



SPORTICOPEDIA SMB 2025

INTERNATIONAL CONFERENCE

THIRD INTERNATIONAL SCIENTIFIC CONFERENCE
SPORTICOPEDIA-Sports Media and Business 2025

THE BOOK OF PROCEEDINGS

Sport in the Focus of the 21st Century: Educational, Social, and Media Aspects

editor

Dejan Dašić PhD
Faculty of Sport

November 14-15. 2025

Belgrade, SERBIA

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FACULTY OF SPORT
BELGRADE

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Preface

The Third International Scientific Conference *Sporticopedia – Sports Media and Business 2025*, held on November 14–15, 2025, in Belgrade, represents a continuation and further advancement of a scientific and professional platform that has been recognized in recent years as a relevant forum for dialogue among sport, media, education, and contemporary society. The conference was organized by the Faculty of Sport, University “Union – Nikola Tesla” in Belgrade, with an expanded network of co-organizers and institutional support from the Ministry of Science, Technological Development and Innovation of the Republic of Serbia.

The central theme of the conference, “*Sport in the Focus of the 21st Century: Educational, Social, and Media Aspects*,” was conceived as a response to the increasingly complex roles that sport plays in contemporary society. Today, sport simultaneously functions as an educational resource, media content, economic activity, cultural phenomenon, and an important instrument of social integration, which requires an interdisciplinary and scientifically grounded approach to its study. The Book of Proceedings presented here contains 25 peer-reviewed scientific and professional papers, thematically covering a wide range of current issues in the fields of sport sciences, physical education, sport management, media, marketing, digital technologies, and the social aspects of sport.

Through the development and continuity of the *Sporticopedia – Sports Media and Business* conference, the Faculty of Sport further strengthens its positioning within the national and international academic community, encourages interdisciplinary research, and creates conditions for more visible involvement of its teaching staff, associates, and researchers in contemporary scientific trends. In this way, the conference and the accompanying Book of Proceedings become an important instrument of institutional development, enhancement of scientific output, and long-term affirmation of the Faculty as a relevant higher education and scientific institution.

We express our gratitude to all authors who contributed to the quality of the Book of Proceedings with their papers, as well as to the members of the Scientific and Organizing Committees for their dedication, expertise, and responsibility in the process of paper selection and peer review. Special thanks are extended to the reviewers, whose contribution was crucial for preserving the scientific integrity and academic standards of the conference. We are confident that the published papers will represent a significant source of scientific knowledge and practical insights for researchers, academics, students, and all professionals engaged in sport, media, and related fields, as well as an incentive for further research and future editions of the *Sporticopedia – Sports Media and Business* conference.

Prof. Dr. Dejan Dašić

Chair of the Program Committee

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PLENARY LECTURE

HOLISTIC ANALYSIS OF MODERN STRENGTH TRAINING

Mithat Blagajac¹

Abstract: The paper analyzes strength training as a complex process of managing adaptation across multiple organic subsystems. In contrast to the traditional view of muscles solely as force producers, the holistic approach treats them as the most important metabolic and endocrine organ. In parallel, the fundamental physiological and kinesiological characteristics of the main strength training systems are examined. The practice of applying strength training immediately after a football match is also analyzed. The central thesis of the paper is the transition from “copying” generic programs to truly “grasping” (understanding) the biochemical and physiological principles of adaptation, supported by the application of modern monitoring systems. Special emphasis is placed on the specifics of training children and adolescents through an analysis of the musculofascial and osteoarticular imbalance that occurs during growth.

Keywords: Strength training adaptation, holistic muscle function, physiological and kinesiological systems, training monitoring and load management, youth growth and musculoskeletal imbalance

Introduction

Muscles, together with the skeletal system, account for 60–65% of total body mass and represent the foundation of organismal health. The fact that approximately 80% of the centers in the cerebral cortex are motor centers clearly indicates the inseparable link between movement and cognition.

Strength development is associated either with the improvement of motor control processes governing muscle activity or with an increase in the number of myofibrils

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within muscle fibers. An increase in the number of myofibrils simultaneously leads to the expansion of the sarcoplasmic reticulum, which overall increases myofibrillar density within the fibers and, subsequently, the muscle cross-sectional area. Changes in cross-sectional area may also be related to an increase in mitochondrial mass, glycogen stores, and other organelles. However, in a trained athlete, myofibrils and mitochondria occupy more than 90% of the muscle cross-section; therefore, the primary factor of hypertrophy is the increase in the number of myofibrils and, consequently, strength gain (Blagajac, 2024).

The musculofascial system is the largest organ or organ system, and it is important to highlight its fundamental characteristics: elasticity, plasticity, the ability to contract and relax, force-generating capacity, the possibility of conscious control of muscle tension, various contraction modes, the capacity for regeneration into advanced age, the dynamics of catabolism (muscle protein half-life of approximately 30 days), and the ability to hypertrophy and atrophy. All these features characterize the musculofascial system. It is a dynamic, adaptive organ rather than merely a passive “generator and executor of movement.”

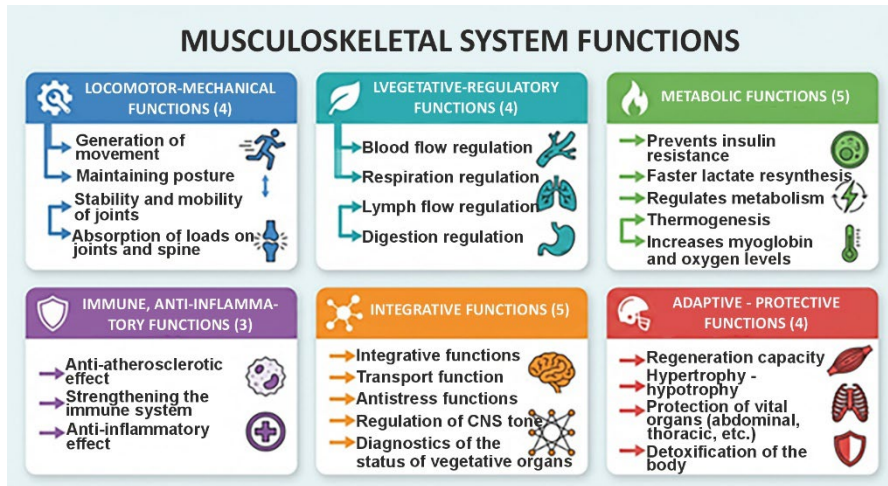
Contemporary research warns that uncritical emphasis on hypertrophy, combined with inadequate supplementation, leads to excessive mass that becomes a metabolic and biomechanical burden, increasing the risk to the cardiovascular system.

The functions of the muscular system are closely interconnected and interdependent, operating as an integrated functional whole that is also linked to the functions of other organs and systems of the body.

For the purpose of easier and more comprehensive analysis, the numerous functions of the muscular system can be conditionally grouped into six categories (Figure 1):

1. Locomotor – mechanical functions
2. Vegetative – regulatory functions
3. Metabolic functions
4. Immune and anti-inflammatory functions
5. Integrative functions
6. Adaptive – protective functions

Figure 1. Musculoskeletal system functions



Form motor abilities to adaptology

Traditional training theory defines “strength” as a motor ability. However, contemporary Adaptology argues that “strength” or “speed” do not exist in the human body as independent entities; rather, they are labels for the external manifestations of internal processes (Seluyanov, 1998; Issurin, 2016).

The holistic concept of strength training emphasizes that training does not “develop abilities” per se, but instead stimulates adaptive changes in three key systems:

1. The locomotor apparatus: muscles, fasciae, bones, and joints
2. The energy–metabolic system: energy supply and utilization
3. The control system: the central nervous system, peripheral nervous system, and the endocrine system

Characteristics of the main strength training systems

In training practice, five strength training systems predominate, each with a specific energetic and physiological signature (Milanović, 2013; Schleip & Müller, 2013).

Powerlifting (System of Maximal Effort)

- Essence: Focused on the development of maximal voluntary muscle force through three fundamental lifts (squat, bench press, deadlift).
- Mechanism: Primarily stimulates neuromuscular adaptation (recruitment of a greater number of motor units and their synchronization). Very high loads are used

(90–100% 1RM) with a low number of repetitions (1–3) and long rest intervals to allow central nervous system recovery.

- Goal: Achievement of absolute force records, accompanied by high stress on the osteoarticular and tendon structures.

Bodybuilding (System of Maximal Hypertrophy)

- Essence: Aimed at altering body composition by increasing muscle size (hypertrophy) and symmetry.
- Mechanism: Employs moderate loads (70–85% 1RM) with higher repetition ranges (8–12) and short rest periods (60–90 s) to induce maximal metabolic stress and microtrauma of muscle fibers. Sarcoplasmic hypertrophy predominates.
- Goal: Aesthetic body modification; often results in increased mass that may become a biomechanical burden in sport games.

Traditional Strength Training (General System)

- Essence: Based on linear progression and general preparation of the muscular system without strict sport specificity.
- Mechanism: Combines basic gym exercises with the aim of increasing the general strength base. The focus is on the muscle as an isolated force generator, often neglecting the context of movement and stability under load.
- Goal: General strengthening of the organism; however, transfer to specific sport activities is often unpredictable and limited.

Functional Strength Training (Movement Integration System)

- Essence: Trains movement rather than isolated muscles. Strength is viewed through the efficiency of musculofascial chains.
- Mechanism: Utilizes multi-joint exercises across all planes of movement (rotational, stabilization, unilateral patterns). Emphasis is placed on proprioception, motor control, and force transmission from the trunk to the extremities.
- Goal: Maximal transfer to sport-specific technique, injury prevention, and movement economy.

Statodynamic Strength Training (Mitochondrial Transformation System)

- Essence: A specific method (according to Seluyanov) aimed at training muscles under conditions of local hypoxia without mechanical overload of the joints.
- Mechanism: Uses low loads (approximately 30% 1RM), slow execution within a shortened range of motion (constant tension for 30–45 s). Capillary compression restricts oxygen supply, thereby activating anabolic processes in slow oxidative muscle fibers.

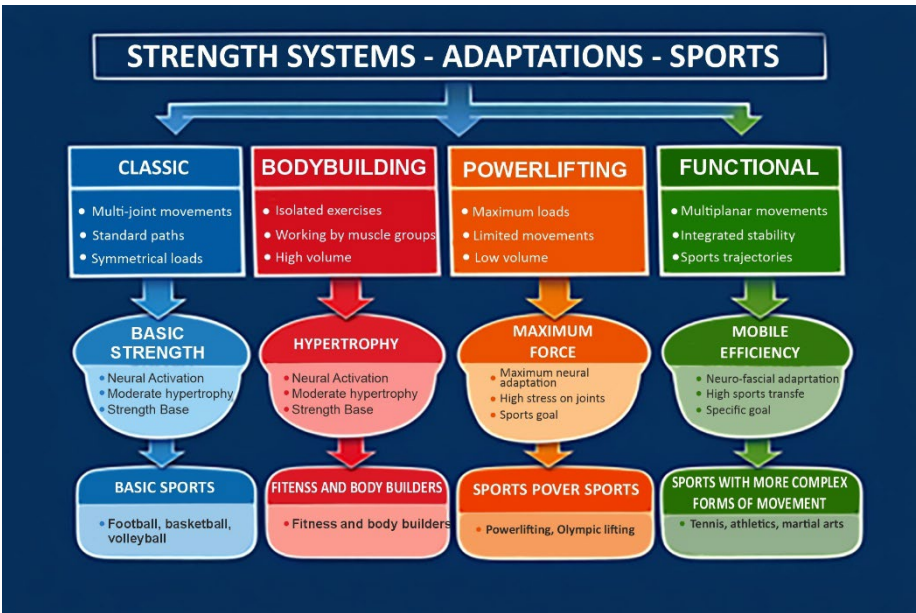
- Goal: Hypertrophy of slow-twitch fibers and their transformation into stronger and more fatigue-resistant fibers through mitochondrial network expansion, making this method particularly suitable for rehabilitation and elite endurance performance.

Comparative Overview of Strength Training Systems

A comparative overview highlights the distinct adaptive targets, energetic demands, and practical applications of each strength training system, underscoring the necessity of selecting methods in accordance with sport-specific demands and long-term adaptation goals.

System	Primary Goal	Dominant Adaptation	Transfer to Sport
Traditional	General strength	Neural + structural	Moderate
Bodybuilding	Aesthetics / muscle mass	Metabolic (sarcoplasmic)	Low
Powerlifting	Maximal force	Neural efficiency (motor unit recruitment)	Low–Moderate
Functional	Movement efficiency	Neurofascial integration	High
Statodynamic	Strength endurance	Mitochondrial transformation	High

Figure 2. Strength systems – adaptations - Sports

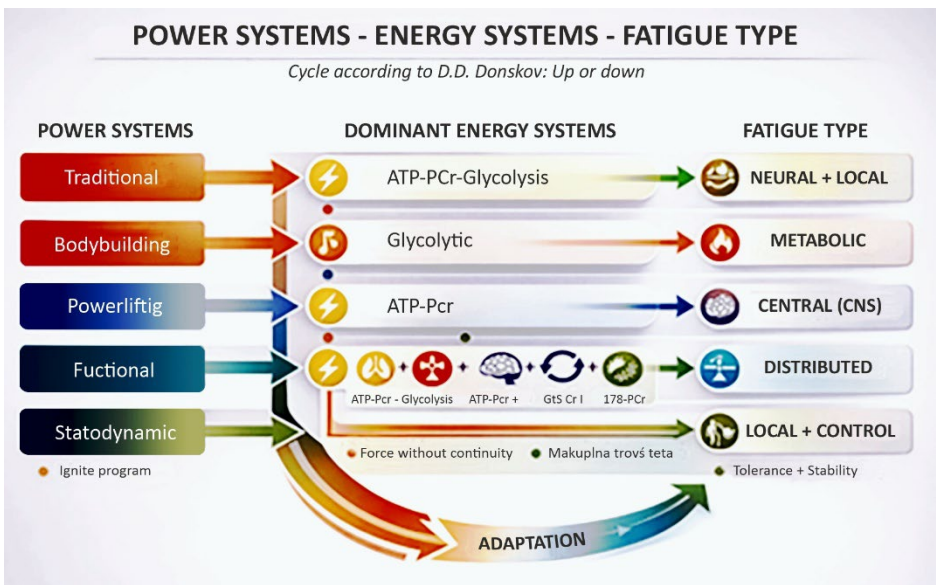


Energetic aspects of strength training

Strength training is simultaneously training of the body’s energy systems. Understanding these processes is essential for preventing overload of the central nervous system (Blagajac, 2016).

- Traditional / Powerlifting: Primarily relies on the ATP–CP system. It induces significant central nervous system fatigue and requires prolonged recovery periods.
- Bodybuilding: Dominated by the glycolytic system. The focus is on metabolic stress, with minimal adaptation of the oxidative system.
- Functional training: Integrates all three energy systems (ATP–CP, glycolytic, and oxidative), resulting in the highest transfer to sport practice.
- Statodynamic training: Engages both the glycolytic and oxidative systems, increasing fatigue tolerance and improving metabolic control.

Figure 3. Power systems – energy systems – fatigue type



Strength training immidiately after a football match

Within the widespread practice of uncritical copying and application of other people’s training methods—without understanding their physiological and kinesiological foun-

dations—the application of strength training immediately after a football match is also frequently observed.

The application of high-load strength training immediately after a match (within 1–2 hours) has no physiological justification and is counterproductive. Strength training performed immediately after a match may only be directed toward tonization and active recovery, and under no circumstances toward true strength development (Seluyarov, 2001).

Basic characteristics of the physiological state after a match:

- The athlete's organism is in a state of deep stress
- Glycogen stores in muscles and the liver are depleted
- Muscle fiber damage (microtrauma) caused by numerous eccentric contractions (decelerations, jumps, changes of direction, duels)
- Accumulation of metabolites in the blood and muscles (lactate, hydrogen ions) and activation of inflammatory processes
- Significantly elevated levels of stress hormones, especially cortisol
- Evident central nervous system (CNS) fatigue, manifested as reduced capacity for motor unit recruitment

Why strength training immediately after a match is harmful:

- It exacerbates muscle damage and intensifies inflammatory processes
- It disrupts glycogen resynthesis
- It increases stress hormone levels—chronically elevated cortisol creates a catabolic environment that inhibits recovery and increases the risk of overload
- It overloads the CNS, which requires relaxation after a match rather than additional stress

After a match, active recovery through tonizing loads is required in order to improve circulation, accelerate the elimination of metabolites and stress hormones, reduce stiffness, and provide mental and emotional relaxation.

Therefore, after a football match—as after any competition—a systematic application of appropriate recovery systems (kinesiological, physiological, and psychological), programs, and protocols is required.

Kinesiological recovery programs may include:

- Very low external loads (30–50% 1RM)
- Low training volume (1–2 sets per exercise)
- Low intensity (no failure, no proximity to failure)
- Full range of motion with dynamic stretching through movement

Characteristics of strength development across age groups

In approaches to strength, a one-sided perspective is often adopted: strength is proclaimed as the foundation of all motor abilities, while neglecting the fact that strength never manifests independently in any sport. Instead, it always appears synergistically within a system and structure alongside other motor abilities. The relationship, interdependence, and relative contribution of each motor ability depend on the specific demands of the sport.

It is essential to emphasize that the foundation of all motor abilities is functional sport technique (movement), not one of its components—strength.

A particular kinesiological, physiological, and health-related issue is strength training in young athletes. Increasingly, strength training is promoted and offered to youth athletes (including via online platforms) independently of comprehensive training aimed at versatile, harmonious general physical, bodily, and functional development, and optimal preparation for healthy growth, education, profession, sport, and life in general (Verkhoshansky, 1980; Malacko & Rađo, 2004).

Development of the Musculofascial and Osteoarticular Systems

The development of the musculofascial and osteoarticular systems does not proceed evenly. These systems alternate in “leadership,” sometimes diverging in tempo, and it is precisely from this mismatch that both great developmental potential and typical problems in strength training of children and adolescents arise. Strength training must therefore be viewed as a developmental process that respects age-specific characteristics.

AGE 7–10 YEARS – “Soft Body, Living Learning System”

During this period, the osteoarticular system is still in the modeling phase. Bones are elastic, epiphyseal (growth) plates are wide and sensitive, joints are relatively unstable but mobile, articular cartilage is thick, and the ligamentous apparatus is more lax.

The musculofascial system is poorly differentiated in terms of strength but extremely plastic in control. Fasciae are well hydrated, soft, and “slippery,” allowing large ranges of motion but with limited force-generating capacity.

The dominant developmental dynamic at this age is not strengthening, but organization. Movement is learned, the nervous system “maps” the body, and muscles function primarily as stabilizers and guides rather than force generators. Numerous mismatches occur: a child can do a lot, but not for long; can learn quickly, but cannot tolerate mechanical load.

Primary goal: motor literacy and control of body and movement.

Training priorities:

- Development of coordination, balance, and spatial orientation
- Trunk stability and basic postural control
- Full joint mobility
- Development of basic endurance through play

Permitted forms of “strength” (indirect development only):

- Mastery of bodyweight (supports, mixed hangs, climbing)
- Jumps with controlled landings
- Carrying light objects while moving
- Pushing and pulling activities through play

These activities develop:

- Neuromuscular activation
- Basic muscle tone
- Joint stabilization

Prohibited or not recommended:

- Gym-based training with external loads
- Set-and-repetition training aimed at “strengthening”
- High-intensity static isometric holds
- Competitive approaches to strength training

Training structure:

- Duration: 45–60 minutes
- High variability
- Frequent task changes
- Minimal verbal pressure from the coach

Strength training must not be an independent goal at this age. Strength is not developed; instead, the foundation of neuromuscular control is built.

AGE 10–14 YEARS – Accelerated Bone Growth Relative to Muscles

This is the most critical developmental phase. The osteoarticular system enters accelerated longitudinal growth. Bones lengthen, lever arms change, joint axes shift, and centers of mass move. Epiphyseal plates remain active but are particularly vulnerable.

The musculofascial system lags behind skeletal growth. Muscles become relatively shortened, fasciae lose elasticity, and tendon attachments experience increased stress. Strength may increase, but coordination often temporarily declines.

Development is asymmetric and wave-like. Typical issues include overload of attachment sites, knee pain, heel pain, lumbar discomfort, and apparent declines in motor abilities.

Strength training may be included, but:

- With low to moderate loads
- Through full ranges of motion
- With emphasis on technique and control

The goal must not be maximal strength, but:

- Preservation of mobility
- Joint stabilization
- Correction of growth-related imbalances

Primary goal: stability and control during growth and development.

AGE 14–17 YEARS – Structural Closure and Entry into Strength

The osteoarticular system gradually completes longitudinal growth. Epiphyseal plates close, joints stabilize, and bone resistance increases.

The musculofascial system enters a phase of rapid capacity development. Muscle mass, fiber cross-sectional area, fascial stiffness, and force transmission improve. Tendons become stronger and more efficient in elastic energy storage.

Development shifts from adaptation to optimization: strength, speed, reactivity, and endurance can now be systematically developed.

Primary goal: planned development of strength and the strength–speed relationship.

Training priorities:

- Systematic development of maximal and explosive strength
- Strengthening of the tendon–fascial system
- Integration of strength into sport technique
- Injury prevention through stability

Permitted strength training:

- Training with external loads
- Progressive intensity increases
- Bilateral and unilateral exercises
- Development of strength, strength–speed, and reactivity

Necessary conditions:

- Technical maturity
- Stable mobility
- Proper dosing of volume and intensity
- Load periodization

Training structure:

- 2–4 strength sessions per week (sport-dependent)
- Clear distinction between developmental and maintenance phases
- Integration with technical–tactical training

At this age, strength is not a risk but a protective and developmental factor—provided it is properly planned and dosed.

Methodological conclusion

- Early, forced strength training does not accelerate long-term development; it often slows it down.
- Balanced development requires respecting the sequence: control → stability → capacity → performance.
- The gym is not the problem. The problem is the wrong age, the wrong goal, and the wrong methodology.

GENERAL METHODOLOGICAL FRAMEWORK FOR ALL AGE GROUPS

Training for young athletes must be aligned with:

- the degree of morphological development of the locomotor apparatus (musculofascial and osteoarticular systems),
- the functional maturity of the central and peripheral nervous systems,
- the capacities of metabolic–energetic systems,
- the adaptive potential of the endocrine system.

If any of these systems is pushed beyond its developmental capacities, overall physical development is compromised and the risk of injuries and functional imbalances increases.

Strength training must simultaneously:

- ensure that strength development follows the athlete’s biological maturity,
- develop the locomotor apparatus (musculofascial and osteoarticular systems),
- stimulate the nervous system without overload,
- respect the age-related metabolic and endocrine limits,

- support long-term development rather than short-term outcomes.

Each age group has a primary training objective and secondary permissible effects. Errors occur when secondary effects are forced as primary goals.

Conclusion

Modern strength training must not be reduced to forcing “weight lifting.” Strength training is a sophisticated system of adaptation that requires:

1. Understanding instead of copying: knowledge of biochemical and physiological foundations, with respect for individual characteristics and current ability level.
2. Continuous monitoring: tracking internal physiological responses (e.g., SmO_2 , HR, BC) to applied training and competition loads.
3. A holistic approach: aligning strength development with growth phases and maintaining musculofascial balance.

Strength is a performance factor only when it is integrated into functional movement and supported by a healthy vascular system. Strength should not be isolated and trained as the foundation of all motor abilities, but treated as an integral part of a system (a network) of motor abilities that manifests differently across different sports activities and sport techniques.

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PLENARY LECTURE

COMMUNICATION AND MEDIA ASPECTS OF THE PROMOTION OF PARALYMPICS IN THE FUTURE „SPORTS DEVELOPMENT STRATEGY IN THE REPUBLIC OF SERBIA FOR THE PERIOD FROM 2025 TO 2035“²

Biljana Vitković³

Abstract: This paper deals with the communication and media aspects of the promotion of Paralympic sports in the context of the development of the new „Sports Development Strategy in the Republic of Serbia for the period from 2025 to 2035“. Paralympics, as an important segment of the life of people with disabilities, is still not sufficiently present in the media in Serbia, and is not well supported systemically. This leads to limited visibility and indicates the need to develop a comprehensive communication strategy.

The goal of the research is to analyze the current position of Paralympics in the strategic documents of the Government of the Republic of Serbia published so far, in the media and society, and to propose communication guidelines within the framework of the development of a new strategy that could contribute to greater affirmation, media visibility and inclusion of athletes with disabilities. Through a qualitative analysis of existing documents, available media sources and information on Paralympism, the research will indicate the current institutional public policies and media practices and propose models of media strategy that can be incorporated into the national legislative framework.

The theoretical directions within which the media coverage of the sports successes of the Paralympians in Serbia moves will also be presented. The research results will contribute to the understanding of the importance of communication in changing the social perception of Paralympians, as well as to the development of a strategy that will be valid in the next ten-year period. Based on the findings, the paper will offer concrete recommendations for institutions, media and organizations, with the aim of improving the media presentation and social integration of the Paralympics in Serbia.

Keywords: Paralympics, strategy, media, communication, disability, sport

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Introduction

The focus of this research is the question of how Paralympics – as an important segment of sport and life of people with disabilities – can be better recognized, visible and integrated into the future strategic framework of sports development at the national level.

For that, it was necessary to consider the existing strategic and action documents available on the official website of the Ministry of Sports of the Republic of Serbia (previous name: Ministry of Youth and Sports)⁴, but also to make a brief insight into the media sports scene of Serbia, which should be a „mirror” of a responsible strategic approach.

Already at the very beginning, a serious obstacle was noticed: although the links to the documents are marked as publicly available, most of the reports on the implementation of previous strategies are not available – the pages are empty or a notification is displayed that the content does not exist, which raises the issue of transparency and continuity in the strategic planning of sports development. Of particular concern is the fact that the last valid Sports Development Strategy covered the period from 2014 to 2018, while the new strategy has yet to be drafted and will cover the period from 2025 to 2035. This means that Serbia has not had a valid strategic document to guide the development of sports for the last seven years. Also, it is noted that the majority of strategic documents covering the period from 2009 to today were posted in the period from June to October 2019, except for the three last documents that were posted in March and September of this year, which further indicates the lack of continuity and systematic approach in the publication and archiving of strategic documents.

The analysis of strategic documents included all content posted until September 11, 2025, which corresponds to the date of the last update of the valid „Work Informant of the Ministry of Sports”. That document served as an additional source of information, given that reports on the implementation of previous strategies were not publicly available. After that date, updates to the Informant were no longer monitored, and neither were new materials posted after September 11 on the website of the Ministry of Sports, including the document published on September 18, 2025.

It is exactly the methodological limitations that were previously discussed that additionally point to a systemic problem in the approach to the publication and availability of strategic documents, which opens up wider questions about transparency and institutional responsibility.

⁴ Article 10 of the Law on Amendments to the Law on Ministries stipulates that on the date of entry into force of this law, the Ministry of Youth and Sports continues its work, in accordance with the scope established by this law as the Ministry of Sports. (Official Gazette of RS, No. 116/2022)

In such an institutional vacuum, it is totally justified to post the following question: on the basis of which information and previous evaluations the professional and academic community can make proposals and suggestions for a new strategic document? Although some additional data were found in the Work Informator, the conclusion remains that the availability of documents on communication channels, such as the website of the Ministry of Sports, is not in accordance with the principles of publicity of work and the Law on Free Access to Information of Public Importance. This law, in accordance with Article 1, emphasizes that all public authorities should proactively publish and make available information about their work of public importance, in order to realize the public's interest to be fully informed, which includes strategic documents such as those on the development of sports for persons with disabilities. This obligation of proactive publication on the Ministry's website is further supported by Article 39, which requires the creation and publication of Work Information in electronic form through a unified information system, with the listing of strategies, programs, plans and reports, thus ensuring transparency without the need for special requirements. The lack or removal of these documents from the site is a violation of these provisions, limiting access to the professional and academic community and violating the principle of public work from Article 2, additionally supported by Article 4 of this law. (Law on Free Access to Information of Public Importance, Article 1, 2, 4 and 39) It is important to note that even the available documents, for the most part, do not contain a more detailed evaluation of the implemented measures, nor a deeper analysis of their results, which further emphasizes the need for greater transparency in planning future strategies.

The subject of research

The subject of this research was the analysis of the strategic regulations of the Ministry of Sports, while the other part of the research project related to the twenty-three-day monitoring of the „sport” section in the main news program of „Dnevnik 2”, the public media service of Serbia – RTS, in the period from September 6 to September 28, 2025.

A quantitative-qualitative analysis of the contents of the documents was carried out, which can be divided into two categories: strategic documents, which are key to shaping the policies and directions of the development of sports in the Republic of Serbia, and auxiliary (operational) documents, which represent supplementary material and enable insight into the practical application of policies.

The strategic documents include: „Strategy for the development of sports in the Republic of Serbia for the period from 2009 to 2013”, „Action plan for the implementation of the strategy for the development of sports for the period from 2009 to 2013”, „Strategy for the development of sports in the Republic of Serbia for the period from

2014 to 2018" and the related „Action Plan“, „Strategy for improving the position of persons with disabilities in the Republic of Serbia for the period from 2025 to 2030“.

Supporting documents include: Report on the national conference „Local communities in the field of sports – Sports development strategy, Sports Law, financing, violence in sports“, „Manuals, regulations and letters of local self-government units“, available on the website of the Ministry of Sports, which offer an overview of specific activities, measures and recommendations at the local level, „Power Point presentations“ on the planning and implementation of sports development programs in local self-government units and „Informants on the work of the Ministry of Sports“ (for the period from September 30, 2022 to September 11 2025).

„Labor informants“ were consulted as an additional source of data on institutional transparency and availability of information, although they do not belong to the category of strategic or auxiliary documents. Their inclusion obscured the insight into the current activities of the Ministry of Sports and the availability of data on the possible realization of the planned activities on the development of sports provided for in the aforementioned strategic documents.

All documents were analyzed according to key concepts and wording related to the promotion of Paralympic sports, such as „paralympics“, „media“, „promotion“ and „persons with disabilities“, in order to identify goals related to media visibility and inclusive policies.

When analyzing strategic documents, the goal was to determine the frequency of occurrence of topics related to Paralympics, the context and way of presenting Paralympic athletes, the presence of official institutional actors (Ministry of Sport, Paralympic Committee of Serbia), as well as the visibility of the value of inclusion and equality in sport.

During the media analysis, the determination was to monitor the way in which the public media service of Radio-television of Serbia (RTS) reports on the Paralympians within the three-week corpus, using the example of the sports section of „Dnevnik 2“. This choice is based on several reasons.

RTS has a legal and social obligation to objectively and inclusively inform the public, which makes it relevant for the analysis of the way athletes with disabilities are presented. In accordance with the Law on Public Media Services, a public media service such as RTS has clearly defined obligations that ensure inclusive and non-discriminatory public information. In particular, Article 7, paragraph 5 of this law prescribes meeting the needs in informing all parts of society without discrimination, paying special attention to socially sensitive groups such as children, youth and the elderly, minority groups, people with disabilities, socially and health-impaired people. This obligation is

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supplemented by Article 4, which emphasizes the principles of completeness, impartiality and balance of information, and Article 6, according to which RTS must timely and truthfully inform the public about relevant topics. The Program Council (Article 28) is responsible for supervising the implementation of these principles, which ensures that the contents are non-discriminatory, diverse and balanced, including all social groups and individuals. (Law on Public Media Services, Article, 4, 6, 7 and 28)

Despite this legal framework, the current situation in the „sport“ section of „Dnevnik 2“ on RTS indicates a potential deviation from these norms. If this section is designed to cover only professional sports, with the opposite selection omitting the sports of persons with disabilities, this represents a violation of the aforementioned legal provisions, as this limits inclusivity and full information to the public. Regardless of the fact that the sport of people with disabilities is not a professional sport, it deserves equal media attention because of its importance for rehabilitation, social integration and the promotion of equality. The editorial choice to cover exclusively professional sports is not only arbitrary, but may be in conflict with the principles from Article 4 and the obligation from Article 6 of the Law on Public Media Services, because it ignores the importance of Paralympic sports, which further renders the idea of equal access to information meaningless and disenfranchises those segments of society that are already at risk of marginalization.

In this regard, monitoring the presence of sports of persons with disabilities in RTS news broadcasts is not only methodologically justified, but relies on explicit legal norms that regulate the work of the public service.

The monitoring determines that news about the sports of persons with disabilities is not represented or is reduced to a minimum, and this indicates the media failure of RTS to fulfill its social and legal role of promoting diversity and equality.

Media reporting is a significant factor in shaping attitudes towards people with disabilities, so by analyzing the content of the „sport“ section of „Dnevnik 2“ of RTS in this period, it can be seen whether there is news about Paralympians and if the answer is yes, what kind of news is in question, as well as which media narrative prevails. A period of 23 days is sufficient to enable the collection of a representative sample of content for qualitative analysis. In addition, if important sports events take place or important dates are marked during that period, the relevance of the reporting increases and a better insight into the practice of the public service is provided. In the end, this kind of analysis makes it possible to assess whether RTS fulfills its obligation to promote equality, inclusion and affirmation of all social groups.

This research approach is important, because it provides a basis for critically examining the visibility and equal representation of all social groups in media content.

In this part, which refers to the subject of the research, it is important to point out certain methodological limitations. One of them concerns the fact that the content of the entire program „Dnevnik 2” of RTS – was not fully watched. Based on the researcher's previous empirical experience, it can be assumed that the content about disabled people, if it existed, could have been shown in the part of the program that deals with social issues – especially in the context of presenting athletes with disabilities and their inclusion in society by overcoming sociological, physiological and systemic obstacles.

Although it is possible that content about people with disabilities, including athletes, can appear in the social section of the program, it is important to emphasize that such an approach is not inclusive. Even though it is certainly important to shed light on the social challenges that people with disabilities face, it is problematic to put them in the context of social issues, because this implicitly places emphasis on their obstacles and difficulties, and not on their abilities, achievements and contribution to society through sports.

The rubric „society”, in the context of public media, often tends to focus on the problems of marginalized groups and the challenges that these groups experience, which can create the image that people with disabilities are defined solely through their difficulties and obstacles, and not through their successes and potentials. This, unfortunately, can lead to the preservation of stereotypes of people with disabilities as people who depend on social assistance, instead of showing their active role and ability to achieve exceptional sporting achievements. That is why it is important that the media, especially public broadcasters such as RTS, treat athletes with disabilities in the context of their sporting excellence and readiness within the rubric „sport”, and not some other.

This approach would enable a better presentation of sports results as universal values, independent of physical or other obstacles or recommended only for some other, special people.

For the purpose of this analysis, the website of the Paralympic Committee of Serbia was also reviewed with the aim of getting to know the content, structure and frequency of publishing current news about sports and competitions for people with disabilities. The goal was to determine the level of media coverage of Paralympic sports, to analyze the content of the Paralympic Committee's website, as well as to create a basis for further scientific research and the development of communication-strategic guidelines.

Therefore, this double, normative and media coverage of the research subject – enabled a deeper understanding of how institutional politics and everyday media practice shape the public discourse on Paralympic sports.

The monitoring of media content combined with the analysis of strategic acts provided a basis for insight into how much the proclaimed values of inclusion and equality are really reflected in the public sphere. This laid a solid foundation for further analysis in the continuation of this paper.

Theoretical framework

When analyzing strategic documents related to the development of Paralympism, it is necessary to rely on normative theoretical approaches related to human rights, social justice, inclusion and the role of the state in shaping equal opportunities for all.

The basic document at the international level important for this topic is the „United Nations Convention on the Rights of Persons with Disabilities” (UNCRPD)⁵ from 2008, according to which, „persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments that, in interaction with various obstacles, may hinder their full and effective participation in society, on an equal basis with others.” (*Convention on the Rights of Persons with Disabilities*, 2008: Article 1)

The „General Principles” are particularly important, which emphasize basic values such as respect for dignity, independence, full and effective participation and inclusion in society, non-discrimination, equal opportunities, accessibility, equality between men and women, as well as respect for diversity and acceptance of persons with disabilities as an integral part of human diversity. (Ibid: Article 3)

A handbook – „Understanding The UN Convention On The Rights of Persons With Disabilities” is also available to the public, which provides a detailed guide to key provisions and interpretations of the Convention, intended for policy makers, researchers and practitioners. (Schulze, 2010)

In theoretical considerations, it is important to point out the human rights model of disability, which starts from the understanding that people with disabilities are holders of full rights, and not objects of medical care or charity. This model relies on international legal frameworks, such as the „UN Convention on the Rights of Persons with Disabilities”, which explicitly obliges signatory states to ensure the full participation of persons with disabilities in society, including sports and recreation. (*UN Convention on the Rights of Persons with Disabilities*, 2008: Art. 30, Par. 5)

In addition, theoretical approaches to social inclusion and social justice indicate that equal access to resources is not enough – it is necessary to actively remove structural

⁵ The official text of the Convention, together with the General Protocol, is available on the official website of the UN.

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barriers that prevent the equal participation of all social groups. (Sen, 1992; Fraser, 2010 and Sandel, 2010)

In the domain of public policies and strategic planning, it is useful to include the approach represented by participatory planning. This means that strategies should be created based on the specific needs of communities (in this case, athletes with disabilities), but also include those communities in the decision-making process, as equal actors.

Critical analyzes of public policies (Bacchi, 2012) can help to recognize how problems are defined in strategic documents: is Paralympic sport presented as a „problem“ to be solved, as a symbol of inspiration or as an equal part of the sports system?

In this context, communication guidelines – if they aspire to be relevant, ethical and effective – must be shaped in accordance with the aforementioned theoretical insights as well.

Furthermore, from the media point of view, it is necessary to consider specific theoretical concepts that deal with identity formation, representation and marginalization of persons with disabilities in the media.

Representation theory

Stuart Hall's representation theory clearly observes that, in the processes of representation, the media often use stereotypes as simple and quickly recognizable images that shape public opinion about certain social groups. This theory explains more deeply why and how marginalized individuals are portrayed through stereotypical and simplistic narratives. The media, Hall argues, often do not reflect the true reality, but construct it through specific codes and meanings that shape social representations and ideologies. Stereotypes are precisely those that are used as cultural codes and can reinforce negative or distorted representations that limit the understanding and acceptance of diversity within society. „Each society or culture strives, with varying degrees of closure, to impose its classifications of the social, cultural and political world. These classifications form the dominant cultural order, which is nevertheless neither unanimous nor uncontested. This question of the 'structure of ruling discourses' is crucial. Different areas of social life appear as entered into discursive domains, hierarchically organized into ruling or desirable meanings.” (Hol, 2017: 15)

Understood in the context of Paralympics, the representation implies a „heroic narrative“ because the disabled athlete is portrayed as an individual who „overcomes obstacles“ or as someone who „inspires society“. Such messages have a positive tone, however, they ignore the complexities of real life and sporting challenges that athletes face. Accordingly, the media are the ones who choose which topics to present and in which way, and this directly affects how society sees people with disabilities. In the

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book „Media and Power”, Hall talks about the fact that it is the media that influence the social inclusion or exclusion of certain groups.

Silva and Howe (Silva, Howe, 2012) provide a critical review of the viability of the „disabled superhero” iconography as appropriate for the representation of Paralympic athletes. Namely, this kind of presentation can be perceived by the capable moral majority as enlightening. However, „superhero” narratives can negatively affect the physical and social development of people with disabilities, because they reinforce what could be called the „achievement syndrome”, that is, that people with disabilities are successful, despite their disability. (Silva, Howe, 2012)

Numerous studies dealing with the topic of presentation of persons with disabilities confirm that the media representation of Paralympic athletes is often not adequate and balanced. Rees, Robinson and Shields analyzed how the media portray elite athletes with disabilities. Six electronic databases – SportsDiscus, CINAHL, PsychInfo, Medline 1996-, Embase and ProQuest – were searched between 2001 and March 2017 to find quantitative or qualitative content analyzes of media coverage of elite athletes with disabilities. The research results show that the representations of disabilities are minimal, and that certain types of disabilities are favored. A narrative of athleticism emerges, but at the same time a medical framework is maintained that distracts from the sporting aspect. Terms like „Supercrip” and „Superhuman” are often used, which can have ramifications for the wider disability community. (Rees, Robinson and Shields, 2019)

Self-presentation theory

The self-presentation theory of Erving Goffman sheds light on the role of Paralympic athletes in the media in a quite understandable way. This theorist starts from the idea that in everyday social interactions people „perform” – they use verbal and non-verbal cues to shape the way others perceive them. Goffman's perspective provides an insight into how the media do not transmit information neutrally, but selectively shape the audience's perception through selected narratives and symbols. The media choose frames that direct the interpretation of the sports event – Paralympians are often presented as „inspirational heroes” who „overcome obstacles” or as objects of pity, and less often – as equal athletes with tactical knowledge, professional challenges and professional achievements. This type of representation satisfies social norms that favor emotion and inspiration, but at the same time ignores the complexity of the Paralympians' sporting identity. Identity is presented selectively, through a socially desirable and emotionally appealing narrative, thereby (often inadvertently) reproducing stereotypes of disabled people as „eternal fighters” or „victims” rather than as competent and equal actors in the world of sports.

Labeling theory

Labeling theory explains how social labeling and stereotypes shape identities and lead to marginalization. Throughout history, people with disabilities have often been labeled as „different” or „less capable”, and society classifies them as deviant — not because of their behavior, but because of the very existence of their disability. This „deviance” does not refer to breaking the rules, but to the social perception that disability is not a „normal condition”.

Society, due to such „distortions” in practice, should constantly review its own norms, to „regenerate” them so that there is no room for misinterpretations.

These ideas are explicitly developed by Stanley Cohen, in the first systematic study „Folk Devils and Moral Panics” from 1972, which introduced the concept of moral panic. He claims that labeling can even promote the deviance he declaratively wants to eliminate. In fact, it can be said that the tendencies towards social control and norming often stigmatize individuals by dehumanizing them. In this way, stigmatized individuals reach for a deviant identity as a means of defense, which leads to even greater deviance, which increasingly exposes that group to negative reactions and punishments. (Cohen, 2011) Howard Becker too makes the observation that society is the creator of deviance, that is, that the violation of social rules, through stereotyping models, leads to the stigma of deviance. (Becker, 1963)

That is exactly why the standardization of behavior and rules in a diffuse activity — such as sports, should be a carefully planned process, with a transparent and public approach to the subject.

In particular, it should be emphasized that the motivation of athletes is often a strong activating mechanism, which is particularly pronounced in Paralympics and is a good support for resisting labelling.

Ivana Zubić, in her book „Sports Psychology”, lists several crucial motives for engagement in sports, and in the context of this work, the „achievement motive” is particularly significant, which „is reflected in a person's need to achieve significant success in an activity and to excel in relation to other people” and „represents a person's constant attempts to compete with 'standards of excellence' such as success, victory, overcoming existing results (other people's, own, imagined)”. (Zubić, 2023: 97–98)

Framing theory

Framing theory explains the way media shape and present information, influencing the audience to understand certain phenomena, groups or events. Through the selection of language, images and thematic focus, the media create frameworks that determine what is important, how it should be interpreted and which perspective is given priority.

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When it comes to Paralympians, this theory indicates how the way athletes with disabilities are presented in the media affects their social identities, visibility and legitimacy as athletes. In frames that show them exclusively through the prism of disability, pity or heroism, the dimension of their sports competence and competitive spirit is lost, which must be changed through a clearer definition of public policies, but also through the construction of precise media and communication guidelines.

This theory was the starting point for noticing a qualitative difference in coverage of wheelchair basketball teams compared to non-disabled teams in America. After the analysis, it was concluded that Paralympic athletes are often marginalized in the media, where they are denied legitimacy in the media presentation and recognition of their sports qualities. The research included 320 articles (160 each, about both sports) from 7 student online media over five seasons at universities with wheelchair sports programs. The results showed that wheelchair athletes were rarely portrayed as legitimate, talented and physically strong, while non-disabled athletes were portrayed as top athletes and „warriors“ on the field. (Watson, 2019)

Agenda theory

According to the theory of the work distribution in mass communication or the theory of the agenda (Agenda Setting Theory), the media choose which stories about Paralympians to highlight, shaping the public what to see but also how to understand and value people with disabilities.

Agenda (visibility) theory investigates how certain subjects or topics appear in the media, how present and recognizable they are, because visibility in the media plays a major role in how a certain group or topic is viewed and valued in society.

More visibility often means more social recognition. Let us say, if a national television often reports on Paralympic athletes, then the audience will also think that these people are an important part of sports life. Or, if reports from the Paralympic Games regularly appear in prime time slots (for example, on the evening news), it signals that Paralympics is an important segment of general sporting events.

International, legislative and strategic framework

The position of persons with disabilities is legally defined in Serbia by domestic regulations, but also by obligations from international conventions.

The domestic legislative framework, especially the Law on Sports, recognizes this social group and clearly prohibits any direct or covert discrimination in sports, including hate speech. The law emphasizes that playing sports must be humane, free, voluntary, healthy and safe, accessible to all citizens under equal conditions, regardless of age, level of physical abilities or degree of disability (Law on Sports, Article 4).

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Legal regulations provide for the protection of the rights of persons with disabilities, which is guaranteed by: the Constitution of the Republic of Serbia, international documents of universal character and documents whose subject is specific rights of persons with disabilities, laws and other regulations that regulate the exercise of rights in all protection systems within the legal system. The Law on Prevention of Discrimination of Persons with Disabilities is of exceptional importance for the legal regulation of the position of persons with disabilities. (*Guide to the rights of persons with disabilities*, 2021: 2)

A special place in the legal framework of Serbia is the European Charter on Sport for All – Persons with Disabilities (Council of Europe Recommendation No. (86)18), as well as the European Sports Charter (Recommendation No. R(92)13, adopted in 1992 and revised in 2001). These two charters represent a normative basis for the development of inclusive sports policies and oblige member states to: ensure accessibility to sports facilities, encourage intersectoral cooperation (sport, health, education), form national bodies for the development of sports for people with disabilities, finance scientific research in this area, encourage the training of teachers and experts for working with children with disabilities. (*European Sports Charter and European Charter on Sport for ALL: Disabled Persons*)

According to the Final Declaration of the European Conference on Sport and Local Authorities (held in Hungary in 1996), local authorities are key in the implementation of inclusive sports policies. Their role also includes providing financial resources for adapting infrastructure, improving cooperation with sports clubs and organizations, integrating people with disabilities into traditional sports structures, including sports in educational and rehabilitation programs. (Đurđević, Mitić, Atanasov and Vujović, 2014: 108 and 119)

Among the important current regulations, we should also mention the „Strategy for improving the position of persons with disabilities for the period from 2025 to 2030“, which was adopted in January of this year. This strategy generally covers the rights and needs of people with disabilities, and mentions sport as an important area for inclusion. The strategy recognizes that the sports facilities are adapted to a significant extent, but at the same time points to the need for additional education of sports coaches in order to make the programs as inclusive and adapted to people with disabilities as possible. The vision of the strategy is aimed at improving the quality of life of people with disabilities through full accessibility and equal access in various areas, including sports and recreation. One of the special goals is the development of inclusive sports and recreational content, which implies not only the adaptation of space and programs, but also the education of coaches. The effect of these measures should be an

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increased number of inclusive trainings in which people with disabilities will be able to participate together with other citizens. (*Official Gazette of RS*, No. 5/2025)

In the context of sports strategies, the Republic of Serbia has so far adopted several important documents. These are: „Sports Development Strategy for the period from 2009 to 2013”, then „Strategy for the period from 2014 to 2018”, while the latest one, which will be valid for the next ten years (for the period from 2025 to 2035) – is being prepared and expected.

Along with accompanying action plans, all these strategic documents represent the foundation on which future sports policy should be built, including the field of Paralympics.

In our country, there is a need for research to review the integrative policy that should correspond to the priorities of sports organizations such as people with disabilities, as well as to give priority in that policy to children and youth with disabilities and disabilities.

However, a comprehensive approach to this issue requires a synergy between the academic, institutional and practical view of sport, which is often lacking in our conditions.

The lack of an integrated approach in the study of sports – which would combine academic seriousness and understanding of real sports events – leads to theoretical isolation on the one hand and media superficiality on the other. Therefore, a synthesis of scientific analysis and practical insight is needed in order to understand and improve the sport more thoroughly. (Penezić, 2020: 388–389)

It is exactly this fragmentation of access that also leads to problems in institutional practice, where the lack of coordination and transparency becomes visible at the most basic level – the availability of public information.

In addition, it should be noted that, if there are links to PDF documents dedicated to the evaluation of sports development on the official website of the Ministry of Sports, those documents are not available, because the links lead to pages from which the files have been removed.

Formally, links exist for documents such as: „Analysis of the implementation of the Sports Development Strategy and Action Plan for the period from 2014 to 2018”, „Report on the implementation of the Sports Development Strategy and Action Plan for 2015”, as well as „Reports for 2016 and 2017”, however, the public is not enabled to view their contents.

This practice of lack of transparency makes it even more difficult to monitor the realization of goals related to Paralympic sports and the systemic inclusion of people with disabilities in sports.

Methodology

The analysis is based on a clearly defined methodological framework. The transparent and publicly available strategic material of the Ministry of Sports, which refers to the development of sports in the Republic of Serbia from 2008 to today, was selected as a starting point. The research method combined qualitative and quantitative content analysis with comparative analysis of relevant strategic documents and media reports.

In the first phase, the strategic acts available on the website of the Ministry of Sports were analyzed using a quantitative method, searching for the frequency of key terms, such as „paralympics“, „media“, „promotion“ and „persons with disabilities“. After that, a qualitative analysis of the content was carried out, focusing on the contextual meaning and way of using these terms. The documents were analyzed for the presence of terms and wordings related to the promotion of Paralympic sports, institutional support, media visibility and inclusive policies.

The methodological framework applied in this research is based on the theoretical approaches of media representation (representation theory), media framing (framing theory) and labeling theory, as well as self-presentation theory and agenda setting theory which together enable a deeper understanding of how the media shape meanings and value messages in connection with certain social phenomena. Combined with a critical discourse analysis approach, this framework enabled the identification of patterns of institutional and media practice when it comes to the portrayal of Paralympic sport.

The strategic documents were not fully available, so it was not possible to fully assess their actual performance in practice. Namely, without the involvement of the public and transparency, it is difficult to expect that there will be feedback on whether these strategies are working. This „missing factor“ was tried to be replaced by an analysis of the media image of sports for people with disabilities, because the media, in a way, replaces or represents the public and can serve as an indicator of the effect of policies in practice. Therefore, in a situation where institutions do not provide enough information and the public is not involved in evaluating the performance of policies, media analysis can be an alternative way to see if and how these policies work.

According to the above, the sports section of the informational program „Dnevnik 2“ of RTS was analyzed in the period from September 6 to 28, 2025, with an additional analysis of the website of the Paralympic Committee of Serbia.

A methodological limitation could also be that at the time of monitoring there was no major competition of persons with disabilities, and that there was no need to report on it. But the data show that even this is not a correct claim, which will be further detailed in the results and discussion section.

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The analysis of strategic documents was based on data available until September 11, 2025, which corresponds to the date of the last modification of the Work Informator, used as a key source. The new document of the Ministry of Sports from September 18, 2026 – is not included, because the research was then in its final phase. Therefore, there is a methodological limitation that certain insights from that paper are not included.

Finally, it should be mentioned that this research is limited in terms of the limited time for monitoring media content due to work on extensive material of strategic documentation, but it is also conditioned by the availability of data on the website of the Ministry of Sports.

However, despite this, it can be said that it provides a significant contribution to the understanding of the institutional and media treatment of Paralympic sports in Serbia. The results achieved could be systemically integrated into the new „Strategy for the development of sports in Serbia for the period from 2025 to 2035”, which is currently in the preparation phase.

Research results and discussion

In this part of the paper, the findings are presented that result from the analysis of strategic and auxiliary documents related to the development of sports in Serbia, as well as media content, with a focus on where the sport of persons with disabilities is positioned today in institutional frameworks and public/media narratives.

The discussion also includes communication guidelines – as a proposal for improving the future strategy of sports development, which is planned for the period from 2025 to 2035, and for the preparation of which a working group has already been formed at the Ministry of Sports.

Strategic analysis

The results of this research indicate a significant gap between the legal and strategic framework that formally guarantees the equality of persons with disabilities in the field of sports and the actual sports and media representation of Paralympic sports in Serbia. In this context, the results of the analysis of the documents of the Government of the Republic of Serbia, i.e. the strategic documents adopted by the Ministry of Sports, are presented below, in order to shed light on the institutional perception of this population and the sports activities that belong to them.

⁶ „Recommendation CM/Rec(2021)5 of the Committee of Ministers to Member States on the Revised European Charter on Sport”

„Strategy for improving the position of persons with disabilities in the Republic of Serbia for the period from 2025 to 2030” (Official Gazette of the RS, No. 6/2025), is the latest document in this area for more specific regulation of the rights of persons with disabilities, including the right to sports and recreation in inclusive programs. It is one of the most important documents adopted so far, because it specifies the problem that this population is facing. The document recognizes the problem of cognitive inaccessibility of information, as well as the need for training coaches to work with people with disabilities, so that sports and recreational programs are more inclusive in terms of content and space.

In chapter 5, „Vision and the desired change that will be realized”, the strategy indicates the need to improve the quality of life of children with developmental disabilities and persons with disabilities, their empowerment and the active involvement of all social actors in the implementation of the planned measures. The necessity of ensuring full accessibility, equal access and non-discrimination in various areas – health, education, social and legal protection, housing, culture, sports and recreation, and tourism – is emphasized.

In subchapter 6.2., „Special goals, measures for realization and analysis of effects”, there is a proposal for the development of inclusive sports and recreational contents. The goal is to make sports and recreation accessible to people with disabilities by training professional staff – to train 150 trainers and sports workers by 2030. The expected effect of the measure is greater inclusivity in regular recreation programs and the willingness of trainers to work with disabled people in the same terms and groups. Indicators of the fulfillment of the measure include the number of trained trainers, and the sources of verification are: Annual report on the implementation of the Action Plan for the implementation of the Strategy, Reports of the Council for Persons with Disabilities, Report of the Republic Institute for Social Protection and regular annual reports of the Commissioner for the Protection of Equality.

Although the strategy explicitly mentions the importance of information on several occasions, there is no use of the word „promotion” in this document, while the word „media” appears three times. The media is mentioned in the context of improving media content and informing people with disabilities. It is emphasized that the development of the competences of media workers will contribute to the reduction of stigmatization and sensationalism in reporting, as well as to the increase of accessibility of information to persons with various types of disabilities. It is expected that better information of persons with disabilities enables their fuller inclusion in the community, facilitates informed decision-making and increases their participation in socio-political life.

In the „Sports Development Strategy in the Republic of Serbia for the period from 2014 to 2018” (Official Gazette of the RS, No. 1/2015), Paralympism is mentioned explicitly

or in the context of the Paralympic Committee of Serbia only nine times. Emphasis was placed on the institutional role of the Paralympic Committee as an integral part of the sports system, involved in strategy analysis, implementation of the action plan, as well as the need to strengthen the capacity to withdraw funds from EU funds.

The Paralympic Committee of Serbia is formally recognized as part of the sports system, but the terms „paralympism“ and „persons with disabilities“ are not elaborated in terms of its value, social or promotional aspects, but remain exclusively institutionally positioned. „Promotion“ is mentioned in five places in the document, but mostly in the context of promoting healthy lifestyles, school sports and motivating citizens to engage in physical activity.

On the other hand, the term „media“ is mentioned more than ten times, including in the special subchapter 8.7, „Media in sport“ (within chapter 8, „Other objectives“). The media is defined here as an important partner in the promotion of sports, the culture of fair play, the prevention of violence and doping, but also in the popularization of minority sports. In particular, the need to improve cooperation with the media and professionalize sports journalism is highlighted. Activities are clearly defined and include support for media projects, equal distribution of sports content, upgrading of sports broadcasts and improvement of media coverage of sports events. However, in later strategic documents there is no evaluation of the achievement of these goals nor are concrete analyzes of the impact of these activities visible.

„Action plan for the implementation of the sports development strategy in the Republic of Serbia for the period from 2014 to 2018“ (Official Gazette of the RS, No. 1/2015), provided for activities aimed at improving the role of the media in sports, which may indirectly relate to media promotion of the Paralympics. It was stated that „activities on equal availability of sports content throughout the country and encouraging the creation of content affirming domestic sports, recreation and positive social value“ will be carried out. The evaluation of the measures would be based on the number of supported projects, the degree of their availability and the impact on the audience. Emphasis is placed on strengthening sports broadcasts on public services, with the measurement of ratings and the participation of relevant institutions such as the Ministry of Youth and Sports, the Ministry of Health and REM. The goals of professional development foresee the mechanisms for the organization of courses and trainings. A special goal is the affirmation of sports values through the media, educational and promotional campaigns, aimed at reducing violence on sports fields, promotion of smaller sports clubs and less represented sports, youth clubs and examples of good practice. The evaluation criteria are: the number of broadcasts and the degree of public interest in the contents of the promotion of positive values in sports, even when they are not of national importance.

However, decisively defined activities of Paralympic sports do not exist in this document. The Paralympic Committee of Serbia is mentioned in the context of strengthening institutional capacities, in parts of applying for funds from EU funds, as well as improving the expertise of sports organizations in the field of project preparation and communication with sponsors and donors.

„Strategy of development of sports for the period from 2009 to 2013“ (Official Gazette of RS, No. 110/2008), envisaged as a goal the improvement of the conditions for the mass participation of people with disabilities in sports activities and the raising of social awareness of the importance and role of their participation in sports. „People with disabilities“ are mentioned 19 times, and the significant context is in the tabular review at the end of the document, where „measures to achieve the goals“ are listed (chapter 8). The goal that is to be achieved is the improvement of the conditions for the mass participation of people with disabilities in sports activities, and as those that should be undertaken, the following are listed: the establishment of an interdepartmental working group (Ministry of Youth and Sports and Ministry of Labor and Social Policy) in order to jointly determine the funding program for athletes with disabilities, i.e. determining the criteria for defining the position of top sports for people with disabilities in relation to the position of other types of sports activities of athletes with disabilities. There is also the implementation of the program for the development of top Paralympic sports and the international competition program through the Paralympic Committee of Serbia, as well as the implementation of the development program for mass recreational sports and top non-Paralympic sports. Then, there are programs for the development of sports branches: Special Olympics, Sports for the deaf and hard of hearing, and Sports for the blind and visually impaired, as well as continuous education of parents, representatives of local self-government units, educational institutions and citizens about the importance of playing sports for people with disabilities.

This strategy offers a broader picture of the problems encountered than all the others after it. He states that the results of Paralympic athletes are the result of personal initiative and efforts of individuals, not systemic support. At the national level, there are several organizations involved in sports for people with disabilities, but their responsibilities are not clearly defined, nor do they cooperate with each other. There are no centralized databases on athletes with disabilities, which makes planning and policy development difficult. Funding in this area is not regulated through a unified system – the associations approach different ministries individually, without mutual coordination, which leads to inefficient spending of funds and possible duplication of funding for these activities. The lack of professional staff, especially classifiers and trainers trained to work with people with disabilities, is an additional problem, as well as inaccessible sports infrastructure and lack of adapted equipment. There is no educational system that deals with the professional training of personnel in this field. The

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health care of athletes with disabilities is carried out in accordance with the general laws on health care, while the institutions involved in sports medicine, such as the Association of Sports Medicine of Serbia and the Anti-Doping Agency, function in accordance with international standards.

In the „Action Plan for the Implementation of the Sport Development Strategy in the Republic of Serbia for the Period from 2009 to 2013” (Official Gazette of the RS, No. 80/2009), persons with disabilities are mentioned a total of 29 times, whereby this term appears in several important contextual units. First of all, it should be noted that the improvement of the conditions for the mass participation of people with disabilities in sports activities is part of one of the total of 22 strategic goals defined by the Strategy.

Within the chapter dealing with sports financing, the need to establish an efficient financing system was emphasized, while a possible tax relief mechanism was also announced, especially in the areas of women's sports and sports for people with disabilities. Special sub-chapter 2.10., „Sports of persons with disabilities”, is dedicated to this topic, with the announcement of conducting a detailed analysis of the current situation, identification of athletes and recreationists with disabilities, as well as recognition of associations that could be partners of the Ministry of Youth and Sports in improving this area. Based on the conducted analysis, recommendations for more efficient functioning of those associations should have been developed. Also, the organization of educational activities for coaches and sports experts who would work with people with disabilities was announced, as well as the development of recommendations for the use of sports in order to promote inclusion in schools. Even then, that is, 20 years ago, the need for decentralization of activities to improve the position of persons with disabilities in sports was emphasized, whereby, as a special goal, the improvement of recreational sports in local governments was defined, including the implementation of the "Sports for All" program.

According to the document (subchapter 3.10., „Sports of persons with disabilities”), it is planned that an analysis of the state of sports of persons with disabilities will be conducted in 2010, with the collection of data on the number of athletes and recreationists, which would enable better planning and adjustment of sports activities (this analysis was not found on the website of the Ministry of Youth and Sports).

Seminars and expert meetings were organized, including those in cooperation with international partners. The evaluation of these activities included the number of events and the number of participants. Special emphasis was placed on the promotion of inclusion through sports in educational institutions. Recommendations for using sports as a means of integrating students with disabilities into the school system were

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made. From the available documents, it is possible to conclude that there was an intention to decentralize the development of sports and promote inclusion.

Analysis of supplementary documents

„Manual for developing sports development programs in the local self-government unit”, mentions the word „media” three times. For the first time in the context of the fight against negative phenomena in sports – doping, violence and excessive commercialization – where the media is designated as a key ally in preserving sports and social values. Another time, the media is mentioned within the tasks of local self-governments, which are encouraged to, in cooperation with the media, promote the true values of sports and bring the importance of physical activity closer to all citizens. (Đurđević, 2015: 17, 31 and 51)

The term „paralympics” is not mentioned in the manual.

The word „promotion” appears a total of five times, of which two contexts are particularly significant: the first is the promotion of physical activity as a means of preserving and improving the health of the population, and the second, the promotion and development of sports for all people with disabilities as an instrument for improving the quality of their lives. (Ibid: 36 and 37)

The words „disabled persons” are mentioned twice in this document. For the first time in the context of the obligation to comply with the Recommendation No. (86)18 – European Charter on Sport for All – Persons with Disabilities and in the context that sports facilities should be adapted to the needs of special groups, such as the very young, adolescents, graduates, lonely elderly people and people with disabilities. (Ibid: 15 and 33)

In the „Manual for financing programs and development of sports in local self-government units”, the word „media” is mentioned for the first time in the context of their role in the fight against abuses in sports such as doping, violence and commercialization, i.e. in the promotion of moral values and preservation of the reputation of sports. In another context, the media are mentioned in the function of reporting and shaping public perception – they describe the profile of hooligans in sports, that is, participants in violent behavior. Their role is informative, but also potentially influential in creating social attitudes about the problem of violence in sports. (Đurđević, Mitić, Atanasov and Vujović, 2014: 13 and 132)

The word „promotion” appears seven times, and the most important are two contexts related to persons with disabilities: „promotion and development of sports for all persons with disabilities is an important means of improving their quality of life and contributes to their rehabilitation and integration in society” and another, where

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promotion is mentioned as one of the key roles of local authorities, which should encourage and affirm sports for persons with disabilities, thus emphasizing their responsibility in creating conditions for the equal participation of all citizens in sport (Ibid: 117 and 119)

It is important to note that the term „paralympics” was not mentioned in the document.

The manual explicitly mentions „persons with disabilities” sixteen times and devotes an entire chapter under the same name to them, in which it systematically emphasizes sport as a means of social inclusion, rehabilitation and personal empowerment of persons with disabilities. The text states that, although legal and strategic frameworks for this area exist, their practical implementation encounters numerous obstacles – infrastructural inaccessibility, insufficient intersectoral coordination and low degree of involvement of this population in sports activities. The manual insists on the need for systemic, intersectoral and locally adapted support, based on international standards and recommendations. The media is additionally mentioned when shaping public perception, both about the problems of sports, and about phenomena such as sports violence and hooliganism. In accordance with the international classification of disabilities, a clear distinction is made between persons with disabilities (physical, sensory and motor disabilities) and persons with special needs (mental disabilities). It was pointed out that sports and recreational activities have multiple values – not only in terms of physical health, but also as tools for rehabilitation, socialization, building self-confidence and a sense of belonging to the community. The worrisome data cited is that in Serbia, out of the estimated 800,000 people with disabilities, less than 0.5% of this population is involved in sports or recreational activities. This indicates an extremely low degree of inclusion and raises the question of the effectiveness of existing public policies in this area. The handbook further points out that, although there is a system of financing sports for people with disabilities at the national level, there is a lack of coordination and consistency between the different levels of government. The need for decentralized and stable support in the work of local self-government units is particularly emphasized, in order to make sports activities for this category of citizens more accessible, better quality and sustainable. (Ibid.)

The Ministry of Youth and Sports published two Power Point presentations on the planning and implementation of sports development programs in local self-government units from the seminars held with their representatives in October and November 2015. The October presentation is more substantial and provides some statistical data on the expected results in the development of sports, while the second presentation is a kind of guide for local self-governments to develop a plan, goals and later their evaluation.

The presentation from October 2015, „Planning and implementation of sports development programs in local self-government units”, does not explicitly discuss the Paralympics, except in the part that states that the general goal of the strategy is to increase the inclusion of the population in sports activities, with a special emphasis on children, youth, women and people with disabilities. It is also emphasized that one of the planned outcomes of the Strategy is an increase in the number of medals won at major competitions, including the Paralympic Games, with an invitation to local self-government units to actively participate. The document emphasizes the need for local self-government units to respect the provisions of the European Charter on Sport for All, which includes persons with disabilities. What is interesting is the fact that this presentation contains rare quantitative indicators, among which is the goal of increasing the participation of people with disabilities by 30 to 50% by 2018 – information that does not appear in other strategic documents. The expected outcomes of the sports development strategy stated in this presentation were an increased number of children and youth who are engaged in organized sports/sports activities by 15 to 20%, an increased number of top sports results at international competitions by 10 to 20%, an increased number of recreationists and mass sports participants, including the elderly, by 50 to 60% by the end of the same year. Four priorities of the sports development strategy (until 2018) are listed here: development of children's and youth sports, including school sports, increasing the scope of citizens' participation in sports by improving sports recreation, top sports and sports infrastructure. The fact that the number of qualified sports experts engaged in organizations in the field of sports is expected to increase by 20% is also interesting.

The presentation from November 2015 „Sports Development Program” contains professional instructions aimed at local governments on how to create a sports development plan and formulate goals. There are explanations of general and specific goals, what to include in measures, activities, indicators, sources of verification. Then there are instructions on how to create a logical matrix, analyze and describe possible risks. The presentation contains information on how to monitor, report and evaluate the implementation of the sports development program.

It can be seen, based on the content of these presentations that the intention was to train people at the level of local self-government in order to professionally and expertly make a plan for the development of sports in their municipalities, but, later, to evaluate the implementation in practice, as well as to make reports. It would be good, in some of the following research, to determine how far this big action of educating officials in local self-governments has come, whether this Sports Development Program in local self-government units has been adopted and what its results are. December 20, 2015 was specified as the deadline for finalizing the Program.

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The document „Letter for local self-government units in connection with the Sports Development Program” does not provide additional information related to the Paralympics, except for mentioning the existence of the Local Self-Government Sports Network within the Standing Conference of Cities and Municipalities, which, although it is not explicitly stated, could also include Paralympic sports through the exchange of knowledge and examples of good practice.

In contrast, the document „Support to local self-government units in the creation and implementation of the strategy – education system” does not mention at all persons with disabilities, Paralympic sports, or the role of the media in promoting inclusion.

In the Report on the held national conference „Local Communities in the Field of Sports – Sports Development Strategy, Law on Sports, Financing, Violence in Sports”, the Paralympic Committee of Serbia is mentioned four times, but exclusively as one of the participants in the consultation, without further analysis of its status or contribution. In the same report, the media is mentioned only twice – the first time as a means of promoting sports on the occasion of the success of top athletes and the second time as part of the goal „media in sports”, without further clarification of that goal.

Due to the lack of transparent reports on the implementation of strategies and action plans, the „Informants on the work of the Ministry of Sports” are also included in the analysis – for the period from September 30, 2022 to September 11, 2025. Although the Informants are available in electronic form from 2022, a partial insight into certain developments in the treatment of sports for persons with disabilities is possible, but also the identification of structural problems that slow down the realization of strategic goals.

Thus, for example, from February 2023, concrete plans for the adaptation of sports infrastructure in accordance with the needs of people with disabilities, such as the announcement of works in Vrnjačka Banja, are recorded in the Informant. (Informant on the work of the Ministry of Sports, February 8, 2023: 51) During the same year, 21 and then 25 project applications were submitted from different local self-government units, but only one project was realized – in Kuršumljija. (Work Informant of the Ministry of Sports, July 31, 2023: 48) This disproportion between the number of applications and realized projects indicates a limited range of support.

Then, in the Informant from 2024, for the same needs, 32 new applications have been recorded, whereby the same municipalities appear several times (Aleksinac, Bela Palanka, Bosilegrad, Kuršumljija, Medveđa), which suggests that projects are re-applied due to disapproval or incomplete implementation in previous cycles. Five projects were approved, but only one – in Kruševac – is directly related to the adaptation of infrastructure to the needs of people with disabilities. The others included broader aspects of sports infrastructure. (Work Informant of the Ministry of Sports, August 31, 2024: 56)

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The trend continues in 2025, when 33 applications are repeated – the most until then. However, the final lists of approved projects remain small compared to the total number of submitted initiatives. There is still no systematic evaluation and transparent monitoring of the results of the implemented activities, which makes it difficult to assess the effectiveness of the measures. (Work Informant of the Ministry of Sports, September 11, 2025: 59)

A positive move in 2025 is the inclusion of the Ministry of Sports in the international project „Sports for All: Promoting Inclusion and Combating Discrimination of Persons with Disabilities“, which is jointly implemented by the European Union and the Council of Europe. For the purposes of the project, an analysis of the national legislative and strategic framework was started, which opened up space for a more comprehensive and systemic approach to inclusion in sports. (ibid: 70–71) Also, the first FIDA Chess Olympiad for people with disabilities, hosted by Serbia in 2023, is cited as an example of good practice and an important event in the field of Paralympic sports. (Work Informant of the Ministry of Sports, March 31, 2023: 49)

Media analysis

In the monitoring period, from September 6 to 28, 2025, no news about athletes with disabilities was recorded in any „sport“ section of „Dnevnik 2“ of RTS. Content about football, basketball, tennis and volleyball dominated, due to current international competitions such as the US Open, the European Basketball Championship, the World Volleyball Championship, athletics and football qualifications.

Although the intensity of sporting events can partially explain this editorial selection, the absence of even minimal coverage of Paralympic sports indicates the systemic marginalization of this area.

The reporting model, in which topics from the field of Paralympic sports are most often treated in the part of „Dnevnik 2“ that deals with social issues, as special reports on individuals, and not as regular sports news, favors the passive perception of the audience, which receives emotional, positive information, but remains uninformed about the key structural challenges that Paralympic sports are facing.

Bearing in mind the importance of the media, especially public services, such as RTS, to treat athletes with disabilities in the context of their sporting excellence and achievements, and within the „sport“ column, and not in another column, the fact that, at the time of monitoring, the 12th European Championship of the C division of wheelchair basketball for men was held in Bulgaria, in which the Serbian national team performed, as well as other competitions, such as the international paraathletic competition Pardubice Bez Barrier OPEN 2025, is even more discouraging, as well as New Delhi 2025 World Para Athletic Championships.

The editorial practice of the public service, specifically in the „sport” section of „Dnevnik 2”, shows a clear pattern of preference for professional sports over sports for people with disabilities, which can be considered a form of exclusion. If the argument that only current events from professional sports are shown in sports news as a justification for this selection, it remains unclear why during the period of media monitoring there was no news about international competitions in which athletes with disabilities achieved notable results – at a level that is quite comparable or even surpasses the achievements of athletes from the professional sector.

The news that the Serbian national team member Vladimir Radojicic won the first place in the discus throw – category F51 at the international paraathletic competition, setting a new official European record of 13.28 meters (Serbian Paralympic Committee, September 21, 2025), should have been in the sports news of „Dnevnik 2”, but also the news about how the Serbian national team fared at the European C division wheelchair basketball championship. They won fourth place (Telegraf, September 14, 2025) and were better positioned than the official basketball team of Serbia, which ended the competition by taking 10th place at the European Basketball Championship – Eurobasket (Danas, September 14, 2025).

At the World Para Athletics Championship in New Delhi, Stefan Dimitrijević brought Serbia a bronze (F12) and Nebojša Đurić a silver (F55) medal in the shot put (Paralimpijci, September 28, 2025), and this news did not receive the slightest media attention in the sports section of „Dnevnik 2” of RTS.

If the news on the website of the Paralympic Committee were to be taken into account, it should be noted that the flow of information from the websites of the Paralympians, as well as their communication channels, is very limited. Therefore, if one wants to show the inclusive nature of sports for people with disabilities, journalists and newsrooms should pay more attention to that topic. Despite certain shortcomings, the website of the Paralympic Committee of Serbia contains information about sports competitions that are not „spill over” into other media. And that news could be downloaded, of course, with reference to the source.

In this regard, research shows that, although people with disabilities are occasionally present in certain television formats, information about them is rarely transmitted through multiple media channels. Even when a relevant topic is covered, the news remains limited to one media space and does not spill over into other information systems. (Vitković, 2023: 317–318)

Such fragmentation contributes to maintaining their symbolic and informational exclusion, because the media do not treat them as a complete social topic worthy of wider attention and networked transmission.

A brief look at the media presentation of the Paralympic Committee of Serbia through the official website shows that it is not a classic sports platform with current news about Paralympians. The content of the site is divided into two sections: „news” and „media”. In the „news” section, information about the activities of the Paralympic Federation of Serbia prevails, while in the "media" section, information about the results of the Paralympic athletes is published. There are original news as well as news that have been taken from other media, so the website of the Paralympic Committee of Serbia appears here in the role of a so-called news aggregator. This practice indicates that the website of the Paralympic Committee of Serbia functions as a news collector, without analytical and commentary-based texts. Instead, institutional content is present, while the direct presentation of athletes and their activities is represented to a lesser extent. It is possible that the representatives of the Committee would explain this situation by the lack of journalist staff, but it would be useful to consider improving the site's capacity in that direction. This would partially fill the communication space that currently remains empty, since traditional media do not consistently fulfill the role of informing about Paralympic sports.

From the aforementioned media analysis, it follows that the new Sport Development Strategy of Serbia for the period from 2025 to 2035 should contain concrete recommendations for media coverage that will affirm the professionalism, equality and systemic integration of Paralympic sports in all aspects of public communication.

Therefore, when all the above is taken into account, the preferred media framework is one that emphasizes Paralympic athletes as equal participants in professional sports. Equality also implies parity in information about their activities. Athletes with disabilities are not „special” or some „they,,, to whom special television programs and shows about successes should be dedicated, but it is necessary that they be shown as „equal among equals,. They are just athletes, competing like everyone else at the highest levels of their physical capabilities. Thus, in an analytical sense, media reports on the sports results of those people are expected and nothing more or less than that.

Communication guidelines for creating a strategy

Bearing in mind the findings from this paper, it is clear that there is a pronounced gap between the strategic goals defined in official documents and their real application, both on the ground and in the media space. The research established that the promotion of sports for persons with disabilities is still treated peripherally – both in normative frameworks and in media reporting.

It has been observed, therefore, that the media rarely and superficially deal with this topic, without a deeper analysis, continuity and affirmative approach, while legal and

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strategic acts do not provide enough specific guidelines and institutional mechanisms to improve the visibility and support of Paralympic sports.

For these reasons, the results of this research should contribute to a greater understanding of the importance of communication in changing the social perception of Paralympians, as well as to the development of a strategy that will be valid in the next ten-year period.

Based on the findings, and with the aim of improving the media presentation and social integration of Paralympics in Serbia, the following communication guidelines will refer to: institutions, media and sports organizations.

The aim of the guidelines is to increase the media visibility of Paralympic athletes, Paralympism as a legitimate segment of sport, increase social inclusion and reduce stereotypes, stigma and prejudices related to this social group. There is also an influence on decision-makers to improve system support, the quality of publication of strategic documents, as well as to work with other interested parties to improve the media narrative when reporting on Paralympic athletes. The goal of all participants in this process should be to educate and raise the awareness of the wider community about Paralympism and create a better basis for the coordination and cooperation of sports organizations.

The goal of communication guidelines at the institutional level is to increase publicity and transparency in work. Regularly report on sports development policies, drafting of strategic documents, public discussions. All strategic documents related to the development of sports in Serbia, as well as action and implementation plans, must be available to the wider media and sports community at all times, in electronic form, machine-readable, in PDF or Word files.

Institutions should then work on media campaigns that highlight the abilities, skills and achievements of Paralympic athletes. In these promotional activities, it is necessary to include famous athletes, Paralympians. When developing a communication strategy, field work is also necessary: conducting surveys among target groups in order to assess the change in the social perception of Paralympians and Paralympism. The plan would also include quantitative analysis of social networks (monitoring reactions and engagement to posts) and cooperation with influencers, YouTubers, celebrities and athletes.

Communication guidelines for the media refer to the main recommendation, which is that news about the successes of people with disabilities should be included in regular sports news. It is necessary to ensure a minimum quantitative threshold in reporting on parasport in the public media (RTS, RTV). Then, work should be done to ensure that the commercial media are included in the reporting. There are also the production of special sports shows that deal with this topic, as well as the guest appearances of

Paralympic athletes in the role of commentators and columnists in those shows. Greater education of journalists and media workers is also needed, as well as the organization of workshops and training for journalists on ethical reporting on Paralympians.

Communication guidelines for sports organizations would imply maximum involvement in cooperation with the media, non-governmental and other organizations to create joint media activities that affirm sports and inclusion. Sports organizations should also have media employees who work on their digital platforms, prepare news, publish interviews, reports about athletes. It is necessary to pay attention to the determination of indicators for measuring the representation of parasports in the media (number of articles, tone of reporting, topic).

When developing all these guidelines, the International Standards of Accessibility should be guided – a set of guidelines and technical recommendations that ensure that digital content is accessible to all users, including people with disabilities. (Web Content Accessibility Guidelines – WCAG 2.2, 2024 and the Serbian Accessibility Association – SAPS, Important regulations related to accessibility, 2025)

Conclusion

The analysis of this topic requires a high dose of social and scientific responsibility, given its sensitive nature. In a society where the existing state and social system does not have a clear and responsible relationship towards all social groups that make it up – achieving that responsibility is very difficult. Over time, such a lack endangers not only those groups but also the system itself, which is slow, non-integrative and non-inclusive and becomes – more of an obstacle than a support for individuals.

Regardless of the good intentions of planners and social strategists, when drafting and implementing strategic documents, it turns out that there are numerous challenges, inconsistencies and shortcomings. Solutions can only be achieved through adequate comprehensive strategic and analytical thinking and action.

Systemic deformations are often the result of bad system solutions, but also of communication errors. Namely, messages are not received or are not interpreted adequately. As a consequence, prejudice, stigma, labelling, ostracism and marginalization of vulnerable groups dominate the public, all of which lead to further social exclusion.

Communication about the rights and needs of people with disabilities should be clear and accessible to a wider audience, with sufficient media visibility and support. It is especially important that institutions, media and sports organizations work to build a media narrative that contributes to an inclusive society, in which people with disa-

bilities have equal chances to express themselves and realize their potential, both in sports and in other areas of life.

How far Serbian society is currently from that goal remains to be seen by future research. This paper represents only the first step – it sheds light on the relationships and circumstances that shape the position of Paralympic sports in Serbia.

Based on the analysis of the available strategic documents dedicated to the development of sports, it can be concluded that Serbia is further from its full realization. People with disabilities who play sports are not sufficiently recognized in systemic and strategic frameworks, while the visibility of Paralympic activities in the public is still limited and fragmented.

The research has shown that the treatment of athletes with disabilities in the current strategies of the Ministry of Sports is reduced to project activities without long-term effect. The biggest problem is the lack of evaluation of implemented measures, insufficient transparency in the publication of strategic documents and criteria for the allocation of funds, as well as the discrepancy between real needs and the number of actually funded initiatives.

The example of repetition of the same municipalities that have been applying for adaptation of sports facilities for people with disabilities for years, further illustrates the dysfunctionality of the existing support system

In order for the inclusion strategy to be effective and fair, a deeper analysis of the community's needs, an increase in the number of approved projects and monitoring of the impact of those projects on the life and development of athletes with disabilities is needed. Also necessary is an appropriate communication strategy, which clearly defines the target group, inclusive messages and evaluation mechanisms.

The proposed communication guidelines imply the elimination of the current practice of difficult access to documents, replacing them with open, accessible and digitally adapted materials. Standardization of accessibility (in accordance with WCAG guidelines) would allow people with disabilities to have equal access to accessible content.

Planning media campaigns and involving Paralympians in promotional activities on health and physical activity would contribute to their social visibility. The media coverage of news public services should include the sports results of persons with disabilities in the sports sections of their primetime news programs, such as – „Dnevnik 2” on RTS.

Education and media coverage of sports topics for people with disabilities are important for raising society's awareness and breaking stereotypes, and proper public information contributes to a greater understanding of their needs.

However, in order for these processes to take place consistently and with a systemic effect, the coordinated responsibility of all relevant actors is necessary – the Ministry of Sports, the Ministry of Labour, Employment, Veterans and Social Affairs, the Paralympic Committee of Serbia, sports federations and the media.

The new strategy for the development of sports in Serbia must not remain just a declarative document, but must become an operational tool for systemic change, with clearly defined measures for inclusion, accessibility and equality in sports for all. By changing the media narrative, educating the public and strengthening institutional responsibility, Paralympic sports can leave the symbolic margins and become a visible and equal part of the sports system. Only then can it be talked about a truly inclusive sports policy, based on real needs, equal opportunities and social recognition of athletes with disabilities.

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THE INTERDEPENDENT INFLUENCE OF BIA WITH KINEMATIC AND KINETIC VERTICAL JUMPING PARAMETERS

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Abstract: The aim of this study was to examine the relationship of various bioelectrical impedance analysis (BIA) body composition variables with kinematic and kinetic variables that were measured in vertical jumping task, in students of faculty of sport and physical education. The sample included 7 participants (6 males and 1 female, age 24.25 ± 3.97 years, height 183.4 ± 12.48 cm, weight 77.9 ± 13.36 kg, body mass index 23.0 ± 1.46 kg/m²). BIA body composition variables (intra-celular water-ICW, extra-celular water-ECW, proteins-PRT, minerals-MIN, body fat mass-BFM, skeletal muscle mass-SMM, visceral fat are-VFA) were measured via InBody 720, while kinematic and kinetic variables (maximal jump force-Fmax, maximal jump power-Pmax, maximal jump velocity-Vmax, concentric action jump time-T) were measured on force plates. Pearson correlation analysis revealed that significant association was established between: Fmax with BH, BM, ICW, ECW, PRT, and MIN, and Pmax with BH, BM, ICW, ECW, PRT, MIN, and SMM, while Vmax and T failed to made im-pact on BIA variables. Backward regression analysis (r^2) identified BM as the most important deter-minants of Fmax ($r^2=0.878$), and Pmax ($r^2=0.951$), and BH and BMI as the most important dete-rminants of Vmax and T (Vmax: $r^2=0.564$, T: $r^2=0.348$). The present results suggest two important findings: 1) body mass plays crucial role in jumping maximal force and power manifestation; 2) body height and body mass index are the best BIA determinants of jumping velocity and time characteristics.

Keywords: body mass, body fat mass, skeletal muscle mass, force, power

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Introduction

Body composition is vital in sport training science, especially for athletes, as its various parameters play a crucial role in optimizing performance and evaluating the effects of training process (Santos et al., 2020). Precise measurement of these parameters enables athletes and coaches to adapt training process and nutrition strategies effectively, which affects training and competition performance. Body composition parameters plays a significant role in understanding the physiological adaptations during sport training (Nunes et al., 2019).

Generally, there are several methods of morphology measurement and data collection. The most widely used are body height and mass, and body mass index; while also widely used are morphology measures derived from bioelectrical impedance analysis (BIA) — body fat mass and percentage, muscle mass and percentage, free fat mass, and other measures such as skinfold measures (de Andrade Goncalves et al., 2017). As above-mentioned, InBody 270 multi-frequency body composition analyzer is widely used, very practical and precise instrument. BIA devices, which use electrical impedance to measure body composition, are often marketed as reliable. This is happened by sending a low-frequency electrical current through the body, and the resistance encountered by this current is used to predict the amount of body fat. They use certain proprietary algorithms to measure total body fat and lean tissue mass (muscles, bones, and other tissues), offering simplicity and practicality for athletes and related professionals (Aanstad et al., 2014). Even though it is a safe, non-invasive, cost-effective, and easily transportable technique, this method is not perfect, as it has its own flaws. It has been shown that is affected by the body's hydration level, as this can make impact on electrical conductivity of biological tissues (McLester, 2020).

The vertical jump (VJ) is considered as a motor performance that involves all lower limb joints in various recreational activities, sports modalities, and training programs (Arakawa et al., 2013). This task is considered a method of testing power and other kinetic and kinematic variables that affects muscular performance in lower limbs (Gutiérrez dávila et al. 2014). Among several jump technique variations (i.e., squat jump, horizontal jump, ballistic jump, etc.), the more commonly utilized due to his association with specific sports movements and easy familiarization is countermovement Jump (CMJ). CMJ start position is considered by a upright stance position with hand on the hips, followed by flexion (eccentric phase) and extension (concentric phase) of the knees and hips (Gheller et al., 2014). The main representative of this jump is the transfer of elastic energy through the eccentric-concentric cycle and eliciting superior activation of muscle spindle that allows more power in the CMJ (Dowling & Vamos, 1993). To evaluate the coordination and intervenient factors related to VJ, different kinetic and kinematic components have been used. Variables as maximal and mean power,

force, velocity and time, along with rate of force development are used in describing jumping performance (Moura & Okazaki, 2022).

In available literature there is no much data concerning analyzing possible relations of BIA derived morphology variables and VJ variables. The available literature has shown that VJ performance (Pmax and Hmax) was correlated with lean body mass, fascicle length, and type II fiber cross-sectional area (Methenitis et al., 2015). Some other researches have found associations between lean body mass and maximal force and power (Legg et al., 2021), and between jump height and body composition, in vertical jumping (Perez-Lopez et al., 2015). This means that there is a lack of researches that have been analyzing relationships among BIA (i.e., intra-cellular water, extra-cellular water, proteins, minerals, body fat mass, skeletal muscle mass, visceral fat area) and VJ (i.e., maximal force, power and velocity) parameters.

In accordance with the above shortcomings, the aim of this study was to examine the relationship of various BIA body composition variables with kinematic and kinetic variables that were measured in vertical jumping task, in students of faculty of sport and physical education. This study seeks to provide clearer insights of influence of body composition on VJ performance.

Methods

Participants

This study hired a cross-sectional research design. The sample consisted of 7 participants (6 males and 1 female). The participants had an age of 24.25 ± 3.97 years, body height (BH) of 1.84 ± 0.06 m, body mass (BM) of 82.54 ± 6.51 kg, and body mass index (BMI) of 24.43 ± 1.73 kg/m². All participants were recruited voluntarily and were provided with comprehensive information about the study's purpose, procedures, and potential risks. The written informed consent, a cornerstone of ethical research, was obtained from each individual, ensuring that the study adhered to the highest ethical standards.

Experimental design

This study, of a cross-sectional design, explored the relationship of different BIA body composition measures with kinetic and kinematic measures in vertical jumping task. The participants attended one familiarization session followed by four one experimental sessions with at least 3 days of rest before experimental session.

Procedures

All measurements were conducted in the morning during the spring of year 2021. The experiment was conducted in the spring between 9 a.m. and 14 p.m. in the laboratory facility that was maintained at the air temperature between 18 and 22 °C. The participants were asked to refrain from strenuous activity for five days before and after each experimental session. They were also performed in the morning under fasting conditions to minimize the potential influence of recent food intake and hydration status on the outcomes. Participants were instructed to refrain from consuming alcohol or caffeine and engaging in any vigorous physical activity for at least 24 hours before the assessment to ensure optimal standardization and accuracy of the collected data.

Familiarization session. The familiarization session was designed to collect standard anthropometric measures and to inform the participants about the procedures (i.e., type of exercise performed). Anthropometric measures were taken by the same experimenter according to the standard procedures recommended by the International Society for the Advancement of Kinanthropometry (Norton, et al., 2000). Body height and body mass were measured to the nearest 0.5 cm and 0.1 kg, respectively. Thereafter, body mass index (BMI) was also calculated. On this session from participant were also collected body composition measures from the BIA InBody 270 analyzer, which provides various body composition measurements for study aim examination.

Experimental session. Prior to experimental session, 15-minute warm-up was executed (i.e., 5-minute bicycle-ergometer riding, 5-minute dynamic stretching, and 5-minute individual preparation). This was followed with 15 CM with 10 seconds of rest between them. Then, participants were allowed a 5-minute rest before performing 3 consecutive CMJ, from which kinetic and kinematic variables were calculated. In experimental session, this VJ have performed in a way that for every jump is granted for 3 seconds to perform eccentric phase, concentric phase, jump phase, landing phase, and then returning to initial phase. CMJs were performed through specific procedures described elsewhere (Arsenijević et al., 2023).

Data analysis

Equipment and instruments. We measured body composition using BIA with InBody 270 device that used Tetapolar 5 points by tactical electrodes system with DSM-BIA (Direct Segmental Multifrequency Bioelectrical Impedance Analysis) (Biospace Co, Ltd., Seoul, Korea). Inbody 270 device demonstrated high test-retest reliability and accuracy (ICC 0.9995). It is regarded to be highly statistically reliable and valid for measuring both overall and segmental body composition in female and male athletes (Dopsaj et

al., 2020). The kinetic and kinematic data were collected via two force plates (dimensions 0.4 x 0.6 m, INC., Newton MA, USA) on which participants performed CMJs following the guidelines provided by Vanrenterghem, De Clercq, and Van Cleven (2001). Signals were collected with ground reaction forces frequency at 1 kHz. Raw data were processed using LabVIEW custom designed program for this experiment (LabVIEW version 18.0, National Instruments Corporation, Austin, TX, USA), by which corresponding kinetic and kinematic variables were calculated.

Body composition variables. BH—body height, cm; BM—body mass, kg; BMI—body mass index: $BM (body\ mass, kg) / BH^2 (body\ height, m)$, $kg\ Body\ mass \cdot m^{-2}$; ICW – intra-cellular water, l; ECW – extra-cellular water, l; PRT – proteins, kg; MIN – minerals, kg; BFM—body fat mass, kg; SMM – skeletal muscle mass, kg; VFA – visceral fat area, cm^2 .

Kinetic and kinematic variables (KKV). We assessed kinetic and kinematic variables during concentric jump phases and calculated maximal force (F_{max}), maximal power (P_{max}), and maximal velocity (V_{max}). From 3 performed CMJs were determined KKV, and their average value was used for further analysis and calculation for all of three variables (i.e., F_{max} , P_{max} and V_{max}) (Moreno et al., 2014).

Statistical Analysis

Descriptive statistics were calculated for all measured variables, including average value (Mean), standard deviation (SD), minimum (Min) and maximum values (Max), and coefficient of variation (CV%).

Correlation coefficient (r) was used to establish associations between body composition variables and each KKV. Statistical significance was set at $p < 0.05$. Coefficient of determination (r^2) and its equation were also reported on scatter plots to express the proportion of shared variance between devices. A backward multiple regression was performed to determine the best fitting model for each KKV. Prior to regression analysis, multicollinearity was examined using a variance inflation factor (VIF), and any variable that had a VIF of 5 or higher was excluded from the model (Kojic et al., 2023).

The strength of the correlation coefficients was interpreted following the classification proposed by Hopkins et al. (2015): trivial (< 0.1), small (0.1), moderate (0.3), high (0.5), and extremely high (0.9).

Results

Table 1. Descriptive statistic of body composition and kinetic and kinematic variables

	Mean	SD	Min	Max	cV%
BH (cm)	183.4	12.5	164.0	201.5	6.8
BM (kg)	77.9	13.4	54.2	94.5	17.2
BMI (kg/m2)	23.0	1.5	20.2	24.9	6.4
ICW (l)	32.4	7.1	19.5	41.1	21.7
ECW (l)	19.0	4.0	11.8	24.2	21.2
PRT (kg)	14.0	3.0	8.5	17.7	21.5
MIN (kg)	4.8	1.0	3.1	6.2	21.0
BFM (kg)	7.6	2.5	5.1	11.3	32.3
SMM (kg)	40.3	9.2	23.5	51.6	22.7
VFA (cm2)	26.5	13.6	11.2	43.6	51.3
Fmax (N)	1834.3	441.2	1037.4	2350.8	24.1
Pmax (W)	3753.1	972.4	2112.1	4844.2	25.9
Vmax (m/s)	2.6	0.3	2.3	3.0	9.9

BH - body height; BM - body mass; BMI - body mass index; ICW - intra cellular water; ECW - extra cellular water; PRT - proteins; MIN - minerals; BFM - body fat mass; SMM - skeletal muscle mass; VFA - visceral fat area; Fmax - maximal jump force; Pmax - maximal jump power; Vmax - maximal jump velocity

Descriptive statistics parameters (Mean, SD, Min, Max, and cV%) for body composition variables (BH, BM, BMI, ICW, ECW, PRT, MIN, BFM, SMM VFA) and KKV variables (Fmax, Pmax and Vmax) are displayed in Table 1. Correlation matrix information’s are displayed in Table 2. Along with values of r, also significance values (p) provided.

Table 2. Correlation matrix of morphological characteristic BIA variables with kinematic and kinetic variables

		BH (cm)	BM (kg)	BMI (kg/m ²)	ICW (l)	ECW (l)	PRT (kg)	MIN (kg)	BFM (kg)	SMM (kg)	VFA (cm ²)
Fmax (N)	r	0.883	0.937	0.790	0.919	0.909	0.922	0.902	-0.530	0.918	-0.437
	p	0.008	0.001	0.034	0.003	0.004	0.003	0.005	0.220	0.004	0.327
Pmax (W)	r	0.942	0.975	0.745	0.960	0.964	0.962	0.953	-0.599	0.959	-0.503
	p	0.001	0.000	0.054	0.000	0.000	0.000	0.001	0.155	0.001	0.245
Vmax (m/s)	r	0.693	0.743	0.634	0.714	0.716	0.720	0.690	-0.343	0.712	-0.268
	p	0.085	0.056	0.125	0.072	0.070	0.068	0.086	0.451	0.073	0.562

BIA - bioelectrical impedance analysis; BH - body height; BM - body mass; BMI - body mass index; ICW - intra cellular water; ECW - extra cellular water; PRT - proteins; MIN - minerals; BFM - body fat mass; SMM - skeletal muscle mass; VFA - visceral fat area; Fmax - maximal jump force; Pmax - maximal jump power; Vmax - maximal jump velocity; T - concentric action jump time

Additional regression analysis (backward regression model), have revealed the best-fitting model with BM, as independent variable, in describing Fmax as dependent variable. This model has explained about 88% of the named dependent test (BMI: $p=0.002$), and equation and r^2 value are shown in on Figure 1. When it comes to the best fitting model on Pmax as dependent variable, backward regression analysis has singled out BM as the variable that has explained approximately 95% of the named variable (BH: $p = 0.000$). The equation of this model and r^2 value have been shown on Figure 2. In the case of the Vmax, as dependent variable, in this model BH and BMI variables fitted with describing around 56% of variance (BH and BMI: $p > 0.05$). This model equation and r^2 value are presented on Figure 3.

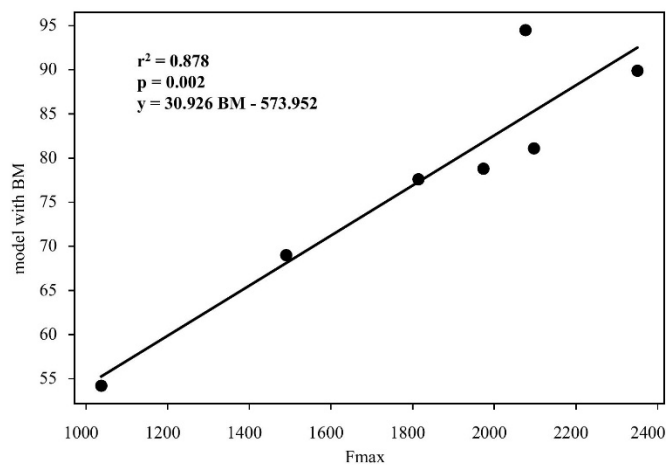


Figure 1. Best-fit regression models with body mass (BM - expressed in kg), predicting maximal force (Fmax - expressed in newton (N)), in vertical jumping task

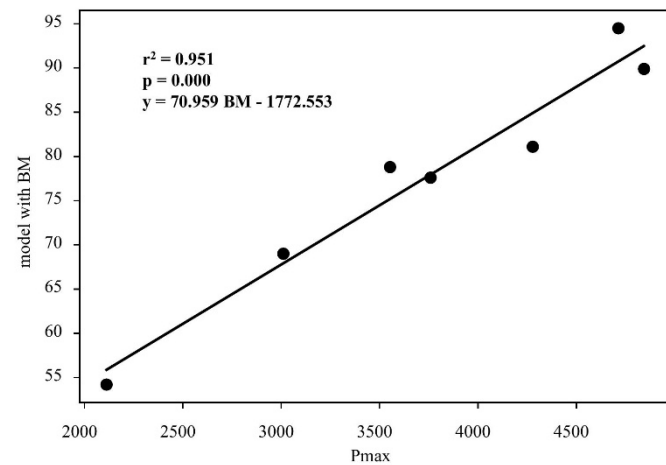


Figure 2. Best-fit regression models with body mass (BM - expressed in kg) predicting maximal power (Pmax - expressed in watts (W)), in vertical jumping task

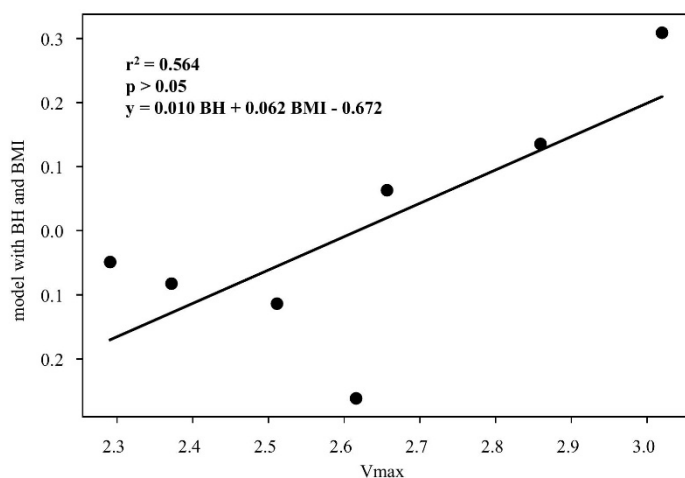


Figure 3.

Best-fit regression models with body height (BH – expressed in cm) and body mass index (BMI – expressed in kg/m²) predicting maximal power (Pmax - expressed in watts (W)), in vertical jumping task

Discussion

This research aimed to assess the relationship of various BIA body composition variables with kinematic and kinetic variables that were administered in vertical jumping task, in students of faculty of sport and physical education. Generally speaking, it was expected that present findings will provide insights into the influence of body composition variables on kinetic and kinematic variables measured in performing vertical jumping task (i.e., counter-movement jump). The results have showed that there in case of Fmax and Pmax variables, all body composition variables, except of VFA and BFM were significantly correlated ($p < 0.05$), and in a case of Vmax all body composition variables stayed out of significance ($p > 0.05$).

Initially, variable Fmax (i.e., maximal force) have showed extremely high association with most of body composition variables BM, ICW, ECW, PRT, MIN and SMM. Further, the same variable accomplished high correlation with BH, BMI and BFM and moderate with VFM. It is worth of mentioning that all variables, but BFM and VFA (i.e., which were negatively correlated), made positive relations with Fmax (i.e., BH, BM, BMI, ICW, ECW, PRT, MIN and SMM). Subsequent backward regression analysis demonstrated that BM is the best determinant of Fmax in vertical jumping task in measured students of Faculty of Sport and Physical Education population. In previous findings there is data of relationships of body composition variables with jump height in vertical jump task (Perez-Lopez et al., 2015), and only one research has found where relationship between Fmax with some of body composition have been examined (Legg et al., 2021). In mentioned research total lean mass showed highest relationship with Fmax (i.e., $r =$

0.68). Concerning Fmax in context of relationship with body composition results of the present study unequivocally indicate that body composition influence on the maximal force in vertical jump performance, or more specifically in a highest share of body mass, extra and intra-cellular water, protein, mineral and skeletal muscle mass.

From the perspective of maximal power (i.e., Pmax variable), results of conducted correlation analysis have showed an extremely high association of Pmax with BH, BM, ICW, ECW, PRT, MIN and SMM. High correlations were observed in Pmax with BMI, BFM and VFA. Studies that have examined relationship between Pmax and body composition variables showed similar (Legg et al., 2021). Like in findings in Fmax, total lean mass was the highest determinant of Pmax in vertical jump demand. In accordance with exposed findings, it can be said that maximal power in vertical jumping is on the highest level influenced by body height and mass, intra and extra-cellular water, proteins, minerals and skeletal muscle mass.

Regarding maximal velocity (i.e., Vmax) measure, high associations were found with BH, BM, BMI, ICW, ECW, PRT, MIN and SMM, while moderate and negative were with BFM, and small and also negative with VFA. Unfortunately, we failed to find any data in available research that have examined relationship between maximal velocity and body composition variables in vertical jumping task or testing. Overall, maximal velocity in vertical jumping is the most connected with body height and mass, body mass index, extra- and intra-cellular water, proteins, minerals and skeletal muscle mass.

The present study provides important theoretical implications, since our findings suggest that vertical jump performance is greatly influenced by body composition. As it was expected and already found in available literature (Perez-Lopez et al., 2015; Legg et al., 2021), majority of variables were positively correlated with kinetic and kinematic measures, except for variables that estimates fat mass (i.e., BFA and VFA), which were negatively associated. This was anticipated as more fat mass negatively influence vertical jump task performance. Another thing that is debatable is lack of significant correlations between maximal velocity and body composition variables. This could be explained by small sample in this study, and more participants would probably change this picture. Unavailability of other studies that compared Vmax with body composition does not allow us to make comparison with other studies in this case. Moreover, this is the first study that explored and confirmed potential dependence of body composition on maximal force, power and velocity, as body composition affects every sport performance that request performing power. Regarding the study limitations, its fair to say that we had a small sample of subjects, and more subject and possible elite sport population could strengthen the research data.

Conclusions

To conclusion, our study emphasizes the importance of body composition on kinetic and kinematic variables in performance of vertical jumping task (i.e., counter-movement jump), since the obtained findings unequivocally suggest that the most off body composition measures significantly influenced maximal force and power. This cannot be claimed for maximal velocity as there was no significant correlation established. Namely, the most of the used body composition measures were positively corelated with kinetic and kinematic variables, and only body fat mass and visceral fat area were negatively corelated. Therefore, it appears that the structure of the body has a great implication when vertical jump task is performed, and the present study provides important findings about measures derived from BIA and these findings can serve practitioners for analyzing the advantages for performance of vertical jumping.

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PHYSIOLOGICAL CHARACTERISTICS IN SUCCESSFUL FEMALE SINGLE FIGURE SKATING ATHLETES

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Abstract: The actual problem, we are trying to reveal in our study, - the identification of physiological characteristics allowing, to carry out earlier allocation of successful in competitions figure skaters - singles. We are trying to reveal in our study is the identification of physiological characteristics, allowing to carry out, earlier allocation the successful in competitions figure skaters – singles. The results obtained can be used in sports selection for women's national figure skating teams. The results of the study will allow coaches to make a timely correction of the training process in figure skaters with low potential in the implementation of the content of motor programs in competitions. In order to fulfill the purpose of the experiment, physiological testing of 30 highly qualified female figure skaters: female figure skaters - single skaters, engaged in figure skating, with a sports experience of figure skating -11, 58 ± 0 , 98 years was carried out. According to the success rate of performance in competitions, 2 groups of athletes were selected: gr1 (n=8) - figure skaters taking prize-winning places in competitions; gr2 (n=22) - figure skaters actively participating in competitions, but not taking prize-winning places. Modern research methods used to assess the functional state and physical qualities of figure skaters: psychophysiological testing performed by using the computer program "Explorer of spatial and temporal properties of the nervous system (Yu.V. Koryagina, S.V. Nopin (2003)), the mental performance of figure skaters judged by the results of the three-stage test "Mental performance" with increasing cognitive load (V.V. Son'kin (2009)). The results of physical performance of female athletes were judged by the results of the Kenneth Cooper test in the form of a smooth run performed in the standardized conditions of the university 's athletics arena. The state of cardiorespiratory system judged by tonometry and spirometry (electronic spirometer C - Spiro 100). Conclusions about the differences in vertical stability were made

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on the basis of computer stabilometry data when skaters performed a battery of tests: "Target", "Stability in Romberg pose", performed on 2 - x legs and separately on each leg tests "Stability in a specific stance "Roll out", performed by skaters separately on the right and left legs. The conclusions reflect the results of the obtained differences in the comparison groups, proved mathematically using in Microsoft Excel and IBM SPSS Statistics 25 programs. As a result, of physiological testing we have revealed significant differences in psychomotor and physical performance of figure skaters, emphasizing the greater ability of successful skaters to resist fatigue and develop more actively, when performing cognitive loads of increasing complexity. The results of the stabilometric test "Stability in a specific stance "Roll out", performed by skaters on the dominant, right leg with visual control, were found to be the most informative for differences in the comparison groups. All our skaters from the 1 gr were right-handed. It has been established, that figure skaters, who successfully perform in competitions, have better coordination abilities, which is determined by the active participation of subcortical structures and cerebellum in the maintenance of vertical posture. In the stabilometric test "Stability in a specific stance "Roll out", performed by skaters on the dominant, supporting right leg with visual control, we found the maximum number of reliable differences in the indicators of skaters from gr1, compared to athletes gr2. That were noted: a shorter length of the trajectory along the sagital and low speed of the center of pressure movement when performing test tasks, which emphasizes the greater efficiency of postural control necessary to maintain an upright posture. Figure skaters, who are less successful in competitions, have worse coordination abilities, which is determined by the more active participation of higher regulatory systems (cortex and subcortex) in maintaining posture. The revealed differences can be useful for sports selection of single figure skaters in the national team of single figure skating and for the correction of the training process of single figure skaters.

Keywords: figure skating, single skating, functional state, psychophysiological testing, spatial orientation, time orientation, stabilometry, vertical stability, highly qualified athletes.

Relevance of scientific research

The actual problem that we are trying to reveal in our study is the identification of physiological characteristics, allowing to carry out earlier allocation of successful in competitions figure skaters – singles, realizing their potential in the form of quality performance of the content of motor programs, allowing to take high prizes in competitions in figure skating on horseback.

The high results of Russian athletes in women's single figure skating are well known and still unattainable. Since 2017, there has been a linear increase in results at the championships of Russia, Europe, the world, and the Olympic Games, which reflected in the increased difficulty of performing various motor programs by single skaters. Objectively, this is reflected by the sum of points for the performance of short and free programs for the leader of women's single figure skating in the Russian Federation: A. Petrosyan (1st place) in 2025 - 177.14 (b); A. Petrosyan (1st place) in 2024 - 167.74(b); S. Akatieva (1st place) in 2023 - 164.15(b). These data emphasize the increasing difficulty of athletes performing "twizzles", "combined rotations", jumps, and other elements. There is a strong strain on the functional systems of the athletes' bodies, which reflected in the judges' assessment of the content of motor programs. However, further growth of athletic achievements and an increase in the technical potential of figure skaters is impossible without the use of high-quality scientific support for the training process and the development of new criteria for the selection of promising athletes and sportswomen [6, 8]. When practicing figure skating, athletes' bodies affected by a whole range of extreme factors: low temperatures, the audience, and the stress of physical exertion at competitions, which places special demands on their adaptive capabilities [9]. Important criteria for assessing the prospects of figure skaters are indicators of physiological testing, reflecting the adaptive capabilities of figure skaters when performing specific work and allowing them to effectively determine significant selection criteria at the stage of high qualification.

The purpose of the study

To conduct a comparative analysis of the indicators of functional status, vertical stability and physical qualities of highly qualified female figure skaters and to determine the physiological markers of success of female athletes.

Research methodology and organization

The design of the study is a solution to an urgent problem for sports physiology – the identification of physiological markers that make it possible to identify female figure skaters who win prizes at competitions and successfully perform the content of motor programs at competitions. For this purpose, we have chosen modern methods of physiological testing using computer technology. All the methods of physiological testing used by us are modern and tested by the results presented in the dissertations, approved by the Higher Attestation Commission of Russia.

The criteria for inclusion in experimental groups: 1. the presence in a sports category from 1 adult category to a master of sports; 2. the experience of figure skating more, than 10 years; 3. the performances of figure skaters at the championships of Russia and International championships; 4. high sports ratings; 5. absence at the time of examination of acute viral diseases, Covid and exacerbations of chronic diseases; 6. absence of premenstrual and the first three days of the menstrual phases of the ovarian menstrual cycle at the time of the study.

Figure skaters, who were excluded from the study: 1. without significant athletic achievements; 2. with acute respiratory diseases detected at the time of examination, 3. with premenstrual syndrome and menstruation in the first 3 days of anatomical menstruation; 4. with complaints of poor health and meteosensitivity.

Physiological testing conducted with the participation of 30 highly qualified female athletes involved in figure skating and having high athletic achievements. The average age of the athletes was: 18, $82 \pm 0,9$ years, the average length of experience in figure skating was: 11, $59 \pm 0,98$ years; the average training load was: $30,01 \pm 0,9$ hours per week. There are 2 groups of comparison of figure skaters according to athletic performance and qualifications: group 1 (gr1) consisted of single skaters, masters of sports (MS), who won prizes at responsible competitions ($n=8$ female figure skaters) and group 2 (gr2) consisted of figure skaters, candidates for Masters of sports (CMC) ($n=22$ female figure skaters). The figure skaters have high sporting achievements: winners and prize-winners of the championships of the Russian Federation, Moscow and the Moscow region, Krasnodar Territory, Chuvashia, Bryansk region. The athletes' sports history collected according to a sociological survey conducted in face-to-face format. The questionnaire of the figure skaters included questions characterizing the sports history (age, experience in the chosen sport, the presence of injuries and chronic diseases, sports in addition to the main physical activity, the highest athletic achievements), the analysis of sports genetics, taking into account sports and the success of parents and grandparents in it. In addition, they studied the motivation to practice figure skating, the characteristics of individual tolerance and reactions of athletes to physical activity, recreational activities after training and competitions, conflict with

coaches and choreographers, and the incidence of acute respiratory viral infections over the past year. The athletes examined during the preparatory period of sports training.

The physiological testing included: 1. Assessment of the anthropometric status of female athletes, with measurements of standing body length (cm) and body weight (kg), body circumference (chest circumference at rest, when inhaling, exhaling and circumference of body circumferences: shoulder, forearm, shin, hip and waist and head); mass index Body mass index is calculated using the formula. 2. The assessment of the psychophysiological status of the figure skaters was carried out on a computer with the implementation of psychophysiological tests in the program "Researcher of human temporal and spatial properties version 2.1" [4] and the URA test – human mental performance [7]. 3. The strength abilities of the athletes were assessed according to wrist dynamometry performed in the initial state of a vertical stand with arms extended to the side and 3 physical loads: 1st squat 30 with maximum tempo; 2nd jumps 1.5 minutes with maximum tempo and straightened legs and 3rd static load - holding the angle for 1 minute; as well as with an in-depth sample of "Reproducing the accuracy of muscle efforts" performed using a DMER-120 wrist dynamometer manufactured by Tulinovsky Instrument-Making Plant TVES Joint Stock Company; 4. Cardio-hemodynamic parameters determined using a BP A50 tonometer from Microlife. The indicators were measured using a Korotkov methods electronic semi-automatic blood pressure monitor in a sitting position. Heart rate and blood pressure were determined, then systolic volume (SV) (ml) was calculated using the Starr formula: $90.97 + 0.54 \times PD - 0.57 \times DBP - 0.61 \times B$, where PD is pulse pressure, DBP is diastolic pressure, B is age; minute blood volume (IOC) (l/min) = $CO \times HR$; pulse pressure (PD) = $SAD - DBP$; average dynamic pressure in mmHg (according to the formula of N. N. Savitsky, 1974): $SGD = 0.5 \times PD + DBP$, where PD is pulse pressure; DBP is diastolic pressure. The reserve capabilities of the figure skaters' cardiovascular system assessed based on the results of the Roufier test. 5. The measurement of the ventilation function of the lungs was performed on an electronic spirometer Spiro S-100, Altonika LLC, Moscow; 6. The differences in the vertical stability of the figure skaters judged according to the data of the stabilometric testing performed on the domestic device Stabilizer – 01-2, OKB RITM CJSC, Taganrog. We used the following stabilometric tests: the "Target" test with biofeedback, the "Stability in the Romberg pose" tests performed on 2 legs and separately on each leg with visual control and its limitation, and the "Stability of figure skaters in a specific stance" and "ROLL-out" on the supporting leg were performed. All tests performed with visual control and its limitation. 7. The skaters performed the Kenneth Cooper test in the form of a smooth run performed in the standardized conditions of the university's athletics arena. The aerobic endurance of the figure skaters judged by the results of the Kenneth Cooper test performed by the skaters in

the form of smooth running, conducted in standardized conditions of the athletics arena of the university. Before and after performing the Kenneth Cooper test, the temperature in the armpit monitored; the maximum arbitrary strength of the muscles of the right and left arms and the time of the individual minute and heart rate (Polar 610). Wingate test performed on a mechanical ergometer with hardware and software upgrade (Monark Peak Bike 894E).

The pulse calculated at the end of each load using a Polar H10 heart sensor. Additional data on aerobic endurance obtained based on the results of the Cooper running test. Performed for 12 minutes with an assessment of temperature and vegetative shifts before and after the test.

According to our previous research, the success of highly qualified athletes in competitions, when engaged in complex sports, has significant differences depending on the level of psycho-emotional stress. Therefore, in the presented study, we use the determination of the level of psycho-emotional stress of figure skaters with the identification of personal and reactive anxiety according to the tests of Janet Taylor, Spielberger-Khanin [2].

Mathematical processing of the obtained data was carried out in Microsoft Excel and IBM SPSS Statistics 25 programs. The nonparametric Mann-Whitney U-test used to calculate statistically significant indicators between independent samples. The non-parametric Wilcoxon T-test used to calculate statistically significant indicators between dependent samples (with orthostatic test and Romberg stabilographic test).

Figure skaters excluded from the experimental groups if they had premenstrual, menstrual, and ovulatory phases on the test day.

The physiological testing was conducted before the training of the figure skaters in the standardized conditions of the laboratory of "Medical and Biological support of sports teams" of the Scientific Research Institute of Sports and Sports Medicine of the Russian Academy of Sciences "GTSOLIFK" during the hours of physiological sympathicotonia from 10.40 to 12.10 at a room temperature of 21.0 ± 1.0 °C and an air humidity of 57%, in compliance with ethical medical and biological standards as set out in the Helsinki Declaration and the Directives of the European Community. Before the start of the physiological testing, the athletes signed an informed consent protocol for the study.

The results of the study and their discussion

As shown by the results, of a sociological study in gr1, the parents of female athletes had high sports qualifications (KMS and I adult category) and high athletic achievements, which was noted in both parents, moreover, the fathers of figure skaters from

gr1 were 100% engaged in playing sports: football and rugby, and in parallel cyclic sports that develop aerobic endurance: skiing and athletics, which are marked by high sporting achievements. In 60% (3 people) of gr1 figure skaters, injuries of the musculoskeletal system noted: sprains of the ankle ligaments and bruises. Scuffing of the ankle skin on skates noted in 100% of cases. In the gr2 group, traumatic lesions noted slightly more often than in the gr1 group and accounted for 70% of cases. In gr2, the severity of sports injuries increases and there are combinations of OCD injuries with CNS damage in 20% of cases (2 people) in the form of a concussion, which is absent in gr1. According to the nature of the traumatic lesion in gr2, the following were noted: concussion of the brain - 10% (1 person), fractures of the distal humerus - 10% (1 person) and sacrum - 10% (1 person), ankle sprain - 60% (6 people).

In comparison with less successful figure skaters from gr1, gr2 skaters showed lower values of reactive and personal anxiety in the Spielberger-Khanin and J. Taylor ($p<0.05$), which highlights the low level of psycho-emotional stress that allows successful figure skaters to manage mental stress in sports competitions.

When analyzing anthropometric data, a decrease in the size of the chest circumference at rest, chest circumference on inhalation and exhalation was noted in figure skaters from gr1 compared with athletes from gr2, which, we believe, is due to the athletes belonging to the asthenic type of constitution and thoracic body type. However, athletes of the first group show a priority for the development of pulmonary ventilation, which is demonstrated by the parameter "Inhalation capacity", due to an increase in its component of the reserve volume of inspiration ($p<0.05$). These features of the morphological status and respiratory reserves of gr1 skaters can be explained, on the one hand, by belonging to a certain type of constitution, and, on the other hand, by higher morphofunctional transformations that occur in the body of female athletes during the development of fitness, under the influence of specific physical exertion.

The figure skaters from gr1 showed more efficient work of the neuromuscular apparatus, which reflected in the values of the maximum voluntary strength of the muscles of the left hand after the athletes performed a static load. The data on sports history, anthropometry, anxiety levels, and chronotypological characteristics of female figure skaters with different athletic performance are shown in Table 1.

Table 1. The results of morphofunctional status data in sports history, anthropometry, anxiety levels, and chronotypological characteristics of female figure skaters.

Parameters	g1, n=8 Me (Q1; Q3)	g2, n=22 Me (Q1; Q3)	p-level
Age, years	19 (19; 20)	19 (18; 19)	–
Experience in figure skating, years	15 (14,5; 15,5)	13 (10; 14)	–
Body length, cm	169 (166,5; 170,5)	165 (163,8; 170,3)	–
Body weight, kg	53 (51,5; 56,5)	55 (52; 62,5)	–
Body mass index	19,7 (18,6; 20)	20,6 (19,3; 21,6)	–
Chest circumference at rest, cm	82 (80,5; 83,3)	85 (83; 92,3)	p≤0,08
Chest circumference on inspiration cm	87 (86,5; 88,8)	91,3 (89,4; 97,3)	p≤0,06
Chest circumference on exhalation cm	80 (79; 81)	82,5 (81,4; 88,5)	p≤0,07
J. Taylor, scores	14,5 (14,3; 14,8)	19 (15; 22)	p≤0,05
Reactive personality anxiety, Spielberger Khanin, scores	33 (32,5; 33,5)	43 (40; 44)	p≤0,05
<i>Reactive personality anxiety, Spielberger's readjustment, scores</i>	3,0 (3; 3)	5,3 (5;6)	p≤0,02
Chronotype in the Horn–Ostberg test, in points	37 (35,5; 38,5)	49 (45; 52)	p≤0,04
The maximum arbitrary strength of the muscles of the left hand after static loading, given Inhalation capacity, ml	33 (32; 34)	29,3 (26,9; 31,6)	p≤0,05
Inhalation capacity, ml	2756 (2732; 2781)	2537 (2338; 2584)	p≤0,05

According to the results of the Horn-Ostberg test, differences in chronotypological characteristics of the circadian biorhythm daily activity of female figure skaters were established. In 100% of cases, figure skaters from gr1 have a daily "Arrhythmic" chronotype, therefore, they are as active as possible during daytime hours, which corresponds to training hours. Athletes from gr2, on the contrary, demonstrate a delay in the work of the biological clock and in 100% of cases note the daily chronotype "owl" with activity at night, when training has already been completed (table1). These studies will be continued by us to clarify the severity of the manifestations of chronotypes of figure skaters.

The psychophysiological characteristics of single skaters in comparison of the results are presented in Table 2.

Table 2. Psychophysiological characteristics of female figure skaters with different athletic performance.

Parameters of psychophysiological testing	g1, n=8 Me (Q1; Q3)	g2, n=22 Me (Q1; Q3)	p-level
Light response (ms)	244,1 (239,2; 249,1)	257,4 (254; 289,2)	p≤0,05
Individual minute (s)	58,8 (58,6; 58,9)	60,9 (55,6; 64,6)	p≤0,05
Reproduction of a time interval filled with a light signal (error in %)	5,5 (4,5; 6,6)	12,3 (7,2; 19,9)	p≤0,05
Estimation of the length of the segments (error in %)	3,8 (2,5; 5,1)	8,2 (6,8; 12,6)	p≤0,02
Recognizing angles (error in %)	0,1 (0,05; 0,15)	0,7 (0,3; 2)	p≤0,05

According to the results obtained (Table 2), significant differences in the perception of space and time by figure skaters were revealed, where successful figure skaters from gr1 demonstrate the best abilities to perceive biologically significant stimuli. Informative tests to identify significant intergroup differences were: "Reaction to light", "Reproduction of a time interval filled with a light signal", "Recognition of angles" and "Estimation of the length of segments".

The results of successful single skaters in competitions reflect higher mobility properties of nervous processes in the central nervous system in comparison with the test standards, while the results of figure skaters from gr2 usually reflect the lower values of such standards, which emphasizes the high lability of nervous processes in figure skaters from gr1.

The assessment of the psychomotor performance of the figure skaters in the comparison groups was carried out according to the results of the 3-stage URA test with the solution of cognitive tasks of increasing complexity (V.V. Sonkin (2009)). The results of the study presented in Table 3.

Table 3. Characteristics of mental performance according to the results of the URA test in single figure skaters with different athletic performance.

Mental Performance test indicators	g1, n=8 Me (Q1; Q3)	g2, n=22 Me (Q1; Q3)	p-level
Stage 1 attempt 7 (number of errors)	0,5 (0,3; 0,8)	3 (1; 4,3)	p≤0,03
Stage 1 attempt 8 (number of errors)	4 (3,5; 4,5)	6,5 (5; 7,5)	p≤0,05
Stage 3 attempt 1 (number of errors)	2 (1; 3)	5 (4; 5,3)	p≤0,05
Stage 3 attempt 4 (number of errors)	1,5 (0,8; 2,3)	3,5 (3; 5,5)	p≤0,05

It was found that athletes from gr1 noted a better ability to resist the development of fatigue when performing cognitive tasks, which is confirmed by significant differences on the 7th and 8th attempts at the end of the 1st stage of the test. With the complication of cognitive tasks at the 3rd stage of the Mental Performance test, significant differences were revealed on the 1st and final attempts of the test, emphasizing the priority of developing the speed of reflex reactions in gr1 skaters with the development of working out and a more pronounced ability to resist fatigue compared to gr2 skaters (Table 3).

When evaluating the performance of stability testing, it is necessary to say the following. In the "Target" test, the only difference in the comparison groups of skaters was found in the comparison groups - the average spread (R, mm) ($p<0.04$). When performing the "Stability in the Romberg pose" test on 2 legs in the comparison groups, differences in the indicators were found: the average spread (R, mm) ($p<0.05$) and the coefficient "Quality of the equilibrium function" ($p<0.02$). Such differences in the comparison groups are present both when performing the "Stability in the Romberg pose" test with visual control and when it is limited.

One of the most informative tests for identifying intergroup differences and highlighting successful single skaters in competitions is the "Stability in a specific pose" test, namely the "ROLLOUT" stand on the supporting leg with visual control. In this test athletes' body is affected by complicated conditions of reducing the area of support and changing afferentation in the absence of visual control, control while maintaining vertical balance. This effect makes it possible to judge the stability of an athlete's posture through her ability to withstand external forces that disrupt balance (Table 4).

Table 4. The results of the single skaters performing the Stability in a specific Stance stability test.

Parameters	g1 Me (Q1; Q3)	g2 Me (Q1; Q3)	p-level
VISUAL CONTROL TEST RESULTS			
Spread over the frontal plane, mm	4,18 (3,84; 4,2)	4,98 (4,7; 5,49)	$p\leq 0,02$
Spread over the sagittal plane, mm	5,05 (5; 5,32)	6,76 (6,65; 8,68)	$p\leq 0,02$
Average spread, mm	5,94 (5,71; 5,99)	7,53 (7,19; 8,39)	$p\leq 0,02$
Average velocity of the pressure center movement, mm/sec	33,97 (30,55; 37,12)	46,14 (44,87; 47,16)	$p\leq 0,04$

The rate of change in the area of the statokinesigram, sq.mm/sec	74,7 (62,9; 74,9)	121,9 (108,8; 150,1)	p≤0,02
Area of the confidence ellipse, sq.mm	302,1 (271,3; 311,4)	513,9 (451,8; 628,3)	p≤0,02
Velocity index	21,49 (19,32; 23,71)	29,42 (28,72; 30,25)	p≤0,04
Length of the trajectory of the center of pressure along the sagittal plane, mm	389,9 (352,1; 452,9)	565,3 (539,9; 633,6)	p≤0,04
Average linear velocity, mm/sec	33,94 (30,54; 37,09)	46,14 (44,88; 47,17)	p≤0,04
The amplitude of linear velocity variation, mm/sec	22,04 (18,69; 24,12)	29,08 (26,29; 31,67)	p≤0,04
Average linear velocity along the frontal plane, mm/sec	23,5 (21,1; 24,8)	29,1 (28,5; 31,5)	p≤0,02
Average linear velocity in the sagittal plane, mm/sec	19,5 (17,7; 22,7)	28,4 (27,1; 31,8)	p≤0,04
Vectorogram power, mm2/s	33,34 (27,86; 39,44)	58,26 (54,36; 63,65)	p≤0,04
TEST RESULTS WITH LIMITED VISUAL CONTROL			
Spread over the frontal plane, mm	11,77 (10,86; 13,8)	7,82 (7,3; 9,49)	p≤0,04
Amplitude of variation of angular velocity, deg/sec	20,1 (18,6; 21,1)	25,4 (24,2; 29,9)	p≤0,02
Amplitude of the first peak in amplitude on the spectrum of the frontal, mm	10,2807 (9,1888; 14,2229)	6,5878 (5,5986; 6,906)	p≤0,02

The results presented in Table 5, when performing the test tasks in difficult conditions of limited surface area with visual control, revealed the obvious advantages of vertical stability of g1 skaters. An important indicator of the test characterizing the postural stability of figure skaters is the "Area of the confidence ellipse" indicator, lower values of which found in figure skaters from g1. Significant differences in the values of the indicators established: "Average spread" and "Spread along the frontal and sagittal planes", which emphasizes the lower deviation of the central nervous system along the corresponding planes and the better vertical stability of the g1 skaters.

Figure skaters, who take prizes at competitions note 2 times lower values of the indicator "Length of the trajectory of the center of pressure along the sagittal plane", in comparison with g2 athletes. Single figure skaters from g1 note lower values of the following indicators in comparison with athletes from g2: "Average velocity of movement of the pressure center", "Rate of change of the area of the statokinesigram", "Average linear velocity" and "Average linear velocity along the frontal and sagittal planes", which determines the high degree of involvement of regulatory systems in the

process maintaining an upright posture indicates their normal operation. The low values of the velocity of the center of pressure movement in the g1 skaters accompanied by significantly lower values of the "Amplitude of linear velocity variation" indicator, which emphasizes a lower displacement of the central nervous system to the sides and a more optimal state of bioelectric activity of the central link of the postural system.

When performing the test with a lack of visual control, both groups of athletes perform worse at completing the task. Figure skaters from g1 note lower values of the "Amplitude of angular velocity variation" indicator, which indicates a lower displacement of the central nervous system. However, the figure skaters from g2 note a lower value of the "Spread over the frontal plane" indicator.

Assessing the reserve capabilities of the cardiovascular system in figure skaters of varying competitive success, it should be noted that athletes from g1 have a pronounced effect of the parasympathetic nervous system at rest, which is consistent with moderate athletic bradycardia at rest. The results of the Roufier test indicate a greater functional range of CCC reserves in g1 skaters, who demonstrate "excellent" results on the test score scale (Table 5).

Table 5. Indicators of the cardiovascular system and aerobic endurance of female figure skaters with different athletic performance at rest and when performing dynamic tests.

Parameters	g1, n=8 Me (Q1; Q3)	g2, n=22 Me (Q1; Q3)	p-level
Heart rate at relative rest (beats/min)	62 (60; 64)	81 (68; 83)	p≤0,05
MAM (Wingate test)	13,91 (10,41; 13,99)	10,28 (6,7; 10,11)	p≤0,05
Average power (Wingate test)	9,92(9,42; 10,83)	8,11(6,01; 9,02)	
Cooper test, distance (m)	2500 (2450; 2550)	2114 (2008; 2120)	p≤0,05
The maximum arbitrary strength of the muscles of the right hand after the Cooper test (daN)	35,5 (35,3; 35,8)	32,5 (31,8; 34,3)	p≤0,05

The results obtained by us of differences in the reserve capabilities of the cardiovascular system among figure skaters of varying success correspond to the results of the Cooper test of a 12–minute smooth run by athletes. The best aerobic endurance observed in g1 skaters with a large increase in the maximum voluntary strength of the muscles of the right hand after performing the test (Table 5).

Discussion

We believe that our research has a certain scientific novelty, however, we note the connection between our results and the results of determining successful athletes with high athletic qualifications engaged in complex sports. In particular, from 2018 to the present, we have developed physiological criteria that distinguish dancers (both men and women), and gymnasts with high athletic performance in competitions, engaged in rhythmic gymnastics. The coincidence noted by the results of psychomotor and physical performance. However, we did not consider the battery of stabilometric tests, highlighting significant coordination abilities in terms of identifying differences. We have not previously considered the stabilometric tests performed with a pronounced limitation of the support area, performed by athletes in specific poses. Namely, these tests are of maximum importance in identifying the development of coordination abilities in highly qualified female figure skaters.

Based on the results of physiological testing, differences in physiological indicators established in the comparison groups of figure skaters with different competitive success. The results of psychophysiological testing revealed significant differences in the speed and accuracy of response to biologically significant stimuli (light). It should be noted, that successful figure skaters in the competition demonstrate high results of these reactions, which significantly exceeds the developed test standards. Figure skaters from gr2 always mark the lower limit of the standards of reactions to biologically significant stimuli, but do not exceed it. When assessing the perception of time in the "Time of an individual minute" test, it should be noted that the results in both comparison groups comply with the test standards. The gr1 skaters showed high values of the "Inhalation capacity" indicator, which may explain the high values of aerobic endurance according to the Cooper test. Tests for assessing vertical stability performed on a stability analyzer are informative criteria for selecting successful figure skaters who take prizes at competitions. Among the battery of tests we conducted, which included the following tests: "Target", "Stability in the Romberg pose" performed on 2 legs and separately on each leg with visual control and its limitation, the most significant for identifying intergroup differences is the test "Stability in a specific stance - "ROLLOUT", performed with visual control and its limitation. We recommend using the differences in the functional state, vertical stability, and physical qualities of figure skaters that we have established for the sports selection of female figure skaters for the national teams of the Russian Federation and the national teams of doubles. Among all the tests performed on the stabilizer are the datum V(mm) and EIS, (sq.mm) indices are of great importance in terms of revealing reliable differences. The differences in V(mm) and EIS, (sq.mm) emphasize the greater tension of the regulatory

systems in the regulation of vertical posture in figure skaters of group 2, when they performing the tasks of the tests.

In addition, it should be noted that significant differences in the levels of personal and situational anxiety (Janet Taylor and Spielberger-Khanin tests) among skaters with different competitive success rates emphasize the low level of psychoemotional stress among gr1 skaters. The revealed data indicates great opportunities for managing mental stress in sports competitions and allow athletes to develop the mobilization of regulatory, autonomic and muscular systems [1]. The results of the study are consistent with our data obtained earlier, when examining dancers of the SVK engaged in sports ballroom dancing [2,3].

Our recommendations for improving the training process for highly qualified female figure skaters consist primarily of recommending systematic monitoring of stability testing performed during the "Vertical Stability" test, performed in a specific "Roll-out" stance on the leading leg, with visual control.

This test allows you to be well-oriented in the level of development of the coordination abilities of female figure skaters. Undoubtedly, psychophysiological tests with serial effects on the sensory systems of female athletes are highly informative for identifying successful single skaters.

Tests such as "Mental performance" with 3 stages of increasing cognitive load[7], a simple sensory – motor reaction allow us to judge the orientation of athletes in space and time and reveal the dynamics of changes in the functional state of athletes during the development and ability of sensory systems to resist fatigue.

Some authors (Losnegard T. (2019) highlight the great contribution of the energy system to the development of a high range of functional status in promising athletes engaged in cyclic loads, which has yet to be studied in highly qualified figure skaters[5].

The results of the presented scientific work fully reveal the purpose of the study and will be continued by us in all areas carried out: psychophysiology, the study of physical performance, vertical stability and the conditions of energy system.

Conclusions

1. It has been established that the indicators of psychophysiological tests with serial stimuli (mental performance, simple visual-motor reaction), the stabilometric test "Stability in a specific stand-out", with visual control and its limitation, have the greatest informative value for identifying elite highly qualified figure skaters who are successful in competitions; among the respiratory volumes and capacities - the index of

inspiratory capacity, the indicator of the maximum voluntary strength of the muscles of the left hand after static loading and the level of personal anxiety in the J. Taylor test.

2. Elite highly qualified figure skaters who are successful in competitions have an average level of personal and reactive anxiety in the J. Taylor and Spielberger-Khanin tests, as well as belonging to the arrhythmic version of the chronotype in the Horn–Ostberg test, which, in our opinion, allows them to be more active during training hours and resist the development of competitive stress.

3. According to the results of stability testing, among the tests characterizing vertical stability, the test "Stability in a specific stand – "ROLL-out", with visual control and its limitation, which allows to identify more informative criteria of differences and a high degree of their reliability, has the greatest informative value for elite highly qualified figure skaters who are successful in competitions.

4. Skaters less successful at competitions have higher values of stabilometric testing in indicators V(mm) and ELS, (sq.mm) in the tests "Target" and "Stability in Romberg pose", performed on 2 - x legs with visual control, which emphasizes the greater tension of regulatory systems in the regulation of vertical posture of skaters from gr 2 in comparison with athletes from gr 1, when performing the tasks of the tests.

5. The data on the psychophysiological characteristics of elite highly qualified figure skaters who are successful in competitions reflect the high speed of development of working out, high-quality performance of the main part of the test task and slowing down the development of fatigue under the influence of a series of cognitive tasks of increasing complexity.

6. Figure skaters who are engaged in women's single figure skating, who are successful in performing various motor programs at competitions, according to pedagogical observation and sports history, have greater motor accuracy when performing mandatory elements, performing twizzles, jumps and step paths, which they perform efficiently and note a lower severity of sports injuries, which gives them the opportunity to faster to recover.

Conflict of interest

The author hereby declares that this research is free from conflicts of interest with any party.

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PHYSICAL ACTIVITY AS A DETERMINANT OF SATISFACTION WITH LIFE AMONG CADET FOOTBALL PLAYERS

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Abstract: The aim of this transversal research was to examine the possibility of predicting the variables of physical activities, and quality of life in interaction with health, physical self-concept, and physical functioning in explaining the criteria of satisfaction with life in cadet football players. The pertinent sample consisted of 160 participants ($M_{age}=15.74$; $SD=1.49$). Satisfaction with Life Scale – SWLS, The International Physical Activity Questionnaire – IPAQ-S, The Physical Self-Description Questionnaire – PSDQ, and The short form-36 Health Survey (SF-36) were used to collect data. Cronbach alpha coefficients showed satisfactory reliability of internal consistency, which means that the applied measuring instruments can be validly used in the Serbian adolescent population. The Pearson correlation coefficients show a moderate correlation of a positive direction between the variables of high-intensity physical activity and physical activity related to health, which indicates that participants who carry out high-intensity physical activities manifest less limitations due to physical difficulties. The findings of the hierarchical regression analysis showed that significant predictors – body mass index, physical exercise, as a segment of body image, and physical functioning predict 20% of the variance of satisfaction with life ($p \leq 0.05$). This suggests that the perception of satisfaction with life in adolescents is more relevant for engaging in physical activities than the level of their physical activities. Also, the variables body mass index, physical exercise, along with self-concept of physical appearance and physical functioning are important mediators in explaining the construct of satisfaction with life, so they can be guidelines for identifying the perceived level of this dependent variable in the adolescent sport population in the Republic of Serbia. Theoretical contributions and practical implications are interpreted in accordance with the correlational and multiple linear regression findings of previous empirical studies.

Keywords: adolescence, football players, physical self-concept, health status/met minute

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Introduction

Aerobic and anaerobic physical activity, e.g. walking, swimming, riding a bicycle, motor games, hiking, housework and physical exercise means moving the body using the striated musculature and skeleton, with energy consumption greater than that at rest, for proper growth and physical development, positive impact on physical and mental health and improvement or maintenance of functional, morphological, cognitive and conative characteristics and motor skills (M. Ivanović and U. Ivanović, 2019). The aforementioned authors believe that physical activities have many benefits for people, and they should be exercised regularly and gradually in a rhythm that suits the body, in order to encourage the strengthening of the body and the realization of the desired goal. In addition, physical activity reduces symptoms of depression, anxiety, stress and the risk of premature mortality, increases self-esteem and intellectual functions in everyday tasks (Przybylska, et al., 2024). The World Health Organization recommends that children under the age of 17 do at least three activities a week: running, skipping rope, gymnastics and team sports, e.g. football, volleyball and basketball, because in that age period it is important to strengthen and properly develop bones and skeletal muscles (World Health Organization, 2022). Unfortunately, only about 20% of children and young people in the world achieve these advised standards. The intensity of exercise is divided into absolute or relative. Absolute intensity is expressed through metabolic equivalent (MET), oxygen consumption and calorie consumption, and indicates the amount of energy spent during the activity. Low intensity refers to activity up to 2.9 METs, moderate activities are in the range of 3.0 – 5.9 METs, while high activities imply energy consumption of over 6.0 METs. For example, walking at a speed of 5 km/h requires consumption of 4 METs, while running at a speed of 12 km/h has a consumption of 12 METs (Croatian Institute of Public Health, 2022). Relative intensity implies the effort necessary to carry out physical activity, and is described by physiological parameters such as the percentage of maximum heart rate or the percentage of maximum oxygen consumption.

The multidimensional construct satisfaction with life represents the subjective level at which an individual positively perceives the physical, mental and social quality of their own life (Parsakia et al., 2024). A number of factors contribute to a person's satisfaction with life. For example: supportive and moderating relationships, hobbies, creative workplace, positive emotional experiences, etc. On the other hand, stress, poor health, financial difficulties and negative emotions reduce the level of satisfaction with life. Research (Zhai et al., 2024) showed that the satisfaction with life of adolescents, who spend more time engaging in physical activity, positively affects their satisfaction with school. That is why it is important that adolescents enjoy classes and that they perceive their participation in solving tasks positively and satisfactorily.

An important concept in psychological analyzes of adolescents is body image, i.e. self-concept of one's physical appearance, body satisfaction. The experience of understanding one's physical appearance (self-concept) presupposes a set of representations, fantasies, emotions, attitudes and meanings related to the body and certain parts of a person (Rojas-Padilla et al., 2024). Body image can also be understood as a mental self-description of one's own body, attitude towards physical appearance, state of health, whereby attitudes of value arise in the context of faith, culture and tradition (Berengüi et al., 2023). The experience of body image affects the perceptual, cognitive, emotional and behavioral functions of an individual during their growth and physical development. It is not static but dynamic and depends on external (social and cultural) and internal (biological and psychological) factors, which change, are maintained and developed. Body image/self-concept of one's physical appearance includes the totality of perception that an individual has about themselves and their identity, the way they see themselves in different dimensions of life, and in relation to their own environment. It, as the central phenomenon of this model, implies attitudes and schemes based on physical appearance, which are influenced by factors of cultural socialization, interpersonal experiences, physical characteristics and personality dimensions (Burgon et al., 2023). The aforementioned authors believe that adolescents who physiologically mature earlier are usually more popular, occupy leading social positions, and are often sports stars, which generates greater self-satisfaction and a more positive body image.

In the last 10 years, empirical research emphasizes the relevance of health status, which includes full function or efficiency of body and mind, and social adaptation (M. Ivanović and U. Ivanović, 2018). In accordance with the aforementioned definition, it is possible to assess the extent to which a person's well-being is impaired in the field of physical, mental and social health. The author's research (Chapa et al., 2022) draws attention to the harmful effects of technology and the increasing number of obese adolescents among the school population, as well as the increased abuse of alcohol and drugs among high school students. The aforementioned authors claim that physical exercise during adolescence is an important moderating factor for the health of young people, and that the predictors such as: physical inactivity, excess body weight and limitations due to physical difficulties represent significant negative determinants of health status during puberty. On the other hand, more physically active adolescents with normal body mass have better health (Faroughi et al., 2024).

Since the applicability of the measuring instruments used in this paper has not yet been tested on a Serbian sample, and while the other studies do not offer consistent results, the *aim* of this quantitative research is to examine the relationship between physical activities, health-related quality of life, physical self-concept, physical functioning and satisfaction with life of cadet football players. Considering the results of previous

research, it is assumed that the positive interaction between physical activity and satisfaction with life will be confirmed in the sample of adolescent soccer players (H_1). It is also expected that statistically significant predictors of satisfaction with life among young players from 14 to 16 years of age will be body mass index, level of intensity of physical activity, self-assessment of physical activity and quality of life related to their health (H_2).

Method

Participants and research procedure

The research was carried out in the Kolubara district on a pertinent sample of 160 cadet football players from three clubs from Valjevo: FK „Budućnost“ (Serbian League West), FK „Radnički“ (Kolubara-Mačva Zone“) and FK „ZSK“ (Kolubar district League). The average age of the participants was ($M=15.74_{\text{years}}$, $SD=1.19$). All participants had at least two years of systematic and organized training, lasting at least three times a week. Data collection was carried out during September 2025.

The application of the measuring instruments was carried out in groups, in the club premises, as part of the regular training sessions of football players, where each subject was tested individually using the pen-and-paper method. Before testing, the objective of the research was explained to the participants and they were guaranteed anonymity, along with instructions on filling in the questionnaire and scale. The estimated time of the testing, in the presence of the examiner, was approximately 20 minutes, where each subject could withdraw from testing at any time, without giving reasons and without any consequences. Three subjects with significant Mahalanobis distances at the $p \leq 0.01$ level were excluded as multivariate outliers (Tabachnik & Fidell, 2013). The research was approved by football players' parents and coaches, as well as the Scientific Council of the Serbian Academy of Innovation Sciences from Belgrade, based on the Declaration of Helsinki.

Measuring instruments

Body Mass Index (BMI)

International Biological Program was used for measuring anthropometric parameters of body mass and body height (Weiner & Lourie, 1969). The participants' body mass was measured with a medical scale, with a measurement precision of 0.1 kg, and body height with a height meter in a standing position, with a measurement precision of 0.1 cm, while the subjects were in light clothes without shoes. The degree of nutrition of the participants is expressed through the body mass index (BMI), which represents the ratio of body mass in kilograms to the square of body height in meters. BMI is calculated by dividing the participant's body mass in kilograms by the square of body height

in meters according to the standard formula: BMI (kg/m²)=body mass(kg)/{height²-(m)}. According to the recommendation of the World Health Organization - WHO, nutrition is classified into categories based on the following obtained BMI values: a) malnutrition - values less than 18.5 kg/m², b) normal body mass - values from 18.6 to 24.9 kg/m², c) excess body mass (overweight) - values of 25 to 29.9 kg/m² and d) obesity - values of 30 and more kg/m² (World Health Organization, 2021). The threshold value for overweight and obesity was BMI ≥ 25 kg/m².

Table 1. Chows the categories of body mass index, i.e. self-assessment of the participants' nutrition.

Table 1. Body mass index categories – BMI

ITM	f	%
Insufficient body mass (malnutrition)	1	0.7
Normal body mass	95	59.37
Excess body mass	59	36.9
Obesity	5	3.1

Annotation. BMI = body mass index; f = frequency; % = percentage

By looking into the the data matrix, it can be seen that the most participants have a normal body mass (from 18.6 - 24.9 kg/m²) and an excessive body mass (from 25 - 29.9 kg/m²), and the least – only one adolescent who is malnourished, while five of them are obese, i.e. with over 30 and more kg/m²).

Satisfaction with Life Scale (SWLS)

SWLS (Satisfaction with Life Scale; Lukaski & Raymond-Pope, 2021) examines the global overall assessment of satisfaction with life, and consists of five items. Participants' task is to evaluate the statements on a 7-point Likert-type scale (from 1=I do not agree at all to 7=I completely agree). For example: "My living conditions are excellent", "I am satisfied with my life". The total score is calculated by adding up the results of all items, with a higher score indicating greater satisfaction with life. The reliability of the internal consistency type is measured by the Cronbach's alpha coefficient and in this research is (α=0.85).

The Physical Self-Description Questionnaire-Short Form (PSDQ-S)

PSDQ-S (The Physical Self-Description Questionnaire-Short Form; Marsh et al., 2010) includes nine specific and two general subscales. For the purposes of this research, a subscale was used that examines the physical self-description of the participants' own physical appearance, who give self-assessments on a 5-point Likert-type scale, from 1 (incorrect) to 6 (correct). In this research, the coefficient of internal consistency of reliability (Chrobach's) for the used questionnaire is (α = 0.78).

The short form-36 Health Survey (SF-36)

SF-36 (The short form-36 Health Survey; Ware et al., 2010) includes two scales: physical functioning and limitations due to physical difficulties, which are used to assess the quality of life and physical and mental health of the participants. The questionnaire contains 36 items covering eight health domains: physical functioning (10 items), limitations due to physical difficulties (4 items), physical pain (2 items), vitality (4 items), general perception of health (5 items), social functioning (2 items), limitations due to emotional difficulties (3 items) and mental health (5 items). The theoretical range ranges from 0 to 100 points, where 0 points represents the maximum health limitation, while 100 points represents a very positive response and suggests no health limitations. The reliability coefficients (Cronbach's alpha) in this sample are ($\alpha=0.87$) for the subscale of physical functioning and ($\alpha=0.83$) for the subscale of limitations due to physical difficulties.

The International Physical Activity Questionnaire (IPAQ-S)

The IPAQ-S (The International Physical Activity Questionnaire, Craig et al., 2003) examines the intensity of physical activity that is carried out daily. The questionnaire includes 27 items: frequency and duration of physical activities spent walking, activities of moderate and high intensity and time spent in a sitting or lying position, during the past seven days. Moderate activities include activities in which breathing is faster than usual, while high-intensity activities refer to those in which breathing is faster than moderate. The participant has the task of selecting the number of days per week (from 1 to 7) that he spent performing particularly physical activities, and below that to write how much time he spent doing physical activities related to the frequency, duration and intensity of physical activity in four domains of life: work, transport, household and free time. The result is presented as continuous variables expressed in METs or categorical variables in three categories (low intensity physical activity, moderate and high intensity physical activity). By summing the values of the level of physical activity in the four mentioned domains, the total level of physical activity is calculated. Based on the parameters of intensity, frequency and duration of physical activity, which are part of the IPAQ questionnaire, energy consumption correlated with physical activity, expressed in metabolic units (MET), is estimated. Since participants' answers are mostly expressed in minutes spent in a particular physical activity, the physical activity score is expressed in MET minutes and is obtained by multiplying the MET minutes spent in a particular physical activity and the MET scores. The value of MET-minute is equal to the value of consumed kilocalories. The obtained Cronbach's alpha coefficients for the variables of physical activity by domain, as well as the variables of total physical activity in this research range from $\alpha=0.73$ to $\alpha=0.79$.

Statistical data processing

Using basic descriptive statistics and measures of skewness and kurtosis coefficients, the values of the variables for checking the normality of the distributions were calculated. Reliability analysis (Cronbach's α -coefficient) was used to define the psychometric characteristics of the instruments. Pearson correlation coefficients were also calculated, in order to define the relationship between the examined variables, while multiple hierarchical regression analysis was conducted in order to define the partial relative contributions of the predictors in explaining the variance of satisfaction with life. A value of ($p \leq 0.05$ or $p \leq 0.01$) was used as the level of significance. Statistical data processing was carried out in the software program Statistical Package IBM-SPSS, version 26.0.

Results

Table 2 shows the basic descriptive parameters of the measured variables: body mass index, physical activity of high and moderate intensity, walking, total physical activity, sitting, physical activities, satisfaction with life and physical functioning as an indicator of quality of life and health.

Table 2. Descriptive parameters of the analyzed variables

Variable	Min	Max	M	SD	SE	Sk	Ku
Body mass index (BMI) – kg/m2	13.96	29.63	19.46	2.47	0.18	0.15	0.48
IPAQ-S							
High intensity PA (MET-min/weekly)	.00	100	29.05	2.06	.44	0.68	0.40
Moderate intensity PA (MET-min/weekly)	.00	500	20.01	1.12	0.35	0.79	- 0.07
Walking (MET-min/weekly)	.00	39	15.35	1.03	0.29	0.77	- 0.52
Total PA (MET-min/weekly)	.00	166	70.02	2.14	0.16	0.19	0.53
Sitting -hours	.46	23	4.76	2.17	0.52	0.83	0.90
PSDQ-S							
Physical activity	2.41	7.05	5.01	0.87	0.36	0.49	0.53
SWLS							
Satisfaction with life	1.36	6.52	4.88	1.36	0.49	- 0.57	- 0.09
SF-36							
Physical functioning	.00	100	68.23	2.74	0.64	0.87	0.82
Limitations due to physical difficulties	.00	100	77.26	1.56	0.70	- 0.92	- 0.87

Legend. Min = Minimum result, Max = Maximum result, M = Arithmetic mean, SD = Standard deviation, SG = Standard error of the arithmetic mean, Sk = Skewness, Ku = Kurtosis.

The normality of the distributions of the used variables on the statistical set of participants was tested by the coefficients of Skewness and Kurtosis at the level of inference error ($p \leq 0.05$). The calculated values of Sk and Ku are in the range of ± 1.96 , which indicates a normal – Gaussian probability distribution of data and further application of parametric methods in statistical data analysis (Haqiqatkah et al., 2023).

In order to verify the connection between physical activity, satisfaction with life and quality of life in cohesion with adolescent health, a correlation analysis was conducted (Table 3).

Table 3. Intercorrelations (Pearson coefficient r) between the examined variables in the research

Variable	1	2	3	4	5	6	7	8
BMI	–	-0.05	-0.15	-0.12	-0.09	-0.30**	-0.07	-0.11
High intensity PA		–	0.67*	0.01	-0.32*	0.26**	0.32**	0.05
Moderate intensity PA			–	0.55**	0.03	-0.07	0.09	-0.01
Walking				–	0.06	0.02	-0.10	-0.04
Sitting					–	-0.05	-0.08	
PA (PSDAQ-S)						–		0.22**
Limitations due to physical difficulties (SF-36)							–	0.15*
Satisfaction with life								–

Annotation. * $p \leq 0.05$; ** $p \leq 0.01$.

A review of the matrix of correlations of the used measuring instruments shows a statistically significant low negative interdependence between the body mass index and physical functioning as one of the indicators of the quality of life related to health. This suggests that participants who have a lower body mass index perceive their physical functioning as better. At the same time, a positive correlation was found between high-intensity physical activity and moderate-intensity physical activity, and a negative correlation between high-intensity physical activity and sitting. Also, a moderate degree of positive interaction between physical activity of moderate intensity and walking is observed. In addition, in relation to different intensities of physical activity, the only significant intercorrelation with high-intensity physical activity was manifested as a segment of the body image of the subject. This shows that adolescents who are involved in high-intensity physical activities perceive their body image in a relevantly more positive way. In addition, high-intensity physical activity is also in a significant low positive relationship with the variable that implies quality of life in interaction with health – limitations due to physical difficulties, which indicates that participants who perform high-intensity physical activity perceive that they have significantly fewer limitations due to physical difficulties. A significant positive mutual influence was obtained between the variables

satisfaction with life and physical activity as a segment of the self-assessment of physical appearance. On the other hand, no correlation was established between the variables: levels of physical activity (high, moderate intensity, walking, sitting) and satisfaction with life. Definitely, in this research, aspects of quality of life are statistically significantly positively related to satisfaction with life.

Therefore, in accordance with the assumed moderating effects of prediction error – residuals (Kennedy et al., 2022), the obtained correlation results in this research confirmed the tested first working hypothesis (H1), i.e. positive interaction of physical activity and satisfaction with life.

In conclusion, it should be noted that the correlation between the variables: physical activities of high and moderate intensity walking, sitting, self-concept and body mass index was not significant, and that in the hierarchical regression analysis the height-weight indicator of nutrition stood out as a statistically significant predictor of satisfaction with life, which indicates to the fact that there was a suppression effect (Tabachnick & Fidell, 2013) on a sample of young football players in the age of mental and physical development between puberty and maturity.

In order to check the contribution of the predictor variables: intensity of physical activity, perception of physical activity, as a segment of adolescent self-concept, and the aspect of physical functioning, as a moderator, in explaining the criterion variable – satisfaction with life, a hierarchical regression analysis was conducted in three models of the regression equation (Table 4).

Table 4. Results of hierarchical regression analyzes with life satisfaction as a criterion variable

Predictors	Model I		Model II		Model III	
	β	SE β	β	SE β	β	SE β
BMI	-0.20**	0.11	-0.20**	0.09	-0.15	0.34
High intensity PA			0.43	0.42	-0.10	0.25
Moderate intensity PA			-0.05	0.37	-0.02	0.43
Walking			-0.04	0.25	-0.03	0.29
Sitting			-0.01			
PA (PSDQ-S)			0.23**	0.56	0.15*	0.10
Physical functioning (SF-36)					0.19*	
Limitations due to physical difficulties (SF-36)					0.12	0.58
ΔR ²	0.05*		0.04*		0.09**	
R ²	0.05		0.09		0.20	

Annotation. β = Standardized regression beta-coefficient; SE β = Standard error of the beta-coefficient; R² = Coefficient of multiple determination; ΔR² = Corrected coefficient of multiple determination - total contribution of a individual group of predictors to the explained variance **p ≤ 0.01, * p ≤ 0.05.

Before conducting the hierarchical regression analysis, the autocorrelations of the linear models, i.e. the independence of the residuals in the model, were checked using the Durbin-Watson test. Collinearity was tested with the values of the linear relationship (variance inflation factors; VIF) and the reciprocal value (Tolerance). The calculated values of the Durbin-Watson test, VIF and Tolerance are in accordance with the recommended values, and it is concluded that the residuals are not correlated, that is, there is no phenomenon of multicollinearity between the predictor variables in the model, and that the condition for the application of regression is met (Senaviratna & Cooray, 2019).

In the first block of variables of the hierarchical linear regression of the moderator effect, BMI was included as a predictor variable, in the second block of variables the level of intensity of physical activity and body image, and in the third block of variables aspects of physical functioning (as indicators of quality of life) were introduced. In this way, it was possible to identify the partial relative contributions of individual predictors in explaining the overall variability of satisfaction with life.

The regression findings indicated that in the 1st initial set of independent variables, the body mass index is a statistically significant negative predictor that explains 5% of the total variance of the criteria. A negative sign indicates that participants who have a lower body mass index are more satisfied with their life, and vice versa, a higher height-weight indicator of an individual's nutrition is the basis for expecting that their level of satisfaction with life will be lower. In the 2nd regression model, the predictive results of the measured independent variables (different intensities of physical activity) show that they did not have statistically significant interactions with the outcome of the criterion variable, that is, their moderating effects were not significant, which points to the conclusion that the correlations of different intensities of physical activity do not depend on the analyzed determinants of satisfaction with life.

However, in this model, only the variable physical exercise as a segment of self-concept of physical appearance manifested a partial level of significance ($\beta = 0.23$, $p \leq 0.05$), which additionally partially contributes with 4% to the interpretation of the variability of satisfaction with life criteria. More precisely, this means that participants who perceive a more positive body self-concept are probably more satisfied with their lives. In the 3rd last regression model of the used measuring instruments, a positive predictor physical functioning is included, which statistically significantly increases the coefficient of multiple correlation, while additionally predicting 9% of the total variance of the criteria, which suggests that young people who perceive their physical functioning to be as good as possible are more satisfied with life. Definitely, the regression equation in the last Model III shows that with this set of statistically significant predictor variables (intensity of physical activity, perception of physical activity as a segment of body image and aspect of physical functioning) it is possible to predict 20% of the total variability of the

dependent variable of satisfaction with life. This suggests the conclusion that the application of the proposed multivariate regression model (Hair et al. 2024) is justified, i.e. that the working hypothesis (H2) was confirmed on the sample of young football players, i.e. the expectation that statistically significant predictors of satisfaction with life among young players aged 14 to 16 will be body mass index, level of intensity of physical activity, self-assessment of physical activity and health-related quality of life.

Discussion

The aim of this cross-sectional study was to examine the relationship between physical activities, quality of life in interaction with health status, physical self-concept, physical functioning and satisfaction with life in cadet football players.

Body composition implies the ratio of muscle mass (muscles, skeleton, organs) to fat in the body, and in anthropological and medical research it is estimated using the body mass index, which was invented by the mathematician Adophe Quetelet in the 19th century, with the intention of quickly and efficiently diagnosing obesity (Korzonek-Szlacheta et al., 2024). A balanced body composition is correlated with improved overall health and reduced risk of chronic diseases (Moreno-Díaz et al., 2024). However, body mass index can give incorrect information in different age periods, e.g. in infants and soldiers since it is not possible to accurately assess body composition, i.e. the percentage of body fat, which is the biggest problem in athletes with excess weight (Anam et al., 2024). The aforementioned suspicion partially coincides with the results of the body mass index in this study, where the BMI varied from 15.26 to 30.85 kg/m². Therefore, it can be concluded that BMI can be justifiably used in the evaluation of the body composition of the Serbian sports population, while one should be careful in the interpretation due to its shortcomings and limitations.

Defining the intensity of physical activity (FA) is very important in its implementation. In doing so, it is important to understand the intensity categories of physical activity (low, moderate and high intensity PA) during physical exercise, and to adapt its intensity to the organism of each athlete. Given that young football players participated in this research, the findings on the level of high intensity of physical activity are expected because most of the participants also engage in some additional sport in their free time, which implies a significantly higher frequency of heart rate, breathing and sweating. A simple method to define the category of high intensity physical activity is done using the conversation test. If during physical activity a string of words can be spoken, and not a whole sentence, it shows that the participants is in the category of high intensity physical activity (Subbarayalu et al., 2024). In the research (Boat et al., 2024), it is recommended that people should regularly perform high-intensity physical activities

for 75-150 minutes, in order to reduce sedentary habits and improve health. In addition, adolescents who do high-intensity physical activities realize better success in school.

The aim set in this research also referred to the examination of the interactions of physical activity, satisfaction with life and health-related quality of life in football players during adolescence. It has been shown that football players who are more satisfied with life think significantly more that they engage in physical activity if it is measured as a segment of their body image self-concept. At the same time, satisfaction with life is not in cohesion with the level of physical activity. Some findings indicate that individuals who engage in physical activities of high and moderate intensity are more satisfied with life and happier than those who engage in physical activities of low intensity (Ahsan & Ali, 2023). However, the existing findings are not logically connected in the relations between different intensities of physical activity and subjective well-being. For example, in the study (Liu et al., 2023) it was determined that a moderate to high level physical activity correlates with a greater quality of life, and that the highest subjective self-concept of physical appearance is among participants who engage in low-intensity physical activities. Also, empirical findings in the study (Parsakia et al., 2024) confirm that satisfaction with life increases if an individual engages daily in physical activities. Adolescents who are more satisfied with life emphasize the greater importance of a better quality of life, i.e. of their physical functioning segment with fewer limitations due to physical disabilities. The mutual effect between physical activity and quality of life was also proven in a study (Yang et al., 2024), where it was stated that high-intensity physical activities contribute to the quality of life correlated with health, which generally increases satisfaction with life in adolescence.

By examining the mutual influence of physical activity, physical functioning and satisfaction with life, relevant determinants were obtained that predict the satisfaction with life construct. Empirical findings on the examined sample, with about 1/5 variability, suggest that cadet football players with a lower body mass index, a higher level of physical activity as a segment of self-concept, and those who perceive their physical functioning as better are more satisfied with life. However, although the tested predictor variables successfully explained a significant percentage of satisfaction with life, a significant part of the variance (about 80%) remained unexplained, which indicates that it is a complex concept explained by numerous other untested factors. Also, the author's research (Parsakia et al., 2024) indicates that male athletes are more satisfied with life compared to female athletes of the same age. At the same time, a higher body mass index of athletes negatively affects the quality of life associated with their health status (Faroughi et al., 2024). In addition, the physical activity of athletes has a significant interaction with satisfaction with life during adolescence (Ault et al., 2024; Pre-doiu et al., 2024).

When interpreting the results of this cross-sectional study, it is important to take into account its methodological limitations. The first limitation refers to the pertinent sample that was available for the research at that time. It would be better if the number of participants was larger and if football players from a larger number of clubs from the entire territory of Serbia participated. The limitations of this research may be in giving socially desirable answers, which are probably the result of filling out the instruments in groups due to the fear that their answers visible i.e. available to other participants in the group. Also, the method of collecting data through self-assessments, due to the tendency to give socially desirable answers, calls into question the sincerity of such answers. This can be solved by using some other measure, e.g. peer and coach assessments to get more honest answers. The last limitation concerns the attrition of subjects. Considering the anthropometric measurements (body weight and body height) and the large number of given items, there is a possibility that the subjects were tired and their motivation decreased, which may have affected the results of the research. Also, considering the correlational design of the research and the obtained low connection between the variables, caution is necessary in the interpretation because it is not possible to conclude about causal relationships.

Therefore, in the future representative sample of all competitive categories of football players, of both sexes, some variables such as lifestyle, social environment, values and attitudes, and the influence of peers and coaches should be included in order to confirm our conclusions about the direction of interactions between satisfaction with life and physical activity as a segment of body image, high-intensity physical activities and quality of life associated with the health of active athletes.

Despite the aforementioned limitations, the findings of this research contribute to a better understanding of the latent factors that predict satisfaction with life among Serbian cadet football players. However, future research (of experimental and longitudinal design) on a representative sample of all competitive categories of football players, of both sexes, should be directed at examining guidelines for improving football players' satisfaction with life. All predictive factors cannot be removed, but it is important to take preventive measures in order to reduce those that can be reduced. Through education, knowledge and skills such as communication with peers and coaches, organizing free time, physical activity, cadet football players can enable the achievement of greater satisfaction with life in the football adolescent population.

Finally, the results of this research indicate the correlation of satisfaction with life and physical activity as a part of the self-concept of one's physical appearance, as well as the interaction of high-intensity physical activity and the quality of life associated with the health of cadet football players, i.e. views of difficulties due to their physical disabilities. Therefore, the level of physical activity is not relevant for the construct satis-

faction with life, but rather the general perception of young athletes when engaging in physical activities. Football players between the ages of 14 and 16 who have a lower body mass index, a higher level of physical activity as a segment of body image, self-concept and those who rate their physical functioning as better are more satisfied with life. Given the obtained regression research findings, i.e. coefficient of indeterminacy, which show the influence of other untested predictor variables on the variance of satisfaction with life criteria, further empirical studies are necessary for a more complete understanding of the cohesion of physical activity and other aspects of satisfaction with life. The findings of this research offer practical implications for the introduction of additional predictor variables when testing satisfaction with life criteria. The results in this study can be an incentive for more detailed research on the relationship between physical activity and satisfaction with life, especially due to the current tendency of a sedentary lifestyle and its unfavorable consequences for the quality of life and health in a sample of athletes in adolescence.

Conflict of interests

The authors declare no conflict of interest.

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SOCIAL MEDIA ADDICTION AND ITS IMPACT ON DAILY PHYSICAL ACTIVITY: A CASE STUDY OF MEDIA AND COMMUNICATION STUDENTS AT SOUK AHRAS UNIVERSITY

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Abstract: This study aims to explore the relationship between excessive use of social media and the level of physical activity among media and communication students at Mohamed Cherif Messaadia University, Souk Ahras. The study relied on a descriptive-analytical approach, with data collected from a sample of 60 students using a questionnaire. The data were analyzed using correlation coefficients, t-tests, and Analysis of Variance (ANOVA). The results showed a statistically significant inverse relationship between excessive use of social media and physical activity levels. However, the results did not reveal a significant relationship between excessive use of social media and positive alternative behaviors such as following sports content or participating in fitness challenges. No significant differences were found based on gender, age, or educational level. The results also showed that urban residents tend to record higher levels of social media use and lower levels of physical activity, indicating an environmental influence.

Keywords: Social media, physical activity, digital addiction, healthy behavior, youth

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Introduction

Social media platforms today have become more than just spaces for entertainment or news sharing; they now represent an integrated digital environment that reshapes patterns of living, thinking, and consumption. These platforms influence how people learn, work, and interact. This transformation has been reinforced by the rise of digital marketing, the influencer industry, and strategies aimed at capturing attention, fostering loyalty, and transforming engagement into a near-automatic daily habit (Leung et al., 2022; Jiang et al., 2022). The emergence of new digital spaces—such as discussions surrounding the "metaverse" and its applications and marketing—illustrates a broader shift toward deeper immersion in the digital world, which in turn extends screen time and intensifies competition for users' attention (Koohang et al., 2023; Park & Kim, 2022; Dwivedi et al., 2022)

This trend cannot be separated from the underlying technical infrastructure of social platforms, where algorithms and machine learning techniques play a crucial role in content personalisation and user engagement, thus contributing—directly or indirectly—to platform dependency (Janiesch et al., 2021). Moreover, with the expansion of remote learning and digital education, particularly during times of crisis, screen exposure has become an increasingly dominant feature in students' daily lives (Ferri et al., 2020; OECD, 2021).

Within this context, the concept of "social media addiction" has emerged as a form of behavioural addiction. It is not solely defined by the number of hours spent online, but by the nature of the relationship with the platforms: persistent preoccupation, difficulty disengaging, prioritising browsing over other activities, and experiencing anxiety when disconnected. This phenomenon is explained by theoretical models such as the "components model of addiction" within the biopsychosocial framework (Griffiths, 2005). The literature on social network addiction highlights key insights into mechanisms of attachment, relapse, and habituation (Kuss & Griffiths, 2017).

Research has also shown that estimates of addiction prevalence vary depending on the measurement tools and classification systems used, reflecting the complexity of the phenomenon and the challenges of applying a universal standard (Cheng et al., 2022). Other studies have explored risk factors associated with this addiction, ranging from individual characteristics to environmental influences and user motivations (Zhao et al., 2022; Hou et al., 2019), while recent reviews and studies provide a broader overview of the concept, its ramifications, and methods of assessment (Amirthalingam & Khera, 2024; Abdullahi et al., 2024).

From a user motivation perspective, the "uses and gratifications" approach helps explain why some students turn to platforms to fulfil needs such as belonging, self-

esteem, stress relief, or even to seek health- or sport-related content—thus making the platforms' impact vary significantly across individuals (Bhatiasevi, 2024; Wikipedia contributors, 2025; Camilleri & Falzon, 2020; Huang & Su, 2018).

The issue becomes even more critical when addiction is linked to tangible outcomes in mental health and academic achievement. Numerous studies have associated addiction or problematic usage with indicators such as depression, anxiety, and psychological stress among both adolescents and university students (Ali et al., 2025; Peng & Liao, 2023; Kalinkara & Talan, 2024). Longitudinal findings also suggest that problematic usage correlates with negative psychological outcomes in students (Shannon et al., 2024). Academically, addiction has been shown to affect performance, academic burnout, and procrastination, thereby impairing students' ability for self-regulation and time management (Iskajyan, 2024; Naffisa & Dwatra, 2024; Zare & Zamani Mazdeh, 2024).

Some literature has also linked intensive usage to sleep disturbances—a key mediating factor potentially affecting physical activity and general motivation (Ye et al., 2024; Nakshine et al., 2022). Moreover, school-based studies have associated addiction with declines in psychological well-being (Mahdi, 2024), and others have linked it to changes in eating habits and life satisfaction—indicators that directly relate to lifestyle (Ozenoglu, 2024; Noor et al., 2024). Additionally, related phenomena such as "nomophobia" (the fear of losing phone connectivity) can exacerbate problematic usage among adolescents, further complicating the overall picture (Pérez-Torres, 2024).

Even when considering the topic of recovery from stress and pressure, the literature highlights the importance of restoring balance between mental exhaustion and psychological recovery—a balance often disrupted by poor screen time management (Sonnentag et al., 2021).

At this juncture, the relationship between addiction and physical activity emerges as both sensitive and complex. On one hand, research indicates that excessive engagement with platforms can reduce time allocated for movement and physical exercise and is associated with deteriorating health indicators or negative lifestyle shifts (Rahman & Hashim, 2025). Other findings support the notion that excessive use and its accompanying sedentary behaviour may negatively impact both physical and mental health (Ali et al., 2025; Nakshine et al., 2022). On the other hand, social media can also be harnessed to foster sports engagement by creating motivational communities, challenges, shared experiences, and social modelling—encouraging individuals to adopt healthier habits (Tufail et al., 2025; Wang, 2024; Lev-on, 2025).

This duality is evident within sporting contexts themselves: some studies explore audience engagement with sports club pages and their motives for participation (Marčinko

Trkulja et al., 2024), others examine how athlete presence on social media influences adolescent sports participation and risk-taking behaviours (Frühauf et al., 2025), while others analyse marathon engagement in terms of digital interaction and well-being (Akhmetkazy & Mamyrova, 2025). Conversely, health and sports research warns that certain online content may promote unrealistic physical standards, potentially distorting healthy learning and behaviour, especially among vulnerable groups (Goodyear et al., 2021).

The post-pandemic period has further amplified the urgency of this issue. Bibliometric analyses and global trends have observed shifts in physical activity patterns linked to COVID-19 (Toktaş et al., 2023), while surveys have documented the pandemic's impact on physical activity across diverse contexts (Kontsevaya et al., 2021). In digital learning environments, a link has been observed between social media addiction and physical activity levels among health-related students engaged in remote learning (Topçu et al., 2021). Evidence from behavioural interventions—even for other age groups—suggests that habit change is possible but requires an in-depth understanding of context and motivation (Blackburn et al., 2021). Mental-physical health frameworks consistently show that physical activity is inherently tied to psychological well-being, making any factor that reduces daily movement a crucial focus of study (Martín-Rodríguez et al., 2024).

Furthermore, the rise of digital sports (E-sports) presents a cultural phenomenon consuming significant time and potentially competing with traditional physical activity in young people's lives (Omole, 2024).

At the level of the social and institutional environment, further dimensions emerge. Digital habits are not formed in isolation—they are shaped by family dynamics and broader lifestyle patterns, which in turn influence students' success and everyday behaviours (Sharma & Lalita, 2024). Narrowly focusing on "individual behaviour" without acknowledging structural factors—such as platform design, attention economy, peer comparison pressures, or the pace of university life—can lead to incomplete solutions. This is echoed in behavioural policy debates that contrast individual-level interventions with structural-level reform (Chater, Loewenstein, 2022).

In the sports domain as well, platform influence cannot be disentangled from broader shifts in sports marketing, club branding, social responsibility, and how sports media frame issues like sponsorship and accountability (Manzari, 2024; Kallioupi, Triantafyllou, 2025), not to mention the branding dimensions of high-performance sports (Linsner, 2021). On a cultural level, literature highlights media and social environment differences that may produce varying patterns of influence (Kobiruzzaman et al., 2022).

In Arab health and social discourse, efforts to define digital addiction and explore its risks and coping strategies have grown, reflecting the issue's increasing visibility in public awareness (Al-Khuli, 2025; Qutishat, 2023; Arab 48, 2022; Habib, 2024; NP Istanbul National Hospital Editorial Board, 2025).

In light of the above, a practical research gap becomes clear: the need to understand this relationship within a specific local university context—particularly among media and communication students, who are especially exposed to platforms due to academic and professional interests. This study thus aims to examine how social media addiction intersects with patterns of physical activity in daily life, and whether such addiction results in a tangible decline in physical activity, or if certain uses of platforms can sometimes serve as a motivator for exercise—depending on motivations, content, and the surrounding social environment.

This leads us to the core research question: **What is the impact of social media addiction on daily physical activity among media and communication students at Souk Ahras University?**

Derived Sub-Questions, based on the main research question, the study seeks to address the following sub-questions:

1. To what extent are media and communication students addicted to social media platforms?
2. What is the current state of physical activity in the daily lives of media and communication students?
3. What proposed solutions could help reduce addiction and promote physical activity in daily life?

Research Hypotheses

First: Hypotheses Regarding the Relationships Between Variables (Correlations)

1. There is a statistically significant negative correlation between excessive use of social media and the level of physical activity among individuals.
2. There is no statistically significant correlation between excessive use of social media and alternative or awareness-related behaviours linked to physical activity.
3. There is no statistically significant correlation between the level of physical activity and the adoption of alternative or awareness-related behaviours.

Second: Hypotheses Regarding Differences Based on Demographic Characteristics

According to Gender:

4. There are no statistically significant differences in the degree of excessive use of social media attributable to gender.
5. There are no statistically significant differences in the level of physical activity attributable to gender.
6. There are no statistically significant differences in the adoption of alternative or awareness-related behaviours attributable to gender.

According to Age Group:

7. There are no statistically significant differences in the degree of excessive use of social media attributable to age group.
8. There are no statistically significant differences in the level of physical activity attributable to age group.
9. There are no statistically significant differences in alternative or awareness-related behaviours attributable to age group.

According to Other Social and Economic Variables:

10. There are no statistically significant differences in the degree of excessive use of social media attributable to marital status, educational level, employment status, or place of residence.
11. There are no statistically significant differences in the level of physical activity attributable to marital status, educational level, employment status, or place of residence.
12. There are no statistically significant differences in the adoption of alternative or awareness-related behaviours attributable to marital status, educational level, employment status, or place of residence.

Methodology

Research Design Type

A descriptive analytical design was used in this study to explore the relationship between social media addiction and physical activity, in addition to proposed solutions to enhance exercise and reduce addiction. This design relies on data collection from the participating sample using a customized measurement tool (survey).

Data Collection Methods

Data was collected using an electronic survey specifically designed to measure the three main axes of the study:

- Social Media Addiction

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- Physical Activity in Daily Life
- Proposed Solutions to Reduce Addiction and Enhance Exercise

A three-point Likert scale (Disagree – Neutral – Agree) was used to assess participants' responses, allowing for the determination of their agreement level with the items specified for each axis.

Sample and Participants

The sample consisted of 60 participants who were randomly selected from a target population aged between 18 to 40 years. Both male and female participants from various educational and occupational backgrounds were involved, ensuring the sample represented a diverse range of age, social, and educational categories.

- Sample Size: 60 participants were selected to ensure a good representation of the target population.
- Participant Selection Method: The survey was distributed electronically through social media platforms and local groups.
- Data Collection Period: Data was collected from May 2 to May 13, 2025, ensuring participation from a diverse group within this period.

Analytical Tools Used

Data was analyzed using SPSS software, and the following analytical techniques were applied:

- Tool Reliability (Cronbach's Alpha): To measure the internal consistency of the tool.
- Descriptive Analysis: Including means and standard deviations to understand the distribution of responses.
- Exploratory Factor Analysis (EFA): To examine the structure of the tool and identify the main factors affecting the results.
- ANOVA Test: To test for significant differences between different groups (e.g., gender, age, marital status) in their responses to the various axes.
- t-test (Independent Samples t-test): To test the difference between the means of two independent groups (e.g., comparing male and female responses).

Study Limitations

- Sample Size: May affect the generalizability of the results.
- Tool Type: Which may require improvements to increase its reliability in future studies.
- Geographic and Social Diversity: The sample was selected from local platforms, which may not fully represent the broader demographic diversity.

Results, Interpretation and Discussion

I. Sample Description

1. Distribution of the Sample by Gender

Table 1. Gender Distribution of the Sample

Category	Frequency	Percentage (%)
Female	53	88.33%
Male	7	11.67%
Total	60	100.0%

Source: Prepared by the researchers based on SPSS outputs.

- The table indicates that the vast majority of study participants were female (88.33%),
- Whereas males accounted for only 11.67% of the sample. This suggests a gender imbalance within the sample, which may affect the generalisability of the findings to the wider population.

2. Distribution by Age Group

Table 2. Age Distribution of the Sample

Category	Frequency	Percentage (%)
18–23 years	43	71.67%
24–29 years	10	16.67%
36 years and above	5	8.33%
30–35 years	2	3.33%
Total	60	100.0%

Source: Prepared by the researchers based on SPSS outputs.

- The largest proportion of respondents were aged 18–23, comprising 71.67% of the sample.
- This was followed by the 24–29 age group (16.67%), while the remaining age categories accounted for smaller percentages. This reflects that the sample is predominantly composed of young university students or recent graduates, a group particularly relevant to the study topic.

3. Distribution by Marital Status

Table 3. Marital Status of the Sample

Category	Frequency	Percentage (%)
Single	55	91.67%
Married	5	8.33%
Total	60	100.0%

Source: Prepared by the researchers based on SPSS outputs.

- The overwhelming majority of participants were single (91.67%).
- Only 8.33% were married. This aligns with the youth-dominated nature of the sample as shown in Table 2.

4. Distribution by Employment Status

Table 4. Employment Status of the Sample

Category	Frequency	Percentage (%)
Unemployed	52	86.67%
Government-employed	6	10.0%
Private Sector	2	3.33%
Total	60	100.0%

Source: Prepared by the researchers based on SPSS outputs.

- A large majority (86.67%) of participants were unemployed.
- Only a small proportion were working in the public (10%) or private (3.33%) sectors. This supports the assumption that the sample consists mainly of **students**.

5. Distribution by Educational Level

Table 5. Educational Level of the Sample

Category	Frequency	Percentage (%)
First Year	27	45.0%
Master's Level	24	40.0%
Doctorate	6	10.0%
Third Year	3	5.0%
Total	60	100.0%

Source: Prepared by the researchers based on SPSS outputs.

- The largest percentages were for first-year students (45%) and Master’s students (40%).
- Doctoral students made up 10%, and third-year students 5%. This indicates that participants generally have a relatively high educational level, likely contributing to their awareness and understanding of the study topic.

6. Distribution by Place of Residence

Table 6. Residence of the Sample

Category	Frequency	Percentage (%)
Urban	52	86.67%
Rural	8	13.33%
Total	60	100.0%

Source: Prepared by the researchers based on SPSS outputs.

- Urban residents constituted 86.67% of the sample.
- Only 13.33% were from rural areas. This distribution suggests a predominantly urban sample, which may reflect greater access to sports facilities and digital services, but also points to a limited representation of rural populations.

Axis One. Social Media Addiction

Item	Category	Frequency	Percentage (%)	Mean	Standard Deviation
I feel distressed just thinking about not being able to access social media	Disagree	26	43.33%	1.93	0.90
	Neutral	12	20%		
	Agree	22	36.67%		
I use social media while eating or before sleeping	Disagree	15	25%	2.30	0.85
	Neutral	12	20%		
	Agree	33	55%		
I have had conflicts with others because of my social media use	Disagree	21	35%	2.10	0.90
	Neutral	12	20%		
	Agree	27	45%		
I often think about social media even when I’m not using it	Disagree	16	26.67%	2.22	0.85
	Neutral	15	25%		
	Agree	29	48.33%		

Item	Category	Frequency	Percentage (%)	Mean	Standard Deviation
I frequently use social media without a clear reason	Disagree	15	25%	2.35	0.86
	Neutral	9	15%		
	Agree	36	60%		
I lose track of time while using social media	Disagree	8	13.33%	2.63	0.71
	Neutral	6	10%		
	Agree	46	76.67%		
I have failed to reduce my social media use despite trying	Disagree	24	40%	1.88	0.83
	Neutral	19	31.67%		
	Agree	17	28.33%		

Source: Prepared by the researchers based on SPSS outputs.

Interpretation of Results:

- **"I lose track of time while using social media"**
 - Mean: 2.63 | SD: 0.71
 - Interpretation: Most students report a lack of time awareness while using social media—this is a **strong behavioural indicator of addiction**.
- **"I frequently use social media without a clear reason"**
 - Mean: 2.35 | SD: 0.86
 - Interpretation: Indicates automatic and impulsive use, reflecting habitual, potentially compulsive behaviour.
- **"I use it while eating or before sleeping"**
 - Mean: 2.30 | SD: 0.85
 - Interpretation: Highlights social media’s integration into daily routines, including rest and meal times.
- **"I think about it even when I’m not using it"**
 - Mean: 2.22 | SD: 0.85
 - Interpretation: Suggests ongoing cognitive preoccupation, even in the absence of actual usage.
- **"I’ve had conflicts due to social media use"**
 - Mean: 2.10 | SD: 0.90
 - Interpretation: Reflects the social impact of excessive use, including strained relationships.
- **"I feel distressed just thinking about not being able to access it"**
 - Mean: 1.93 | SD: 0.90
 - Interpretation: Indicates psychological discomfort and anxiety tied to disconnection—a sign of emotional dependency.

The relatively high mean values across multiple items suggest that students **exhibit behavioural and cognitive patterns consistent with digital addiction**, including excessive use, mental preoccupation, and social consequences.

The findings highlight a need for **educational and institutional initiatives** to:

- Promote **digital balance**,

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- Raise awareness of the **risks of compulsive platform use**, and
- Encourage **conscious and healthy engagement** with social media platforms.

Axis Two. Physical Activity in Daily Life

Item	Category	Frequency	Percentage (%)	Mean	Standard Deviation
I engage in physical activity regularly during the week.	Disagree	21	35%	2.00	0.84
	Neutral	18	30%		
	Agree	21	35%		
I am enrolled in private sports clubs.	Disagree	26	43.33%	1.90	0.88
	Neutral	14	23.33%		
	Agree	20	33.33%		
I feel energetic and refreshed after exercising.	Disagree	11	18.33%	2.43	0.79
	Neutral	12	20%		
	Agree	37	61.67%		
I set aside time daily for exercise, regardless of how busy I am.	Disagree	20	33.33%	1.97	0.80
	Neutral	22	36.67%		
	Agree	18	30%		
I prefer walking or cycling over using transport for short distances.	Disagree	19	31.67%	2.23	0.91
	Neutral	8	13.33%		
	Agree	33	55%		
I make an effort to exercise at home or outside.	Disagree	15	25%	2.23	0.83
	Neutral	16	26.67%		
	Agree	29	48.33%		
I consider physical activity an essential part of my lifestyle.	Disagree	10	16.67%	2.42	0.77
	Neutral	15	25%		
	Agree	35	58.33%		
I feel upset when I miss my weekly workout.	Disagree	21	35%	1.98	0.83
	Neutral	19	31.67%		
	Agree	20	33.33%		

Source: Prepared by the researchers based on SPSS outputs.

Interpretation of Results:

- **“I feel energetic and refreshed after exercising”**
 - Mean: 2.43 | SD: 0.79
 - Interpretation: Reflects a clear psychological benefit from physical activity, indicating its value in enhancing mood and vitality.
- **“I consider physical activity an essential part of my lifestyle”**
 - Mean: 2.42 | SD: 0.77
 - Interpretation: Indicates a deep cognitive awareness of the role of exercise as a lifestyle choice, rather than just a routine task.
- **“I prefer walking or cycling for short distances”**
 - Mean: 2.23 | SD: 0.91
 - Interpretation: Shows a tendency toward low-impact physical activity, suggesting health awareness in daily routines.
- **“I make an effort to exercise at home or outside”**
 - Mean: 2.23 | SD: 0.83
 - Interpretation: Suggests flexibility and moderate commitment to staying active in various environments.
- **“I engage in physical activity regularly during the week”**
 - Mean: 2.00 | SD: 0.84
 - Interpretation: Reflects moderate exercise frequency, but implies a lack of strong routine or consistency.
- **“I feel upset when I miss my weekly workout”**
 - Mean: 1.98 | SD: 0.83
 - Interpretation: Indicates emotional connection to exercise for some students, though not strong enough to drive consistent practice.
- **“I set aside time daily for exercise regardless of how busy I am”**
 - Mean: 1.97 | SD: 0.80
 - Interpretation: Reveals weak time commitment, possibly due to academic pressures or lack of personal scheduling.
- **“I am enrolled in private sports clubs”**
 - Mean: 1.90 | SD: 0.88
 - Interpretation: Suggests low club participation, potentially due to cost, limited availability, or low motivation.

While some indicators reflect a positive awareness of the importance of physical activity—especially regarding its psychological benefits—**lower mean scores in other items suggest that this awareness does not always translate into consistent behaviour.**

This **gap between belief and action** highlights the need for:

- **Supportive environments** (e.g., free university sports clubs, mandatory physical education sessions),
- **Awareness campaigns** that frame exercise as part of mental wellbeing and lifestyle,
- **Time-management support for students to help integrate physical activity into daily routines.**

Axis Three. Proposed Solutions to Reduce Addiction and Promote Physical Activity

Item	Category	Frequency	Percentage (%)	Mean	Standard Deviation
Opening free, state-funded sports clubs	Disagree	0	0%	2.97	0.18
	Neutral	2	3.33%		
	Agree	58	96.67%		
Ongoing awareness about the harms of excessive social media use	Disagree	1	1.67%	2.95	0.29
	Neutral	1	1.67%		
	Agree	58	96.67%		
Reducing screen time helps improve my lifestyle	Disagree	0	0%	2.92	0.28
	Neutral	5	8.33%		
	Agree	55	91.67%		
Launching awareness campaigns about the importance of daily exercise	Disagree	1	1.67%	2.92	0.33
	Neutral	3	5%		
	Agree	56	93.33%		
Following fitness or motivational content online instead of only entertainment	Disagree	2	3.33%	2.78	0.49
	Neutral	9	15%		
	Agree	49	81.67%		
Replacing screen time with physical activities	Disagree	3	5%	2.67	0.57
	Neutral	14	23.33%		
	Agree	43	71.67%		
Participating in sports challenges with friends instead of social media	Disagree	6	10%	2.65	0.66
	Neutral	9	15%		
	Agree	45	75%		
Scheduling specific times for social media use only	Disagree	8	13.33%	2.60	0.72
	Neutral	8	13.33%		
	Agree	44	73.33%		

Source: Prepared by the researchers based on SPSS outputs.

Interpretation of Results:

- **Replacing screen time with physical activities**
 - Mean: 2.67 | SD: 0.57
 - Interpretation: Shows strong student agreement with the idea of redirecting time toward physically beneficial activities—indicating high awareness of the need for lifestyle balance.
- **Scheduling specific times for social media use only**
 - Mean: 2.60 | SD: 0.72
 - Interpretation: Reflects willingness to self-regulate, a positive sign of time-awareness and digital self-control.

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- **Following sports or motivational content instead of just entertainment**
 - Mean: 2.58 | SD: 0.74
 - Interpretation: Indicates openness to reshaping digital consumption habits, favouring more beneficial content.
- **Opening free, state-funded sports clubs**
 - Mean: 2.57 | SD: 0.63
 - Interpretation: Reveals strong support for institutional solutions, showing students' expectations of structural support for healthy living.
- **Launching campaigns to promote the importance of daily physical activity**
 - Mean: 2.53 | SD: 0.66
 - Interpretation: Suggests belief in the role of community and media awareness in changing health behaviours.
- **Reducing time on social media improves lifestyle**
 - Mean: 2.50 | SD: 0.73
 - Interpretation: Indicates good understanding of the negative impact of excessive digital use, supporting voluntary time reduction.
- **Participating in sports challenges with friends**
 - Mean: 2.40 | SD: 0.75
 - Interpretation: Moderately accepted, but may require organised social initiatives to increase adoption.
- **Ongoing awareness of the harms of overuse**
 - Mean: 2.35 | SD: 0.81
 - Interpretation: Moderate agreement, possibly indicating a preference for practical solutions (e.g., clubs or routines) over purely informational campaigns.

The **relatively high mean values** across most items indicate that students are both **cognitively aware** and **behaviourally open** to adopting practical solutions for reducing digital addiction and promoting physical activity.

There is clear support for both:

- **Self-directed actions** (e.g., scheduling screen time, replacing digital use with physical activity),
- **And institutional support** (e.g., state-funded sports clubs, targeted awareness campaigns).

Hypothesis Testing

Correlation Test Results Between the Three Scales

Relationship Between Scales	Correlation Coefficient (r)	Interpretation
Excessive Social Media Use × Physical Activity	-0.29	Moderate negative correlation: the more excessive the use, the lower the activity
Excessive Use × Behaviours / Awareness / Support	-0.095	Very weak negative correlation
Physical Activity × Behaviours / Awareness / Support	0.14	Weak positive correlation

Source: Prepared by the researchers based on SPSS outputs.

Interpretation:

- A **clear inverse relationship** exists between excessive social media use and physical activity, aligning with findings from many prior studies.
- Other relationships are **very weak**, indicating that awareness or proposed behaviours **do not significantly influence** social media use or physical activity levels in this sample.

T-Test Results by Gender

Scale	T-Value	P-Value	Interpretation
Excessive Social Media Use	0.26	0.805	No significant difference between males and females
Physical Activity	2.05	0.070	Near-significant difference (males may be more active?)
Behaviours / Awareness / Support	-0.04	0.972	No statistically significant difference

Source: Prepared by the researchers based on SPSS outputs.

Interpretation:

- **Gender** does **not significantly influence** social media use or interaction with awareness/support strategies.
- A **slight trend** suggests males may engage in more physical activity, but this is **not statistically significant** ($p > 0.05$).

ANOVA Results by Age Group

Scale	F-Value	P-Value	Interpretation
Excessive Social Media Use	0.40	0.76	No significant differences between age groups
Physical Activity	0.68	0.57	No statistically significant differences
Behaviours / Awareness / Support	0.69	0.56	No statistically significant differences

Source: Prepared by the researchers based on SPSS outputs.

Interpretation:

- **Age** does **not significantly affect** any of the three measured dimensions (use, activity, or awareness).
- There are **no significant differences** in digital use, physical activity, or response to awareness efforts across age groups.

1. Marital Status

Scale	F	P	Result
Excessive Social Media Use	0.005	0.9432	No statistically significant difference
Physical Activity	0.000	0.9861	No difference
Behaviours / Awareness / Support	0.039	0.8434	No difference

Source: Prepared by the researchers based on SPSS outputs.

Interpretation:
Marital status (single/married) does not significantly affect any of the study variables.

2. Educational Level

Scale	F	P	Result
Excessive Social Media Use	0.447	0.7206	No difference
Physical Activity	0.153	0.9274	No difference
Behaviours / Awareness / Support	0.768	0.5165	No difference

Source: Prepared by the researchers based on SPSS outputs.

Interpretation:
Educational level (e.g. Bachelor's, Master's, Doctorate) shows no significant relationship with digital use, physical activity, or engagement with support strategies.

3. Employment Status

Scale	F	P	Result
Excessive Social Media Use	1.541	0.2230	No significant difference
Physical Activity	0.143	0.8669	No difference
Behaviours / Awareness / Support	0.817	0.4467	No difference

Source: Prepared by the researchers based on SPSS outputs.

Interpretation:
Employment status (student, employed, unemployed) does not significantly impact the outcomes in this study.

4. Place of Residence

Scale	F	P	Result
Excessive Social Media Use	2.683	0.1069	Near-significant difference
Physical Activity	2.841	0.0972	Near-significant difference
Behaviours / Awareness / Support	0.540	0.4655	No difference

Source: Prepared by the researchers based on SPSS outputs.

Interpretation:

- There is a **suggested trend** (not statistically significant) that **place of residence (urban vs. rural)** may influence:
 - Social media usage
 - Level of physical activity
- However, **these differences are not statistically significant** ($p > 0.05$), though they **approach significance** ($p \approx 0.10$), suggesting the need for further investigation.

Study Results and Discussion

The results of this study revealed a statistically significant inverse relationship between excessive use of social media and the level of physical activity among media and communication students. This finding aligns with previous studies such as Nakshine et al. (2022) and Mahdi (2024), which linked excessive screen time with declines in healthy behaviours such as physical activity, as well as with sleep disorders and mental health issues. These results suggest that unregulated digital behaviour may directly affect healthy lifestyle patterns, a conclusion also supported by Blackburn et al. (2021), whose study on physical activity interventions among older adults indicated that reduced physical activity is often driven by psychological and environmental factors associated with digital routines.

In contrast, the study found no statistically significant relationship between excessive social media use and positive alternative or awareness-related behaviours (e.g., following sports content or participating in fitness challenges). This finding is consistent with the work of Goodyear et al. (2021), which showed that engaging with motivational or health-oriented digital content does not necessarily translate into behavioural change. Similarly, Keles et al. (2020) noted that awareness of the risks of digital overuse does not often lead to practical steps to reduce it.

Regarding demographic differences, the results showed no statistically significant differences in social media overuse or physical activity levels related to gender, age, marital status, or educational level. While there was a slight tendency for males to report higher levels of physical activity, this difference did not reach statistical significance—echoing the findings of Topçu et al. (2021), which indicated that the impact of gender on physical activity tends to diminish in shared digital or educational environments.

As for place of residence, the findings indicated near-significant differences ($p \approx 0.10$) in both social media overuse and physical activity levels. Urban residents tended to report higher levels of social media use and lower levels of physical activity. This supports the conclusions of Kontsevaya et al. (2021), who found that urban environ-

ments are associated with more sedentary lifestyles, especially during and after the COVID-19 pandemic.

Finally, the internal consistency analysis revealed that the alternative and awareness-related behaviours scale did not reach a high reliability level ($\alpha < 0.5$). This may indicate conceptual or behavioural inconsistency among the items, suggesting a need for further refinement in future studies to improve scale coherence and reliability.

Conclusion

This study aimed to explore the relationship between excessive social media use and levels of physical activity, while also examining the influence of selected demographic variables and awareness-related behaviours on this relationship. The results revealed a statistically significant inverse correlation between excessive social media use and physical activity, supporting the growing body of evidence that highlights the negative impact of digital overuse on healthy lifestyle patterns. Conversely, awareness-related or alternative behaviours did not show a significant effect or correlation, raising important questions about the actual effectiveness of such practices in changing behaviour, despite participants' awareness of the importance of maintaining digital balance. Furthermore, the study found no statistically significant differences across gender or age groups regarding digital usage or physical activity, reinforcing the hypothesis that the influence of social media has become increasingly universal, transcending traditional population group boundaries and becoming a shared behavioural norm among youth from various backgrounds. Given the methodological limitations of the study—including the sample characteristics, cross-sectional design, and reliance on self-reported data—the findings should be viewed as exploratory. Future research is therefore encouraged to expand the scope by including mediating variables such as motivation and psychological wellbeing, and by employing longitudinal designs to capture how these relationships evolve over time. This study opens avenues for further research into effective digital intervention strategies and the mechanisms by which theoretical awareness of digital risks can be transformed into practical, balanced behaviour, with the aim of achieving sustainable digital and physical wellbeing—especially among young people.

Author Contributions

Conceptualization, O.H.; **Methodology**, O.H.; **Investigation**, O.H.; **Data Collection**, O.H.; **Data Curation**, O.H.; **Formal Analysis**, O.H.; **Results Interpretation**, O.H.; **Resources**, G.S. and H.W.; **Writing – Original Draft**, O.H.; **Writing – Review & Editing**, G.S. and H.W.. All authors have read and agreed to the published version of the manuscript.

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THE INFLUENCE OF SPORTS MARKETING ON CONSUMER BEHAVIOR AND BRAND PERCEPTION IN THE MODERN DIGITAL ENVIRONMENT

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Abstract: The paper analyzes the growing importance of sports marketing as a key factor in the development of modern sports organizations and its influence on consumer behavior and brand perception. The study examines socio-demographic differences in attitudes towards sports, digital promotion, sponsorship, and the role of social media in creating consumer engagement. Data were collected through an online survey of 107 respondents, using a Likert scale to measure attitudes. The results indicate that most respondents recognize marketing as essential for the success of sports organizations, especially through creative campaigns and digital channels. However, traditional sponsorship still plays a significant role in shaping audience trust and engagement. The findings highlight the need for integrating innovative digital marketing strategies to strengthen consumer relations and improve brand visibility in the sports industry.

Keywords: Sports marketing, consumer behavior; sponsorship; digital marketing; and brand perception

Introduction

In contemporary social contexts, sport and physical activity play an increasingly important role, not only as forms of leisure and recreation but also as integral components of modern lifestyles (Gammelsæter et al., 2025). The growing public interest in sport has led certain sports disciplines to occupy a central position within social dynamics and

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the media landscape. One of the key factors contributing to this development is the strong economic dimension of sport, as significant financial resources have been invested over recent decades in sports clubs, competitions, and professional athletes, while the market value of sports organizations and individuals has continuously increased. In such an environment, marketing assumes an increasingly prominent role in sport. Although its fundamental principles do not differ substantially from those applied in manufacturing and service industries, sports marketing possesses specific characteristics that distinguish it as a separate field of study. It encompasses a set of activities aimed at promoting sports products, services, events, and brands, as well as building and maintaining relationships with audiences, fans, and the wider public (Nilsen et al., 2024).

The subject of this paper is the analysis of sports marketing, its core characteristics, significance, and role in contemporary sport, with the aim of highlighting how marketing contributes to the development of sport and the enhancement of its social popularity.

The origins of sports marketing in North America date back to the mid-nineteenth century, when business entities recognized the potential of sport as a means of achieving commercial objectives. During the 1850s and 1860s, companies sought to capitalize on the growing public interest in sporting events in order to improve their business performance. One of the earliest examples is the rowing competition organized between Harvard and Yale universities in 1852, which, in addition to its sporting significance, generated notable economic effects for the local community through increased commercial activity, tourism demand, and revenues.

By the late nineteenth century, the commercialization of baseball had begun, with tobacco companies using images of sports teams and players for promotional purposes (Straume & Gammelsæter, 2025). This practice led to the creation of the first baseball cards, which played a significant role in enhancing brand recognition and consumer loyalty. Although the forms of distribution of these promotional materials have evolved over time, they laid the foundations for the modern market of sports memorabilia and collectible products (Koch et al., 2025).

The further development of sports marketing was strongly linked to technological progress. The introduction of radio broadcasting in the 1930s enabled mass audiences to follow sporting events, while television in the mid-twentieth century further increased the accessibility of sport to the general public. Sporting events became part of popular culture, and athletes evolved into public figures with substantial market potential (Akbar et al., 2025). During the 1960s, sport became increasingly associated with identity and image, which led to the development of sponsorships and long-term marketing partnerships between athletes and companies.

A particularly significant moment in the history of sports marketing was the signing of one of the first sponsorship agreements, when golfer Gene Sarazen began collaborating with Wilson Sports Goods in 1923. Later, in 1928, Coca-Cola became an official sponsor of the Olympic Games, further confirming the global importance of sport as a marketing platform. The development of television broadcasting and the growth in the value of media rights contributed to the emergence of the modern sports industry, whose market value today is measured in billions of dollars.

In contrast to North America, sports marketing in Europe began to develop more intensively only during the 1970s and 1980s, parallel to the processes of professionalization and commercialization of sports clubs. Major sporting events, such as the Olympic Games and international football competitions, became attractive platforms for brand promotion, while television broadcasts enabled access to mass audiences. During this period, organizations such as UEFA initiated cooperation with major sponsors, significantly expanding marketing activities in European sport.

In the Balkan region, the development of sports marketing progressed more slowly and was shaped by political and economic changes during the 1990s. In the period of the former Yugoslavia, the commercial aspect of sport was limited; however, popular sports such as football and basketball gradually opened space for sponsorships and promotional activities. By the late 1990s and early 2000s, sports clubs began to implement more professional marketing strategies, while television rights became one of the key sources of revenue. Today, sports marketing in Europe and the Balkans increasingly follows global trends developed in North America, while retaining certain local specificities arising from regional contexts and cultural patterns (Choi et al., 2025).

The subject of this study is the analysis of the influence of sports marketing, with particular emphasis on the role of social media, on consumer behavior and the perception of sports brands in the contemporary digital environment. The research focuses on examining respondents' attitudes toward the importance of sport in everyday life, the development of social cohesion, the informational and promotional role of social media, as well as the level of digital audience engagement in the context of sport. The primary objective of the research is to determine the extent to which sports marketing—especially digital channels and social media—affects consumer behavior, their level of engagement, and the perception of sports brands. The secondary objectives of the study are to analyze the importance of sport in respondents' everyday lives, examine attitudes toward the contribution of sport to the development of social cohesion, determine the level of sports content consumption on social media, assess respondents' trust in sports-related information on digital platforms, analyze the impact of online promotions and interactions on interest in sports events, and examine the gap between the perceived importance of social media and their practical application in sport. Based on the theo-

retical framework and the subject of the research, the following hypotheses were formulated: **H1:** The majority of respondents perceive sport as having a significant role in their everyday lives. **H2:** Respondents perceive sport as an important factor in the development of social cohesion. **H3:** Social media represent a significant channel for information dissemination and promotion in sport. **H4:** There is a positive perception of the role of social media in sports development, but their practical use (e.g., registration for sports events) remains at a low level. **H5:** The majority of respondents assume a passive role in the digital sports environment, primarily as content consumers rather than active participants in online interactions.

Literature Review

The sports industry continues to grow, and sport has become one of the most significant social activities, driven primarily by economic motives and profit-generating opportunities, followed by its positive impact on individual and public health (Ratković & Dašić, 2018). Branding is no longer limited to physical products, services, or companies, but increasingly encompasses individuals, particularly those who are already publicly recognized due to the nature of their professional activities (Dašić et al., 2021).

Philip Kotler defines marketing as a discipline that integrates scientific and creative aspects in the process of identifying, creating, and delivering value to target markets with the aim of achieving profitability. Through marketing, unmet consumer needs and desires are identified, enabling organizations to develop appropriate value propositions (Bindal & Nulkar, 2022).

The contemporary marketing environment is characterized by high dynamism and complexity, with changes further accelerated by the development of digital technologies and the emergence of the Web 2.0 concept. The Web 2.0 concept, extensively elaborated by Hennig-Thurau and colleagues, is based on user-generated content and a significantly higher level of interaction between the internet and its users. Over the past two decades, the internet has become a key communication tool, enabling global connectivity and information exchange in a manner far more efficient than traditional forms of communication.

Boone and Kurtz introduced the concept of Integrated Marketing Communications (IMC) as a strategic framework that enables organizations to achieve consistent and coordinated communication with potential consumers in target markets. IMC provides a foundation for aligning different elements of the promotional mix, thereby facilitating greater control over communication activities and the development of consumer-oriented messages while simultaneously achieving organizational objectives. Integrated marketing communications also contribute to the creation of effective targeted

campaigns, allowing brands to deliver the right message to the right audience at the right time.

In this context, social media represent a significant tool for strengthening consumer engagement and enhancing an organization's online reputation, as emphasized by Hennig-Thurau and colleagues. The increasing use of social media by consumers creates additional opportunities for boosting sales and expanding audience interest. Malthouse and colleagues emphasize that success on social media does not depend solely on a brand's presence on digital platforms, but also on the development of processes that enable the creation of relevant and engaging content. Through interaction on social networks, blogs, and online communities, organizations can gain valuable insights into consumer perceptions, maintain brand awareness in the public mind, and stimulate engagement in both digital and traditional environments, thereby strengthening long-term consumer loyalty (Al-Shammari et al., 2025).

Social networks function as digital networking platforms that enable users to connect with family members, friends, and professional contacts, as well as to develop direct interpersonal relationships. The growth in their use has significantly transformed the way marketing activities are conducted by enabling new, interactive forms of communication between consumers and brands. Through social media, users can actively participate in content exchange and engage in two-way communication with sports and other brands, which contributes to higher levels of engagement.

Consumer interactions on social media platforms such as Facebook and Instagram have encouraged brands to become more innovative and faster in creating and distributing content. As a result, strong online brand communities have emerged, within which intensive interactions take place among consumers themselves. Social media advertising enables brands to efficiently disseminate information related to their products and services in a manner that is easily accessible and understandable to users, making this form of promotion increasingly prevalent in contemporary marketing practice (Apostu et al., 2025).

In the sports domain, loyal audiences and shared fan interests contribute to the creation of numerous online and offline communities. Fans and consumers of sports brands represent a key target group in sports marketing, originating from diverse social, economic, and educational backgrounds and possessing varied personal characteristics. Research indicates that fans experience sport in a highly personal manner, demonstrating varying levels of identification, passion, and emotional involvement during and after sporting events.

The development of social media has further intensified emotional expression and strengthened fan affiliation by enabling consumers to communicate directly with sports clubs, teams, and athletes, as well as to gain deeper insights into their activities

and personalities. At the same time, social media provide sports organizations with opportunities to actively build and maintain relationships with fans. Although these platforms allow users to publicly express opinions and attitudes—which may occasionally have negative effects on brand image—continuous monitoring and management of online interactions can help sports managers identify opportunities to strengthen consumer relationships and enhance long-term loyalty (Gordi Baghcheh Mishe et al., 2025).

Research suggests that social media can be effectively used as a key marketing tool for managing consumer relationships, primarily through active engagement, which can also contribute to increased audience interest in sporting events. Consumer engagement via digital platforms strengthens the bond between brands and audiences, indirectly influencing viewership growth and fan loyalty. Additionally, some studies indicate that sponsor image can positively influence sports involvement and purchase intention, whereas mere sponsorship awareness does not always produce the same effect and may even reduce the desired impact.

Practical examples from the sports industry confirm the importance of social media in building sports league brands. The growth of the Pro Kabaddi League fan base in 2016, according to reports, was driven not only by television campaigns but also by intensive use of social media for audience communication (Koronios et al., 2016). Marketing teams employed various digital activities, including live event streaming, real-time result updates, and the sharing of information about athletes and sponsorships, thereby creating active online fan communities.

A similar approach is applied by other professional sports leagues, such as the NBA, which use social media to increase game attendance and strengthen their base of loyal fans, particularly in developed markets. Investments in social media communication have become strategically important for sports organizations, as they enable higher levels of interaction and audience engagement in the digital environment. Analysis of data obtained through online metrics helps marketers better understand consumer behavior and design campaigns that can lead to increased attendance at sporting events and revenue growth.

Furthermore, the application of advanced technologies such as live streaming, interactive posts, augmented reality, and chatbots can further enhance the fan experience. The inclusion of athletes in digital campaigns also contributes to greater visibility of sports brands on social media. Social networks are increasingly viewed as powerful factors influencing individual attitudes and behavioral intentions. Digital communication, particularly via platforms such as Twitter, has proven to be an effective means of improving relationships between sports organizations and their audiences.

Empirical findings also confirm that fans' purchase intentions largely depend on their attitudes toward sponsors and their level of sponsorship awareness, while social media communication significantly influences fan engagement within online communities. Contemporary organizations and brands have adapted their communication strategies to achieve more interactive and innovative engagement with consumers. Consequently, social media occupy a distinct position in marketing and promotion, differentiating themselves from traditional communication channels. Their advantages include relatively low costs, opportunities for creative expression, integration of multiple communication channels, timely content distribution, and continuous collection of consumer feedback.

Understanding the motivation of sports fans represents an important component of successful sports marketing, as it enables more precise design of marketing activities aimed at increasing viewership and audience interest. Research highlights that fans' motivational characteristics are crucial for understanding their behavior. In this context, theoretical approaches emphasize the importance of intrinsic and extrinsic motivation, with intrinsically motivated individuals demonstrating higher levels of involvement, focus, and engagement. A high degree of involvement in activities is often associated with more favorable consumer behavior, further confirming the significance of emotional and motivational dimensions in the sports environment.

Today, all these countries are independent states with different demographic, socio-economic, and macro-structural characteristics (Jotanovic et al., 2017).

Research Results

The survey began with a question regarding the respondents' gender, and the results are also presented graphically in order to provide a clearer overview of the sample structure. A total of 107 respondents participated in the study, of whom 51% were female and 49% male. This distribution indicates a relatively balanced gender structure of the sample, with a slight predominance of female respondents.

By comparison, Eurobarometer data from 2019 show that within the European Union, 47% of men regularly engaged in physical activity, compared to 42% of women, indicating the existence of gender differences in overall interest in sport. In certain EU countries, such as Bulgaria, Spain, Greece, and Slovakia, this difference reached up to ten percentage points in favor of men. Although specific statistical data on the gender structure of students in the field of sports marketing are not widely available, the results of this study may suggest a gradual reduction in gender disparities, particularly within the academic and marketing context of sport. In this regard, increased media

visibility and more intensive sponsorship of women's sport may further contribute to greater female interest in the field of sports marketing.

With respect to age structure, the results indicate that the largest proportion of respondents belongs to the youngest age category, up to 24 years (74.5%), which is expected given that the research primarily involved a student population. Respondents aged 25–34 account for 8.5% of the sample, while 10.6% are aged between 35 and 44. The age group 45–54 is represented by 6.4%, whereas respondents older than 55 did not participate in the survey. These findings are consistent with the results of a study conducted among employees in the European Union sports sector, according to which young people aged 15–29 account for 37.4% of the workforce in this sector, which is more than double their share in total employment. These data confirm that the sports sector, including areas such as sports marketing, strongly attracts younger populations, which may be associated with the dynamic nature of the sector, digitalization, and the growing role of social media.

An analysis of respondents' monthly income shows that the largest share of the sample (42.6%) has no personal income, which is expected given the predominance of students. Monthly income of up to RSD 65,000 is reported by 17% of respondents, while 21.3% earn between RSD 65,001 and RSD 120,000. Income exceeding RSD 120,001 is reported by 8.5% of respondents, whereas 10.6% did not declare their income level. This structure indicates heterogeneity in the economic status of respondents and enables the examination of attitudes and behaviors within the context of different levels of purchasing power.

The final sociodemographic question referred to marital status. The majority of respondents are unmarried (76.6%), while 19.1% are married. Divorced respondents account for 4.3% of the sample, whereas there were no widowed participants. One respondent (2.1%) chose not to disclose marital status. This marital status structure further confirms that the sample largely consists of a younger population, which is consistent with the age distribution results. Overall, the sociodemographic profile of respondents indicates the predominance of a younger, economically still partially dependent population, with relatively balanced gender representation. Such a sample structure provides an adequate basis for analyzing attitudes and behaviors in the field of sports marketing, particularly in the context of contemporary trends related to digitalization, media exposure, and youth engagement in the sports industry.

Table 1. Structure in Relation to the Importance of Sport in Everyday Life

Sport plays an important role in my everyday life	
I completely disagree	7%
I disagree	13%
I have no opinion	15%
I agree	42%
I completely agree	23%

Source: authors;

The majority of respondents perceive sport as having an important role in their everyday lives, as 65% of them either agree or strongly agree with this statement. A smaller proportion of respondents (20%) express disagreement, indicating that sport does not represent a significant part of their daily routine. At the same time, 15% of respondents do not hold a clearly defined opinion, which may suggest the existence of a potential target group that could be further motivated through appropriate sports-related and marketing activities.

Table 2. Structure in Relation to the Development of Social Cohesion

I believe that sport contributes to the development of social cohesion	
I completely disagree	4%
I disagree	4%
I have no opinion	7%
I agree	51%
I completely agree	34%

Source: autori;

The research results indicate that the majority of respondents actively follow sports-related content on social media platforms, as 66% either agree or strongly agree with this statement. This finding points to a high level of digital engagement among the audience and confirms the importance of social media as a key channel of sports marketing. At the same time, 25.5% of respondents do not regularly follow sports content via these platforms, while 8.5% have not formed a clear opinion, suggesting potential for additional engagement through targeted digital activities.

The results further show that trust in sports-related information on digital platforms is moderate. Specifically, 48.9% of respondents agree that they trust such content, while

36.2% remain undecided and 14.9% express distrust. This indicates that although digital channels exert influence, their effectiveness largely depends on the credibility of information sources. Online promotions increase interest in sports events for 46.8% of respondents, whereas 27.7% are neutral and 25.6% do not perceive such an effect, highlighting the need for improved design and more precise targeting of digital campaigns.

Secondary data suggest that social media have a particularly strong influence on younger age groups, as a significant proportion of young people follow athletes and actively consume sports content through digital platforms. Previous studies also indicate that intensive use of social media can influence fan consumer behavior, especially by increasing impulsive purchasing and engagement. However, the findings of the present primary research show that the influence of comments and reactions on social media on opinions about sports events is not pronounced among most respondents. As many as 46.8% disagree with the statement that comments affect their opinions, 27.7% are undecided, and only 25.6% report being influenced. These results suggest that although social media play an important role in promotion and communication, their direct impact on attitude formation toward sports events depends on individual audience characteristics and levels of trust in online content.

The results also demonstrate that most respondents do not actively participate in online sports-related discussions. A total of 68% of respondents (34% "strongly disagree" and 34% "disagree") state that they do not engage in such activities, indicating a low level of interactive audience engagement. An additional 21.3% have no clear opinion, while only 10.7% report participating in online sports discussions. These findings are consistent with earlier research suggesting that most sports fans adopt a passive role on social media, primarily consuming content rather than actively commenting or participating in discussions (Hambrick & Mahoney, 2011). The results imply that sports organizations should develop more interactive and inclusive digital strategies to encourage active participation and stronger fan engagement.

Overall, the survey results indicate that respondents largely remain passive within the digital sports environment. Most do not actively engage in online discussions, and the influence of social media comments and reactions on opinion formation about sports events is assessed as moderate. Although social media offer numerous opportunities for interaction and information sharing, they are still insufficiently utilized as channels for active participation and attitude formation in sport.

With regard to registering for sports events via social media or applications, the results reveal a low level of adoption of these tools. As many as 68.1% of respondents disagree with this statement, 17% are undecided, while only 10.6% agree and 6.4% strongly agree that they use digital platforms for event registration. This indicates substantial

room for improving both the functionality and promotion of digital channels in the organization and marketing of sports events.

The findings reveal a clear discrepancy between the perceived importance of social media and their actual practical use in the sports context. Although most respondents do not use social media and applications to register for sports events, perceptions of their role in sports development are highly positive. A total of 78.8% of respondents (51.1% agree and 27.7% strongly agree) believe that social media significantly contribute to the development of sport.

These results are consistent with existing research emphasizing that social media enhance communication between sports organizations and audiences, increase the visibility of sports activities, and encourage broader participation in sport, particularly within “sport for all” initiatives. In addition, the findings highlight the strong informational role of social media, as 80.8% of respondents reported discovering athletes and teams they had not previously known through these platforms. Only 10.6% disagreed with this statement, while 8.5% had no clear opinion.

Taken as a whole, the results indicate that social media represent an important instrument for the promotion and development of sport; however, their potential in terms of direct audience participation and conversion into concrete activities—such as event registration—has not yet been fully exploited. Social media demonstrate a strong informational and promotional function in contemporary sport, but further strategic efforts are needed to transform passive consumption into active engagement.

Discussion of Results

The research results indicate that, for the majority of respondents, sport represents a significant segment of everyday life, confirming its social and cultural relevance. The high level of agreement with the statement that sport contributes to the development of social cohesion suggests that sport goes beyond the framework of physical activity and constitutes an important social phenomenon that connects individuals and communities.

The analysis of results related to social media shows that most respondents actively follow sports-related content through digital platforms, which is consistent with findings from previous studies highlighting the growing importance of digital sports marketing. However, trust in sports-related information on social media is assessed as moderate, emphasizing the importance of source credibility and transparency in communication.

These findings confirm the results reported by Hambrick and Mahoney (2011), according to which the majority of sports fans assume the role of passive observers in the digital environment. At the same time, the results indicate a significant untapped potential for the development of more interactive and personalized digital strategies in sports marketing.

Conclusions

Based on the conducted research, it can be concluded that sports marketing, particularly through social media, plays an important role in contemporary sport, primarily as a channel for information dissemination, promotion, and relationship building with audiences. Respondents largely recognize the importance of sport in both personal and social contexts, as well as the contribution of social media to sports development.

However, the results indicate that the level of active digital audience engagement is relatively low, pointing to the existence of a gap between the potential of digital platforms and their actual use. This suggests that sports organizations and marketing stakeholders need to invest additional efforts in developing strategies that encourage interaction, trust, and the conversion of audiences from passive observers into active participants.

The main limitations of this study relate to the sample size and the predominance of a younger, student population, the use of only one data collection method (online survey), the subjective nature of self-reported attitudes, and the geographical and cultural limitations of the sample. Future research could include a larger and more diverse sample of respondents, apply a mixed methodological approach combining quantitative and qualitative methods, analyze differences across various sports and leagues, examine the role of influencers and athletes in digital sports marketing, and focus on mechanisms that stimulate active digital audience participation.

The evaluation of research hypotheses confirms the study's key findings. The majority of respondents perceive sport as having an important role in their everyday lives, as 65% agree or strongly agree with this statement, while only 20% express disagreement. These results clearly confirm a predominantly positive perception of the importance of sport, thereby confirming Hypothesis H1. Furthermore, respondents perceive sport as an important factor in the development of social cohesion, with 85% agreeing or strongly agreeing that sport contributes to social cohesion, which confirms Hypothesis H2. Social media are also confirmed as a significant channel for information and promotion in sport. The results show that 66% of respondents actively follow sports-related content on social media, while 80.8% report discovering athletes and teams they had not previously known through these platforms. These findings indicate a

pronounced informational and promotional role of social media, confirming Hypothesis H3. At the same time, the results reveal a positive perception of the role of social media in sports development, alongside a low level of practical usage. Although 78.8% of respondents believe that social media significantly contribute to the development of sport, as many as 68.1% do not use social media or applications to register for sports events. This clear discrepancy between perception and practice confirms Hypothesis H4. Finally, the findings indicate that the majority of respondents assume a passive role in the digital sports environment. A total of 68% do not actively participate in online sports discussions, while the influence of comments and reactions on social media on the formation of opinions about sports events is assessed as moderate. These results demonstrate the dominance of passive content consumption, thereby confirming Hypothesis H5.

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PERSONALITY TRAITS OF ESPORTS PLAYERS

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Abstract: The fastest growing segment of sports is esports, or electronic sports, where players compete by playing video games. This paper presents a narrative review of the literature with the aim of systematizing the literature on personality traits of esports players. Research shows that esports players have lower levels of extraversion and agreeableness compared to athletes, which is explained by the lower social interaction in esports. Differences in agreeableness can be explained by the less structured environment in esports, where there is no developed system of clubs and coaches as in traditional sports. Compared to athletes, esports players show higher levels of neuroticism. Athletes have more self-confidence and a positive physical and emotional self-image, while esports players spend more time in the virtual world. Lower-ranked esports players in competitions had more pronounced agreeableness, extraversion, and lower openness to new experiences. In traditional sports, the results were different. Extraversion and agreeableness are correlated with high performance in traditional sports. Narcissism (Dark personality traits) had a positive effect on player success as measured by players' peak rankings potentially through better emotional regulation while playing.

Keywords: esports, personality traits, esports players

Introduction

The fastest growing segment of sports is esports, or electronic sports, where players compete by playing video games. Esports has become a global phenomenon thanks to the development of the internet, the availability of technology, especially computers and mobile phones needed to play video games. Since esports is a lucrative industry,

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investors from all over the world are trying to invest some of their capital in the rapidly expanding trend of playing video games. Definitions of esports are few and not precise enough (Bányai, Griffiths, Király, Demetrovics, 2019, Steinkuehler, 2020). Esports commonly refer to an organized and competitive approach to playing computer games. Esports are organized and global competitions where success relies on precise movements and advanced cognitive skills (Guttmann, 2004, Pedraza-Ramirez, Musculus, Raab, Laborde, 2020). A form of sports where the primary aspects of the sport are facilitated by electronic systems; the input of players and teams as well as the output of the esports system are mediated by human-computer interfaces. With over 3 billion video gamers worldwide (compared to less than 2 billion in 2015), esports is expanding incredibly quickly (Behnke, Gross, Kaczmarek, 2022). Even as esports becomes an increasingly global phenomenon, the scientific community still knows very little about it.

Electronic sports are played mainly on computers, consoles, or even mobile devices, where players compete, individually or in teams of usually 2-10 people, with opponents sitting on the other side of a virtual world where everything happens. The video games most associated with esports are League of Legends, Dota 2, Overwatch, CS:GO, Paladins, Smite, Fortnite, PUBG, and Call of Duty. Esports video games generally have a specific set of rules and require the development of muscle memory for many maneuvers to be performed in the game, all of which require years of intensive training/play (Himmelstein, Liu, Shapiro, 2017). Each game has its own community with specific norms, rules, aesthetics, and identities.

Esports is typically categorized as an intellectual sport. Still, it also demands reaction speed, coordination of movements and motor abilities. A collection of required skills typically hinges on the game's genre. Card games such as Hearthstone are purely intellectual. Real-Time Strategies require effective strategic thinking, high levels of automatism and fast reactions to a changing situation on the map. First-Person Shooters are mainly about motor skills and reaction regarding Player vs Player combat, though, fight strategy and solid communication in the team are also very important.

To remain competitive in a rapidly changing eSports industry an average athlete spends 5–6 hours daily on gaming, although some players can dedicate up to 12–14 hours a day playing game matches. Nonetheless, playing the game is not the sole responsibility of professional esports players. They take part in team meetings with the coach, develop new strategies, watch replays to study their opponents and to find their own weak points, communicate with the fans and press. Akin to traditional sport, esports demands not only physical abilities which can be evaluated using sensing technologies, but also particular psychological traits. A pro-player is often exposed to stressful situations, e.g. competitions with a huge number of observers, critical in-game situations and lengthy, tedious training sessions. Indeed, rapidly changing con-

text and ever new game situations imply strict requirements on decision-making within a short time period. Hence, methods from traditional sport cannot be directly adapted to esports. All these points may impact the performance, thus, it is very important to keep the athletes in a good mental condition. Lately, esports teams have begun to collaborate with psychologists to assist the players to cope with the psychological difficulties (Smith, Birch, Bright, 2019).

Since professional esports are demanding, it is essential to take care of the mental and physical health of players (Trotter, Coulter, Davis, Poulus, Polman, 2020, Trotter, Coulter, Poulus, Polman, 2021). Due to the high demands, they may experience burnout, drop out of esports, and develop health problems including pain in various parts of the body and sleep disorders (Peracchia, Curcio, 2018, DiFrancisco-Donoghue, Balentine, Schmidt, Zwibel, 2019, Smith, Birch, Bright, 2019), which are also common among traditional sports professionals (Rice et al., 2016).

Participants develop connections with people around the world through digital platforms, forming virtual teams and communities that encourage collaboration and understanding of cultural differences. These activities also promote values like teamwork and sportsmanship, which positively influence personal and social development (Dašić, Vitković, Ilijevska Kostadinović, 2024).

Games are often organized as amateur or professional national or international competitions that involve sponsors, organizers and spectators. The marketing and promotional potential of e-sports is gaining importance with the emergence of social networks and streaming platforms such as 'Twitch' (Ratković, Pečić, 2024). Video games were previously played exclusively for fun and relaxation, and the only people who watched them were friends, family and siblings. However, as time went on, the popularity and reach of video games have grown. Millions of fans now watch e-sports and cheer for their favorite teams or players.

The academic exploration of esports remains relatively limited, with available data on the subject being sparse. This study employs a descriptive-qualitative methodology. This paper presents a narrative review of the literature with the aim of systematizing the findings of previous empirical studies that have investigated on the psychological characteristics of esports players such as their personality traits, motivation and emotions. A literature search was conducted on Google Scholar, Scopus and PsycINFO databases, using the keywords: "esports", "personality traits of esports players", "HE-XACO model of personality of esports players", "Big five model of personality of esports players", "Dark personality traits of esports players". Empirical studies published between 2010 and 2024 were taken into account, which examined the personality traits of esports players. Papers (three papers) that exclusively deal with technical, physiological or sociological aspects without a psychological dimension, review papers,

diploma papers, papers that were not available in their entirety (only the abstract is available) were excluded from the review. Considering that this is a newer field of research, studies that had a small number of respondents, studies that did not measure the constructs with questionnaires, but that used interviews as a way of collecting data, were also taken into account. The found studies were analyzed qualitatively with a focus on identifying dominant psychological traits of esports players.

Big five personality traits of esports players

Personality represents a comprehensive whole, the integration of an individual's traits into a relatively stable and unified organization that determines his or her activity in a changing environment, and is shaped and changed under the influence of that activity (Petz, 2005). There are many theories that explain the structure and development of personality in different ways, but there is agreement that personality significantly influences human behavior.

In the last two decades of the twentieth century, the "Big Five" model has developed into a dominant theoretical and research paradigm when it comes to the structure of basic personality traits (Costa & McCrae, 2008; Goldberg, 1990; John, Naumann, & Soto, 2008). According to this model, personality is structured by five basic, mutually orthogonal traits: neuroticism, extraversion, openness, agreeableness, and conscientiousness. These five traits have been shown to be successful predictors of various types of behavior (Soto & Jackson, 2013)

Athletes have been extensively studied in contrast to esports players (Piepiora, 2020, Allen, Laborde, 2014). Athletes are less neurotic, more open to new experiences, more extroverted and more conscientious than non-athletes (Eagleton, McKelvie, De Man, 2007). In study (Zubić, Milenković, 2024) which examined personality trait differences between athletes and non-athletes according to the HEXACO model, results showed that athletes have higher extraversion and conscientiousness, and lower emotionality and openness to new experiences than non-athletes. There are no statistically significant differences between athletes and non-athletes in honesty and agreeableness. Athletes also differ from each other, for example, team athletes tend to be more open to new experiences and less conscientious than individual athletes (Nia, Besharat, 2010, Allen, Greenlees, Jones, 2011). Compared to athletes who engage in low-risk sports, extreme sports participants are less hardworking and more extroverted (Rhea, Martin, 2010, Castanier, Le Scanff, Woodman, 2010). Martial arts athletes are less neurotic than team sports athletes (Bojanić, Nedeljković, Šakan, Mitić, Milovanović, Drid, 2019). Compared to athletes at lower levels of competition, elite athletes are less neurotic and more conscientious (Piepiora, 2021a, 2021b). Research examining

differences between esports players and non-players has found that esports players were less neurotic and conscientious than non-players (Braun, Stopfer, Müller, Beutel, Egloff, 2016, Kim, Nam, Keum, 2022).

Research (Behnke, Stefanczyk, Zurek, Sorokowski, 2023) found differences in personality traits between esports players and athletes. It was collected cross-sectional data on esports players' (n = 416) and athletes' (n = 452) personalities and performance characteristics. It was assessed personality with the Ten Item Personality Inventory (TIPI-PL) personality questionnaire based on the Big Five personality model. The results showed that esports players were less extroverted and conscientious than athletes. The less social engagement in esports compared to standard sports may account for the differences in extroversion. People who prefer to interact with others indirectly may be more open to participating in esports. In addition, extroverted individuals spend less time sitting at home in their free time and are more likely to be physically active (Ebstrup, Aadahl, Eplov, Pisinger, Jorgensen, 2013, Stephan, Boiché, Canada, Terracciano, 2014). Differences in conscientiousness may be a consequence of engaging in a specific form of activity (Allen, Laborde, 2014). Especially at the beginning of an esports career, esports is a less planned and structured activity than sports. Traditional sports have created a network of clubs and venues where young athletes can develop their skills under the guidance of professional coaches. This network is only just developing in esports, and the nature of esports competitions is also less time-limited. Esports athletes practice on their own and are not required to adhere to a training regimen in a club. It is also important to note that esports players engage in video games differently than regular players: they spend more time playing, are more competitive, and are motivated by developing their skills (Bányai, Griffiths, Demetrovics, Király, 2019).

A study (Šunje, Vardo, 2023) in Bosnia and Herzegovina examined the differences in personality traits between esports players and athletes. The research has been conducted on 67 examinees, 30 of whom are semi-professional or professional esports players who participate in state-level and regional-level competitions. The remaining 37 examinees are the highest-ranked athletes in Bosnia and Herzegovina. The Big Five Personality Inventory - The BFI (the Big Five Inventory) is an instrument that enables the (self) assessment of the big five personality dimensions. The results showed that esports players have less pronounced extraversion and agreeableness and higher neuroticism compared to athletes. No statistically significant differences were found on the openness dimension. In essence, extraversion is an essential component of every athlete, along with emotional stability. In esports players, these characteristics are not necessary for optimal performance, since they are at the other end of the extraversion-introversion continuum. Neuroticism in esports players may be related to their excessive use of computers and the Internet, which we know do not have very positive

consequences for any individual. Cooperativeness and conscientiousness are one component of sports that they should possess, in terms of cooperation, compromise, sacrifice in sports, as well as order and discipline, while for esports players these are not key components. An esports player may focus only on themselves, not build understanding and relationships outside the virtual world, and replace conscious efforts for order and discipline with somewhat unconscious and compulsive computer use. Also, the results did not show a statistically significant difference in cognitive and somatic anxiety between esports players and athletes, as each of them views the upcoming competition as important from their own point of view. Interestingly, there is a statistically significant difference between esports players and athletes in the dimension of self-confidence. In general, athletes have a more positive physical, emotional and social self-image, which may be associated with greater self-confidence than esports players.

Study (Matuszewski, Dobrowolski, Zawadzki, 2020) focuses on the relationship between personality traits, derived from the Big Five model, and performance in the competitive electronic sports (eSports) video game League of Legends (LoL). Data were gathered from 206 LoL players of various in-game success levels, as measured by their position within the competitive hierarchy (division) of the video game. The NEO-Five Factor Inventory (NEO-FFI) questionnaire was used to measure personality traits within the gathered sample, which was divided into two groups of higher and lower ranked players. It was found that achievements in esports are correlated with personality traits based on the Big Five model (extraversion, agreeableness, and openness to new experiences). Lower-ranked players in competitions had more pronounced agreeableness, extraversion, and lower openness to new experiences. In traditional sports, the results were different. Extraversion (Eagleton, McKelvie, de Man, 2007) and agreeableness (Nia, Besharat, 2010) are correlated with high performance in traditional sports. Esports players who spend more time practicing skills and progressing in video games have less time to interact with others, especially in the real world. Since many of them sleep less than 4 hours a day, esports players report a lack of sleep and time for social activities (Peracchia, Curcio, 2018). It may be possible that players who are highly focused on themselves during the game and do everything to “carry the game” on their own are more successful. Despite the fact that LoL is a team game, teams, and hence coplayers, change with every ranking game. This means that there is a high degree of variance in terms of team performance from match to match, which may mean that a self-centered approach to the game is a good strategy to maximize ranking in the long-term. In addition, there are differences in openness to new experiences between high-ranking players and those who are less successful. One possible explanation is that video games require adaptability and new patterns of play that

change every month. There was no difference in neuroticism or conscientiousness between high-ranking players and those who are less successful.

In study (Pereira, da Silva Nunes, Pires, 2022), it was investigated the association between measurements of Big Five Factor and coping strategies in professional League of Legends (LOL) players. 138 people participated, aged between 16 and 37 years ($M=21.24$, $SD=3.77$), who answered the Big Five Inventory and Athletic Coping Skills Inventory-28. Correlations were made between the scores of these instruments, and regression of coping skills in personality factors. Neuroticism and Conscientiousness are associated with the use of coping skills, which suggests that personality is a relevant variable in understanding the use of adaptative strategies to deal with adversity while playing LOL.

HEXACO personality traits of esports players

The best-known operationalization of this revised lexical model of personality is the HEXACO structure (Ashton, Lee, & De Vries, 2014; Lee & Ashton, 2012; Lee & Ashton, 2008), whose name is an acronym for the dimensions represented in it: honesty (H-Honesty/Humility), emotionality (E-Emotionality), extraversion (X-eXtraversion), agreeableness (A-Agreeableness), conscientiousness (C-Conscientiousness) and Openness (O-Openness).

The study (Singh, Sharma, Arya, 2022), intended to explore the psychosocial profile of Esports players and traditional sports players. The study sample consisted of 140 participants (73 esports & 67 sports). In this cross-sectional study, we recruited participants from Esports cafes, Youth Sports centers & Universities and collected their sociodemographic variables and psychosocial profile with Mini-International Personality Pool 6, SelfConcept Clarity Scale, UCLA Loneliness Scale Version 3, Satisfaction with Life Scale, and Depression, Anxiety and Stress Scale-21. No statistically significant difference was found between esports players and athletes in anxiety, stress, loneliness, life satisfaction, and depression. This study used the HEXACO personality model, the only differences between these subsamples were in the expression of honesty and openness to new experiences. Namely, it was found that esports players have a higher expression of honesty and openness to new experiences than athletes. The personality trait of openness is an indicator of the level of imaginativeness and creativity while honesty/humility relates to fairness, mutual aid and non-aggression. Individuals exhibiting higher scores on openness tend to engage in novel idea related tasks. Online games present challenges to the players where they are expected to make swift decisions and often think outside the box to proceed forward with the gameplay, thus esports tend to favor the individuals who are imaginative and creative, unlike sports

where physical traits are the most prominent aspect determining performance. Further, our study reported higher scores on honesty in esports players. Higher scores in esports players as compared to sports players tend to indicate that esports players believed in the idea of fairness, mutual aid and non-aggression. As esports require frequent social engagements and team play, this comes unsurprisingly that they tend to exhibit traits of mutual help and fairness.

This research (Abbasi, Nisar, Rehman, Ting, 2020) empirically validates the role of specific HEXACO personality factors that foster consumer engagement in electronic sports users. HEXACO 60 items and consumer video game engagement scales were used for data collection. Data were collected from esports users, with 250 valid responses. The results based on the structural model indicate that openness to experience, extraversion, agreeableness, and conscientiousness positively predict consumer engagement in esports. The research model carries the explanatory capacity for consumer engagement in esports concerning personality dimensions as indicated by the HEXACO model. It highlights the potential benefits of such research especially to marketers who could potentially employ personality modeling to develop tailored strategies to increase consumer engagement in video games.

Dark Tetrad traits and esports players

Dark personality traits measure aspects of personality that are often overlooked by the five-factor model. Dark Tetrad refer to a collection of socially aversive personality characteristics. These include Machiavellianism, narcissism, psychopathy, and sadism.

In study (Horne, Furnham, Grover, 2023) attempts to quantify this relationship of behavior and ranking, using trait Narcissism and five-factor model personality traits to measure these tendencies in behavior. Four hundred and forty-four players were recruited across paid and unpaid sampling. It was used The Narcissistic Personality Inventory-40, The Big Five Inventory 2 and measure of Peak Ranking. Narcissism had a positive effect on player success in LoL's temporary teams, as measured by players' peak rankings. No five-factor model personality trait had any significant association with peak ranking. Our results could mean that Narcissism has a minor beneficial role in emotional regulation but generally suggest that personality traits have a minor to negligible effect on long-term LoL ranking. The temporary team environments within LoL games may encourage players to ignore toxic comments and persevere, and if negative communication does escalate, it may just make a losing game a loss faster and allow players to play more games over time. As a result, the effects of positive team communication may only be useful in games that are otherwise close. However, as personality traits only predicted 2.8% of variance in LoL ranking, it is likely that

player skill and other contextual factors have a larger influence on performance. The nonsignificant effects of personality traits could be due to the superficial social environment within LoL games. Teams are only temporary in LoL, lasting just one game of typically 25–45 min. Within this period, players' communication is anonymous and only permitted through text or nonverbal signals. Therefore, differences in player communication may be minimized and more negative, narcissistic behavior may be more easily ignored by other teammates. Additionally, players may be encouraged to promote a positive social environment for the short duration of one game. Players on the same team share a common goal and experience the same consequences from their team's performance. Therefore, players may still be incentivized to facilitate a positive social environment within games and coordinate with their teammates. Equally, teammates may also tolerate antisocial behavior of their teammates that may arise from narcissistic traits for the duration of the game to maximize their own chances of winning. In this way, the performance effects of personality traits relating to social behavior on social behavior within LoL games, such as Extraversion and Agreeableness, may be minimized.

Conclusions

Esports is growing exponentially year after year, and players require psychological skills very similar to those required of traditional athletes.

This paper presents a narrative review of the literature with the aim of systematizing the literature on personality traits of esports players. Research shows that esports players have lower levels of extraversion and agreeableness and higher levels of neuroticism compared to athletes. Lower-ranked esports players in competitions had more pronounced agreeableness, extraversion, and lower openness to new experiences. In traditional sports, the results were different. Extraversion and agreeableness are correlated with high performance in traditional sports. Narcissism had a positive effect on player success as measured by players' peak rankings potentially through better emotional regulation while playing.

Previous research on the personality of esports players faces a number of methodological and theoretical limitations that reduce the reliability and generalizability of the findings. First, most studies use small sample sizes, often limited to specific countries, genders, or specific games, which reduces the representativeness and applicability of conclusions to the wider population of esports players. Also, research is mostly transferal, which makes it difficult to monitor personality changes over time and assess cause-and-effect relationships. In many cases, only self-reports through questionnaires are used, without triangulation of data by other methods (eg interviews, observations

or behavioral data), which may lead to subjective biases. In addition, the distinction between amateur and professional players is often not made, and differences in video game genres that can significantly shape the psychological profile of players are overlooked. The lack of a theoretical framework that is specifically adapted to the digital context is also an obstacle to the interpretation of the results. Finally, many studies ignore the broader social and cultural context of esports, including the influence of online communities, streaming, and digital audiences, which further limits understanding of the complex dynamics between individuals and the environment in which esports players operate.

Future directions of esports personality research should be directed towards a deeper understanding of the psychological mechanisms that contribute to their success, adaptation and well-being in a unique digital context. First, longitudinal follow-up of esports athletes is recommended to determine whether personality changes over the course of a career as a consequence of intense practice and competition. Also, it is important to investigate how specific games (eg, team vs. solo, strategy vs. shooter) shape the psychological profiles of players. It is necessary to pay attention to the differences between amateurs and professionals, because their lifestyle, motivation and pressure differ significantly. Additionally, research should include qualitative methods (eg interviews) in order to understand the inner experiences of esports players - their perception of identity, stress, self-confidence and attitude towards the audience. An interdisciplinary approach, including neuropsychology, sociology, and media studies, could deepen insights into the connection between the digital environment and personality development. Special attention should also be paid to the influence of digital culture, social networks and virtual interaction on the emotional stability and social connection of esports players. Finally, it would be useful to examine personality differences between esports players of different cultures and genders, in order to create a comprehensive and culturally sensitive model of personality in esports. These directions can contribute to better support for the esports community through the development of educational and mental health interventions adapted to their specific needs.

In light of the important psychological factors involved in esports, sports psychologists should play an important role in esports clubs. For example, it would be desirable for sports psychologists to train players in teamwork skills, communication skills, motivation-enhancing techniques, emotion management techniques, skills necessary for a successful professional sports career. It would be important for psychologists to include preventive treatments in their work with esports players to avoid potential negative health effects due to intensive computer and joystick use (e.g. sleep disorders, neck and back pain) (Difranco-Donoghue, Balentine, Schmidt, Zwibel, 2019, Pereira, Brito, Figueiredo, Verhagen, 2019). In short, every esports team should include a psychologist as a key member.

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THE METAVERSE AND THE FUTURE OF SPORTS MARKETING: NEW FRONTIERS FOR DIGITAL ENTREPRENEURS

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Abstract: The rapid development of immersive digital environments, collectively referred to as the metaverse, is transforming the global sports industry and redefining how sports are experienced, marketed, and monetized. As digital spaces become more interactive, participatory, and decentralized, they open up unprecedented opportunities for digital entrepreneurship and innovation in sports marketing. This paper explores the dynamic intersection of these two domains, indicating that metaverse-based ecosystems enable new forms of fan engagement, branding, and value creation. By integrating insights from recent academic literature and practical examples, the study examines how emerging technologies are reshaping traditional sports marketing models and expanding the entrepreneurial landscape.

The paper highlights how digital entrepreneurs and sport organizations use metaverse platforms to develop immersive fan experiences, launch virtual merchandise and collectibles, organize hybrid sporting events, and create decentralized digital communities. These innovations are driving a fundamental shift from passive sports consumption to active co-creation of value, where fans become participants, collaborators, and even investors. Moreover, the research identifies key strategic implications for stakeholders seeking to position themselves competitively in this evolving environment. While the metaverse presents significant benefits, including enhanced personalization, global reach, and new revenue streams, it also introduces major challenges related to data privacy, technological accessibility, interoperability, and ethical considerations. By addressing these opportunities and constraints, the paper contributes to understanding how the metaverse can serve as a new frontier for innovation, entrepreneurship, and marketing transformation in the sports industry. The findings underline the need for an adaptive, forward-thinking approach that integrates creativity, technology, and consumer insight to ensure sustainable growth in the digital sports economy.

Keywords: Metaverse, Sports Marketing, Digital Entrepreneurship, Fan Engagement, SportTech

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Introduction

The global sports industry is undergoing profound digital transformation driven by technological convergence, shifting consumer expectations, and the increasing demand for immersive, interactive, and community based experiences. Traditional sports marketing models, historically grounded in live event attendance, scheduled broadcasting, sponsorships, and mass advertising, are evolving toward digitally mediated ecosystems that prioritize personalization, experiential engagement, and consumer agency. Among the most disruptive developments shaping this transformation is the metaverse, a network of persistent virtual environments where users interact in real time, create digital content, maintain virtual identities, and participate in decentralized economies.

The metaverse represents more than a technological extension of the digital world. It has emerged as a socio economic environment in which sports consumption intersects with gaming, simulation, virtual socialization, and digital asset ownership. These environments enable sports organizations, brands, and athletes to interact with global audiences without the limitations of physical presence, offering new pathways for fan engagement, content monetization, and community led value creation.

Simultaneously, the metaverse has accelerated the rise of a new class of market actors: digital entrepreneurs who build ventures within immersive and decentralized ecosystems. These entrepreneurs develop virtual goods, design interactive platforms, activate digital communities, and establish new forms of revenue generation through digital ownership models, token enabled fan economies, and programmatic co creation of value. Unlike traditional sports marketers who communicate to audiences, digital entrepreneurs foster participatory ecosystems in which fans function as collaborators, producers, stakeholders, and co investors in brand ecosystems.

Despite the rapid commercialization of the metaverse in sports contexts, academic research has not yet fully examined the convergence of digital entrepreneurship, sports marketing, and immersive virtual economies. Existing studies typically address issues of technology adoption, digital fandom, or sport commercialization, but limited attention has been given to how entrepreneurial actors create value, structure business models, and scale market opportunities in decentralized and interoperable environments. Important questions remain about the mechanisms through which entrepreneurial innovation reshapes sports marketing, the strategic logics that govern competition in virtual sports ecosystems, and the challenges that influence sustainable commercialization.

This paper addresses these gaps by exploring the metaverse as an emerging entrepreneurial and marketing environment in the sports industry. It examines (1) how immersive digital environments transform sports marketing dynamics, (2) what entrepreneurial opportunities arise from virtual and token enabled sports engagement, and

(3) which strategic, ethical, and structural challenges influence competitiveness in the digital sports economy. By integrating theoretical perspectives and contemporary industry developments, the study contributes to a broader understanding of how value is created, shared, and scaled within digitally native sports ecosystems.

Literature Review: The Metaverse in the Sport Industry

From an etymological perspective, the term metaverse is a compound formed from the Greek prefix meta and the word universe. In Greek, the prefix meta (μετά) originally means “after,” “beyond,” or “with,” and it has been historically used to indicate transcendence, transformation, or a higher-order relationship to something else. In philosophical contexts, meta appears in words such as metaphysics, denoting inquiry that goes beyond the physical or material world.

The concept “metaverse” was first introduced by Neal Stephenson in his 1992 novel *Snow Crash*, to indicate a fully immersive, computer-generated virtual world existing alongside the physical environment. However, the concept gained its full meaning with the acceleration of digital transformation and the rise of social media, virtual reality, and digital product formats. According to Merriam – Webster (2021) the term metaverse is defined as a highly immersive virtual world where people gather to socialize, play, and work. According to Mysdakidis (2022), the metaverse represents a persistent digital ecosystem that integrates physical and virtual realities, enabling real-time, immersive, and multisensory interaction through technologies such as VR and AR, within interconnected social and collaborative environments. Similarly, Cheng (2023) considers the metaverse to be a fully immersive and interactive virtual world in which users can interact with one another in a seamless and realistic manner.

The sport industry is increasingly recognized as a pioneering sector for metaverse applications (Morgan & Kerr, 2025). The metaverse offers a unique platform for creating immersive digital spaces where athletes, fans, and other stakeholders can interact in innovative ways. Evidence from a 2022 survey of 4,500 sport consumers indicates that 81% would be willing to pay to experience real-world sporting events within a metaverse environment (Cohen, 2022).

Furthermore, Esmer (2025) conducted a comprehensive bibliometric analysis examining the intersection of artificial intelligence and the metaverse within the sports domain. The study demonstrates a substantial increase in scholarly output, particularly from 2022 onward, and highlights the high citation impact of earlier works, reflecting the growing academic attention and significance of this research area. Notably, the analysis indicates that the majority of studies have concentrated primarily on technological applications, adoption of virtual environments, and user engagement metrics,

with relatively limited exploration of entrepreneurial activities, business model innovation, or value creation mechanisms in metaverse sports ecosystems.

Empirical research indicates that fan engagement in metaverse-based sports environments is driven by a convergence of experiential, cognitive, technological, and brand-related factors. In their qualitative investigation of Nikeland, a brand-sponsored metaverse platform, Demir & Dinc (2023) demonstrate that immersive environments reduce traditional barriers to participation, enabling diverse user groups to engage in sports experiences without the constraints of age, physical ability, or geographic location. This highlights the metaverse's potential to broaden access and redefine inclusivity in sports consumption. A central determinant of engagement lies in the sensory and atmospheric richness of the virtual environment, where elements such as spatial design, interactive architecture, and ambient audiovisual cues generate a heightened sense of presence. Emotional activation further reinforces participation, with users reporting enjoyment, excitement, and satisfaction derived not only from the environment itself but from social interaction and gamified challenges that encourage active rather than passive involvement. Importantly, cognitive absorption emerges as a defining feature of metaverse engagement, as many participants describe experiencing flow, a state of deep focus and uninterrupted interaction indicative of strong psychological immersion. This is accompanied by a perceptual convergence of physical and digital realities, wherein virtual sports experiences are interpreted as experientially authentic rather than simulated. However, the findings also reveal that engagement is contingent on usability, with platform complexity and interface friction posing barriers to sustained interaction, emphasizing the strategic importance of intuitive design. Finally, metaverse participation shapes brand-related outcomes, as users associate immersive digital environments with innovation, creativity, and forward-looking brand identity. This demonstrates that metaverse platforms are not merely engagement tools but mechanisms for strengthening brand equity, deepening community affiliation, and enabling value co-creation between sports organizations and digitally active fan ecosystems.

Complementing these findings, Kim & Kim (2024) examined virtual sport participation intentions using semantic network and topic modelling analysis. Their results emphasize additional motivators, including gamification, digital ownership through collectibles, social presence, experiential novelty, and the accessibility of virtual participation without physical constraints. Collectively, these studies illustrate that fan engagement in the sports metaverse is multidimensional, encompassing psychological, social, technological, and brand-related drivers.

From a market demand perspective, Chen and Zhang (2024) further demonstrate that metaverse sport consumption is shaped by dimensions that differ from traditional

patterns of sport participation. Their mixed methods research identifies three overarching demand drivers, including conventional sport consumption motives, demand for VR enabled engagement, and demand for immersive metaverse specific experiences, all of which significantly predict fans' willingness to participate in virtual sporting environments. Complementing this perspective, Pizzo et al. (2024) indicate that the metaverse is fundamentally transforming sport and leisure by expanding them into immersive digital ecosystems. However, they caution that the current fragmentation of metaverse platforms complicates the balance between organizational control and user autonomy. Their findings demonstrate that sustainable metaverse sport ecosystems depend on collaborative value creation models that integrate both firm driven design and active user participation, emphasizing co-creation as a central mechanism for long term engagement and community viability.

The Evolution of Sports Marketing Toward Digital Ecosystems

The evolution of sports marketing reflects a gradual shift from traditional, one-way communication models toward complex, interconnected digital ecosystems that facilitate multi-stakeholder engagement. Historically, sports marketing relied on mass media channels, sponsorship arrangements, and linear messaging to reach audiences. However, the advent of the internet and social media fundamentally transformed these dynamics, enabling direct, interactive communication between sports organizations, athletes, and fans. This digital shift allowed for greater personalization of content, continuous engagement, and the collection of data to inform strategic marketing decisions.

Given the significant impact of digitalization on the sports industry, the term "digital sports marketing" has increasingly been adopted in the scholarly literature (Ratten & Thompson, 2021). Digital sport marketing has evolved significantly with the transition of traditional sports channels, such as ESPN, Eurosport, and Sky Sports, to mobile and digital platforms, reflecting the increasing proliferation of consumer-focused content across video, audio, and social media formats, and marking a new era in which fan engagement and commercial considerations are closely intertwined (Seymour & Blakey, 2020).

Streaming platforms have become central to digital transformation in sport, providing fans with access to live sporting events, exclusive content, and on-demand programming. According to market estimates, the global sports streaming service market was valued at USD 0.74 billion in 2024, with continued

growth expected through 2033, driven by increasing digital adoption, improved streaming infrastructure, and rising investments in sports broadcasting rights by major digital platforms (Business Research Insights, 2024). Over half of sports fans consider streaming platforms their primary method for watching sports, and a majority report that the accessibility and exclusive content offered by these services have increased their engagement with sports (Sports Business Journal, 2025). The providers such as Amazon Prime Video, DAZN, and Sky have responded by investing heavily in sports rights and developing tailored content strategies to capture increasingly digital and on-demand audiences. These platforms not only serve as distribution channels but also function as engagement tools, enabling sports organizations to collect user data, foster communities, and deliver personalized marketing campaigns.

A notable example of innovative digital sport marketing is UEFA's mobile strategy during its European football tournaments. Through a dedicated mobile app, UEFA created a centralized hub for fan engagement, delivering live updates, interactive content, and personalized experiences. The app allowed the organization to monitor user behaviour across different markets, revealing trends such as a 24 percent decrease in engagement in Spain following the tournament kickoff (Sensi, 2024). This case illustrates how mobile and digital platforms enable sports organizations to combine fan engagement, data collection, and marketing insights within a single ecosystem, bridging traditional broadcasting and on-demand consumption.

In Europe, the sports streaming market illustrates both the opportunities and challenges of digital sport marketing. While international providers like Amazon and DAZN expand their presence, domestic services such as Sky Sports, BBC On-Demand, and Canal+ continue to dominate local markets (Statista, 2024). This diversity highlights the importance of context-specific strategies and the need for sports marketers to balance global reach with localized content offerings.

In addition to streaming, digital sport marketing encompasses social media campaigns, interactive fan experiences, gamification, virtual merchandise, and, increasingly, metaverse-based platforms. By integrating these channels, sports organizations can create immersive, multi-platform ecosystems that enhance fan engagement, strengthen brand identity, and generate new revenue streams. The evolution of sports marketing toward digital ecosystems provides fertile ground for digital entrepreneurial activity, particularly in metaverse sports, where inno-

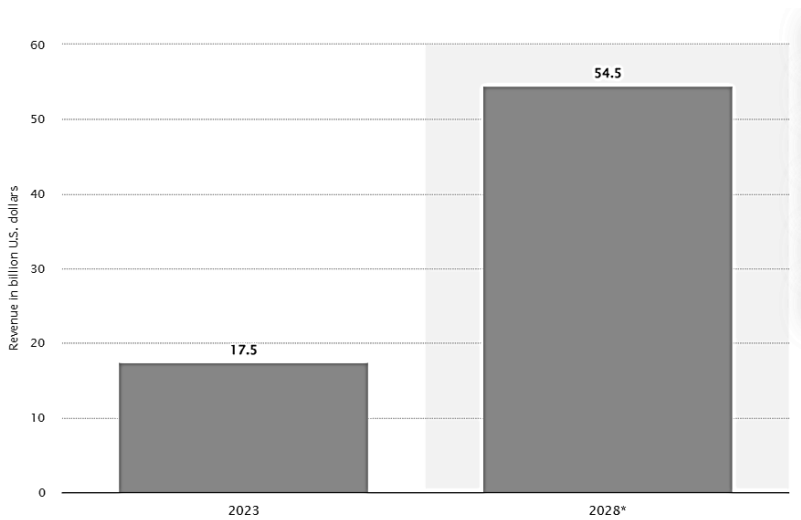
vative business models, virtual experiences, and interactive fan engagement can redefine the commercial and experiential dimensions of the industry.

Digital Entrepreneurial Opportunities in Metaverse Sports

Considering the opportunities enabled by digitalization, contemporary literature adopts a broader conceptualization of entrepreneurship that extends beyond business creation to encompass any proactive process in which an individual or organization identifies, evaluates, and exploits opportunities to generate sustainable new value under conditions of risk and uncertainty (Jovanović et al., 2024). The metaverse is anticipated to evolve into a trillion-dollar market within this decade (Weking et al., 2023), presenting transformative opportunities for digital entrepreneurship through the development of new business models, innovative venture creation, and the integration of hybrid physical–virtual value propositions.

Moreover, according to relevant statistic reports, metaverse-related revenues are projected to increase from 17 billion U.S. dollars in 2023 to 54.5 billion U.S. dollars by 2028 (Fig.1), reflecting a compound annual growth rate of 25.5 percent (Statista, 2025).

Figure 1: Global metaverse-related revenues in 2023 with projections for 2028 (in billion U.S. dollars).



Source: Statista (2025)

Weking et al. (2023) identify the metaverse as a key external driver of entrepreneurial activity, providing a conceptual framework that explains how ventures can create opportunities within digital, hybrid, and immersive environments. By highlighting the distinct characteristics of metaverse-enabled entrepreneurship compared with traditional, out-of-metaverse practices, the study emphasizes novel opportunities for developing innovative offerings, structuring business models, and designing entrepreneurial processes that capitalize on the unique capabilities of virtual and interconnected ecosystems.

Within this context, the metaverse represents a particularly promising opportunity for digital entrepreneurship in sports. This concept is closely related to Sportech, a term that encompasses technological innovations in sport (Lanfranchi & Rotondo, 2019) aimed at enhancing athletic performance, fan engagement, operational efficiency, and commercial opportunities. Sportech includes digital tools, wearable devices, performance analytics, virtual and augmented reality applications, and emerging metaverse platforms that facilitate immersive and interactive experiences for athletes, fans, and sports organizations. With regard to the metaverse, entrepreneurs can leverage fully virtual, physical-to-virtual, virtual-to-physical, and hybrid pathways to create innovative offerings, design immersive fan experiences, and develop novel business models that integrate digital and physical interactions. Examples include virtual stadium experiences, gamified fan engagement, digital collectibles, and augmented reality integrations that link real-world events to immersive digital content. The emergence of the metaverse in sports has given rise to new concepts, including the notion of the virtual stadium. This term first appeared in 2022 when the Atlanta Braves launched the Digital Truist Park (Cunningham & Ko, 2025), marking a pioneering effort to recreate the stadium experience in a fully digital environment.

Recent empirical research conducted among 1,208 MZ-generation participants (aged 18–42) with prior exposure to metaverse sports events in Korea demonstrated that event characteristics embedded in virtual environments significantly shape user engagement and behavioural outcomes (Morgan & Kerr, 2025). Both spatial and relational immersion were found to positively affect personal and relational satisfaction, respectively, which in turn significantly strengthen team attitudes. For digital sport entrepreneurs, this highlights the strategic importance of designing metaverse offerings that integrate social

connectivity, personalization, and sensory immersion to attract, retain, and monetize diverse fan segments.

Moreover, digital entrepreneurship is transforming sports branding by enabling novel, technology-driven approaches to brand co-creation, fan interaction, and digital asset commercialization. Global sports brands increasingly leverage the metaverse (Chen et al., 2023) as a new arena for digital entrepreneurship, integrating virtual goods, gamified environments, and community-driven interaction into their business models. Qualitative document analysis of Nike and Adidas (Vural, 2024) demonstrates that brand-led metaverse ecosystems extend beyond digital presence toward asset creation, platform ownership, and value exchange through Non-fungible tokens (NFTs). Nikeland, launched by Nike in 2021 on the Roblox platform, demonstrated how sports brands can leverage the metaverse to create immersive digital ecosystems and foster entrepreneurial value. The platform allows users to adopt personalized avatars, participate in sport-themed games, explore branded environments, and acquire virtual merchandise, including NFTs linked to real-world products. Similarly, Adidas distributes branded NFTs through The Sandbox metaverse, linking virtual ownership with real-world benefits such as product discounts. In 2021, Adidas initiated a high-profile collaboration with prominent blockchain-native entities, including Bored Ape Yacht Club (BAYC), gmoney, and PUNKS Comic, to co-create Into the Metaverse, a limited NFT collection that integrated digital identity, virtual wearables, and exclusive community access. The collection sold out rapidly, generating over USD 22 million in initial sales and demonstrating significant market demand for branded digital goods (Digital Twin Insider, 2023). These initiatives indicate that metaverse entry is driven by strategic goals of expanding user reach, strengthening competition, stimulating sports participation, and establishing reciprocal value creation between brand and consumer. The examples illustrate how metaverse environments support hybrid business models that merge digital products, experiential engagement, and brand co-creation, offering replicable pathways for entrepreneurial innovation in sport. In line with these findings, Kim et al. (2025) indicate that sport organizations must develop proactive strategies to effectively monitor and enforce their trademark rights within these expansive digital environments.

Furthermore, the metaverse offers sports organizations significant opportunities to optimize costs associated with hosting mega events such as the FIFA World Cup or the Olympic Games. Traditional events require enormous inves-

tment in stadium construction, maintenance, security, and logistics, often amounting to billions of dollars. By leveraging metaverse platforms, organizers can create immersive, large-scale virtual experiences that replicate the atmosphere of live events (Schmid et al., 2023) while reducing reliance on physical infrastructure. Hybrid models, which combine in-person attendance with virtual participation, further enhance this potential. For example, while fans attend matches or competitions on-site, remote participants can engage through interactive digital environments, customize avatars, participate in virtual fan zones, and access exclusive content. Such integration expands audience reach beyond stadium capacity, generates additional revenue streams through digital merchandising and sponsorships, and allows resources to be redirected toward fan engagement and marketing initiatives. With regard to this perspective Piccioni (2023) explains that hybrid events provide notable advantages by expanding and diversifying the audience, indicating that participants gain flexibility, as they can choose to attend either in person or online, depending on their preferences and circumstances. Consequently, metaverse-enabled hybrid events not only reduce operational costs but also provide flexible, scalable, and participatory experiences, transforming the economics and strategic planning of global sports mega-events.

In addition to previously discussed applications, the metaverse offers significant entrepreneurial opportunities in sport through advanced marketing communication, performance development, and new revenue models. Immersive digital environments enable data-driven, personalized brand engagement, real-time consumer analytics, and innovative sponsorship activation that surpass traditional digital channels. Furthermore, AI-supported simulations and virtual training systems enhance athlete performance analysis, tactical preparation, and injury-prevention capabilities (Zhu et al. 2023; Hadi et al. 2024).

Conclusion

The emergence of the metaverse represents a transformative frontier for sport marketing and digital entrepreneurship. By providing immersive, interactive, and hybrid physical–virtual environments, the metaverse enables sports organizations and entrepreneurs to create novel experiences that deepen fan engagement, enhance brand loyalty, and generate new revenue streams. Digital platforms, such as virtual stadiums, NFT-based merchandising, and interac-

tive fan zones, offer innovative opportunities for co-creation, personalized marketing, and global audience expansion, while reducing reliance on traditional physical infrastructure.

Entrepreneurs operating within metaverse sports ecosystems can leverage these environments to develop new business models, integrate physical and virtual assets, and experiment with hybrid event formats that combine live attendance with virtual participation. This convergence of technology, sport, and entrepreneurship expands commercial potential, but also reshapes the strategic approaches of clubs, leagues, and brands seeking to engage digitally connected and interactive fans. Overall, the integration of metaverse technologies in sport marketing underscores the growing importance of digital entrepreneurship in shaping the future of the global sports industry, emphasizing creativity, adaptability, and innovative value creation.

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GLOBAL IMPACT OF SPORTING EVENTS: MARKETING IMPLICATIONS AND CULTURAL TRANSFORMATIONS

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Abstract: This paper critically examines the global influence of sporting events on marketing practices and cultural dynamics in contemporary society. Building on established theoretical frameworks of sports marketing and event management, it analyzes the mechanisms through which mega-events and transnational leagues generate economic value via sponsorships, media rights sales, and digital platforms, while simultaneously shaping consumer behavior and fan identity. Special attention is given to branding processes (of places, organizations, and athletes) and “glocalization” strategies that blend global marketing standards with local cultural codes to enhance relevance and audience engagement. The study highlights the ambivalent cultural effects of such events—between the homogenization of global pop culture and the strengthening of local symbolic resources—as well as issues of social legacy, sustainability, and equitable access. Synthesizing findings from documented scientific literature, the paper proposes an analytical framework linking marketing implications (attention monetization, brand management, engagement measurement) with cultural transformations (identity reconfiguration, media convergence, participatory practices). Ultimately, it argues that the effects of sporting events are context-dependent: marketing outcomes are most sustainable when aligned with local cultural narratives, sustainable policies, and long-term community development goals.

Keywords: sport entrepreneurship, sport management, sport business, entrepreneurship

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Introduction

International athletic events, such as the Olympic Games and the FIFA World Cup, as well as international leagues and elite club tours, have emerged as key venues for the modern attention economy and symbolic production. These events serve as both extremely profitable market items and cultural rituals that restructure concepts of identity, belonging, and prestige within global flows under conditions of intense mediation of sport (Dašić, 2021; Kostadinović & Ilievska Kostadinović, 2025). According to recent research in sport marketing and event management, value is created both during and after the event through sponsorships, the sale of media rights, digital platforms, and multichannel management of fan and consumer relationships. This has significant ramifications for the branding of cities, organizations, and athletes. This perspective aligns with the focus of this paper on mechanisms of economic valuation and cultural dynamics, including branding and glocalization, as well as issues of legacy, sustainability, and equity of access.

From a marketing perspective, mega-events represent “temporary concentrators” of global attention, enabling brands to purchase or build visibility in environments characterized by high levels of emotional audience engagement (Pavlović et al., 2025; Trkulja et al., 2025). However, contemporary research emphasizes the importance of distinguishing short-term *impact* (e.g., media exposure) from strategic *leverage*, understood as a set of tactical and institutional activities through which investments in events are converted into sustainable benefits for destinations and relevant stakeholders. Chalip argues that leverage is the key concept for understanding how hosts and partners can systematically design activations, integrations, and alignments with local resources so that effects extend beyond the conclusion of the event (Chalip, 2004). This framework is particularly relevant in the era of digital platforms, where sponsor and organizer activations are increasingly optimized through engagement metrics and the management of user journeys across multiple touchpoints (TV/streaming, social media, applications, and the in-stadium experience).

Through long-term management of associations, experiences, and reputation, sponsorship has developed into a sophisticated communication and relational mechanism that connects brands with sport properties (teams, leagues, events, athletes). Although there is a wealth of research on audience reactions to sponsorship, systematic reviews published in prestigious marketing journals show that understanding sponsorship management “end to end”—from property selection through activation and integration to effect evaluation and reputational risk management—is becoming more and more important (Cornwell, 2020). This highlights the significance of an analytical framework that links brand management, attention monetization, and engagement metrics (such as conversion, retention, and sentiment) with the wider sociocultural

effects that athletic events have on local communities and audiences around the world.

Alongside the economic dimension, global sporting events also represent intense cultural nodes in which meanings of the local and the global are negotiated. The concept of glocalization helps explain how global sport products (competition formats, broadcast standards, global sponsorship categories) are “translated” into local cultural codes—and conversely, how local fan practices, symbols, and narratives become part of the global repertoire. Giulianotti and Robertson demonstrate that glocalization does not imply mere homogenization, but rather multiple possible patterns (e.g., adaptation, hybridization, transformation) through which actors (fans, clubs, media) reshape global flows in accordance with local identity strategies (Giulianotti & Robertson, 2007). From this emerges an ambivalent cultural outcome, explicitly recognized in your abstract as well: the simultaneous strengthening of global popular culture and the reaffirmation of local symbolic resources.

Place and nation branding through major sporting events is one of the most obvious connections between marketing and culture. A mega-event can give a platform for deeper articulation of brand identity as well as short-term publicity recognition, according to empirical study in destination marketing—as long as stakeholder coordination and purposefully created legacy and leverage strategies are in place. Knott et al. highlight the role of media (both traditional and new) and citizens in co-creating a more authentic image using South Africa and the 2010 FIFA World Cup as an example. They conclude that “brand legacy” depends on strategic activities rather than just the fact that the event occurred (Knott et al., 2015). This finding is particularly relevant for considerations of equity of access and long-term community development: if brand-building occurs without local inclusion and benefits, cultural effects may shift toward resistance, cynicism, or reputational risk.

Finally, contemporary scholarly literature insists that the *legacy* of mega-events must be understood as a multidimensional set of planned and unplanned, positive and negative, tangible and intangible changes that remain after the event. Preuss proposes a conceptualization encompassing infrastructure, knowledge, networks, emotions, image, and cultural patterns, while warning that legacy measurement is methodologically demanding and that aggregate macro indicators often fail to capture the “soft” changes that are crucial for social impact (Preuss, 2007). In this sense, integrating sustainability and social equity into planning and evaluation becomes not only a normative obligation but also a condition for sustainable marketing outcomes: the reputation of the event, the destination, and its partners depends on whether global commercial ambitions are aligned with local narratives, capacities, and long-term development goals. Accordingly, this paper positions itself to analytically connect

marketing implications (attention monetization, brand management, engagement measurement) with cultural transformations (reconfiguration of identities, media convergence, and participatory practices), emphasizing the contextual contingency of outcomes.

Marketing Leverage Strategies and the Monetization of Attention in Global Sporting Events

Global sports mega-events, such as the Olympic Games, the FIFA World Cup, continental championships, and the final tournaments of elite club competitions, are uncommon "peak moments" of worldwide attention because they concentrate extremely high media visibility, intense emotional audience engagement, and dense flows of commercial transactions in a brief amount of time (Dašić, 2018; Pavlović & Marković, 2025). In this context, marketing leverage refers to a collection of carefully thought-out ideas and approaches that help organizers, partners, destinations, and other stakeholders turn this fleeting focus of attention into longer-lasting market, reputational, and relational benefits. Crucially, leverage does not reduce the event to a one-off media "impact," but rather treats it as a platform for activating multichannel touchpoints and creating measurable value over time.

Leverage as a Strategic Framework: From "Presence" to Organized Value Extraction

The first principle of leverage lies in the distinction between a mega-event merely "taking place" in a given country or region and its potential being systematically exploited. Empirical insights from leverage research demonstrate that even when clear ambitions exist (tourism, investment, reputation, industrial development), knowledge transfer and the application of "best practices" are not automatically successful: strategies must be localized and aligned with institutional and cultural contexts; otherwise, they may remain symbolic or operationally unviable. Analyses of attempts to transfer leverage knowledge from one context to another (e.g., non-host destinations) indicate that social, political, and cultural conditions may render imported models inadequate, and that leverage requires iterative adaptation and early preparation (Beesley & Chalip, 2011). This finding is particularly important for global events, where production and commercialization standards are highly globalized, while destination and actor capacities are markedly heterogeneous.

Accordingly, leverage should be conceptualized as a portfolio-based and phased framework:

- (a) before the event—building audiences, partnerships, narratives, and engagement infrastructure;

(b) during the event—converting attention into interaction, data, transactions, and relationships;

(c) after the event—retention, reactivation, and capitalization of acquired associations.

Across all phases, the central question is how to transform short-term attention into long-term attention (loyalty, repeat visits, repeat purchases, and reputational stability).

Monetizing Attention: Mechanisms, Revenue Streams, and Rights Management

Media rights (broadcasting/streaming), sponsorships, and ticketing/experience sales are usually the main revenue streams that support the monetization of attention in international sporting events. The value of media rights rises with audience predictability, consumption intensity, and the ability to package content into various formats (live coverage, clips, behind-the-scenes material, short vertical content, etc.). This is significant because media rights are not just a distribution channel but a primary mechanism for turning attention into revenue. In addition, as it has an impact on ecosystem sustainability, investment incentives, and competitiveness, the structure of rights sales and revenue distribution is a strategic concern.

Although part of the literature focuses primarily on leagues, its insights are applicable to mega-events in terms of the logic of valuing attention and allocating revenues. Revenue-sharing models derived from collective rights sales demonstrate that “fair” and stable arrangements must account for heterogeneous audience contributions and market power among actors, since inappropriate allocation can generate strategic tensions that undermine the product and its viewership over the long term. In this sense, formal analyses of compromise-based allocation rules emphasize that media rights sales and revenue distribution are not neutral administrative decisions, but integral components of broader strategies for sustaining attention value over time (Bergantiños & Moreno-Ternero, 2021).

This suggests that in order to maximize marketing leverage, an organizer must optimize not only reach but also digital measurability (attribution, registrations, CRM integration) and the architecture of rights (territories, languages, platforms, short-form formats, clips, secondary content). Due to the fragmented nature of today's attention ecology, monetization is moving toward hybrid models that combine direct-to-consumer channels, platform partnerships, and data-driven tactics with linear broadcasting.

Digital Leverage Infrastructure: Social Media, Co-Creation, and an “Always-On” Presence

Digital platforms have fundamentally transformed leverage: mere “presence” in broadcast coverage is no longer sufficient; attention must be managed through interactive flows (comments, shares, user-generated content, live chats, real-time

clips). Reviews of research on sport and social media show that sports marketing increasingly relies on value co-creation and relational logic, where audiences are not passive message recipients but active participants in the production and circulation of meanings and content (Filo et al., 2015). From a leverage perspective, this implies that organizers and partners must plan content and community strategies in advance: editorial calendars, real-time posting protocols, moderation mechanisms, and engagement metrics aligned with concrete objectives (e.g., registrations, app downloads, fan-zone visits, purchases).

The transition from campaign-based to continuous attention models is another crucial factor. The mega-event becomes the pinnacle of a "always-on" narrative: before to the event, audiences are segmented and expectations are set; during the event, attention is focused on activations; and following the event, attention is stabilized through legacy narratives, highlights, and future formats. The design of user journeys from impression to engagement and from engagement to transaction or loyalty is where leverage takes on operational substance.

Branded Communities as Instruments for Converting Attention into Relationships

One of the most effective mechanisms for monetizing attention in digital environments is the development of online communities that enable longer-term relationships between brands and audiences. In the sports context, the concept of branded communities is particularly significant because it allows companies and sports organizations to bridge the gap between short-lived event hype and long-term relational value. Empirical findings suggest that such communities can enhance brand loyalty and, when transparently managed, need not undermine loyalty to the community itself; rather, they can become infrastructural nodes through which sponsorship and brand strategy are implemented via content, services, and interactions rather than mere exposure (Popp & Woratschek, 2015).

For leverage in global sporting events, this means that sponsor and organizer communication should not be designed as a one-off message, but as a relational ecosystem governed by its own rules (membership, privileges, exclusive content, gamification, loyalty programs). In practice, branded communities may take several forms:

- (a) platforms run by clubs or organizers (apps, memberships);
- (b) communities built around sponsor brands (e.g., fitness challenges, fantasy games);
- (c) hybrid models developed in partnership with media platforms.

The key leverage criterion is the ability to "lock in" attention through repeatable interaction and to measure and manage that interaction via CRM systems and data flows.

Reputational Leverage and “Image Leveraging”: Integrating Event, Destination, and Nation Brands

Beyond direct monetization, mega-events function as instruments of reputational leverage (destination or nation image, perceptions of modernity, competence, and hospitality). Research on “image leveraging,” using the case of Germany and the 2006 FIFA World Cup, shows that states can deliberately use mega-events as platforms for reshaping international perceptions, with intentionality and coordination of communication mechanisms proving more decisive than the mere staging of the event itself (Grix, 2012). This form of leverage is marketing-relevant because reputation spills over into investment attractiveness, tourism demand, and bargaining power in future commercial and sporting arrangements.

Reputational leverage, however, necessitates discipline: promises must be in line with audience experience (both visits and watchers worldwide), and narratives must be consistent across platforms. If not, there is a greater chance of reputational retaliation, especially in digital settings where unfavorable signals can spread quickly. Because reputation in the attention economy is defined as accumulated attention with a normative “quality signal,” reputational leverage should be viewed as a component of more comprehensive attention management.

The literature on sport and social media emphasizes the need to connect operational metrics with strategic objectives, as “high engagement” without a clear link to conversion or reputational outcomes may be tactically impressive but strategically inefficient (Filo et al., 2015). In parallel, studies on branded communities suggest that long-term value emerges when attention is translated into stable communities and when community management is integrally linked with brand strategy and sponsorships (Popp & Woratschek, 2015). Finally, monetization through media rights requires understanding attention value at the ecosystem level (who contributes audiences, how revenues are allocated, and how this affects the product), since long-term attention stability depends not only on creative campaigns but also on institutional arrangements (Bergantiños & Moreno-Ternero, 2021).

Cultural Transformations and Glocalization: Fan Identity, Media Convergence, and Event Legacy

Today, international sporting events serve as intense cultural “nodes” where (1) media formats and consumption habits, (2) symbolic values and identity narratives, and (3) longer-term patterns of socio-cultural change in host destinations and larger sport communities are formed concurrently. From the standardization and commercialization of the sporting spectacle to the negotiation of national, local, and transnational identities, the

literature increasingly highlights that a mega-event is a format that generates cultural resources and power mechanisms rather than a neutral "stage" on which sport is merely displayed (Horne, 2015). Within this framework, glocalization can be treated as a key analytical concept: it explains how globally organized sport products (rules, the aesthetics of television coverage, sponsorship models, digital ecosystems) are translated into local cultural codes (Vuković et al., 2025), while also showing how local fan practices, symbols, and narratives enter global flows and redefine them.

One of the most operational demonstrations of glocalization in sport appears in studies that track the reception and appropriation of "imported" sporting formats within local fan cultures. Cho shows that the expansion of global sport products (e.g., U.S. professional leagues and their associated pop-cultural infrastructure) does not necessarily lead to cultural homogenization; rather, it can generate a complex process of "de-/re-constitution" of the national and the local within the fan experience. In this process, the global becomes a resource rather than a substitute for the local: fans selectively appropriate global symbols and practices, but embed them within their own identity narratives and social distinctions (Cho, 2009). For mega-events, this has a direct implication: audiences are not homogeneous, and the cultural impact of the event depends on how different audience groups (local communities, diasporas, transnational fans, "spectator-tourists") interpret the event and integrate it into existing cultural repertoires.

In mega-events, glocalization frequently takes the shape of simultaneous local cultural distinctiveness (local symbols, language, national/city narratives, fan choreographies) and a universal worldwide framework (ceremonies, "broadcast grammar," standardized visual aesthetics). By definition, this simultaneity is not harmonious; rather, it is a site of negotiation and conflict, especially when local expectations of authenticity, fair access, or cultural representation clash with international economic standards. Because of this, glocalization is better understood as a process of ongoing decision-making about what is emphasized locally, what is suppressed, who obtains prominence, and who is ostracized rather than as "soft adaptation" (Dašić, 2023; Stanković, 2025).

Mega-events accelerate the transformation of fan identity from spatially rooted belonging (club/city/nation) toward multiple, situational, and network-mediated identities. Fan identity increasingly becomes a "layered" construction: the same individual may simultaneously be a local supporter, a transnational follower of a global club, a participant in a digital community, and a consumer of sports content across multiple formats. Such layering is especially activated during mega-events, when symbolic production intensifies—flags, rituals, fan repertoires, narratives of nation, and "us–them" distinctions.

Cho (2009) further indicates that global sports flows can generate new forms of the national and the local: appropriation of global sport formats sometimes produces "individualized" or hybrid forms of nationalism and belonging (e.g., identification that is si-

multaneously national and strongly personalized through consumer styles). In mega-events, this becomes visible in practice: national symbols are often “consumer-designed” (merchandise, aesthetics, branding of fandom), while a strong emotional and ritual charge of belonging is preserved.

This is the exact point at which a crucial question emerges: do mega-events promote societal cohesiveness or cause fragmentation? The literature on the social effects of mega-events emphasizes that “social” and “cultural” effects should not be viewed as inherently positive. While social cohesion, pride, and solidarity may rise, exclusion, unequal benefit distribution, and cultural tensions may also worsen (Mair et al., 2023). As a result, identity “gains” for fans and communities are not just psychological occurrences; rather, they are linked to participation, access, and inclusion policies (i.e., who can attend, who has symbolic and financial access to the event, and whose identity is validated in official narratives).

In contemporary sports communication, the mega-event is no longer primarily a television product; it is a transmedia regime in which content is distributed and reinterpreted across multiple platforms, with intensive interweaving of professional production and user-generated content (UGC) (Lunić, Česarević, 2025). Lee Ludvigsen analyzes the hyper-digitalization of sports mega-events through the shift toward platforms such as YouTube and related ecosystems, emphasizing that digital platforms are not merely secondary channels but spaces in which what counts as an “event” is (re)defined: through clips, recompositions, comments, algorithmic recommendation, and “always-on” dynamics (Lee Ludvigsen, 2023). The cultural consequences are twofold:

1. Fragmentation and narrative re-assembly—audiences increasingly experience the event through clips and micro-narratives rather than a single linear broadcast;
2. Algorithmic curation—the visibility of sporting moments and identity narratives increasingly depends on platform logics (recommendations, trends, engagement).

Such a convergent media system also changes how fan identity is produced: identity is “performed” through comments, sharing, memes, remix culture, and micro-communities. In other words, fandom becomes performative and network-mediated, with the mega-event serving as the peak of this performativity.

The mediatization of sport is not only a question of technology, but also of institutions that govern how the event is represented—through which language, which values, and which interpretive frameworks. Ličen, Antunovic, and Bartoluci analyze how mediatization manifests through digital Olympic content on social media and show that institutional media (e.g., public service broadcasters) negotiate between public interest and platform logics in digital environments, so that the “Olympic” narrative can be simultaneously informative, promotional, and identity-laden (Ličen et al., 2022). This is relevant to mega-events because it demonstrates that the cultural politics of representation unfolds not only in organizing committees and ceremonies, but also in everyday digital posts: topic selection,

tone, focus on national pride, selection of athletes as symbols, and the visibility of marginalized groups, among others.

In the context of a larger sociological framework, Horne highlights that mega-events are by definition "media events" and that a "non-mediatized mega-event" is paradoxical since mass media coverage makes it possible for a mega-event to serve as both a cultural resource for identity and a tool for commercialization and urban transformation (Horne, 2015). One important finding is that media architecture (platforms, rights, editorial rules, algorithms) influences what becomes "significant" and "historic" in the public memory, therefore it is impossible to assess the cultural impacts of mega-events independently.

The concept of legacy is often used normatively in the political and promotional rhetoric of mega-events, whereas scholarly literature insists on empirical differentiation: legacy may be planned or unplanned, positive or negative, tangible or intangible, short-term or long-term. Thomson et al., through a systematic quantitative review of the literature, show that the legacy research field has expanded, but also that substantial heterogeneity persists in terminology, theoretical frameworks, and measurement methodologies; moreover, the "cultural" and "political" dimensions of legacy constitute a stable yet methodologically demanding research area (Thomson et al., 2019). This is particularly important for this chapter because cultural transformations often fall into the category of "intangible" changes: shifts in identity, pride, perceptions of the city/state, patterns of cultural participation, and media practices.

The literature on the social effects of mega-events also shows that assessments frequently suffer from selectivity: costs (such as exclusion, gentrification, and disruption of local cultural scenes) are less commonly operationalized or treated as "collateral" effects, while benefits (such as pride, solidarity, and destination branding) are highlighted (Mair et al., 2023). Because cultural legacy is not just a "outcome," but also a process of allocating resources, visibility, and legitimacy, it is vital to examine which cultures and behaviors are supported by the mega-event.

When insights on glocalization, media convergence, and legacy are integrated, a clearer picture emerges: cultural transformations in mega-events are not marginal side effects of sporting competition, but a systemic product of interactions between global flows and local practices, mediated by regimes of media infrastructure.

- Globalization explains how global sport formats become locally meaningful through selective appropriation and hybridization of identities (Cho, 2009).
- Media convergence explains how the "event" is disassembled and reassembled through transmedia flows and platforms, reshaping fandom practices and cultural participation (Lee Ludvigsen, 2023).

- Mediatization explains the institutional production of meaning and the competition between public interest, national narratives, and platform logics (Ličen et al., 2022), within a broader context in which the mega-event becomes a key element of contemporary consumer culture and symbolic politics (Horne, 2015).
- Legacy, finally, describes how these transformations are stabilized (or contested) over time, amid methodological challenges in measuring intangible cultural and social change (Thomson et al., 2019) and the need to assess both benefits and costs (Mair et al., 2023).

A research and practical conclusion follows: cultural transformations and glocalization in mega-events cannot be credibly analyzed without integrating three levels—(1) fan identities and practices, (2) media/platform architectures and institutional editorial regimes, and (3) empirically grounded legacy evaluations that capture both positive and negative, and both tangible and intangible outcomes.

Conclusion

The role of global sporting events can no longer be understood exclusively as athletic competitions or one-off spectacles, but rather as complex socio-economic and cultural platforms that simultaneously generate market value, symbolic resources, and long-term societal consequences.

From a marketing perspective, global sporting events function as exceptionally powerful accelerators of attention; however, attention in itself has no lasting value unless it is strategically managed. The concept of marketing leverage emerges as a key analytical and operational framework for understanding the distinction between short-term exposure and long-term value creation. The analysis demonstrates that successful attention monetization depends on early preparation, stakeholder coordination, and the capacity to embed the event within a broader ecosystem of media rights, digital platforms, branded communities, and reputational management. In other words, the market value of mega-events does not arise automatically from their global visibility, but from the ability of actors to translate that visibility into sustainable relationships, data assets, loyalty, and reputation.

At the same time, cultural analysis shows that global sporting events operate as intensive spaces of identity production and transformation. Processes of glocalization clearly indicate that global sport formats do not erase local cultures and identities, but reshape them through selective appropriation, hybridization, and the negotiation of meaning. Fan identities become multilayered, transnational, and strongly mediated, while belonging is increasingly expressed through digital practices, performative forms of fandom, and

participation in networked communities. Media convergence further intensifies these dynamics, as the mega-event no longer exists as a singular, unified experience, but as a set of fragmented, algorithmically distributed narratives that collectively shape cultural significance and collective memory.

A particularly important conclusion concerns the question of legacy. The analysis shows that the legacy of mega-events cannot be reduced to infrastructure or short-term economic indicators alone, but must also encompass intangible cultural and social changes: shifts in identity perceptions, media practices, patterns of cultural participation, and relations between global and local actors. These effects are neither inherently positive nor evenly distributed; rather, they depend on how events are governed, on the inclusion of local communities, and on the balance between commercial interests and social responsibility. This confirms that marketing strategies and cultural consequences are deeply intertwined: the ways in which attention is monetized and managed directly shape the kind of cultural legacy an event leaves behind.

Global sporting events thus represent a paradigmatic example of the contemporary attention economy and spectacle culture, in which market, media, and identity processes unfold simultaneously and interdependently. Their analysis requires an integrated approach that connects marketing, media studies, and the sociology of sport. Only such an approach makes it possible to understand how short-lived sporting moments are transformed into long-term economic, cultural, and social structures, and under what conditions these processes can be sustainable, inclusive, and socially legitimate.

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MACHINE LEARNING AS A METHODOLOGICAL FRAMEWORK IN SPORTS SCIENCE – FROM EXPLORATORY TO CONFIRMATORY ANALYSES

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Abstract: In sports science, the use of machine learning and artificial intelligence techniques has increased significantly in recent years, especially in the domains of performance evaluation, training process optimization, and sports injury prediction. However, a significant number of current studies have significant methodological issues, such as poor validation processes, the possibility of information contamination (data leakage), a lack of reporting transparency, and restricted generalizability of findings. Through a narrative evaluation of peer-reviewed scientific literature indexed in the Web of Science and Scopus databases, this research aims to identify major sources of methodological bias and analyze prevailing methodological practices in the application of machine learning in sport. In order to obtain a meaningful evaluation of model performance, time-aware data splitting and grouped validation procedures are required due to the unique temporal and hierarchical structure of sports data. The use of modern reporting and quality-assessment frameworks, such as TRIPOD+AI and PROBAST+AI, is critically examined in this study, along with the contribution of interpretable models and explainable AI techniques to improving results' practical applicability and trustworthiness. In order to improve methodological rigor, transparency, and reproducibility, recommendations are developed for future study and practical use of machine learning in sports science based on the synthesis of the literature.

Keywords: machine learning; sports science; model validation; data leakage; explainable AI

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Introduction

The past decade has brought a significant methodological shift in sports science, in which machine learning (ML) has increasingly moved beyond the role of a purely predictive tool and has become an integrated framework for research, validation, and reporting of results (Dasic, 2018; Stanković, et al., 2024). Contemporary studies indicate that ML methods enable researchers to analyze large and complex datasets on athletes—ranging from physiological and biomechanical to psychological and contextual data—thereby uncovering patterns that were not accessible through traditional statistical methods (Reis, Alaiti, Vallio, & Hespanhol, 2024). Such approaches are particularly relevant for injury risk analysis, training optimization, and the individualization of return-to-play processes. Because measurements frequently come from numerous levels (repeated measurements within the same athlete, throughout teams, and across different seasons), sports data naturally display a strong temporal and hierarchical structure. To prevent information leaking and provide a realistic evaluation of model generalizability, this structure requires the employment of time-aware data partitioning and grouped validation processes (Dašić 2023a; Dašić 2023b).

But using machine learning in sports research comes with new methodological difficulties in addition to analytical benefits. Kapoor and Narayanan (2023) claim that data leaks, reproducibility issues, and inadequately transparent model validation plague many published studies, casting doubt on the validity of the claimed results. Because of this, new frameworks like TRIPOD+AI and PROBAST+AI place a strong emphasis on openness, reporting uniformity, and methodical evaluation of the risk of bias in ML-based research (Collins et al., 2024; Moons et al., 2025).

Simultaneously, there has been a growing focus on explainable machine learning (Explainable Artificial Intelligence—XAI), which allows for the interpretation of the contribution of individual variables to model outcomes and insight into the internal mechanisms of models (Finzel et al., 2025). XAI acts as a link between algorithmic "black boxes" and practitioners in the sports industry, such as coaches, doctors, and analysts, who need precise and reliable information to aid in decision-making (Vuković, et al., 2023; Vuković et al., 2024). As a result, machine learning is developing as a methodological paradigm that combines exploratory and confirmatory approaches rather than operating as a stand-alone statistical methodology, promoting a shift toward a more transparent, interdisciplinary, and repeatable sports science (Lunić, Česarević, 2025; Mladenović, 2025).

Literature Review

According to recent reviews, machine learning (ML) in sports is now a comprehensive methodological framework that influences study design, model validation (such as grouped/temporal and nested cross-validation), and transparent performance reporting, including explainability approaches (XAI) and control over data leakage. This viewpoint is especially pertinent to studies on performance analysis, return-to-training/return-to-play procedures, and injury risk.

One of the most important methodological improvements of the last ten years is the recent advancements in machine learning in sports science. New methods of research and evidence-based decision making have been made possible by the explosive development in data from physiological measures, biomechanical studies, and sports performance monitoring. In this regard, many authors stress that machine learning should be seen as a methodological approach that incorporates data analysis, validation, and interpretation into a cohesive research framework rather than just as a predictive tool (López-Fernández et al., 2022).

According to empirical research, machine learning (ML) techniques are used in a variety of sports-related fields, such as injury risk analysis, training optimization, tactical pattern analysis, and competition outcome prediction. The majority of research focuses on performance prediction and injury prevention, although methodological methods remain very varied, according to a systematic review by López-Fernández et al. (2022) that comprised more than 60 papers. Jordan et al. (2023) reached similar conclusions, pointing out that many studies lack sufficient model validation and precise explanations of cross-validation processes, which limits the reproducibility of presented findings.

One of the most active application areas of machine learning in sports, according to a large body of research, is injury prevention. For instance, research in football and rugby has shown that algorithms like Random Forest, XGBoost, and Support Vector Machines can accurately predict injury risk with over 80% accuracy when sample sizes are sufficient and the temporal structure of the data is maintained (Ruddy et al., 2022; Carey et al., 2023). However, feature selection and the possibility of data leakage—the unintentional incorporation of test set information into model training—are frequently overlooked, leading to unduly optimistic performance estimates.

Machine learning allows researchers to capture intricate relationships between physiological, biomechanical, and psychological aspects of sports performance (Dašić, Vuković, 2024). According to recent research in swimming and basketball, algorithms like gradient boosting models and neural networks can forecast performance results based on factors like age, body composition, training load, and recovery time (Rathore

et al., 2023; De Pauw et al., 2024). However, Singh et al.'s (2023) investigation shows that more sophisticated models don't always perform better than more straightforward regression-based methods, especially when sample sizes are constrained.

There are still significant methodological issues. First, a significant source of bias is the absence of established outcome definitions and unreliable variable measurement (Whitaker et al., 2023). Second, a lot of research don't use the right methods to deal with class imbalance or carry out external validation, which limits how broadly the results can be applied (Rana et al., 2023). Third, reporting hyperparameters and model structure is frequently not transparent enough, which emphasizes the significance of new frameworks like TRIPOD+AI and DOME for enhancing methodological rigor (Mongan et al., 2020).

In the most recent research, model interpretability has received special attention. In order to bridge the gap between statistical intricacy and practical applicability, methods like SHAP and LIME are being employed more frequently to determine the most important elements influencing injury risk or performance results (Calderón-Díaz et al., 2024). According to applied research, using XAI techniques promotes more informed, real-time decision making and increases coaches' and medical experts' trust in automated systems (Zarić et al., 2024; Naughton et al., 2024).

Overall, the literature review shows that machine learning is emerging as a key methodological tool in sports science; nevertheless, the quality of study designs, the selection of validation techniques, and reporting transparency all have a significant impact on the scientific value of machine learning. Therefore, reproducible protocols, ethical data governance, and wider integration of XAI methodologies inside applied sports practice should be the main goals of future methodological development.

Methodology

This study examines whether machine learning (ML) can serve as a methodological framework in sports science that integrates exploratory analysis (pattern and factor discovery) with confirmatory testing (validated predictions and transparent reporting). Rather than conducting a systematic review in accordance with the PRISMA protocol, the research adopts a qualitative approach in the form of a narrative literature review with elements of methodological synthesis. The primary objective is to identify dominant methodological practices in the application of ML in sport and to formulate evidence-based recommendations for model validation, reporting, and interpretability.

In accordance with contemporary methodological standards, this synthesis treats reporting guidelines and tools for assessing study quality and risk of bias in machine-

learning-based prediction models as central reference frameworks. In particular, TRIPOD+AI is used as the principal guideline for transparent reporting of prediction model development and validation, while PROBAST+AI is applied as the key framework for evaluating risk of bias and applicability (Collins et al., 2024; Moons et al., 2025).

The literature search primarily targeted peer-reviewed scientific articles indexed in the Web of Science Core Collection and Scopus, which were selected as the main sources of documented scientific evidence due to their strict indexing criteria and high standards of scholarly relevance. PubMed was consulted as a supplementary source to identify studies related to sports medicine and biomedical aspects of artificial intelligence. Google Scholar was used exclusively in a supporting role for citation chasing and reference verification. Studies identified solely through Google Scholar were included in the analysis only if they were also indexed in either the Web of Science or Scopus databases.

Discussion

Advantages and methodological innovations of machine learning in sports research

According to recent studies, machine learning (ML) in sports has evolved from a "supportive" analytical tool to a fundamental methodological framework. It speeds up the transition from scientific understanding to useful decision-making by combining data collection, real-time processing, modeling, and explainable reporting. In order to handle multi-modal data streams (GPS/IMU, physiological measures, video, and contextual data), apply sophisticated validation procedures, and evaluate model calibration and generalizability—all of which are essential for the transferability of findings across seasons and clubs—new data-analytic techniques are first required (Bullock et al., 2024; Zhou et al., 2025). Compared with traditional regression-based approaches, modern ensemble and deep learning models more effectively capture nonlinear relationships and interactions among training load, biomechanics, and contextual factors, and—when systematically validated—allow for more realistic predictions of injury risk and performance outcomes (Van Eetvelde et al., 2021; Claudino et al., 2019).

Second, significant advancements in athlete monitoring have been fueled by automation through wearable technology and edge/online processing, where machine learning (ML) reduces reliance on laboratory-based protocols by enabling the detection of workload trends, abnormal movement patterns, and early signals of overload (Rebelo et al., 2023; Wang et al., 2023; Seçkin et al., 2023; Collins et al., 2024). A closed "measurement–analysis–intervention" loop is created by integrating sensors with risk-assessment algorithms, giving coaches immediate input on training dose, readiness, and recuperation

(Mateus et al., 2024; Alzahrani et al., 2024). Because ML models may adjust to specific parameters (age, playing position, injury history) instead of depending on a "average" athlete profile, these systems enable individualized recommendations (Moons et al., 2025).

Third, machine learning makes it easier to find latent patterns that are frequently missed by traditional analysis, such as combinations of workloads at the micro and meso levels, method variability, and subtle indicators of overuse or tiredness. Key predictors can be transparently discovered and assessed for stability using explainable artificial intelligence approaches (such as global and local SHAP), which makes it easier to translate findings into training and rehabilitation procedures (Musat et al., 2024; Zhou et al., 2025). Furthermore, there is growing interest in generative and synthetic approaches (such as tabular variational autoencoders) to address class imbalance and improve robustness in settings with limited sample sizes—a common challenge in elite sport—as long as stringent validation procedures are followed to prevent methodological artifacts (Cordeiro et al., 2025).

Lastly, the area is moving toward greater repeatability thanks to methodological advancements in integrated analytical workflows and reporting uniformity. High-quality reviews and applied research increasingly demonstrate systematic checks of temporal data divides, grouped and internal–external validation procedures, calibration analyses, and evaluations of clinical or practical utility (Bullock et al., 2024; Van Eetvelde et al., 2021). When combined, machine learning (ML) not only improves the precision of injury risk and performance forecasts but also creates a new standard for methodology wherein study design, model validation, explainability, and result transferability are all essential parts of a single, cohesive research process (Claudino et al., 2019; Mateus et al., 2024; Finzel et al., 2025).

Limitations, challenges, and future directions of methodological development

While there are several advantages to using machine learning (ML) in sports research, the existing literature consistently identifies a number of methodological challenges that compromise the validity and generalizability of results. First, bias and low generalizability are still primarily caused by poor data quality and inconsistent outcome definitions (such as what exactly qualifies as a "injury" or a "return to play"). Weak or non-representative measurements, a lack of events, and population mismatch cause poor calibration in the field of healthcare predictive models; these models may discriminate convincingly but consistently overestimate or underestimate risk (Van Calster et al., 2019; Huang et al., 2020). Similar issues arise in sport when heterogeneous data sources (GPS/IMU, video, clinical measures) are combined without a clearly defined quality-control protocol and explicit statements of applicability.

The risk of overfitting and excessively optimistic performance estimations is significantly increased by small sample sizes and significant class imbalance, especially for uncommon events like injuries. In order to prevent parameter instability and artificial inflation of predictive performance, methodological suggestions for minimum sample size for prediction model development stress the significance of matching the number of observed events with model complexity (Riley et al., 2018/2019). When global accuracy measurements are employed in deep learning contexts, chronic class imbalance further jeopardizes model evaluation, underscoring the necessity of suitable performance metrics (such as AUPRC) and carefully chosen rebalancing techniques (Johnson & Khoshgoftaar, 2019; He & Garcia, 2009).

Third, data leakage—situations where information from the test environment unintentionally influences model training, whether through wrong preprocessing order, temporal "look-ahead," or overlap of persons across folds—is a common and frequently overlooked hazard. From unreasonably high metrics to erroneous trust in models, foundational research have detailed the mechanisms and effects of leakage and suggested practical solutions to stop it (Kaufman et al., 2012; Cawley & Talbot, 2010). This essentially means that imputation, scaling, and feature-selection processes must be carefully limited to internal training folds in time-series data typical of sports, with validation carried out using blocked or rolling schemes.

Insufficient standardization of validation and reporting represents another major methodological challenge in this field. Evidence from a large-scale "stress test" review of predictive models conducted during the COVID-19 period shows that the vast majority of studies were affected by a high risk of bias and inadequate reporting transparency, often resulting in inflated performance estimates (Wynants et al., 2020). Despite the availability of established frameworks for medical artificial intelligence—such as MINIMAR, CREMLS, and dedicated reporting recommendations for machine learning—their systematic and consistent adoption in sports science has not yet become common practice. This gap is particularly evident with respect to calibration, internal–external validation, and reproducibility, which remain insufficiently addressed in many published studies and thus constitute a fourth key methodological limitation of current research (Hernandez-Boussard et al., 2020; Stevens et al., 2020; Kolbinger et al., 2024).

Fifth, care must be taken when interpreting the explainability (XAI) requirement. The literature highlights that post hoc "explanations" of intricate black-box models do not always guarantee a trustworthy comprehension of causal mechanisms; in high-stakes situations (such as choices impacting the health of athletes), it might be better to take into account models that are naturally interpretable and verifiable domain assumptions (Rudin, 2019). Simultaneously, thorough documenting of models and datasets, such as "model cards" and "datasheets for datasets," can significantly minimize hidden assum-

ptions and clearly describe intended usage, restrictions, and evaluation procedures (Gebru et al., 2021; Mitchell et al., 2019).

And finally, the intersection of methodology and ethics introduces critical concerns related to privacy and data governance in sport. Recent research highlights that the expansion of “big data” in sport entails not only substantial analytical opportunities but also significant legal and ethical responsibilities, including informed consent, data minimization, controlled access, and transparency regarding secondary data use (West et al., 2024). In practical terms, this requires the implementation of clear protocols for anonymization or pseudonymization, robust access-control mechanisms, and explicit agreements defining data ownership and usage rights for information generated through wearable technologies.

Future directions follow several clear lines.

- (1) Methodologically, there is a need for widespread adoption of time-aware data splits, nested hyperparameter optimization, and internal–external validation, accompanied by systematic reporting of calibration and clinical or practical utility.
- (2) Open science practices, including preregistration and Registered Reports, as well as the publication of code and configurations, reduce opportunities for post hoc adjustment and strengthen the credibility of findings (Nosek et al., 2018).
- (3) Standards for documenting datasets and models (datasheets and model cards) should become a routine component of supplementary materials.
- (4) Open datasets with clearly defined access rules (e.g., open football event data and spatiotemporal streams) enable independent replication, benchmark development, and comparative testing (Pappalardo et al., 2019).
- (5) Any evaluation of XAI should include tests of explanation stability and comparisons with simpler, interpretable models, in order to avoid reliance on explanations that do not generalize across domains.

Taken together, these guidelines support the transition of ML in sport from a phase of enthusiasm to one of mature, reproducible, and responsible application (Table 1).

Given that sports datasets are typically chronologically and hierarchically structured (repeated measurements within the same athlete, throughout teams, and across seasons), the suggestions made in Table 1 are especially important in this context.

Table 1. Practical framework for the methodological enhancement of machine learning research in sport

Methodological challenge	Recommended measure	Expected effect
Incomplete or inconsistent data	Introduction of standardized measurement procedures and clear data collection protocols	Improved validity and comparability of results
Small samples and class imbalance	Data rebalancing techniques and integration of multiple seasons or teams	Greater model stability and generalizability
Data leakage during validation	Nested and time-blocked cross-validation	More realistic performance estimation and reduced risk of bias
Insufficient reporting transparency	Application of TRIPOD+AI, DOME, and PROBAST+AI guidelines	Improved reproducibility and verifiability of results
Limited model interpretability	Use of XAI techniques and model cards	Clearer explanations and increased trust among practitioners
Lack of open data	Publication of anonymized datasets and source code	Enhanced replicability and benchmark development
Insufficient ethical oversight	Implementation of privacy, consent, and data governance protocols	Data protection and ethical accountability

When random data splits and traditional k-fold techniques are used without blocking or grouping, this significantly raises the danger of biased performance estimate. In this regard, blocked and grouped cross-validation techniques directly promote a more reliable evaluation of model generalizability and are a methodologically better option for data with temporal or clustered structure (Roberts et al., 2017). Furthermore, when hyperparameters and model selection are optimized within the same validation procedure, error estimates may become systematically optimistic; therefore, nested cross-validation constitutes an essential condition for reliable model evaluation and comparison (Varoquaux et al., 2017).

Conclusion

A new methodological framework that transcends the limitations of traditional statistical analysis has been built by the use of machine learning in sports science. Large, multimodal datasets can be integrated using modern methods to create models that not only forecast sports results and injury risks but also offer comprehensible justifications for those forecasts. According to research, connecting exploratory and confirmatory studies is essential for creating trustworthy and useful models. In this sense, machine

learning serves as a tool for more accurate decision-making in training, injury prevention, and athlete rehabilitation rather than only as an analytical tool.

However, a number of difficulties accompany methodological advancement. Among the most prevalent issues are still heterogeneous data quality, small sample numbers, the possibility of data leakage, and a lack of established validation processes. The reliability of results is often compromised by inadequate reporting transparency and the lack of universal reproducibility requirements. In this regard, implementing frameworks like TRIPOD+AI, PROBAST+AI, and DOME is an essential step in improving scientific rigor and standardizing evaluation standards.

Explainable models (XAI), open science procedures, and the production of transparent and open datasets that enable independent verification of results should be the focus of future methodological advancements in sports research. Ethical issues like informed consent, privacy, and responsible athlete data administration also require special attention.

In sports science, machine learning is a paradigm shift that goes beyond technology innovation to include significant methodological adjustments. Its ability to combine analysis, interpretation, and practical application into a logical, repeatable, and scientifically supported process is its greatest contribution rather than just forecasting results. Along this path, a key requirement for the long-term and reliable progress of sports science continues to be the connection of technological innovation with strong research ethics.

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FROM FUNDING RISK TO PREDICTIVE CONTROL: WINCODE AI SYSTEM FOR PREVENTING FINANCIAL MISMANAGEMENT IN SPORTS

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Abstract: Many sports institutions fail not due to a lack of funding, but due to an inability to convert allocated resources into compliant and sustainable projects. This paper investigates whether an AI-supported system can reduce financial mismanagement by replacing static grant writing with predictive structured control. The study presents the WinCode system, an AI-driven platform consisting of four interconnected modules: MILES for logical project and financial modelling, SCORE for iterative evaluator simulation, EXECUTE for real-time task and risk tracking, and ECHO for audit-ready reporting and transparency. Empirical evidence is drawn from pilot workshops conducted with Erasmus+ sport project managers and first-time applicants. The results indicate that the application of predictive logic modelling significantly improves funding success rates, particularly for organisations with limited internal administrative capacity. By reframing project design from a speculative process into a controllable and verifiable system, the WinCode methodology supports scalable, transparent, and financially sound implementation of sports projects.

Keywords: predictive funding; AI-supported grant writing; financial governance; sports projects; WinCode

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Introduction

The European sports funding landscape is undergoing a structural transformation characterised by increasing demands for transparency, accountability, and demonstrable impact. Despite substantial allocations under the Multiannual Financial Framework (MFF) 2021–2027, a persistent implementation gap remains evident across the sports sector. Many organisations, ranging from grassroots clubs to established institutions, struggle to translate awarded funds into compliant, sustainable, and socially impactful projects. This gap is rarely the result of insufficient motivation or expertise in sport, but rather of limited administrative capacity and the absence of structured systems for managing financial and implementation risks.

Empirical evidence and policy guidance indicate that while funding strategies at European level are increasingly impact-oriented, execution at organisational level often fails due to fragmented planning, inconsistent logic, and reactive project management practices. As a result, sports organisations face risks such as underutilisation of funds, implementation delays, or the return of allocated resources. These challenges highlight a structural imbalance between the growing complexity of funding requirements and the practical capabilities of project implementers, particularly within small and medium-sized organisations.

In response to these challenges, recent academic and professional discourse has explored the integration of Artificial Intelligence as a systematic tool for improving governance, quality assurance, and risk management in project-based environments. Rather than serving merely as an automation mechanism, AI is increasingly conceptualised as a cognitive support system capable of reducing administrative burden, enhancing logical consistency, and enabling proactive decision-making throughout the project lifecycle. By supporting organisations in navigating regulatory frameworks and complex evaluation criteria, AI-based systems offer a pathway to mitigate cognitive overload and improve coherence between project design, budgeting, and implementation. Within the context of sports funding, this shift marks a transition from traditional static grant writing towards predictive structured control. Static approaches typically rely on narrative persuasion and retrospective evaluation, offering limited opportunities to identify logical weaknesses prior to submission. Predictive approaches, by contrast, embed evaluation logic, financial traceability, and risk mitigation mechanisms directly into the project design phase. This transformation enables organisations to anticipate implementation challenges, align resources with measurable outcomes, and maintain compliance throughout execution.

This paper positions the WinCode system as a response to the identified implementation gap in sports funding. Grounded in the Logical Framework Matrix and operationalised through a structured 26-step protocol, the system integrates AI-supported

mentorship, predictive evaluation, execution tracking, and audit-ready reporting. By examining its application through empirical pilot cases, the study contributes to the emerging body of research on AI-enabled governance and offers a practical model for strengthening financial integrity and sustainability in publicly funded sports projects.

Aims

The primary aim of this paper is to examine whether an AI-supported project management system can reduce financial mismanagement and improve the successful implementation of publicly funded sports projects by replacing static grant writing practices with predictive structured control. The study focuses on the WinCode four-pillar architecture, MILES, SCORE, EXECUTE, and ECHO, in addressing common sources of implementation failure, including fragmented planning, delayed risk detection, and insufficient alignment between project objectives, budgets, and expected outcomes. Through empirical evidence derived from pilot implementations, the paper assesses whether predictive logic modelling and iterative evaluator simulation can increase funding success rates and reduce resource loss, particularly among sports organisations with limited internal administrative capacity.

In addition, the study contributes to the broader academic discussion on hybrid intelligence in project governance by analysing how the structured integration of AI-based systems can mitigate cognitive overload among sports managers and improve decision-making quality across the project lifecycle.

Literature Review

The transition from traditional grant writing to predictive governance in publicly funded sports projects reflects a broader evolution across project management, cognitive science, and digital transformation research. The expansion of European funding instruments under the Multiannual Financial Framework (MFF) 2021–2027 has intensified requirements related to compliance, impact measurement, and financial accountability, exposing structural limitations in the capacity of sports organisations to manage increasingly complex project lifecycles.

The Crisis of Implementation and the Implementation Gap

Research in sport management consistently highlights limited organisational capacity as a major barrier to effective project implementation. Dowling et al. (2018) demonstrate that smaller sports organisations face persistent challenges in internationalisation due to constrained administrative resources and limited access to professional

project development expertise. Recent systematic evidence further confirms that sustainable growth in sport management depends on a structured combination of knowledge, competencies, and professional skills, particularly in governance, planning, and strategic implementation (Guidotti et al., 2023). Without these competencies, organisations are more likely to engage in fragmented and reactive project development, increasing the risk of financial inefficiency and long-term instability.

From Linear Planning to Impact-Based Governance

Traditional project management has long been dominated by the “iron triangle” of cost, time, and scope (Pollack et al., 2018). While this model remains relevant for operational control, it is insufficient for publicly funded sports projects, where societal impact and behavioural change are increasingly prioritised. Contemporary governance models therefore emphasise outcome - and impact-based planning, requiring explicit causal links between resources, activities, and long-term change.

Hills, Walker, and Dixon (2019) show that programmes lacking a documented Theory of Change often fail to produce measurable effects, even when adequately funded. Logic-based frameworks, by contrast, embed evaluation criteria directly into project design, reducing uncertainty during implementation, and providing a foundation for predictive governance approaches.

Cognitive Load, Transformational AI, and Predictive Governance

Cognitive Load Theory explains why traditional grant writing practices often fail in complex administrative environments. Sweller (2011) demonstrates that excessive extraneous cognitive load impairs human problem-solving and decision-making. In sports funding contexts, managers must navigate dense regulatory frameworks alongside their core professional responsibilities. Digital technologies offer a pathway to alleviating this burden. Thompson et al. (2024) argue that technology-mediated support systems are essential for sustaining organisational performance in non-profit sports settings. By externalising structural and compliance-related tasks, organisations can reclaim what Shirky (2010) terms “cognitive surplus,” enabling greater focus on strategic and social innovation.

The emergence of Transformational Artificial Intelligence (TRAI) further strengthens this shift. Todosijević and Razbornik (2024a) define TRAI as a paradigm in which AI automates logical structuring and evaluative reasoning rather than simple text generation. From an equity perspective, Stegmann and Lang (2025) note that uneven digital transformation reinforces disparities between elite and grassroots organisations; AI-supported governance tools can narrow this divide by providing standardised, evaluator-grade support and strengthening the integrity of public sports funding. Predictive governance models are further supported by systematic evidence

Todosijević, S., Razbornik, I., Bednarek-Kamińska, M. (2025) From funding risk to predictive control: wincode AI system for preventing financial mismanagement in sports In: Dašić, D. (ed) Sporticopedia SMB2025, Vol 3, No 1, 203-210

showing that artificial intelligence enables early risk detection, evaluator-aligned simulation, and continuous decision support across the project lifecycle (Adamantiadou & Tsironis, 2025).

Methodology

The methodology is designed to evaluate the effectiveness of predictive structured control as an alternative to traditional, narrative-based grant writing, with a particular focus on financial integrity, implementation reliability, and organisational capacity building.

Research Design and Scope

The research combines qualitative and quantitative elements. A qualitative review of theoretical and policy-oriented literature establishes the conceptual framework for predictive governance and hybrid intelligence. This is complemented by quantitative and descriptive data collected from pilot training programmes conducted between 2023 and 2025 in Slovenia and Serbia. The sample includes over 100 sports professionals, including coaches, academy directors, project coordinators, and researchers, who participated in structured training based on the WinCode

WinCode System Architecture

The WinCode predictive system operationalises the 26-step protocol through four interdependent AI-supported modules. MILES provides structured AI mentorship for project modelling, policy alignment, and logical consistency. SCORE simulates official evaluation criteria to identify weaknesses and optimise quality prior to submission. EXECUTE converts approved work plans into time-bound task files, supporting real-time monitoring and proactive risk management. ECHO automates audit-ready reporting and impact visualisation, ensuring continuous compliance and transparent financial governance.

Methodological Paradigm Shift: Cognitive Surplus in Practice

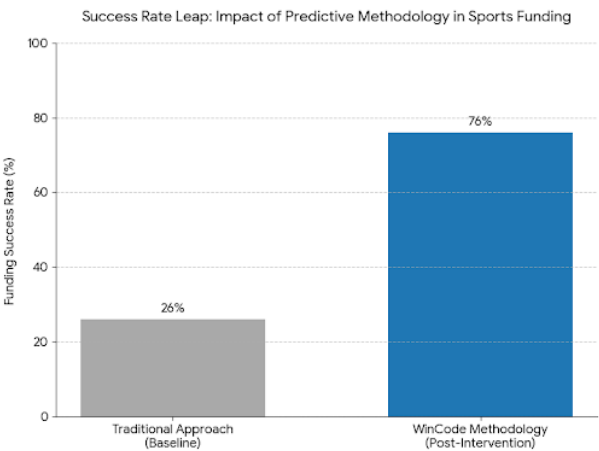
The methodological shift introduced by predictive structured control represents a redistribution of professional effort rather than a simple technological substitution. By prioritising structured thinking, logic validation, and financial alignment, the WinCode methodology reduces extraneous cognitive load and enables sports professionals to focus on strategic and social objectives. This reallocation of effort provides the analytical foundation for the results presented in the following section. This study adopts a hybrid methodological approach integrating conceptual analysis with empirical evidence.

Results with Discussion

The application of the WinCode predictive methodology was evaluated through a case study involving pilot programmes conducted with sports organisations in Slovenia. Participants included coaches, academy directors, project coordinators, and researchers who applied the 26-step protocol to real Erasmus+ Sport and national funding calls. The results support the concept of hybrid intelligence, in which AI systems handle complex structural and compliance-related tasks while human professionals retain strategic judgement and ethical oversight. This partnership enables sports organisations to focus on social innovation and programme quality, rather than administrative survival.

The application of the WinCode predictive methodology demonstrated a substantial increase in funding success rates. Prior to the adoption of the predictive structured control model, participating organisations reported a baseline funding success rate of approximately 26%, which is consistent with average outcomes in highly competitive European calls. Following the implementation of the WinCode system, the success rate of submitted proposals increased to 76%. This improvement suggests that systematic logic modelling and evaluator-aligned simulation significantly reduce the risk of rejection caused by structural inconsistencies and unclear impact pathways. Proposals subjected to two to three iterative cycles of the SCORE module demonstrated measurable quality gains. Evaluator feedback highlighted improved coherence between objectives, activities, and budgets, as well as clearer articulation of expected outcomes. On average, these proposals achieved an estimated increase of 8–10 evaluation points, corresponding to an overall quality improvement of approximately 10–12%.

Figure 1. Leap in Project Funding Success Rate Following the Introduction of Predictive Structured Control



Source: Authors' own research and analysis.

The figure illustrates the comparative funding success rates of sports project proposals before and after the implementation of the WinCode predictive governance methodology. The baseline success rate reflects outcomes achieved through traditional grant writing approaches, while the post-implementation rate represents proposals developed using predictive logic modelling and evaluator-aligned verification. The observed increase demonstrates the effectiveness of structured, AI-supported project design in improving proposal quality and funding outcomes.

Conclusion

This study demonstrates that the transition from static grant writing to predictive structured control represents a substantive improvement in the governance and implementation of publicly funded sports projects. The empirical evidence from the Slovenian pilot programmes indicates that the WinCode system effectively reduces financial mismanagement risks by embedding logical coherence, evaluator-aligned verification, and financial traceability directly into the project lifecycle.

By operationalising a 26-step protocol grounded in the Logical Framework Matrix and supported by AI-driven modules, the methodology addresses key weaknesses that traditionally undermine sports projects, including fragmented planning, delayed risk detection, and cognitive overload among project managers. The observed increase in funding success rates, combined with significant efficiency gains and administrative cost reductions, confirms that predictive governance is not merely a technological enhancement but a strategic necessity in an increasingly complex funding environment. Importantly, this approach contributes to the democratisation of access to public funding by providing smaller and less resourced organisations with tools comparable to those available to elite institutions.

In conclusion, the WinCode predictive governance model offers a scalable and transferable framework for strengthening transparency, sustainability, and impact in sports funding. Its application has implications not only for financial management but also for the long-term capacity building of sports organisations operating within European public funding schemes.

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MEDIA LOGIC AND THE PREMIER LEAGUE³⁶

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Abstract: Mediatization of sport implies the adoption of media's modus operandi, the infiltration of media logic into sport realm. The paper discusses whether sport has become a form of "media theater" and sport clubs "media entertainment companies". I analyze the influence of four constituents of media logic on the case of Premier League of England. Economic logic of the media assumes Premier League has to adapt to a different model, that shifts priority from stadium and merchandise revenue to TV rights and digital fan engagement. Symbolic logic of the media adapts entertainment media formats to integrate sport into culture industry.

Fan communitization is now primarily digital, and techno-logic of the media implements new technologies in all spheres of sport phenomena, from training to match oversight and, finally, datafication of both players and consumers. Social media logic changes the whole structure of fans, from local and national to global and multicultural.

Keywords: Premier League, football, mediatization, media logic, media culture

Introduction

The relationship between sport and media opens the fundamental questions: what is sport and what is media? Can we differentiate the two? Sport existed and functioned without media for decades. Can we actually register changes in this relationship that we could call mediatization of sport? Mediatization is concerned with media related changes in culture and society in many realms (Hepp, 2013). It adheres to the idea there is a specific modus operandi of the media, its media logic, the logic of functioning, that shapes the sport and other phenomena (Hjarvard, 2013).

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Media studies usually examine the production and consumption aspects of the media, which we can refer to as economic logic of media companies, on the one hand, or social logic of audience and fan behaviour. They are increasingly related to one another through the media, whether it is the television media formats and content we as viewership are accustomed to (symbolic logic of the media), or the digital technologies that shape both players' and team performances and engages the users on social media fan profiles (techno-logic of the media).

In this paper I will analyze these four aspects of media's *modus operandi* that sport clubs and Premier League as such is adapting to. The same question is discussed in all four sections: would Premier League and football as such be any different without the media logic that infiltrates an increasing number of aspects of sport?

Economic media logic of Premier League

Football clubs' finances are deeply connected to the fans. The way it is connected has changed, though. In the past, it was the tickets that brought the profit, and even today this is very important for second tier of English football. The Premier league is also concerned with the stadiums' revenue, but not as much as before. New stadiums are being built and this is a very important aspect of clubs' business. But it is not central for clubs as much as before. It was Arsenal in 2006 that was still thinking about building a stadium rather than creating a media organisation that will multiply club's finances. New seats and clean toilets for the local fans were priority, although other clubs have already shown this is not the future business model (Robinson & Clegg 2019). Even in the nineties, Liverpool as the most successful English club expected to be the Premier league's priority in the eve of its establishment in 1992, but it was actually Manchester United with the management experience from American NHL, that brought the right, new kind of merchandise.

In 1998 United's source of finance was 34% spectators, that is stadium's revenue, but this has fallen to 13% in 2017; merchandise and sponsors brought 47% of revenue in the last decade of twentieth century, but in 2017 fell to 26%; it was 61% TV rights revenues now (Andreff, 2021: 282). The spectators that United was chasing were not on the stadium in Manchester, but all over the world in front of their screens. In 1992, BSkyB established a £304 million 5-year deal for broadcasting rights, but in 2016 it was £2.9 billion per year (Falcous, 2021: 326). Sports was the foundation for BSkyB, because it brought popular and not so expensive media content to gain viewership, and the ratings have become the focus of both the media companies and football clubs. Even the new corporations, like Amazon, who wanted to boost its Amazon Prime platform, acquired the rights for streaming Premier league to get viewership. This marriage of

sport and media were based on efficient production of hours of content, followed by TV marketing sales.

According to European Champions Report 2025, United's rival Manchester City did not rely that much of broadcasting rights in recent years. The matchday brought them 88 million euros of revenue from stadium spectators, while TV rights brought 343 million euros (Sartori, 2025). It was clear that old school approach to managing football clubs is history, because stadiums alone cannot bring that much profit. In Premier league, there is a struggle about the share of TV rights revenues, because all the clubs get the equal share, which is a topic of discussion whether bigger clubs should be getting a larger share or creating their own European league to collect the broadcasting rights.

At this point, Manchester City rose from 548 million in 2019 to 838 million euros in 2024, based on sponsorship deals and player transfers, but commercial revenue was 406 million compared to 343 million euros for TV rights (Sartori, 2025). According to the report, total operating revenues of largest football clubs in Europe, such as Real Madrid or Paris Saint-Germain, follow the same pattern of slightly larger commercial compared to broadcasting rights revenues. But already on the level of Internazionale Milano we can see the dominance of media-related finances, although it is not entirely clear whether those sponsorship deals can also be seen as media-related. For example, organising events is considered a commercial revenue, but organising events is a media activity. After all, Robinson and Clegg (2019) defined Manchester City as "media-entertainment company". It is safe to say football clubs have to address its media presence as part of its business.

However, media has changed the approach to the whole game and the league. If you want global broadcasting revenues you have to have a global audience, not the local one. You have to play Asia Cup in pre-season or friendly matches in North America to entertain fans overseas. More so, you have to import foreign players and if they do not play, like in the case of Park Ji-Sung in Manchester United or Lee Chung-yong for Bolton, Korean viewing figures will drop (Millward, 2017: 38). "The trends suggested that the Premier League might become the first national sports league where overseas broadcast rights are more lucrative than those in the domestic market" (Millward, 2017: 40). The league led by global media and global corporations had to become transnational.

In some parts of the world, like North America, it is not broadcasting but streaming that is central for media sports. NBC Universal has acquired the rights but chose to stream it direct-to-consumers on many platforms, including ESPN+, Premier League Pass or just NBC Sports app (Kuntz, 2020: 137). It is still unclear how will this develop the fan base in the United States. On the one hand, pay-per-view probably provides more profit for the corporation, although fans struggle to adjust to different schedules and streaming platforms, now that they have to pay 64.99\$ per season. On the other

hand, there is a question does this prevent the increase of viewership and the consolidation of football fans in America. Although these two aspects should be connected, as more fans and more viewers would imply more profit for the media corporations, it is questionable whether some companies will follow this logic. "Perhaps the League may choose to launch its own subscription-based channel at some point" (Elliot, 2017: 188).

The social media logic of Premier League

In 1992 there was a widespread fear that once the games are broadcast no one will come to the stadium. At the beginning, only the second half was televised, because the managers thought that the first half will sell the tickets at the stadium. At some point they understood stadium will bring more revenues than TV rights or merchandise ever again. Today, without a question, communication with fans and/or consumers is mediated. This idea of globalization and communitization of fan communities (Hepp, 2013) is entirely known and still entirely paradoxical. The fans are mostly not the ones that live in the city where the club resides. Most of Manchester United fans, whole half a billion of them, do not even live in England. Local fans and their historical, intergenerational communities, are not central for the club's business any more. These media-and-sport organisations "feature global social media audiences in the tens of millions across multiple social networks, increasing brand value for those organizations while also exposing other social media audiences to both marketing and communications content" (Clavio & Meisinger, 2025: 184).

Communication of the club with its global fan base is not just virtual, it has to be accompanied by friendly matches abroad, to actually engage with the intercontinental fans overall. Clubs also use their presence over social media accounts and reproduce the brand's value in the digital realm. This is changing the usual relationship of club and its fans. Fans were historically tied to their towns and cities, and several generations saw themselves as fans of the particular club. It was historically rooted, and related to the ethnic and local identities, that in the case of Premier league were primarily English. Even today there are practices that imply some promotion of nationalism, even militarism (Kelly & Woo Lee, 2021 :298), where "Remembrance day" is utilised as paying homage to British military, world war, sometimes even contemporary wars.

Yet the core fans historically tied to the club do not see traditions being kept for long, but replaced by postmodern global identities of transcultural football clubs of Premier league. Even though the number of viewers increases, the local fans, the most traditional ones, are in stark tension with the establishment of today's Premier league. For example, Liverpool supporters strongly disagree with the mainstream interpretation

of Hillsborough disaster in 1989 and still insist on their side of the story. "Liverpool FC's anthem 'You'll Never Walk Alone' remains vital to the community's remembrance and tribute to the lives lost... Liverpool supporters organized a 6-minute rendition at the beginning of an FA Cup match in 2007. The song accompanied a fan-generated stadium mosaic that simply read 'The Truth' – intended to draw attention to the ongoing distortions and inaccuracies perpetrated in the media about the cause of the tragedy and those involved.... Accordingly, Liverpool supporters performed an essential identity that challenged the historic unjust national discourse about the events and the inaction by subsequent administrations to address them properly" (Kassing, 2025: 421).

This conflict of space of places, historically rooted identities, and space of flows, the new flows of capital and global consumers (Castells, 2010), tends to change the overall social logic, that is the structure of viewership, fans and their practices, tension between the traditional and the commercial. Instead of pubs, local communities and stadium itself, the club lives on social media, through betting organisations and television networks. Fans are often sceptical to the technological advancements and do not fully support the changes brought to the sports, like VAR or any other new technology, as it creates the further development of commercialised product and not the historical phenomenon of local football clubs (Frandsen & Landgrebe, 2022).

There is the rise of "protest against the perceived corporatisation of the game which continues to exclude and alienate its 'traditional' fan base"(Turner, 2017: 112). Fans are unhappy with the price of tickets, especially on the away games, the foreign ownership, globalisation and neoliberalisation of the game, but also modern football's transformation overall. This implies there is an authentic fandom, on the one hand, and commercialized consumption of football, on the other hand. Traditional football fan is male, working class, local, not weary of a bit of "hooliganism", while the new fans include women, ethnic minorities, a global audience.

However, one should not just see the old fan identity as conservative, because what new formula brings is the new patterns of consumption and the game's transformation. For some, it is even a question of cultural, symbolic capital, because the historical fans belonged to the lower classes and now going to stadium became a middle-class leisure, not the expression of someone's identity. Fan protests therefore may be nostalgic and romanticized but they are also participatory. They wanted to have a say in the decisions about the functioning of the club and its further development. The argument is sound from the symbolic capital perspective, after all, the clubs that are becoming transnational corporations still rely on the local environments and regional cultures, the historical generations of local fans that actually created the product that is now being sold (Turner, 2017: 126). It is a question whether that can just be taken away from them and sold as a global media product.

Symbolic media logic

What are the changes when it comes to content production? How is this content shaped by media formats and journalist practices? What is sport news? Unlike “hard news” about politics and economy, sport is a popular subject that frequently boosts readership. According to Guy Hodgson (2023: 42), British national newspapers increased its pagination by at least 50% from 1984 to 1994, and Sunday Express even tripled in size, while coverage of sport increased even further. The Sun and The Times are paying millions of pounds to broadcast only Premier League highlights on tablets and phones. For decades now, British newspapers increased the percentage of sport coverage, mainly to 20 to 30% of the paper. This included not just the rise of sport section within the whole edition, but in terms of editorial and columns inches it rose to 46-50% of the edition (Hodgson, 2023: 43). Even on 22 June 2016, the last campaign day for Brexit, Daily Mirror had 9 pages about the EU referendum and 20 pages about sport (ibid).

You cannot - not talk about sport. But what is sport and what is sport media or sport news? Media covers only what is considered “newsworthy”, while other information remains unpublished. There is an assumption that newsworthiness is audience-driven (Hjarvard, 2013: 26), in terms that journalists do not choose what is going to be published but fans do, with their decisions about what kind of sport news is important. Why are some players often sources of information and which quotes journalists publish? Even though sport is a humane activity where people can improve their physical performance, it is not portrayed as such by the media. You always got to have either a frame of conflict or a human interest dilemma in order for the information to be newsworthy, and also competitors have to be perceived as if in the horse race, meaning trailing one another in pursuit of excellence (de Vreese, 2014).

Bradshaw and Minogue (2020) have a list of what can become newsworthy, or more likely to get published: the power elite, relevance, bad news, good news, surprise, celebrity, exclusivity and conflict. The sport news has to be about powerful individuals or organisations, about heroes and antiheroes, winners and losers (Penezić, Bajić and Seletić, 2024). Some clubs will not be considered that relevant, while some will constantly be in the focus of media. Arguments, controversies, break-ups, scandals, these are more important than regular day’s work of an athlete. What we see on the TV screens is not just different in terms of replays, statistics, close-ups, and many other cinematographic methods to create a mega-event sport spectacle. It is about provoking emotional reactions of just amusement. This way certain kind of behaviour is emphasized over others and you can expect stereotyping like in the terms of “Englishness” represented by domestic players, and foreign players style of play.

There is a question whether the audience want news or infotainment, or in other terms, does the audience want sport news or sportainment, and can this be seen as

sport journalism at all (Bradshaw & Minogue, 2020). Nevertheless, journalists often cover these kinds of stories, which bring the sport sphere closer to the realm of popular culture, and in the case of tabloids, even sensationalism. As Wayne Rooney states, reporters “love building you up, and love just as much kicking you when they think you are down” (in Birkner and Nolleke, 2015: 11). Athletes are treated just as any other celebrity, like in the case of John Terry who had to portray the ideal “Englishness” while having extramarital affair with a former partner of his teammate, and some racial controversies against one Queens’s Park Rangers player. “On the one hand, his style and his qualities of on-pitch leadership are illustrative of the restorative nostalgia of the re-nationalization narratives outlined above, positioning him as the heir to former England captains such as Bobby Moore. However, on the other hand, his lifestyle, his celebrity and his off-pitch antics represent the ambivalence in English football culture wrought by neoliberalism: he is seen as a product of a culture that lacks taste and self-control, and as representative of the replacement of the noble working class by the ‘chav’” (Ewen, 2013: 483).

The commercialisation of football changed the working-class masculinity and “hooligan” symbolism of English football, but is increasingly being replaced by celebrification of society and a culture of consumption. Many today do not remember what has David Beckham done on the football pitch but a lot of them know about his marriage with a pop music star. Sport celebrities are still mostly “meritocratic”, that is they are celebrities because they are successful athletes. But there is a striking change between the relationship of previous football players to the club. Players were connected to their local communities and club’s fans, and today’s sport celebrities are in fact more distant from the fans than ever before. We can read about their diets, and private aspects of their lives, their social media usage, but their relationship with a local community is further and further apart and less visible (Harris, 2017: 109). This way athletes are increasingly becoming mediated figures rarely seen in real life but through the lens of the media. And there they are the close-up shot and not an athlete from previous eras.

Techno-logic of the Premier League

Does technology change sport and, if so, how? I have shown that in many aspects clubs and athletes adjust to the media logic, but is there something specifically technological that brings major changes to the sport landscape? We could categorize it as certain changes that are in the making when it comes to what is happening on the stadium itself, among the players and referees (like in the case of VAR technology); second, how does social media relate to the treatment of fans; third, does new technology, like big data or AI interfere in the management of players, even acquisition of players, based on calculated performance?

Implementation of the video assistant referee (VAR) challenged the authority of individual human referees on the stadium. Refereeing is becoming much more complex and creates more dilemmas for the team of referees, but what should not be forgotten is that VAR is simply and implementation based on historical relationship with television. From replay technology of the past, that relativized the authority of the referee when it comes to decisions about goals or offsides, VAR makes it official: technology will interfere and make a decision that will overturn the human perspective. On top of that, it seem there is a whole range of questions when it comes to what decision-making technologies affect in sports (Frandsen & Landgrebe, 2022: 813): tactics and structures in the game, key actors' performance and behaviour, fans, referees.

“Not surprisingly, such controversies are also provoked by the increasing use of media technologies to make performances more transparent for referees and audiences. In principle this happens from the beginning of sports: Lines, goal nets, or finish line photography can all be considered “decision aids” that enhance visibility to support the referee’s decision” (d’Andrea & Stauff, 2022: 837). The team of referees use mobile communication system and VAR technology, and are becoming more important players in the game itself, all the while being broadcast as important for the TV narrative of the game. The expectation is more rational and less emotional decision, but the relationship between referees and fans are more complicated, as fans get to demand to scrutinize referees right there and right now. VAR seem to be just a new tool for analyzing the game, shape our understanding and experience of the game, and these new tools are further developed and negotiated.

Second, what is happening with social media? Live event reporting by the journalists is now supplemented with real-time communication, or chatter, on the social networks (McEnnis, 2023: 125). Social media are now publishing platforms, a place for user interactions, gathering fan opinion, and maybe some source for stories and news. But social media is often not interested in facts or ethical standards, but foster conversation, debate, interaction, that are more emotional than objective. Subjectivity and partisanship seems to be on the increase as journalists tweet opinions rather than information, just like fans, that they engage with and are the source of media organization’s income. Other digital technologies had already impacted the business model of sport media organizations, because they require investment (Penezić, Bajić and Selenić, 2023). Many of these organizations dedicating increased amounts of content to controversy and opinion at the cost of fact-based analysis, all while the size of traditional newsroom staffs decreased. But social media accelerated this. The sport media industry has become encumbered with ‘hot takes’—illogical or uninformed opinions meant to engage and/or inflame the audience” (Clavio & Meisinger, 2025: 180).

There is also a phenomenon of fan TV on the rise, where fan congregate and interact on certain platforms like Youtube, where they provide their own reflections about the clubs and sport they support and follow. There are special fan zones, online fandom structures, that find their own ways of supporting the club, and the social networks of fans are becoming transnational, multicultural and global. That is all increasingly becoming very important for the clubs' business. "Analysing fans' social media practices can yield an insight into fans' consumption habits and patterns" (Woods & Ludvigsen, 2021). Clubs rely not just on classic survey, but on data processing to analyse the fans' behavior. There are Twitter analytics, Youtube data tools and other means of scraping and data mining, that are now becoming more important for the clubs themselves.

Finally, a peculiar thought is occurring when it comes to another authority on the field, namely coaches. Should computers recruit players and contemplate tactics? The use of big data is now a trendy practice, that became popular with the film *Moneball* (2011), starring Brad Pitt, where the baseball club started relying on the computer analysis, the "sabermetric" scouting of players and assembling a competitive team. In the case of Premier league, this has first happened in a not so succesfull fashion, with Liverpool acquiring Andy Carroll based on the data processing of different game features, but it carried on to this day (Robinson & Clegg 2019). Many physical and technical performance parameters are observed and become a part of the tracking system, where the data is processes. The results can impact the evolution of the game, such as the demonstration that wide players and central defenders are valued for the physical demand (high-intensity running) and the central players for their technical requirements. "More specifically, ball possession, number of shots, shots on target, number of passes and pass completion rates are all associated with team success" (Bush et al, 2015).

Some even develop a network approach, where the high level of interaction and orchestration of the group is valued, but also low level of centralization or the "distribution of network positions and roles" (Grund, 2012: 688). In general, this is perceived as objective measures of individual performance, related to assists, tackles, off-sides and other individual behaviour that can be examined as a contribution of the network position and individual performance. But that clearly interferes with the work of the human managers and their view of the game. Even if they gladly accept datafication in their everyday tactical and strategic decisions, it is still that organization of the club and players' performance getting more related to techno-logic than manager's decisions or worldview.

Conclusion

This paper has shown that the Premier League's transformation from a locally grounded sporting competition into a global media product reflects a shift toward broadcasting, digital platforms, and data-driven management, redefining both club organization and the spatial imagination of fandom.

Media logic reshapes supporter communities by privileging transnational, digitally networked audiences, while generating tensions with historically rooted local identities and traditions. The Premier League thus becomes a site of conflict between the "space of places" and the "space of flows", where traditional identities, memories, and participatory claims clash with corporate governance and commercial rationalization. Clubs have effectively become hybrid media-entertainment companies whose financial stability depends less on physical attendance and more on the ability to generate continuous mediated content for dispersed global audiences.

Symbolically, football is increasingly produced and consumed through media formats that emphasize spectacle, celebrity, and emotional drama, blurring the boundaries between sport, journalism, and entertainment. Journalistic formats, tabloidization, and infotainment frames align football with popular culture industries, transforming players into mediated personalities and matches into serialized drama.

Technologically, innovations such as VAR, performance analytics, and social media platforms intervene directly in decision-making, authority, and experience of the game. These developments promise rationalization and transparency, yet they also deepen the dependence of sport on media infrastructures and computational systems.

Taken together, these findings suggest that the Premier League is not merely influenced by media, but constituted through media logic. Without these logics, contemporary football—as a global spectacle, a commercial enterprise, and a cultural industry—would be fundamentally different. The Premier League thus exemplifies how sport today functions as a mediatized cultural form—one defined not only by athletic competition, but by continuous negotiation between commercial imperatives, technological rationality, and enduring social meanings.

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Invitation paper

SPORT, MEDIA, AND SOCIETY: MEDIA REPRESENTATION OF ETHICAL ISSUES – BETWEEN IDEALIZATION AND NORMALIZATION OF DEVIATIONS

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Abstract: Sport occupies a prominent position in contemporary society, transcending its primary framework and emerging as a significant cultural and communicative phenomenon. Although it is often promoted as a realm of fair play, character building, and universal values, numerous negative phenomena – such as corruption, doping, match-fixing, pervasive commercialization, and various forms of discrimination – reveal the complexity of its ethical dimension. This article explores how the media represent ethical issues in sport, analyzing whether media narratives contribute to raising public awareness and fostering critical reflection on these deviations, or, conversely, to their normalization and spectacularization. In doing so, the study also draws attention to the broader spectrum of issues that currently shape the field of contemporary sport. Using qualitative content analysis of Serbian daily newspapers, the research focuses on several paradigmatic cases in order to identify dominant discursive patterns through which ethical dilemmas are presented to the public. Particular attention is given to narratives related to fair play, on-field violence, athletes' conduct beyond sports events, and the accountability of sports institutions. The aim of this paper is to highlight key challenges in contemporary sport and the various contradictions inherent in the media representation of its ethical aspects, as well as the broader implications these narratives may have for the relationship between sport, media, and societal values.

Keywords: sport ethics, media representation, sport and society, sports media, discursive analysis

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Introduction

Contemporary sport, driven by a relentless pursuit of ever-greater achievements, both in terms of athletic performance and financial profit, has increasingly drifted away from its original principles and values. It is therefore unsurprising that commentators, but also the scientific researchers, frequently assert that modern sport bears diminishing resemblance to what it once represented.

This trend becomes clearer when sport is observed within a broader societal context, as it functions as a revealing mirror of social values. At the same time, this context also caused the fact that the sport nowadays remains a domain in which the boundaries of morality and ethics are continuously tested, which is shaping contemporary society in general (Guttmann, 2004; Cashmore et al., 2022). Long ago, sports competitions “evolved into a dominant form of entertainment and a routine aspect of everyday life, as well as one of the most profitable global industries” (Пенеzić, 2021: 42). Moreover, ongoing trends of “globalization and the monetization of all socially relevant activities contribute to the commodification of every popular resource, reinforcing public demand for sports content” (ibid: 39).

Communication and the media play a central role in shaping the relationship between sport and society, particularly by transforming sport into a form of symbolic capital, as described by Bourdieu long ago (1979). This capital, depending on interests and circumstances, is often converted and instrumentalized in ways that further distance sport from its foundational values. In such environment, the space for ethical reflection becomes increasingly constrained, especially under the pressures of commercialization and spectacularization, processes that Debord (1967) described in his analysis of contemporary society.

Modern sports spectacle is unimaginable without media: the media not only follow sports events and heroes but frequently construct and idealize them – normalize various forms of deviant behavior in and around sport. For these reasons, analyzing how media represent sports events and actors is crucial for understanding processes of moral legitimization or relativization in contemporary sport. In Serbia, media discourse often displays a pronounced ambivalence, oscillating between idealization and the normalization of deviations, which forms the foundation of this research.

The question of ethical issues in sport is, therefore, very important to be considered within this framework. It includes rule violations during play, organizational and game-related fraud, the use of prohibited substances (doping and steroids), gender and racial equality, as well as discrimination and stereotyping. Commercialization of sport is also particularly ethically problematic, as it raises questions about the nature of play and encourages the use of prohibited methods.

Based on these considerations, the central research question of this paper is: *How do Serbian media represent ethical dilemmas in sport – do they emphasize responsibility and moral values, or do they contribute to their relativization and the normalization of deviant behaviors?*

The aim of the article is to highlight the role of the media in shaping societal understandings of sport and athletes as moral role models.

Particular attention is given to the representation of ethical issues in Serbian media, through the analysis of two paradigmatic cases, in order to demonstrate how media can simultaneously idealize and justify, or minimize deviant patterns of behavior.

Methodology

This study is based on qualitative research focusing on the analysis of specific media content, with particular emphasis on discourse and narrative in media reporting of selected sports cases. This method enables a deeper understanding of how language, tone, and text structure shape social and moral meanings of sports events and actors (Fairclough, 1995; Krippendorff, 2019; van Dijk, 2009).

Therefore, theoretical frameworks proposed by Entman (1993) and Richardson (2007) guided the identification of discursive strategies and narrative frames in media texts. The analysis covers online editions of daily newspapers in Serbia, specifically Novosti, Blic, Kurir, Danas, and Informer. More concretely, the media coverage of two representative cases in 2025 were examined:

1. Doping and suspension of judo national team athlete Milica Nikolić (announcement: June 3; media coverage: July 10–13, 2025);
2. Violence against a referee by the director of RK Vojvodina Darko Jevtić (announcement: September 24, 2025; media coverage: September 16–24, 2025).

These cases were selected because they represent different types of ethical deviations in sport (individual and institutional), while reflecting prevalent problems in contemporary sports (doping, violence), allowing for a meaningful comparative insight into media patterns of moral representation. The analysis involved identifying discursive and narrative frameworks, with particular attention to tone and modality, i.e., whether texts express condemnation, justification, glorification, or emotional identification with the athletes.

Criteria for analysis included:

- Headline and lexical choices: linguistic tone, connotations, and emotional charge;

- Visual elements within articles: photographs, symbols, layout, and graphic framing;
- Story framing: the way events are contextualized and morally interpreted, fostering specific narratives.

From this, three analytical categories were formed:

- Type of representation: idealization of the athlete vs. depiction of deviation;
- Recognizable discursive strategies: emotionalization, spectacularization, moralization, relativization;
- Visual elements: use of photographs, colors, symbols, and headlines in shaping moral meaning.

Each text was analyzed along the following dimensions:

- Tone and moral framing: condemnation / justification / neutrality;
- Type of discourse: sensationalist / institutional / protective / emotional;
- Role of actors: personalization (focus on the individual) vs. systemic critique;
- Visual and linguistic codes: metaphors of war, struggle, honor, betrayal, etc;
- Media leniency: attempts to humanize or to critic deviations.

To ensure interpretive reliability, the analysis relied on source triangulation and a comparative approach across newspapers (their online editions) with different editorial policies and ideological orientations. For both cases, texts from the same set of media outlets were analyzed to enhance representativeness and facilitate a comparative assessment of reporting practices. The aim of this methodological procedure is to map how domestic media construct moral narratives about sports actors and to examine the extent to which media reporting contributes to the idealization or relativization of deviant behaviors in sports.

Research questions guiding the study are:

3. How do media in Serbia present sports deviations – through condemnation, relativization, or justification?
4. Does reporting predominantly reflect a narrative of moral responsibility or solidarity with athletes?
5. To what extent do external, non-media factors (social, political, institutional) influence media narratives and shape interpretations of sports events?

Literature Review

Sport, Ethics, and Society

Sport represents not only need to express the body but also an organized skill in that expression. The dynamism within the body seeks to be shaped through movement into various forms. These forms are an expression of human spirit and emotion. Therefore, play is a union of spirituality and the body. Spirituality gives meaning to play, and the body realizes it. Unlike play, which is a human creative need, sport is a structured reduction of that need. When play is organized and reduced to strict rules, it becomes sport. Ancient Greek philosophers emphasized the importance of training both body and spirit for the development of the individual. The origins of organized sport are found in the Olympic Games, where not only physical skill and play were showcased but also intellectual capacities. In the earliest Olympic Games, athletic and gymnastic competitions were given equal importance alongside spiritual contests such as oratory.

From ancient times to the present day, sport has held a significant and essential place in the lives of people across the globe. No one remains indifferent to sport - whether participants, competitors, spectators, or critics. Even Pythagoras noted that some attend the Olympic Games to compete, others to support the competitors, and yet others to observe both the athletes and the supporters - the latter being philosophers. Since the first organized sports competitions, sport has developed into a wide range of disciplines. History has shown that new sports emerge and evolve over time. Due to its profound influence on both individual and societal life, sport has gained significant importance, becoming a human activity that mobilizes diverse resources, from material to value-based. Its impact in contemporary society extends beyond the economy and modern technologies to education and moral values.

Therefore, sport involves various professions such as doctors, psychologists, economists, lawyers, historians, and sociologists, as well as sciences - both natural and applied, and social and humanistic. It also engages artists, writers, and journalists. Sociologists study the impact of sport on social groups, leisure time, values among students, discrimination, pathological behavior, violence, and other phenomena. Psychologists examine its effects on individual success and failure, personality development, behavior in competitions, mass emotional responses, marketing experts, and everyone involved in sporting life. Legal professionals address sports contracts, sanctions for anti-social and criminal behavior in competitions, and other legal matters related to sport.

The significance, role, and mass appeal of sport have also become subjects of philosophical and ethical inquiry. Platon, in *The Republic*, highlighted the importance of physical training in the education of philosophers. He noted that humans were given „two arts, music and gymnastics... primarily to care for their dual nature: vital and philoso-

phical” (Platon, 1976: 96). The philosophy of sport was formally established in the second half of the 20th century in the United States, thanks to Warren Fraleigh, a professor at the State University of Brockport, New York. He founded the Philosophy of Sport Society in 1972, which became an international association in 1999. The discipline of sport philosophy has since developed in the U.S., Canada, the U.K., and Japan. Philosophical literature on sport in Europe emerged in Germany, the Czech Republic, Poland, Hungary, and Slovenia (McNamee, 2007: 1). For philosophers, the question of sport involves conceptual, cognitive, and moral dimensions. This is why sport ethics is now studied at universities as a distinct branch of ethics.

Sport in contemporary societies also raises numerous moral problems and dilemmas. Ethical concerns stemming from sporting activities have broader implications for both individual and societal ethics. The use of performance-enhancing substances is not solely a concern for athletes, coaches, managers, or sports organizations; it extends to society at large. Questions of fairness in sport intersect with broader societal issues of justice. Another ethical problem arises when rules are broken in play, and referees fail to observe or act on the violation. In such cases, the ethicality of the transgressor’s victory is called into question. Cheating in sport thus presents clear ethical dilemmas. To address instances that referees may miss, technological tools like video assistant referees allow for review and fair adjudication. Before such technologies, many ethical questions arose due to unseen or intentional rule violations.

Concrete examples demonstrate significant manipulation and corruption within sport, affecting even amateur activities. Professional sport involves substantial material investment and potential profit. In contemporary society, sport has become a major economic activity. Competing interests intersect, and conflicts of interest often enable manipulation and abuse. Therefore, it is crucial to ethically assess potential risks and illegalities in sport. Ethics plays a central role in evaluating and prescribing rules to prevent immoral behavior in and around sport.

Upholding ethical principles and rules among participants requires the cultivation of integrity. Psychologically, integrity represents the set of personal qualities that make an individual whole. Ethical integrity consists of character traits forming a harmony between chosen values, attitudes, abilities, interests, and habits (Čupić, 2010: 203). Moral integrity encompasses specific character traits, namely honesty, consistency, predictability, and responsibility (Čupić, 2010: 203).

In sport, integrity is demonstrated through fair conduct and safety during competitions and related activities. It is determined by adherence to norms and values that define correct or incorrect behavior for all actors in sport (Robertson & Constandt, 2021). Four types of integrity in sport can be identified: inherent (related to the corporate community, manifested through core values: fairness, justice, and excellence in com-

petition); personal (responsibility of athletes, coaches, referees, managers, administrators, and board members); organizational (demonstrated commitment to values); and procedural (proper rules, athlete autonomy, and high-quality officiating) (Gardiner, Parry & Robinson, 2017). Sport integrity extends beyond the sporting arena to all who influence sport (Cleret, McNamee & Page, 2015: 1-2).

Research in the world's most developed countries shows that integrity in sport is compromised, particularly by corruption. Despite distrust in fair play or deviations within sport, respondents in studies noted that „the positive social outcomes of sport engagement were still referenced as the reason behind the lack of change in participants' interest and propensity to participate, spectate and volunteer in sport, despite their reported lack of trust and discontent with sport's inability to manage its integrity” (Manoli, Bandura & Downward, 2020: 215).

This underscores the enduring significance of sport for individual and societal life. Sport influences not only competitive outcomes but also individual identities, values, lifestyles, and everyday practices, making it a central social phenomenon (Penezić, Bajić & Selenić, 2023). For such reasons, sport has traditionally been regarded as a moral arena where values of fair play, discipline, and self-control are cultivated. Professionalization and commercialization, however, have significantly altered these dimensions, creating a range of ethical dilemmas – between performance and fairness, achievement and integrity (McNamee, 2018).

Despite its social significance, sport has not been sufficiently researched or analyzed from a sociological perspective, particularly in terms of critical media analysis. Guy Debord introduced (1969) the concept of the “spectacle” as a dominant form of social communication, arguing that it is not merely a collection of images but a social relationship mediated by images. From that point of view, reality is replaced by its representation in contemporary society, leading to alienation and passivity, while media and consumer culture actively shape perceptions of reality and limit critical reflection. Pierre Bourdieu (1979) further emphasizes such perspective, helping us to understand that sport functions, both as an institution and as a practice, also providing valuable insight into social structures, cultural values, and symbolic struggles, considering the fact that the sport is a field where social hierarchies, prestige competition, and cultural reproduction are manifested, reflecting broader societal norms and values.

For such reason, David Rowe (2014) highlights the emergence of a powerful “media-sport cultural complex” in this, contemporary context, where sport is transformed into a spectacle for mass consumption. Namely, media generate, reproduce, and circulate representations of sport that become arenas of struggle over ideological, cultural, and social values, shaping narratives about identity, gender, race, and class. This approach

facilitates understanding of how media discourse actively participates in constructing moral meaning and interpreting ethical deviations in sport.

This framework provides a basis for analyzing media narratives in which sport, ethics, and society intersect. It is particularly useful for examining how deviant behaviors in sport, such as doping or violence, are represented in the media, how moral spectacles are created, and how media, consciously or unconsciously, shape boundaries of acceptable behavior and public perception of sport actors.

Ethics and Deviations in Sport

Ethics, as the study of morality, deals with the rules of moral behavior and the judgment of specific actions, that is, „making a judgment about what is good and what is bad or evil“ (Čupić, 2010: 27). The question arises: why is ethics important for sport? Precisely because it allows us to distinguish between right and wrong behavior of participants in sporting competitions, those who cheer for them, those who organize events, and those who influence the development of sport externally. Without ethical insight into sport, situations could occur that endanger all participants and the very essence of the game.

Ethics requires all participants in sport „to transcend our own viewpoints in order to adopt the position of an impartial observer who assumes a universal perspective“ (Singer, 2000: 320). For the application of ethical principles and norms, it is necessary for every individual to feel and accept themselves as a citizen of the world. This, according to the Stoic philosophers, builds dignity in each person. Kant added to this Stoic perspective that a moral person possesses dignity (Kant, 1981: 82). Human behavior according to moral principles and norms is realized through moral conduct. For individuals to behave morally, Kant argues that they must cultivate their own autonomy, which is „the foundation of the dignity of human nature“ (Kant, 1981: 89). Kant maintains that a person physically senses „that in their own self they respect the moral person“, which leads to „elevation and the highest self-respect as a sense of inner worth... by which they are raised above all price... and possess inalienable dignity that inspires self-respect“ (Kant, 1993: 236).

Dignity and moral integrity are incorruptible, allowing individuals to make decisions according to their conscience. Incorruptible individuals cannot be bribed, which is one of the major problems in contemporary societies. Bribery, often employed by authoritarian regimes, deprives people of dignity and morality. This is precisely the mechanism sometimes used in and around sport. Any form of bribery constitutes an entry into illegality. Those who manipulate through bribery and illegal acts do so with athletes, fans, as well as managers, administrators, and sports governing bodies. These malicious practices occur at both local and global levels. Therefore, it is necessary to esta-

blish and enforce ethical codes as the first line of preventive guidance. To ensure ethical codes are respected and applied, lawmakers should codify them into laws with strict sanctions. In this way, ethical codes would not remain mere recommendations or moral warnings but would become legally enforceable measures against immoral conduct in and around sport. Prevention and punishment protect individuals from engaging in unethical behavior and actions.

By following ethical codes, which guide individuals toward moral behavior, various forms of deviations in sport and around sport can be prevented. Deviations in sport are both internal and external. Internal deviations are related to the use of prohibited substances that enable athletes to achieve success or results dishonestly. These include doping, i.e., the use of banned performance-enhancing substances, as well as prohibited physical aggression during competitions. Cheating by athletes is also dangerous. Such cheating may involve illegal maneuvers in the game or participation in deliberately rigged results. In match-fixing, participants often include athletes, coaches, referees, team managers, and administrators, as well as external stakeholders such as betting companies and organized fan groups. Behind organized fan groups are usually economic interests of criminals, criminal networks, and the mafia. They are prone to inciting violence to conceal their illicit activities. Given the enormous amounts of money involved, many actors in and around sport consciously contribute to the spread of deviations. One criminal activity associated with sport is drug trafficking. Organized criminal fan groups distribute drugs, particularly targeting young fans. The financial gains from drug sales are substantial due to the large fan base. Moreover, the commercialization of sport facilitates various forms of illegality and corruption, such as player transfers, investments in sports facilities, service contracts, and the purchase of sports equipment.

Everything that occurs in sport reflects the conditions of societies and states. If society and the state are in turmoil due to abuses by powerful interest groups colluding with authorities, or authorities corrupted by selfish greed, this environment inevitably impacts sport. For these reasons, the role of ethical principles and norms is crucial in fostering internal morality in sport through well-designed educational policies, i.e., the moral education of athletes and other participants (coaches, managers, administrators, referees). Individual moral responsibility is also important for all involved in sport, as well as those around it (fans, managers, investors, service providers, and authorities). Responsibility raises the level of moral culture among individuals, social groups, institutions, authorities, and society as a whole. Morally responsible individuals are both ethically mature and psychologically healthy. The Latin saying, “*Mens sana in corpore sano*”, should serve as a credo for play, sport, and all who participate in its community.

Framing at the Core of the Sport–Media Relationship

The power of the media in social life has been evident since their inception, becoming particularly pronounced during the 19th century. With the development of modern technologies, primarily electronic media, the influence of the media in societal life has grown immensely, reaching a global scale. The flow of information across the planet now occurs at unprecedented speed and reach.

In contemporary societies, information has become essential for maintaining and advancing life. Accurate information guides people in making better and more informed decisions, while also alerting them to potential dangers - both natural and human-induced. Information significantly impacts life and death in modern society. The importance, relevance, and value of information are reflected in its codification within human rights frameworks. In the so-called "fourth generation" of human rights, information is prioritized. This category of rights reflects the civilizational development of human needs and interests. Normed within the United Nations framework, it encompasses the right to truthful information, the right of women to make reproductive choices, and the right to a clean and healthy environment (environmental rights).

A key challenge regarding media lies in its use. Experience shows that media can be easily misused, and contemporary societies demonstrate frequent abuses. Therefore, it is crucial to regulate and legally govern their use. The clearer and more precise the laws on information and media, the more limited the potential for misuse. Media should focus only on information that is significant and relevant for public life. Information concerning private life undermines the media's mission and creates confusion in citizens' understanding of contemporary societies. Selection of information is equally important, as indiscriminate reporting can overload public space. Faced with an overwhelming volume of information, individuals may become disoriented, unable to distinguish essential from trivial, primary from secondary, or valuable from worthless information. As Bordieu (1991: 83) noted, „We live in a universe with ever more information but ever less meaning”.

To prevent misinformation and media manipulation, the role of media professionals is critical. This is where media and morality intersect. Professionalism among media workers is fundamentally grounded in their moral conduct. The moral culture of media professionals is essential for providing citizens with truthful information. When media professionals act with integrity, the information disseminated to the public is not only accurate but also carefully curated. This ensures that citizens are not overwhelmed or lost in the sheer volume of information, avoiding what Bal (1997: 13) described as „too much information kills information”. Proper criteria for selecting information are based on professional standards. Selecting information based on ideological or political criteria is dangerous, as ideological selection allows only information favorable to a specific

agenda to be published. Information serving ideology or politics becomes propaganda. The infusion of ideology „distorts reality within the media space, creating confusion and problems that often destabilize society and the state” (Čupić & Joković, 2016: 13).

Professional media conduct requires talent, knowledge, skills, conscience, and experience. These characteristics reflect their moral health and demonstrate that they are ethical individuals. Ethical individuals are people of integrity, which extends to the media organizations in which they work. Media organizations with integrity become credible, trustworthy, and reliable to citizens. Trust is difficult to gain and easy to lose. Conscious media professionals ensure that public trust is maintained. Through their mission, media also promote moral behavior among citizens. By adhering to professional standards, both media organizations and their staff uphold ethical conduct and maintain moral integrity. Professional media standards include: „truth, accuracy, honesty (objectivity), impartiality, appropriate treatment of information sources, respect for the individuals who are the subject of information, elimination of any form of discrimination, and accountability” (Čupić, 2010: 14). The consistent application of these standards demonstrates moral conduct within both media and public spheres.

Our analysis largely relies on the framework provided by established framing theory (Goffman, 1974; Entman, 1993), which enables the identification of how media frame events, assign meaning through word choice, tone, and moral evaluation. Framing theory is closely related to agenda-setting theory, as both highlight how media draw public attention to specific topics, thereby shaping the public agenda.

Within this analytical perspective, media are also perceived as significant producers of moral boundaries, determining acceptable transgressions or generating moral panics that accompany such actions, simultaneously amplifying scandals while occasionally relativizing deviations.

Media and Sport: Representation and the Normalization of Deviance

Jürgen Habermas, a seminal theorist of the public sphere, who observes the path of transformed media structures in the era of digitalization and democratic crisis, argues in his more recent work that new forms of communication undermine established conceptions of the political public sphere as such (2012, 2022).

This implies a new structural transformation of the public sphere, with serious consequences for contemporary society itself. From that perspective, we should be also aware that the media, both as organizations and as individual actors, constitute “an essential part of the social system, creating patterns of relationships that generate an ‘intersubjective’ understanding of values, norms, and culture” (Mladenović & Penezić, 2025: 94). They “do not merely transmit meaning; rather, they exist in relation to multiple individual and multi-individual systems” (ibid). Therefore, we should under-

line the contemporary fact that “media-mediated communication, although primarily determined by the socio-material conditions of its production, reciprocally reshapes social dynamics and democratic mechanisms, particularly through digital platforms” (Penezić & Kauzlarić, 2024, p. 88).

This sort of suggestions today need also to be contextualized within the relationship between sport and the media, since this provides the most appropriate framework for observing and interpreting the complexity of this connection in contemporary society. Namely, the “position and functions of sport and journalism, and consequently their mutual relationship, are framed by modern processes of globalization, which constitute a continuous historical trajectory of profound systemic change into a new system that becomes simultaneously interdependent, though in a different manner” (Пене-зић, Бајић & Селенић, 2024: 237). Therefore, it must not be forgotten that “the popularity and broad societal significance of sporting events likewise offer significant opportunities for theoretically examining the challenges that accompany journalism and the media” (ibid: 236).

In the same manner, we have to pay attention to the local landscape, and consider the fact that the Serbian media system is characterized by strong tabloidization and the politicization, along with the frequent instrumentalization of athletic success for the purposes of collective identity. This context represents an ideal field for examining the ethical ambivalence present in the representation of sport. Accordingly, our analytical framework encompasses the following concepts:

Moral Panic: Introduced by Cohen (1972), who describes moral panic as structured societal reactions to perceived deviance, demonstrating that public concern and fear are not random overreactions but socially organized processes.

Normalization of Deviance: Vaughan (1996) describes the process through which individuals or groups gradually accept deviant actions as normal (“human”) facilitated by media narratives and public perception.

Media Effects on Deviance: Hall et al. (1978) highlight that media can simultaneously idealize individuals while normalizing deviant behaviors.

Celebrity Persona Construction: Turner (2014) emphasizes how media production and television create and circulate manufactured celebrity images, shaping unprecedented public engagement with these personas.

Understanding contemporary power relations between sports institutions, sponsors, and media is, on the other hand, essential, as market and audience pressures significantly shape the portrayal of athletes and sporting events. Both Goffman (1974) and Entman (1993) emphasize that media frames shape perceptions of reality, defining what is considered moral or deviant. In the sports context, media frequently depict

athletes as heroes or as ordinary individuals whose mistakes are forgivable, even when their behavior substantially deviates from ethical norms.

Research Results: Case studies

Case A: The Suspension of Judo National Team Athlete Milica Nikolić

1. *SCANDAL IN THE WORLD OF SPORTS! Serbian national team member suspended for doping; Novosti, 10 July 2025³.*
2. *Ugh, what a scandal: A well-known Serbian athlete failed a doping test! Immediately expelled from the sport!; Kurir, 10 July 2025⁴.*
3. *Scandal in Serbian sports! Olympian and national team member suspended for doping; Blic, 10 July 2025⁵.*
4. *Shock – Serbian national team member suspended for doping; Informer, 10–13 July 2025⁶.*
5. *Serbian Olympic athlete explains how a banned substance ended up in her body: Because of identical packaging, she mistakenly took her mother's medication, Danas, 13 July 2025⁷.*

³ More details: Novosti (10 July 2025). Skandal u svetu sporta: Reprezentativka Srbije suspendovana zbog dopinga. Novosti online. <https://www.novosti.rs/c/sport/ostali-sportovi/1507829/skandal-svetu-sporta-reprezentativka-srbije-suspendovana-zbog-dopinga>. Accessed 15 July 2025. An introductory article about this case, that opens the topic and contains the basic facts about the suspension, including references to the Anti-Doping Agency. Useful baseline for comparing sensationalist vs. neutral reporting.

⁴ More details: Kurir (10 July 2025). UH, KAKAV SKANDAL: Poznata srpska sportiskinja pala na doping testu! Momentalno izbačena iz sporta! Kurir Online. <https://www.kurir.rs/sport/ostali-sportovi/9720200/milica-nikolic-pala-na-doping-testu>. Accessed 15 July 2025. A tabloid account that serves well for analyzing sensationalist tone and language.

⁵ More details: Blic-Sportal (10 July 2025). Skandal srpskog sporta! Olimpijka i reprezentativka suspendovana zbog dopinga. Blic Online (Sportal). <https://sportal.blic.rs/prica/skandal-srpskog-sporta-milica-nikolic-suspendovana-zbog-dopinga-2025071009340863300>. Accessed 15 July 2025. A suitable article for comparing the tone between a mainstream daily newspaper and a tabloid.

⁶ More details: Informer (10 July 2025). Šok - Srpska reprezentativka suspendovana zbog dopinga. Informer Online. <https://informer.rs/sport/ostali-sportovi/1033349/milica-nikolic-dzudo-suspenzija>. Accessed 15 July 2025. A sensationalist framing is used, making it useful for analyzing the "scandal" narrative in tabloid press. Excellent for studying scandal construction and tabloid rhetoric.

⁷ More details: Danas (13 July 2025). Srpska olimpijka objasnila kako se u njenom telu našla zabranjena supstanca: Zbog istih kutija greškom popila majčin lek. Danas Online. <https://www.danas.rs/sport/milica-nikolic-doping/>. Accessed 15 July 2025. This article presents the athlete's

This case serves as an example of media coverage of doping in sport and the discourse of ethical weakness. Namely, in most of the texts discussed, as well as in others not explicitly analyzed here, doping is presented as a “scandal” and a “disgrace”, while at the same time a narrative of victimhood – of the athlete as a casualty of the system and of an accidental mistake – is also constructed. Consequently, to this day a more objective consideration of the causes of this case has been significantly hindered: on one hand, the systemic nature of this long-standing problem in contemporary sport is underscored, while on the other, it is partially set aside by pointing to exceptions and instances in which individuals supposedly become victims of the shortcomings of this sphere of sport competition as well as of their own ignorance or carelessness.

Such imbalance in reporting – and therefore its influence on the creation of confusion regarding potential interpretations of this case (and the broader issue it may illustrate) – is evident in the discrepancy between interpretative approaches in domestic media. Tabloid-oriented outlets, such as Kurir and Informer, consistent with the dominant pattern of their editorial practices and modes of information processing, employ sensationalist headlines and a moralizing tone, yet without any deeper contextual understanding. Danas, by contrast, shifts the focus toward the athlete’s personal story, illustrating a humanizing frame and a tendency toward normalization. However, it likewise lacks deeper insights into the complexities that accompany such cases.

Across the entire body of media reporting on this case, including the articles examined here, there is largely an absence of a comprehensive and integrated approach to reporting on and analyzing this case (and the phenomenon more generally) within the context of contemporary sport, including the domestic setting.

Thus, it appears justified to conclude that the media function in this regard is reflected in maintaining the image of a “morally pure sport”, while periodically justifying errors as occurring “outside the system”. This likely contributes to the easier public acceptance of such cases and consequently to their normalization, thereby increasing the likelihood of the recurrence of similar situations.

Case B: Handball Club Vojvodina Director Strangled the Referee

1. *A SCANDAL UNLIKE ANY IN SERBIAN SPORT! The Vojvodina director strangled the referee, the arbiter reveals horrific details; Novosti, 24 September 2025*⁸.

statement and adopts a more analytical tone, useful for observing strategies of humanization, but also relativization.

⁸ More details: Novosti (24 September 2025). SKANDAL KAKAV SRPSKI SPORT NE PAMTI! Direktor Vojvodine davio sudiju, arbitar izneo jezive detalje. Novosti Online. <https://www.novosti.rs/c/sport/ostali-sportovi/1529763/skandal-kakav-srpski-sport-pamti-direktor-vojvodine-davio-sudiju-arbitar-izneo-jezive-detalle>. Accessed 26 September 2025. Article that serves as a good example of

2. *Serious scandal – Vojvodina's director strangled the referee?! The official revealed horrifying details: He pushed me into an empty room...;* Kurir, 24 September 2025⁹.
3. *The head of Vojvodina attacked the referee: A scandal shakes Serbian handball,* Blic, 24 September 2025¹⁰.
4. *Accusations by RK Partizan against RK Vojvodina's director Darko Jevtić: "He must be stopped",* Danas, 16 September 2025¹¹.
5. *Director of Vojvodina strangle the referee and issue horrific threats? A major scandal shakes Serbian sport,* Informer, 24 September 2025¹².

This second case is an example of media coverage of violence in sport and the media spectacle framing. It reveals even more clearly the mechanisms through which domestic media transform violence into a form of sporting spectacle. Despite differences in editorial concepts across various outlets, all the analyzed sources – though to differing degrees – contribute to the spectacularization of the event, as such dramatization increases the visibility and attractiveness of their content. Consequently, the media representation itself hinders an objective understanding of the incident, as well as an examination of the structural causes of violence in domestic sport and in contemporary sport more broadly.

a strong headline and sensationalist framing of a case. Good example of sensational framing in a mainstream outlet.

⁹ More details: Kurir (24 September 2025). TEŽAK SKANDAL - DIREKTOR VOJVODINE DAVIO SUDIJU?! Arbitar izneo jezive detalje: Ugurao me je u praznu prostoriju.... <https://www.kurir.rs/sport/ostali-sportovi/9783574/direktor-vojvodine-darko-jevtic-davio-sudiju-ivana-mosorinskog-u-toku-utakmice>. Accessed 26 September 2025. A tabloid, strongly emotional account, useful for analyzing dramatization and the construction of a specific narrative.

¹⁰ More details: Blic-Sportal (24 September 2025). Prvi čovek Vojvodine napao sudiju: Skandal potresa srpski sport!. Blic Online (Sportal). <https://sportal.blic.rs/prica/skandal-u-srpskom-rukometu-prvi-covek-rk-vojvodina-napao-sudiju-mosorinskog-2025092409470936702>. Accessed 26 September 2025. Article that offers a quick overview of the event and reactions (useful for comparing tabloid and more serious tones).

¹¹ More details: Danas (16 September 2025). Optužbe RK Partizana na račun direktora RK Vojvodina Darka Jevtića: Treba mu stati na put. Danas Online. <https://www.danas.rs/sport/optuzbe-rk-partizana-na-racun-direktora-rk-vojvodina-darka-jevtica-treba-mu-stati-na-klub/>. Accessed 26 September 2025. Article published before the event, but it is important for examining the broader context, as it provides an additional perspective on the case, indicating the genesis of the problem.

¹² More details: Informer-Sportinjo (24 September 2025). Direktor Vojvodine davio sudiju i jezivo mu pretio? Težak skandal potresa srpski sport. Informer Online (Sportinjo). <https://sportinjo.informer.rs/ostali-sportovi/rukomet/2365/darko-jevtic-ivan-mosorinski-sudija-vojvodina/vest>. Accessed 24 September 2025. An additional tabloid source with details of the complaint and reactions, useful for analyzing the common accusation – denial – escalation process.

The articles exhibit typical patterns of sensationalist framing: an emphasis on “horror”, “unprecedented scandal”, and moral panic, which serves to personalize and moralize the incident while simultaneously neglecting the broader context – namely, institutional patterns of tolerated violence, long-standing conflicts within sporting structures, and the lack of sanctions within sports organizations.

Novosti and Kurir generate a heightened emotional charge, while Blic adopts a more informational approach, though still adhering to a similar logic of dramatization. Today, although employing a somewhat more analytical tone, uncritically reproduces the narrative of the official statement issued by RK Partizan, thus participating in the perpetuation of a one-sided interpretation of the event.

The combined effect of these media approaches is the construction of an image of chaos and moral collapse, wherein violence is presented as an individual “emotional outburst”, rather than as a symptom of a systemic problem. Through the psychologization of the actors (“lost control”) and the dramatization of the incident, violence becomes implicitly normalized and situated within a frame of expected – and almost legitimate – reaction under conditions of sporting tension.

Such a discursive approach also influences audience reception, positioning the public as spectators of a spectacle, which in turn contributes to greater tolerance and further reproduction of deviant behavioral patterns.

Discussion: Comparative Analysis of the Cases and its Notion

Table 1: Analysis of Media Coverage of the Doping Case Involving Judoka Milica Nikolić

Headline; Media Outlet	Media type	Content summary	Dominant narrative	Linguistic characteristics
<i>SCANDAL IN THE WORLD OF SPORTS! Serbian national team member suspended for doping; Novosti</i>	Mainstream daily	Introductory report focusing on the basic facts about the suspension; mentions the Anti-Doping Agency.	Neutral-informative framing of a disciplinary case.	Balanced vocabulary, informative tone, standard journalistic structure.
<i>Ugh, what a scandal: A well-known Serbian athlete failed a doping test! Immediately expelled from the sport!; Kurir</i>	Tabloid	Simplified, dramatized presentation of the athlete's failed test.	Scandal-centered, personalized, dramatizing narrative.	Emotive wording, bold expressions, sensational verbs and adjectives.
<i>Scandal in Serbian sports! Olympian and national team member suspended for doping; Blic</i>	Mainstream daily with tabloid elements	Covers the suspension with a somewhat dramatic but still more controlled tone.	Semi-sensational framing balancing information and drama.	Combination of standard news language and mild sensationalist cues.
<i>Shock – Serbian national team member suspended for doping; Informer</i>	Tabloid	Strong sensationalist framing emphasizing “shock” and scandal.	Outright sensationalism; shock-value narrative.	Hyperbolic language, emotionally charged headlines, dramatic framing.
<i>Serbian Olympic athlete explains how a banned substance ended up in her body: Because of identical packaging, she mistakenly took her mother’s medication, Danas</i>	Analytic daily	Presents the athlete’s explanation and offers a rational, contextualized account.	Humanizing and mitigating narrative focusing on explanation.	More formal register, contextual detail, empathetic framing.

Source: Authors’ processing

Table 2: Analysis of Media Coverage of the Violence Incident at the Handball Match Involving the Handball Club Vojvodina

Headline; Media Outlet	Media type	Content summary	Dominant narrative	Linguistic characteristics
<i>A SCANDAL UNLIKE ANY IN SERBIAN SPORT! The Vojvodina director strangled the referee, the arbiter reveals horrific details; Novosti</i>	Mainstream daily	Strong headline and heavily framed report emphasizing the severity of the incident.	Sensationalist, scandal-oriented.	Dramatic adjectives, emotionally charged phrasing, high-impact headline.
<i>Vojvodina's director strangled the referee during the match; Kurir</i>	Tabloid	Highly emotional narrative focusing on shock and outrage.	Shock-driven scandal narrative.	Hyperbolic, emotive, exaggerated expressions.
<i>The head of Vojvodina attacked the referee: A scandal shakes Serbian handball; Blic</i>	Mainstream daily (hybrid, semi-tabloid)	Short overview of the event with included reactions; mixes fact-based tone and mild sensationalism.	Semi-sensationalist but informative.	Combination of news reporting and moderate dramatization.
<i>Accusations by RK Partizan against RK Vojvodina's director Darko Jevtić: 'He must be stopped'; Danas</i>	Analytical daily	Provides contextual background preceding the incident; sheds light on earlier conflicts.	Contextual, analytical.	Formal, structured, focused on broader issues rather than drama.
<i>Director of Vojvodina strangle the referee and issue horrific threats? A major scandal shakes Serbian sport; Informer</i>	Tabloid	Sensationalist article emphasizing threats, accusations, and escalation.	Escalation-driven, sensationalist.	Emotionally charged, direct quotes, and a chronological narrative to identify actors, emphasize conflict, and create a scandalous tone.

Source: Authors' processing

These two cases – the doping of national team athlete Milica Nikolić and the violence at the handball match involving RK Vojvodina – illustrate different forms of scandals in Serbian sport and how the media shape public perception of these events.

Before moving on to the concrete comparative analysis, it is important to note that tone, narrative, and the framing vary significantly across the selected media, ranging from moral condemnation and dramatization to institutional and humanizing approaches.

Table 3: Comparison of the Analyses of the Two Selected Cases

Element	Case A (Doping)	Case B (Violence)
<i>Dominant Frame</i>	moral weakness and victim of circumstances	moral panic and spectacle
<i>Reporting Tone</i>	empathetic and somewhat justifying	sensationalist, moralizing
<i>Presence of “Forgiveness” Tone</i>	pronounced (female figure, emotional story)	limited (male actor, wild outburst)
<i>Social Message</i>	deviation as a common exception, due to ignorance and unclear rules	violence as a frequent trait of sporting temperament, and a product of overall chaos

Source: Authors’ processing

Both of the examined cases demonstrate markedly similar patterns of media representation, despite belonging to different categories of ethical deviance in sport.

In both cases, Serbian daily media predominantly do not function as a critical corrective to the sports system, nor as reliable interpreters of the ethical context of the events. Instead, they operate primarily as producers of moral spectacle, aiming to provoke sensationalism among readers and thereby attract the attention of the broadest possible audience.

Media mediation of ethical issues in sport reveals a double standard: deviant acts are condemned, yet simultaneously justified through emotionalized narrative. Such discourse contributes to the normalization of unethical practices, creating the illusion of “isolated incidents” rather than deeply rooted structural problems.

This dual logic – condemnation for the sake of sensationalism and justification for the sake of humanization – results in doping being portrayed as an individual oversight, while physical violence is framed as an emotional reaction. In neither case is a clear picture articulated regarding the systemic causes of these deviations, whether they relate to the management of sports organizations, structural pressures, a lack of accountability, or the long-term neglect of ethical standards.

Through a combination of censure and empathy, this unbalanced approach maintains an idealized image of sport, while ethical deviations become part of its dramaturgy rather than

a systemic problem. In doing so, consciously or not, the fact is overlooked that the role of the media is not merely informational, but also culturally normative and even educational, as the media undeniably participate in shaping the boundaries of acceptable behavior in sport and in society.

Whereas in the doping case the emphasis falls on moral condemnation (“scandal” or “disgrace”) combined with a narrative of accidental error, ignorance, or the athlete’s sacrifice, in the case of violence the dominant mode is dramatization (“horrific”, “unprecedented”, “chaos”), expanded through emotional psychologization of the perpetrator (“lost control”, “swept away by emotion”). In both cases, media discourse oscillates between harsh condemnation and simultaneous relativization, thereby transforming ethical deviations into dramaturgical elements rather than subjects of professional, institutional, or societal analysis.

Although they naturalize different forms of deviance, both cases illustrate a similar media mechanism: problems are personalized, dramatized, and emotionalized, which leads to the displacement of systemic responsibility to the background and rational analysis, while individual actors become the suitable narrative carriers of the story. In this sense, both examples demonstrate that the media in the domestic context do not articulate the ethical dilemmas of sport as a societal issue but instead transform them into content with high affective charge, tailored to the logic of readership and market performance.

Thus, both cases confirm the central hypothesis of the study: the media in Serbia, instead of contributing to a critical understanding of ethical challenges in sport, participate in their spectacularization and normalization, producing a specific discourse in which sport remains idealized, while deviations are represented as inevitable – and at times even understandable – elements of its everyday reality.

Conclusion

The comparative analysis of the two cases demonstrates how media framing and tone shape public perception of sports scandals. Our analysis shows that Serbian media frames ethical deviations in sport primarily through the logic of spectacularization, confirming that sport, as a deeply mediatized field, is shaped by media formats and storytelling conventions rather than by its own normative frameworks. Instead of contextualizing doping and on-field violence as systemic problems, the media construct them as moral spectacles: emotionally charged, personalized, and dramatized narratives designed to provoke public reaction rather than encourage critical reflection.

The presence or absence of forgiveness, as well as gendered representations, further influences how audiences interpret these events. These cases highlight the powerful

role of the media in constructing ethical, social, and emotional dimensions of sports incidents, with significant implications for public opinion and the governance of sport.

Serbian media within the analyzed cases (context) exhibit an ambiguous representation of ethical issues in sport: while they idealize heroes, deviations are often aestheticized. Rather than serving as a corrective to behavior, most of the media become distributors of moral narratives oscillating between glorification and relativization. Such discourse not only alters the perception of athletes but also affects societal understanding of ethics and responsibility. Namely, this study illustrates that the media in Serbia shows a tendency to protect national sporting symbols and to relativize ethical deviations. Sport ethics, therefore, in the domestic media space (and widely, probably), intertwine with national emotions, but also with market interests, and tabloid sensationalism.

This approach reflects a form of mediated moral panics, where moments of condemnation are followed by rapid relativization through humanizing or psychologizing elements. Such oscillation blurs ethical boundaries and contributes to the normalization of deviance: doping becomes an unfortunate mistake, while physical violence appears as a momentary emotional excess. By individualizing responsibility and suppressing structural factors (governance failures, institutional pressures, lack of accountability, etc.) the media prevent the articulation of sport ethics as a broader societal concern.

Ultimately, the findings of this study confirm that media discourse operates between the idealization of sport as a moral domain and the routine incorporation of its deviations into a dramaturgy of everyday news. In a mediatized environment where affective intensity outweighs analytical depth, the media relinquish their cultural-normative role, thereby reinforcing the very conditions under which unethical practices persist. A more context-sensitive and critically grounded media approach is therefore essential for strengthening public understanding of ethical issues and for supporting the integrity of contemporary sport.

Our findings indicate that by prioritizing sensationalism over explanation, Serbian media weaken both sport ethics and media ethics. Instead of fostering accountability and fair play, the press presents doping and violence as isolated or emotionally driven incidents, thereby normalizing deviance. In doing so, the media not only fail to provide a critical ethical lens but also influence how unacceptable practices become tolerated within the broader culture of sport. Greater scholarly attention is, therefore, needed regarding ethical journalism in sport and its societal function.

At the same time, we should be aware of the fact that external factors, such as politics, economics, and culture, also play a significant role in shaping sporting events and the athletes activities, and, consequently, the way these events and actors are covered in the media and interpreted within public. For such reasons, media narratives are rarely

neutral; they often reflect broader societal interests, national priorities, and commercial pressures, which influence how the public perceives sports and ethical conduct.

For example, another, very popular case, that maybe illustrate this context in best manner, included probably the biggest Serbian sport athlete of all time – Novak Đoković, who largely enjoyed the unreserved support of all domestic media, regardless of their conceptual and other differences. All of his sporting achievements were celebrated and rightly praised across the media landscape, and, almost without exception, so were his off-court activities. In such a climate, the media often neglected situations in which they could have been more analytical, or even critical, of certain developments – such as his positions during the COVID-19 pandemic – which are frequently cited as an example of this.

In 2025, however, a significant shift occurred after Novak Đoković, on several occasions, expressed support – both verbally and through gestures on the court – for student and civic protests in Serbia. Following this, almost overnight, he went from being an undisputed sports idol praised uniformly by all media actors to becoming the target of unfounded criticism in a considerable number of outlets close to the current regime (mostly tabloid-oriented ones). Some even attempted to call into question his indisputable athletic accomplishments, and at one point, in one such outlet, he was even labeled a “failed tennis player.”

Recognizing external influences is, therefore, important for any similar analysis, as it allows a more nuanced understanding of how media framing, sensationalism, and moral narratives are constructed and disseminated. Considering these contextual factors helps to critically assess the intersection of sport, media, and society.

Author Contributions

Milica Joković Pantelić: Conceptualization, Resources, Methodology, Investigation, Data curation, Formal Analysis, Writing – original draft, Writing – review & editing.

Slobodan Penezić: Conceptualization, Resources, Methodology, Investigation, Data curation, Formal Analysis, Writing – original draft, Writing – review & editing.

All authors have read and agreed to the published version of the manuscript.

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PERMANENT BRUTALIZATION: CONTEMPORARY TENDENCIES IN COMBAT SPORTS

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Abstract: Combat sports are the oldest form of competitive sports. They originate from ancient Greece, where the Olympic Games included boxing, wrestling, and pankration, a mixture of both fighting systems. In the ancient world, martial arts were extremely brutal, many dangerous techniques were allowed, and instead of gloves, fighters would wear spikes to further injure their opponent. In the 20th century, combat sports were revived, with boxing and wrestling becoming the most popular, and they are also part of the modern Olympic Games. However, they became more brutalized, and kick-boxing was invented, then full contact, and eventually MMA was born, which is based on the ancient pankration tradition. The process did not stop there, but new fighting systems, each more brutal than the previous one, are constantly emerging and attracting large audiences with their brutality and their doubtful ethics.

Keywords: Combat sports, Martial arts, Brutalisation, MMA, Ethics

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Introduction

Among the many sports that humanity has mastered, martial arts stand out. They represent the oldest form of competition, but also the most serious: the only one in which the confrontation with the opponent is direct. Martial arts are among the oldest sports of humanity. The first records date back thousands of years and have come a long way in evolution, both in terms of technique and rules. There is almost no society in the world without its own form of martial arts, and what they all have in common is a refined ethic that defines them but is also subject to change. Simply put, in all corners of the world, people have a need for competition, or the so-called agon.

The ancient Greeks were the first to define agon, the vital need for competition and rivalry that found its manifestation in fighting. Miloš Đurić (1997) defined agon as "One of the most culture-forming features of Hellenic nature was the agonistic instinct, i.e. the instinct for competition, rivalry, and spectacle for the sake of victory, and not for any practical goal, no matter how valuable, nor for any material gain, nor for any cultic or magical goal, but only for reputation and honor, for primacy and distinction, for praise and glory. The essence of agonistic expression consists in the fact that it is fair play, i.e. it recognizes the quality of the opponent, that he is given the same opportunities as himself; only such a procedure makes it possible to get to know the own effort and qualities of each competitor, to properly evaluate them and give them the recognition that the competitor deserves".

In the ancient world, within the Olympic Games, combat sports had their own place. The ancient Greeks fought in boxing, wrestling, and a combination of the two – pankration. These ancient variants of modern combat sports were particularly brutal – in boxing, instead of gloves that would cushion the blows, boxers used reinforcements to produce exactly the opposite effect. They even put spikes on the wrists of the hands in order to completely incapacitate the opponent. Likewise, the pankration fighting system was extremely cruel where practically anything was allowed – a fight without rules and mercy that would last until the opponent was completely beaten (Ćirković, 2006)

The ancient Greek Olympic Games were first overshadowed by the gladiatorial games of ancient Rome. In them, slaves would fight to the death in arenas. Over time, the audience became bored with the slave conflict, so new attractions were invented. Thus, entire groups of slaves clashed, simulated battles were staged, and animals were introduced. The Romans thus sought entertainment in the fights of elephants, lions, and tigers with humans, but also with each other. The climax was reached when an entire naval battle was simulated inside the Colosseum to the general delight of the audience (Brodel, 2007).

These blood sports of the ancient world were abruptly interrupted by Christianity. Having first begun as a sect, the Edict of Milan of Emperor Constantine the Great allowed Christians to profess their faith for the first time (Остророски, 1993). A few decades later, Emperor Theodosius declared Christianity the only religion and banned pagan customs. The ban also affected the Olympic Games, which, after almost a thousand years of tradition, ceased to exist. With them, the gladiatorial games, which for centuries had shown that brutality was entertaining to the masses, disappeared. The age of Christianity followed, embodied in the Middle Ages, where there was no place for entertainment that stemmed from brutality (Crowther, 2007).

Martial arts in the 20th century

The modern era has brought new fighting systems. First and foremost is wrestling, which is part of the tradition of many nations, where competitors mainly competed at fairs. There are variations of wrestling on all continents, and as the oldest sport, it survives even in the modern era (Kasum, Jovanović, Ćirković, 2010).

Boxing also developed in parallel with wrestling. The first records of boxing date back to the Minoan civilization, and this sport reached its peak in the 20th century (Ćirković, 2006). Modern boxing was the choice of the English nobility, which is why it is called a noble art. This sport gained worldwide popularity after World War II with the appearance of Muhammad Ali, whose contribution to this sport is immeasurable, but also to wrestling in general. With his charm, upbringing and charisma, Ali became the first world-famous fighter admired by millions (Marjanović, 2006; Mijatov, Radenović, 2021)

The Olympic movement was important for the development of martial arts. Pierre de Coubertin revived the ancient Olympic Games in a modern guise by opening the first games in 1896. Wrestling and boxing were an integral part of the games. An important aspect of the Olympic Games was the safety of the participants, so as such they were a kind of filter for martial arts: those that were too rough simply could not become part of the Olympic movement. Along this line, judo, karate (shotokan), and taekwondo would become part of the Olympic Games.

At the same time, the 20th century saw the popularization of martial arts and their humanization. Bounded by clear and strict rules, martial arts became humane fighting systems where an individual, through regular training, can safely develop into a true fighter.

It is important to note that modern wrestling and modern boxing have come a long way from their ancient forebears. These sports have been deeply humanized, with the safety of the participants now being taken into account. In ancient Greece, boxers would use gloves, but to further strengthen their fists and inflict greater damage on their oppo-

nents (Crowther, 2007). In modern boxing, gloves are there to protect. As for wrestling, many dangerous moves are prohibited in modern wrestling. The best evidence of this is the ancient sculpture of a wrestler from the Uffizi Gallery in Florence, where the wrestler performs a move that is prohibited in the modern version of this sport.

The path of humanization has also been taken by Japanese martial arts, some of which have become sports. It is a long process of development of fighting ethics that reached its peak in the 20th century. Judo stands out, which became an Olympic sport in 1964 in Tokyo. Its origins are directly from the battlefields of medieval Japan, where samurai used brutal jiu-jitsu techniques in order to defeat their opponents in the most effective and brutal way possible. The founder of judo, Jigoro Kano, selected jiu-jitsu techniques and discarded the dangerous ones, creating a modern humane art – judo (Kano, 2007; Mijatov, 2017).

Korean taekwondo was humanized in the same way. On the battlefields of medieval Korea, the key skill was hapkido, in which anything was allowed and the death or complete incapacitation of the opponent was imperative. From this brutal and all-encompassing skill, taekwondo was created, which is safe for fighters and represents the pinnacle of predominantly foot techniques. As a result, it became an Olympic sport at the 2000 Olympic Games in Sydney (Choji, 1995).

Permanent brutalization

Humanization seemed to have its limits. Martial arts also took another, opposite path. The 20th century brought a multitude of new skills that stood out for their brutality, which until then had been reserved for old styles.

Karate is an ancient art originating from Okinawa. It was deeply humanized first by the reforms of Ginchin Funakoshi, the founder of the Shotokan style. However, the founder of the Kyokoshin style, Masatatsu Oyama, reintroduced brutal techniques and even more brutal sparring into his idea of karate. When karate rules became more and more considerate of the health of the participants, Kyokoshin cultivated a high level of brutality. The founder of this style, Oyama himself, became famous by fighting a bull, where he showed superhuman strength and technique, but also brutality and ruthlessness towards an innocent animal (Simić, 2005).

The change also came in the skills of grappling. Helio Grace was not satisfied with judo and the range of techniques that this art offers. For this reason, he founded his own art: Brazilian Jiu-Jitsu. In practice, Helio reintroduced the long-forbidden techniques of Japanese Jiu-Jitsu that Jigoro Kano had removed from judo precisely for safety reasons.

This rebrutalized version of judo from Brazil would become one of the most recognizable martial arts of the 21st century (Mijatov, 2016).

A sudden change occurred in the 1990s. Combat sports were becoming increasingly monotonous and the audience was eager for fast and brutal action. As a turning point, we can take the brutalization of boxing, where the match between Mike Tyson and Evander Holyfield was forever remembered. In the midst of the fight, Tyson bit off his opponent's ear at that very moment, and that match would become the most memorable moment in boxing, even though the act itself transcended the boundaries of this sport. From that moment, that bite, the process of brutalization would gain momentum and cover all fighting sports.

Soon, boxing was not enough and it was precisely in the late 90s and early 2000s that kickboxing suddenly became popular. Along with it, Thai boxing, an exotic art that had mostly remained within the boundaries of Thai tradition, spread around the world because it introduced new dynamics and new brutality into fighting systems. Not only fists but also legs, knees and elbows served as legitimate weapons for fighters. The brutality continued further, where kickboxing transformed into K1, which allowed almost all strikes and, with its three rounds that make up a match, emphasized the dynamics of the fight and quick knockouts.

The new millennium brought the syncretization of all martial arts into a single system known as MMA - mixed martial arts. First through the Pride organization and then through the UFC, this new martial arts sport will attract millions of spectators who will enjoy brutal and bloody fights in the octagon. The combination of punches and wrestling allows for a complete fighter but also new ranges of brutalization that characterizes MMA matches. In addition, the level of destruction allowed in this sport far exceeds both boxing and kickboxing, where when the referee would have stopped the match long ago in these sports, in MMA the referee allows the practical massacre of the opponent, so often the matches end with the entire octagon covered in blood.

The brutality of MMA matches has also led to a new popularization of martial arts. Practically since the time of Muhammad Ali, martial arts have not had this level of popularity. It was only in 2014 that the highest-paid athlete in the world came from the world of wrestling, in the form of Conor McGregor, who became a global star like Muhammad Ali once was (Knight, 2021). Unlike Ali, who captivated with charm, eloquence and culture, McGregor stood out with his grumpiness, swearing and arrogance.

The process did not stop there, but the brutalization continued. For the audience thirsting for blood and quick fun, a clash of two opponents with very few restrictions was not enough, so MMA matches turned into shows of exoticism and brutality. Thus, we also had matches of men against several women, then group fights five against five,

but also mixed categories where several lightweight fighters would clash with one heavyweight (Peters, 2015).

The limits of human imagination in the realm of brutalization seem to exist. In recent years, we have also had fights in telephone booths. Two fighters are tasked with defeating each other in a very small space using all available techniques. In addition, there are fights in cars known as Carjitsu, where the match begins with the competitors sitting in the driver's and passenger's seats, wearing seat belts, and from that position they begin the fight. Finally, as the most direct and brutal form, we have the slapping competition, where the competitors stand still and take turns slapping each other until one falls down or gives up the fight (Mitchell, 2024; Roberts, 2024).

Conclusion

Martial arts, as one of the oldest forms of competition, have undergone a long process of permanent change throughout history. From ancient Greece to the present day, combat sports holds a special place among sports where conflict is direct. In every other sport, there is an intermediary between the participants: most often a ball or some other prop. In many other sports, there is no such thing as contact, such as volleyball or athletics. Only in combat sports is the conflict direct and without intermediaries: a conflict between two fighters whose goal is to completely incapacitate the opponent.

What makes combat sports humane are the rules. They have changed over the centuries, but they have always sought to be considerate of the health of the participants. Even in ancient Greece, boxers would strengthen their wrists to make their punches more deadly. Then came gloves as a form of protection, and today we have modern boxing, which is truly concerned with the safety of the boxer. Once a punch is thrown, it cannot be controlled. Also, even the most experienced fighters cannot control the amount of damage their punch can cause. As a result, it is very important that striking combat sports have very clear rules aimed at protecting the participants.

On the other hand, in wrestling and grappling, dangerous techniques are openly banned, making the fight much safer. However, the trend has also been different. Some martial arts, such as Brazilian Jiu-Jitsu, have brought back old banned techniques, thus giving fighters a wider range of options in combat. Finally, MMA has united a multitude of styles into one ruthless fight in the octagon, where almost anything is allowed. With its syncretism of different striking and grappling skills, MMA has attracted millions of viewers with its brutality.

The process did not stop there. The modern era also witnesses slapping competitions, group fights, but also mixed gender fights. The ethics of fighting are in an obvious crisis,

where brutality is increasingly emerging for the sake of popularity and viewership. In an era dominated by mass media, where it is crucial to attract attention and stand out from the crowd, brutality in combat sports has proven to be an extremely powerful tool. Put simply: more brutality brings more viewership, which in itself guarantees more profit for the organizations.

If we take into account the lessons of history, the future is not very promising. As we have already mentioned, in ancient Rome, gladiatorial games occupied a special place among sports. They began with a certain amount of brutality in one-on-one fights. However, ordinary combat quickly became monotonous for the audience, so group clashes were introduced into the gladiatorial games, as well as fights between people and animals, and even entire naval battles. What is worrying is that this process in Rome paralleled the process of decline and collapse of the Roman Empire (Gibon, 2007). Nothing more directly indicated the decadence of an entire society than the brutalization of martial arts. Similarly, today we are witnessing a permanent brutalization that can simultaneously serve as a serious warning of the crisis of the entire society.

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CROSS-CURRICULAR COMPETENCES IN THE TEACHING OF PHYSICAL AND HEALTH EDUCATION SUBJECTS IN THE CONTEXT OF EXTERNAL EVALUATION OF SCHOOLS

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Abstract: The aim of the work is application of the Reference Framework of Competences for Democratic Culture (RFCDC) in teaching in the subject of Physical and Health Education. The authors opted for reviews and reflections on democratic competences and their application in the teaching of the subject Physical and Health Education, through the method of analyzing the results of external evaluation. The data for this research were results of external evaluation process which were obtained in school 2022/23 year during visits to 191 classes in 143 schools. The external evaluation of institutions by checking 24 standards and 124 indicators found in six areas of quality. This work should be a guideline for further professional development of teachers, but also for the development of syllabus in the process of initial education of teachers who teach the subject of Physical and Health Education.

Keywords: Reference framework of competences for democratic culture (RFCDC), competences, competences for democratic culture, external evaluation, physical and health education

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Introduction

This article presents an effort of authors to emphasize connection between achievement of teachers' quality standards in Physical education and competences for democratic culture, viewed within the Reference Framework of Competences for Democratic Culture (further: RFCDC).

The Ministry of Education and the Institute for Evaluation of the Quality of Education and Training carry out an external evaluation of institutions by checking 24 standards and 124 indicators found in six areas of quality.

- The field of evaluation Programming, planning, and reporting contains 3 standards and 16 indicators;
- Teaching and learning area contains 5 standards and 28 indicators;
- The field of educational achievements contains 2 standards and 15 indicators;
- The Student Support area contains 3 standards and 16 indicators;
- The Ethos area contains 5 standards and 22 indicators;
- The area of school work organization, human and material resource management contains 6 standards and 27 indicators.

Standards can be used to check "school conditions" for the development of competences for democratic culture. Compliance with a standard is assessed through the presence of a set of indicators that describe it. Each indicator is evaluated on a scale from 1 to 4.

The school quality standards represent measures for evaluating the quality of work of schools in the Republic of Serbia (Rulebook on quality standards of the institution, 2018).

Methodology

In this research authors wanted to explain results of external evaluation of physical and health education, gather them in Teaching and Learning area of school quality standards and explain them through the model of 20 competences in RFCDC.

The data for this research were results of external evaluation process which were obtained in school 2022/23 year during visits to 191 classes in 143 schools in administrations in Leskovac, Niš, Čačak, Novi Sad and Jagodina in the first and second cycle of primary education and secondary education (Vuković, Čaprić, Lazić, 2023).

The degrees of fulfillment of the following standards were considered through the lense of standards detailed nominated in the Rulebook on quality standards of the institution, 2018, 2024):

- The teacher shall efficiently manage the learning process in the classroom.
- The teacher shall tailor the activity in the classroom to the educational needs of students.
- The students shall acquire knowledge, adopt values, and develop skills and competences in class.
- Every student shall have the opportunity to be successful.

Results with discussion

For the purpose of this article, standards for Teaching and Learning area, numerated from 2.1 to 2.5 in Rulebook on quality standards of the institution will be presented in figures and then in tables 1 to 5 in comparative view to the RFCDC. In all tables competences will be presented in the right columns and marked as areas of ROKDK:

Values = V;
Attitudes = A;
Skills = S;
Knowledge and critical understanding = KCU.

Quality standard 2.1:

Standard 2.1 has a mean score of 3.31. which indicates that there is a functional use of teaching aids and available sources of knowledge, that teachers use high-quality explanations and instructions, apply the sequence of requirements, and connect activities in the Physical and Health class education (Figure 1).

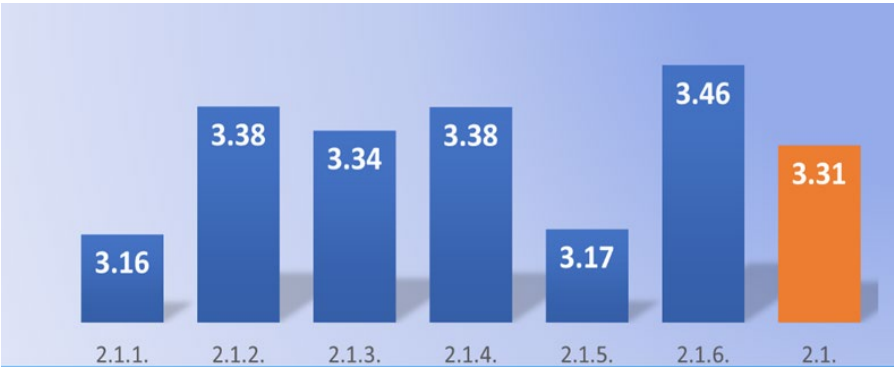


Figure 1. Effective management of the learning process in class

Vuković, S., Lazić, S. (2025) Cross-curricular competences in the teaching of physical and health education subjects in the context of external evaluation in schools In: Dašić, D. (ed) Sportopedia SMB2025, Vol 3, No 1, 257-270

In standard 2.1 all indicators are presented from the teacher perspective, besides the first 2 indicators are directed to students (Table 1). Students can understand the content only if teacher successfully manage classroom management.

Table 1. Standard 2.1 and RFCDC competences

Quality standard 2.1: The teacher shall efficiently manage the learning process in the classroom:		
Rulebook standards	Score	RFCDC competences, descriptors and sub descriptors
2.1.1. The students shall clearly understand the objectives/ learning outcomes of the school class and why they need to learn the planned content.	3.16	<p>KCU: Competence 19: Knowledge and critical understanding of the world (including politics, law, human rights, culture, cultures, religions, history, media, economies, the environment and sustainability).</p> <p>Descriptor 114: Can explain how social relationships are sometimes encoded in the linguistic forms that are used in conversations (e.g. in greetings, forms of address, use of expletives).</p> <p>Sub descriptor 1911: Can reflect critically on some effects which different styles of language use can have in social and working situations.</p>
2.1.2. The student shall understand the explanations, instructions, and key terms.	3.38	<p>KCU: Competence 19: Knowledge and critical understanding of language and communication.</p> <p>Descriptor 115: Can explain why people of other cultural affiliations may follow different verbal and non-verbal communicative conventions which are meaningful from their perspective.</p> <p>Sub descriptor 1912: Can explain why people of other cultural affiliations may follow different verbal and non-verbal communicative conventions which are meaningful from their perspective.</p>
2.1.3. The teacher shall successfully structure and connect parts of the class using different methods (forms of activity, techniques, procedures...), or implement training for a vocation/profile, in line with the specific requirements of the work process.	3.34	<p>V: Competence 2: Valuing cultural diversity.</p> <p>Descriptor 8: Promotes the view that one should always strive for mutual understanding and meaningful dialogue between people and groups who are perceived to be "different" from one another.</p> <p>Sub descriptor 202: Promotes the view that one should always strive for mutual understanding and meaningful dialogue between people and groups who are perceived to be "different" from one another.</p>
2.1.4. The teacher shall gradually ask questions/set assignments/requirements of varying levels of complexity.	3.38	<p>KCU: Competence 19: Knowledge and critical understanding of language and communication.</p> <p>Descriptor 113: Can describe the social impact and effects on others of different communication styles.</p> <p>Sub descriptor 1902: Can describe the social impact and effects on others of different communication styles.</p>
2.1.5. The teacher shall channel the interaction between students so that it serves the purpose of learning (i.e. he/she shall use questions, ideas, student comments, and encourage peer learning).	3.17	<p>S: Competence 16: Co-operation skills.</p> <p>Descriptor 98: Generates enthusiasm among group members for accomplishing shared goals.</p> <p>Sub descriptor 1629: Generates enthusiasm among group members for accomplishing shared goals.</p>
2.1.6. The teacher shall make functional use of existing resources and sources of information available to students.	3.46	<p>S: Competence 10: Autonomous learning skills.</p> <p>Descriptor 59: Seeks clarification of new information from other people when needed.</p> <p>Sub descriptor 1008: Seeks clarification of new information from other people when needed.</p>

Although students are in focus in first 2 indicators of standard 2.1. it is highly important and recognized teacher’s role in the process of efficient management of the learning process in the classroom. Teacher should be equipped with knowledge which allow him/her to understand different types of communication and its critical understanding. In situations like this, teacher give himself/herself a chance to upgrade knowledge in this very specific field of professional work and development, as a part of lifelong learning (Council of Europe, 2018).

Quality standard 2.2:

The average fulfillment of this standard is 3.06 (Figure 2). The assessment of the standard that determines the adaptation of the work in the class to the educational needs of the students is noticeable but not complete because it was determined that the methods and materials were insufficiently adapted to the needs of certain students (Illustration 3), as well as the application of quality activities concerning planning individualization of work with students and work according to individual student educational plans (IEP).

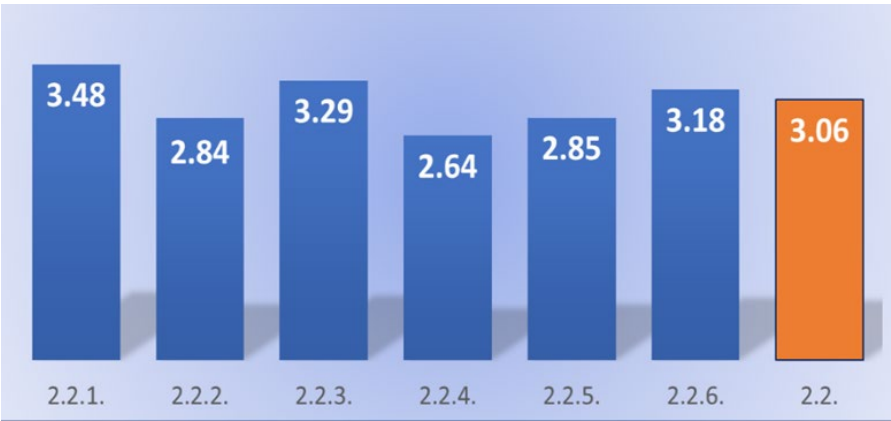


Figure 2. Adjusting the work in the Physical and Health Education class

In this standard is clear that teacher’s values are significantly important (Table 2).

Table 2. Standard 2.2 and RFCDC competences

Quality standard 2.2: The teacher's adaptation of classwork to the needs of students		
Rulebook standards	Score	RFCDC competences, descriptors and sub descriptors
2.2.1. The teacher shall tailor requirements to the abilities of each student.	3.48	A: Competence 5: Respect. Descriptor 29: Treats all people with respect regardless of their cultural background. Sub descriptor 504: Treats all people with respect regardless of their cultural background.
2.2.2. The teacher shall adjust working methods and teaching materials to the individual characteristics of each student.	2.84	S: Competence 10: Autonomous learning skills. Descriptor 59: Seeks clarification of new information from other people when needed. Sub descriptor 1007: Can gather information effectively using a variety of techniques and sources.
2.2.3. The teacher shall dedicate time and attention to each student in line with his educational needs.	3.29	V: Competence 1: Valuing human dignity and human rights. Descriptor 2: Argues that specific rights of children should be respected and protected by society. Sub descriptor 102: Argues that specific rights of children should be respected and protected by society.
2.2.4. The teacher shall use specific tasks/activities/materials based on the Individual Educational Plan (IEP) and individualization plan.	2.64	V: Competence 1: Valuing human dignity and human rights. Descriptor 2: Argues that specific rights of children should be respected and protected by society. Sub descriptor 103: Argues that everyone should recognise the fundamental freedoms of each human being. KCU: Competence 19: Knowledge and critical understanding of language and Communication. Descriptor 114: Can explain how social relationships are sometimes encoded in the linguistic forms that are used in conversations (e.g. in greetings, forms of address, use of expletives). Sub descriptor 1907: Can reflect critically on how diverse audiences may perceive different meanings from the same information.
2.2.5. Students who need extra support shall participate in joint activities that encourage their progress and interaction with other students.	2.85	V: Competence 1: Valuing human dignity and human rights. Descriptor 4: Argues that all public institutions should respect, protect and implement human rights. Sub descriptor 105: Argues that all public institutions should respect, protect and implement human rights.
2.2.6. The teacher shall tailor the activity pace to the different educational needs of students.	3.18	V: Competence 2: Valuing cultural diversity. Descriptor 9: Expresses the view that the cultural diversity within a society should be positively valued and appreciated. Sub descriptor 205: Argues that one should try to learn from one another in order to deepen understanding of both one's own and other people's backgrounds.

Indicator 2.2.4 has the lowest score. It is very complex indicator and in table is visible that it asks values and knowledge and critical understanding. Because of its complexity

authors think that, for quality achievement the cross-curricular competences in teaching Physical education, it is necessary for all teachers to improve their competences in values and knowledge and critical understanding.

Quality standard 2.3:

The standard that assesses whether and how learning progresses and students' competences are developed was rated the lowest in this analysis and is 2.88 (Figure 3). Based on the obtained result, it can be concluded that there is a lack of student independence and acceptance of student initiatives and originality, and there is no space for the development of critical reasoning, values, attitudes, and skills even though this subject is ideal for the development of competences for democratic culture. Although there is teacher feedback, there is no interaction to improve health education competences and discussions.



Figure 3. Acquisition of competences in class

In this indicator students are in the center of observing and quality assessment (Table 3). The presence of skills is dominant.

Table 3. Standard 2.3 and RFCDC competences

Quality standard 2.3: Students achieve learning and competence development at the class		
Rulebook standards	Score	RFCDC competences, descriptors and sub descriptors
2.3.1. The students' activities/ schoolwork shall demonstrate that they have understood the subject of study in class, that they can apply the lessons learned, and explain how they arrived to the solution.	3.32	KCU: Competence 18: Knowledge and critical understanding of the self. Descriptor 107: Can describe the ways in which his/her thoughts and emotions influence his/her behaviour. Sub descriptor 1803: Can reflect critically on his/her own motives, needs and goals.
2.3.2. The students shall make connections between the subject of study in class and previously learned matter in various fields, vocational practice, and daily life.	3.10	S: Competence 10: Autonomous learning skills. Descriptor 61: Can assess the quality of his/her own work. Sub descriptor 1017: Can integrate learning from various subjects/areas of learning.
2.3.3. The students shall collect, critically evaluate, and analyse ideas, answers, and solutions.	2.72	S: Competence 11: Analytical and critical thinking skills. Descriptor 65: Uses evidence to support his/her opinions. Sub descriptor 1105: Can draw conclusions from an analysis of information.
2.3.4. The students shall present their ideas and share original and creative solutions.	2.63	S: Competence 15: Linguistic, communicative and plurilingual skills. Descriptor 91: Can adopt different ways of expressing politeness in another language. Descriptor 89: Asks speakers to repeat what they have said if it wasn't clear to him/her. Sub descriptor 1518: When ambiguous communications occur, he/she can clarify or otherwise deal with them satisfactorily. Sub descriptor 1507: Uses body language to help reinforce what he/she wants to say.
2.3.5. The students shall use feedback to solve a task/improve learning.	3.21	S: Competence 11: Analytical and critical thinking skills. Descriptor 65: Uses evidence to support his/her opinions. Sub descriptor 1115: Can reflect critically on past experiences in order to inform future progress.
2.3.6. The students shall plan, implement, and evaluate a project in class independently or with the help of the teacher.	2.33	S: Competence 10: Autonomous learning skills. Descriptor 61: Can assess the quality of his/her own work. Descriptor 63: Shows ability to monitor, define, prioritise and complete tasks without direct oversight. Sub descriptor 1019: Can monitor own progress towards reaching his/her own learning goals. Sub descriptor 1024: Manages own time effectively to achieve his/her own learning goals. S: Competence 11: Autonomous learning skills. Descriptor 69: Can use explicit and specifiable criteria, principles or values to make Judgments. Sub descriptor 1142: Can draw the results of an analysis together in an organised and coherent manner to construct logical and defensible conclusions.

In this standard the lowest score goes to indicator 2.3.6 which asks of students to be independent and projected oriented during the class. For this indicator it is important to educate teachers first, and then students. Bearing in mind that students’ development and achievement are in positive correlation with the quality of teachers’ work it can be said that quality of teachers’ professional development is precognition for cherishing the inspired child and making successful students – future professionals (Lazić, Vuković, 2024).

Besides that, this indicator’s score indicates to authors some important questions of their further pedagogical work and researches.

Quality standard 2.5:

The average achievement of this standard is 3.12. The analysis indicates that there is support for student development and participation, but that there is a need to encourage the free expression of opinions and ideas by students and to allow students to influence the content, a form of work, or means (Figure 4).

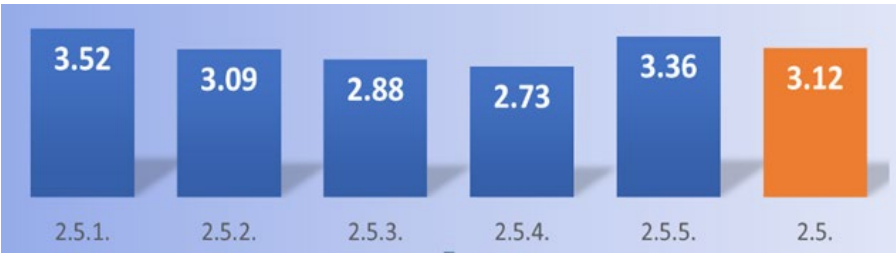


Figure 4. Display of individual student performance standards

In this standard student can be successful only if teacher has quite good attitudes, skills and knowledge (Table 4).

Table 4. Standard 2.5 and RFCDC competences

Quality standard 2.5: Students are enabled to be successful		
Rulebook standards	Score	RFCDC competences, descriptors and sub descriptors
2.5.1. The teacher / practical training instructor and students shall maintain a relationship of mutual respect, the teacher/practical training instructor shall encourage students to respect each other and constructively establish and maintain discipline following agreed rules.	3.52	A: Competence 5: Respect Descriptor 29: Treats all people with respect regardless of their cultural background. Sub descriptor 504: Treats all people with respect regardless of their cultural background. KCU: Competence 20A: Knowledge and critical understanding of politics, law and human rights. Descriptor 118: Can explain why everybody has a responsibility to respect the human rights of others. Sub descriptor 2003: Treats all people with respect regardless of their cultural background.
2.5.2. The teacher shall use a variety of procedures to motivate students, taking into account their diversity and previous achievements.	3.09	S: Competence 16: Co-operation skills Descriptor 97: When working as a member of a group, keeps others informed about any relevant or useful information. Sub descriptor 1624: Helps to motivate others when working in a group, encouraging them to participate.
2.5.3. The teacher shall encourage intellectual curiosity and free expression of opinions.	2.8.8	S: Competence 15: Linguistic, communicative and plurilingual skills. Descriptor 89: Asks speakers to repeat what they have said if it wasn't clear to him/her. Sub descriptor 1506: Asks questions as a way to be involved in conversations. A: Competence 4: Openness to cultural otherness. Descriptor 23: Expresses curiosity about other beliefs and interpretations and other cultural orientations and affiliations. Subdescriptor 404: Expresses curiosity about other beliefs and interpretations and other cultural orientations and affiliations/
2.5.4. The student shall be allowed to choose the approach to a topic, the form of activity or the material.	2.73	S: Competence 10: Autonomous learning skills. Descriptor 58: Shows ability to identify resources for learning (e.g. people, books, internet). Sub descriptor 1001: Shows ability to identify resources for learning (e.g. people, books, internet).
2.5.5. The teacher shall demonstrate trust in the abilities of the students and have positive expectations of success.	3.36	A: Competence 8: Self-efficacy. Descriptor 49: Shows confidence that he/she knows how to handle unforeseen situations due to his/her resourcefulness. Sub descriptor 824: Shows confidence that he/she can deal efficiently with unexpected events.

In this standard indicator 2.5.4 has the lowest score, since it asks of students to be independent in in approaching to topic and the form of activity or the material. In other words they should be enabled to be successful. This point of view in contemporary pedagogy in Serbia is clearly visible in preschool education, especially in the new national

curricula *The Years of Ascent*³. Kindergartens in whole Serbia for last 7 years works according to this curricula and cherish curiosity, playfulness, critical thinking, project working among children. Still, it is not present enough in formal education. Teachers need skills in order to improve their work.

Overview of all standards and CDC

In Table 5 is clearer picture of presence of each competence for democratic culture in order of appearance.

Table 5. CDC presented in each standard

	Values	Attitudes	Skills	Knowledge and critical understanding
2.1	Competence no. 2		Competence no. 16 Competence no. 10	Competence no. 19
2.2	Competence no. 1 Competence no. 2	Competence no. 5	Competence no. 10	Competence no. 19
2.3			Competence no. 10 Competence no. 11 Competence no. 15	Competence no. 18
2.5		Competence no. 5 Competence no. 4 Competence no. 8	Competence no. 16 Competence no. 15 Competence no. 10	Competence no. 20a
Total	5	4	12	6

Authors find very important to emphasize that teachers’ skills are at the first place for quality teaching and lecturing. This is recognized in Didactics’ point of view which state that teachers should have knowledge of public performance and keeping students’ attention for some time (Lazić, 2022).

Knowledge and critical understanding issues about the topic of the class is important for each and every teacher since their profession is to teach.

Values comes at the 3rd place and authors find this important, bearing in mind that values are beliefs that some desirable goal motivates action that serves as a guiding principle in life through many situations. In other words, values are structures around which more specific attitudes are organized. They influence attitudes because if people's values are assessed, it can help predict their attitudes and behaviour (*Reference Framework od Competences for Democratic Culture. Volume 1*, 2018).

At last, but not the least, attitudes show the persons’ whole mental orientation to some-one or something and they are very important in every relationship and in building rela-

³ Years of Ascent. Official Gazette – Educational Gazette no. 16/2018. Available at: <https://ecec.mpn.gov.rs/wp-content/uploads/2020/02/Godine-uzleta-ENG-fin-Edited.pdf>

tional competences. Although perception of control is a powerful predictor of neuro-chemical and behavioral responses to stress, it is not known whether the experience of choosing to exercise and exercising control over that exercise is a critical factor in creating resilience to the stress that is inevitable in the educational system (Vuković at all, 2021.)

This research showed that in teaching profession values are more important than attitudes and it is completely.

Conclusion

The teaching of physical and health education is an excellent educational space in which, in addition to skills and attitudes, values that are part of democratic culture are built, and this is a task that adds to the importance of this subject. This research showed that in teaching profession values are more important than attitudes and it is completely.

Therefore, continuous professional development of teachers and the inclusion of these contents in initial teacher education are necessary to achieve competences for democratic culture.

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THE IMPORTANCE OF PHYSICAL FITNESS IN THE CONTEXT OF MILITARY OPERATIONS

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Abstract: The physical fitness of military personnel is a key factor in the success of military operations. Military units face various challenges and conditions on the ground, which require high endurance, strength, speed, and psychological resilience. In this context, physical fitness not only improves the effectiveness of soldiers but also enhances their ability to cope with the stressful and physical demands of military operations. Training principles, the specificity of training, and adaptation to various climatic and terrain conditions are some of the key aspects that define the importance of physical fitness. This paper explores the theoretical foundation of physical fitness in the military, confirming that well-trained soldiers, with high physical fitness, have a greater ability to quickly execute tasks, as well as increased safety and optimal team coordination. Additionally, effective methods for improving physical fitness are crucial, including strength training, endurance exercises, functional training, and high-intensity interval training (HIIT). These methods are tailored to meet the specific demands of military tasks and ensure that soldiers are physically prepared for the diverse conditions they may face during operations.

Keywords: physical fitness, military operations, endurance, strength, speed, psychological resilience, training principles, strength training, functional training, HIIT

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Introduction

Physical fitness represents one of the most important components for the success of modern armed forces. Physical fitness is emphasized as a key element for the success of military operations. (Dubik & Fullerton, 1987; Marshall, 1950; Marti, Vader, Minder, & Abelin, 1988; Nye, 1986). The modern warfighter is expected to have a wide range of physical capabilities because the tasks faced during combat require high levels of muscular strength and power, anaerobic performance, and aerobic fitness (Kraemer & Ratamess, 2004; Kraemer & Szivak, 2012).

Soldiers face numerous challenges – from endurance marches with loads, through performing tactical maneuvers in different terrains, to coping with stressful and unpredictable situations. All of this requires a high level of physical and psychological capacities. In military operations, physical fitness is not only a matter of individual strength or endurance, but also of operational efficiency, safety, and coordination within the unit. Insufficient physical fitness can result in reduced ability to perform tasks, increased risk of injuries, and decreased combat readiness.

Modern research indicates that the combination of traditional training methods and modern approaches, such as functional training and high-intensity interval training (HIIT), enables optimal development of all necessary capabilities. Likewise, adaptation to climatic conditions and diverse terrains is of key importance to maintain efficiency in everyday military practice.

Physical training also has its downside: as the amount of physical activity increases, so do injury rates (Jones, Cowan, & Knapik, 1994; Koplan, Powell, Sikes, Shirley, & Campbell, 1982; Koplan, Rothenberg, & Jones, 1995; Powell, Kohl, Caspersen, & Blair, 1986; Trank, Ryman, Minagawa, Trone, & Shaffer, 2001). Injuries can result in physical limitations and disability, which compromise military readiness. A critical goal of military physical training is balancing the need to improve and maintain a high fitness level while minimizing injury risk.

The aim of this paper is to emphasize the importance of physical fitness in the military context, to present the key requirements and principles of training, as well as to analyze the methods that ensure the highest level of readiness of military personnel.

Theoretical basis of military physical fitness

Physical fitness represents a set of physical and psychological abilities that enable an individual to respond effectively to the demands of various tasks. In military settings, it has even greater significance because the success of operations depends on the sol-

diers' readiness to endure effort, react quickly, and function under conditions of increased stress.

Physical fitness has always been one of the most crucial factors in winning battles for armies and has maintained its importance throughout history without losing its significance. Those who have won wars are those who were trained and ready (D'Eliscu, 1944).

According to basic kinesiological principles, physical fitness consists of multiple components: endurance, strength, speed, agility, coordination, balance, and flexibility. Each of these components is critical in military conditions. For example, endurance is key for long marches and operations that require continuous physical engagement, while strength enables overcoming physical barriers and carrying heavy equipment. Speed and agility are associated with rapid reactions in combat situations, and coordination and balance are important when performing tasks in unpredictable terrains.

The theory of physical fitness in military practice also emphasizes the importance of psychological resilience. A soldier's ability to cope with stress, fatigue, uncertainty, and high risks is necessary to maintain concentration and discipline under pressure. Research shows that an integrated approach – developing both physical and mental capacities – results in the highest level of operational efficiency. Another key aspect of the theoretical framework is adaptation to environmental conditions. Soldiers often perform tasks in extreme climatic conditions – high temperatures, cold, humidity, as well as in diverse terrains (mountains, forests, deserts). Preparation in such conditions is not only a physical challenge but also a physiological process of acclimatization, which allows the body to adapt and maintain efficiency in various situations.

Modern theories also emphasize the role of functional fitness, which differs from classical physical fitness. While traditional training focuses on the development of individual abilities (strength or endurance), the functional approach creates a synergy of all abilities through simulation of real tasks that soldiers perform in the field. The theoretical basis of physical fitness in the military represents an interdisciplinary concept that includes physiology, psychology, biomechanics, and sports science. Systematically developed physical fitness not only ensures higher individual efficiency but also increases operational capability, safety, and cohesion of the entire military unit.

Training principles and adaptation

Effective physical preparation of military personnel cannot be imagined without the application of basic training principles. These principles represent scientifically validated guidelines that ensure the systematic development of physical abilities and the prevention of injuries or overexertion. In the military context, their application is cru-

cial for creating a balanced and resilient force capable of functioning in a wide range of conditions.

- Principle of Progression

Progress is achieved through the gradual increase of load – whether it is an increase in weight, duration, or intensity of exercises. For soldiers, this means gradually introducing more intensive training such as marching with a load, sprints, or simulation of combat conditions.

- Principle of Specificity

Training must align with the demands of military service. If tasks involve carrying equipment of 20–30 kilograms, training must include activities that simulate such conditions. In this way, the body develops specific abilities that are directly applicable in operations.

- Principle of Variability

Monotonous training can lead to stagnation and decreased motivation. Therefore, it is important to use different methods – a combination of strength, endurance, HIIT, functional training, and outdoor activities. Variability not only stimulates progress but also improves the ability to adapt to new conditions.

- Principle of Individualization

Although the military functions as a collective, each soldier has a different level of physical fitness and psychological resilience. An individual approach in determining the intensity and volume of training is necessary to achieve optimal results and avoid injuries.

- Principle of Recovery

The high demands of military training can cause chronic fatigue if periods of rest and regeneration are not included. Active and passive recovery, proper nutrition, and sleep are key to maintaining physical efficiency.

Adaptation represents the process of adjusting the body to various stresses – physical, psychological, and environmental. Military operations often take place in extreme conditions: high temperatures, cold, high humidity, mountainous or desert terrains. Appropriate preparation allows soldiers to maintain efficiency even in such environments.

- Climatic adaptation – training in hot or cold conditions to increase the body's tolerance.

- Terrain adaptation – exercises and training on different surfaces (sand, snow, mud, uneven terrain) for better stability and functionality.
- Psychophysiological adaptation – exposure to controlled stressors (sleep deprivation, fatigue, limited nutrition) to develop mental toughness and psychological resilience.

Through the combination of these principles and adaptation strategies, an integrated training system is created that not only increases physical fitness but also prepares the soldier to operate with maximum efficiency in unpredictable and high-risk situations. Soldiers who maintain high levels of physical fitness are more resilient to operational stress, demonstrate greater task efficiency, and exhibit lower rates of injury during military operations (U.S. Army, 2020).

Methods for improving military fitness

Physical fitness of military personnel is developed through the systematic application of various training methods. These methods are selected and adapted according to the specific demands of military service, so that soldiers can endure high levels of physical effort, be psychologically resilient, and respond to operational challenges.

Strength Training

Strength represents the foundation for performing a large number of military tasks – carrying heavy equipment, climbing, overcoming physical barriers, as well as engaging with the enemy in close combat.

- Methods: free weight exercises (squats, deadlifts, presses), bodyweight exercises (push-ups, pull-ups, parachute push-ups), and functional movements.
- Benefits: increased muscle mass, improved explosive strength, and reduced risk of injury.

Endurance Training

Endurance is essential for tasks that require prolonged physical activity: marching, patrolling, operations in mountainous or urban environments.

- Methods: middle- and long-distance running, swimming, cycling, marching with a load (ruck marching).
- Benefits: improved cardiorespiratory capacity, increased oxygen transport efficiency, and greater resistance to fatigue.

Functional Training

Functional training simulates real movement in military conditions and enhances the ability to perform everyday military tasks efficiently.

- Methods: exercises with boxes, rope pulls, kettlebells, medicine balls, as well as combined movements (carrying loads, climbing, dragging a partner).
- Benefits: improved coordination, balance, mobility, and stability, which is especially important in uneven and unpredictable terrains.

High-Intensity Interval Training (HIIT)

HIIT combines short periods of intense effort with intervals of rest or low-intensity activity. In military settings, this method increases the ability to perform explosive movements and recover quickly. High-Intensity Functional Training programs are especially effective for military populations as they combine strength, endurance, and functional movements in a time-efficient manner. (Haddock, 2016).

- Methods: sprints with short intervals, circuit training with strength and cardio exercises, combination of jumps, running, and bodyweight exercises.
- Benefits: increased anaerobic and aerobic endurance, rapid calorie burning, improved reaction time.

Combined Programs

Modern training systems in armies most often use a combination of all methods. This creates a balanced soldier profile capable of enduring prolonged operations while also reacting explosively in short combat situations.

In practice, methods are adapted according to the type of unit and the tasks it performs. For example, special forces practice high-intensity training with an emphasis on functionality, while mechanized units focus more on endurance and strength stability. It is important to emphasize that methods for improving fitness are not directed only at the individual but also at the entire unit. Group training increases motivation, team spirit, and coordination – factors that are essential for the success of any military operation.

Conclusions

Physical fitness represents a fundamental factor for the success of military operations. The theoretical analysis shows that the development of strength, endurance, speed, flexibility, and psychological resilience significantly improves soldiers' ability to cope with physical and operational challenges. The application of training principles such as

overload, progression, specificity, and variability ensures optimal adaptation of the body to different conditions of terrain, climate, and stress. Effective methods for improving physical fitness, including strength training, endurance, functional training, and HIIT, enable the development of abilities directly related to the demands of military tasks. The combined application of these principles and methods allows for increased performance, reduced risk of injuries, and better team coordination.

Maintaining a high level of physical readiness not only improves the operational efficiency of soldiers but also increases their safety and ability to cope with the complex challenges of modern military operations.

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SPORT LAW AND SPORT MEDICINE

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Abstract: Parents play a very important role in developing affinity and love for sports, especially if they are physically active and can set an example for their children. It is very important that parents take their children to sports events where they can see and feel all the beautiful and exciting moments that sport provides, which will motivate them to actively participate in sports life. If they are actively involved in sports life, children can eventually achieve a successful professional career, that is, become top athletes. Achieving success in any sports discipline is followed in its own way by one of the newer branches of law called Sports Law. The main goal of Sports Law is to provide legal protection to athletes and other natural and legal persons involved in professional sports activities.

Keywords: Sport, Sport Law, Sport Medicine, Athletes

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Introduction

The sports medicine physician have to be acquainted with the medicolegal components of sports medication insurance (Alomar-Jiménez et al., 2021). It isn't always unusual to have questions concerning legal components even as protecting a sports activities occasion including: healthcare duty, scope of exercise, licensure, legal responsibility, and malpractice. There has been a widespread growth in sports medicine litigation due to the fact 1990. The maximum typically mentioned trouble is the capability warfare of hobby of the team physician. On one aspect is the athlete's health and on the alternative, the group's, coaches', control's interests. However, the sports activities medication health practitioner's precedence have to continually be the athlete's health.

The federal and country legal guidelines offer the framework for the medicolegal components of sports medicine coverage. The Article VI of the U.S. Constitution declares "that this Constitution will be the ideal regulation of the land." This legal principle of supremacy means that federal legal guidelines enacted via way of the U.S. Congress take priority over country legal guidelines and observe to each country or territory beneathneath U.S. jurisdiction. Furthermore, a country regulation couldn't be contradictory to a federal regulation.

Several federal legal guidelines have direct implications in sports medicine coverage, including the Health Insurance Portability and Accountability Act (HIPAA), the Family Educational Rights and Privacy Act (FERPA), and greater recently, the Supporting Athletes, Families, and Educators to Protect the Lives of Athletic Youth (SAFE PLAY) Act and the Sports Medicine Licensure Clarity Act.

Sport

Sport is a international phenomenon that plays many essential capabilities in present day society (Pijetlovic, 2015). It is most customarily stated in its fine function as a device contributing in the direction of training of kids and younger adults, a way of social integration and overcoming cultural differences, a first-rate supply of employment in present day society, and a automobile in the direction of higher mental and physical health. In addition, in its socio-cultural dimension, recreation is part of the famous way of life that entertains billions of humans global. Many humans discover with their nearby or country wide group, comply with their games 'religiously' and derive a feel of pleasure if their group wins. This impact that recreation has on loads and its titanic cultural significance has made it a maximum precious content material for broadcasters, in addition to a goal for political propaganda.

Sporting interest crosses a extensive variety of legal topics including agreement regulation, tort regulation, highbrow belongings regulation, opposition regulation, constitutional regulation, labour regulation, inner marketplace regulation and essential rights. It entails everyone (humans of all ages, genders, races, etc.) in any respect levels (beginners, recreationists, amateurs, semiprofessionals and professionals) and in all capacities (spectators and tv viewers, gamers, coaches, clinical doctors, psychologists, agents, etc.).

Responsibilities

The fundamental ideas of clinical ethics which manual each health practitioner, including autonomy, nonmaleficence, beneficence, and justice, additionally observe to the team physician (Alomar-Jiménez et al., 2021). In addition, and to extend the ones ideas, numerous sports activities medication corporations, including the International Olympic Committee (IOC), the International Federation of Sports Medicine (FIMS), and the American College of Sports Medicine (ACSM) have every delineated their very own Sports Medicine Code of Ethics. The consensus of the extraordinary codes of ethics is that the essential precedence or duty of the team physician have to be the athlete's health. It is vital to by no means do damage and to continually make goal clinical selections.

Some of the group health practitioner's responsibilities consist of: appearing preparticipation bodily examinations (PPE), figuring out athletes' eligibility, go back-to-play selections after damage, growing an emergency motion plan (EAP) for practices and competitions, overseeing the workforce imparting healthcare offerings, and protective in opposition to criminal legal responsibility.

Confidentiality

Privacy and restraint are essential values in all relationships (Alomar-Jiménez et al., 2021). Patient-physician confidentiality isn't always the exception. Several federal legal guidelines set up the requirements for protective affected person healthcare facts including the HIPAA and the FERPA legal guidelines. As an exception to the overall rule, a group health practitioner hired via way of a membership may also divulge an athlete's health facts to the coaches and proprietors due to the fact this isn't always taken into consideration included health facts.

FERPA is a federal regulation that protects the privateness of students' academic records. Treatment statistics are excluded from the definition of tutorial records beneath FERPA. Nonetheless, a college may also divulge students' remedies statistics

to every other institution, with out written consent, whilst valid academic hobby is verified. In the absence of affected person–athlete consent, a group health practitioner have to by no means divulge health facts to the clicking or different entities.

Malpractice

Medical malpractice is a subset inside tort regulation that offers with expert negligence (Alomar-Jiménez et al., 2021). In order to have a a success declare, the injured affected person–athlete have to show 4 legal factors: expert responsibility owed to the affected person–athlete; failure of the treating expert to apply affordable care executing that responsibility; failure ended in damages; and causal hyperlink exists among the negligence and damages. Negligence may be verified whilst the health practitioner does now no longer adhere to the same old of care. However, withinside the area of sports medicine, the same old of care is probably hard to set up due to the numerous extraordinary clinical specialties worried withinside the care of the athletes including orthopedic surgical procedure, emergency medication, own circle of relatives medication, inner medication, pediatrics, and bodily medication and rehabilitation.

Adhering to the same old of care and exercise hints is the first-rate protection in a malpractice case. The courtroom docket may also examine important components in any clinical choice including: knowledgeable consent, dialogue of advantages and dangers of the proposed remedy and opportunity remedy options. Jurisprudence has properly set up that signing a waiver legal responsibility might now no longer save you a malpractice lawsuit in opposition to a physician. Furthermore, a few courts have invalidated the ones agreements due to the fact they violate public policy.

Typically, malpractice instances have resulted from an negative final results in a surgical procedure or procedure. Interestingly, the sports medicine physician might be located responsible in go back-to-play selections as properly. Concussion assessment and control has been a warm subject matter withinside the latest years concerning sports medicine coverage. Some authors propose that the legal gadget should preserve group physicians accountable to alert soccer gamers approximately the danger of growing continual stressful encephalopathy (CTE). We recognize that early go back-to-play after maintaining a concussion or a cervical backbone damage may want to have catastrophic effects. The U.S. Congress addressed this issue, after a few years of lobbying and lots of country legal guidelines, withinside the SAFE PLAY Act. The federal regulation imposes a trendy plan for concussion control: an athlete who sustained a concussion can't go back to play till written launch from a healthcare expert (by no means at the identical day). Moreover, the regulation calls for that public colleges teach parents, students, and coaches on concussion signs and symptoms and dangers.

Children and Adolescents

The ethics and legalities of studies along with the physiological evaluation of kids and adolescents (legally minors) were debated at length (Armstrong et al., 2017). The triumphant view is that experimental techniques have to area a younger individual at no greater than negligible danger of damage. Negligible danger has been described via way of the United Kingdom Medical Research Council (MRC) to intend that, 'the dangers of damage expected withinside the proposed studies aren't greater, thinking about the possibility and importance of physiological or mental damage or discomfort, than the ones typically encountered in each day lifestyles or in the course of the overall performance of habitual bodily or mental examinations or checks'. In defining techniques concerning negligible danger, the MRC consists of remark of behaviour, noninvasive physiological tracking, developmental checks and bodily examinations, modifications in diet, and acquiring blood and urine specimens.

Sport physiologists operating with younger humans have to adhere to expert codes of conduct, institutional (or regional) moral regulations, and country wide legal guidelines. Moreover, a few nations require heritage assessments on adults previous to them operating with younger people. For example, in England recreation physiologists (and coaches) have to have a Disclosure and Disbarring Service Certificate to work with minors.

In many nations, athletes beneath the age of 18 years can't offer legal consent to take part in workout body structure checks. To shield all events, it's miles really useful to attain each written knowledgeable parental/ parent consent and assent from the younger athlete. Before trying out can begin, the purpose, techniques, capability advantages, and dangers of the checks have to be defined in a shape suitable to the athlete's and parent's way of life and stage of comprehension. Additionally, it's miles really useful that a agreement virtually outlining the function the game physiologist will play is agreed and signed via way of all events. For elite athletes and country wide teams, signatories have to consist of a consultant of the country wide governing frame in addition to the instruct.

Sport physiologists have to consequently be conscious of things including power differentials and coercion withinside the recruitment system. It is not likely that elite younger athletes will refuse to take part in a tracking programme if their instruct insists on imparting proxy permission on their behalf. Parents may also experience obliged to consent to checks so that it will maintain an excellent courting with the instruct or, possibly to make sure (or as a minimum now no longer threaten) selection. As physiological tracking entails everyday trying out, the younger athlete have to additionally maintain the choice to withdraw from the trying out programme at their discretion with out worry of penalty (e.g. being reduce from the group). Similarly, facts are pri-

vate and the physiologist have to make sure that parental consent and athlete assent are acquired earlier than disclosing any take a look at consequences to a 3rd party, e.g. a instruct.

Athlete

The legal status of an athlete who earns a residing from taking part in recreation is decided withinside the United Kingdom via way of country wide rules and the legal checks mentioned in case regulation (O'Leary, 2017). Some athletes might be unbiased contractors, others might be people and a few might be employees. Legal fame is essential as it characterizes the contractual courting among the athlete and the entity for which she or he offers offerings; the character of that contractual courting will decide the rights and duties that arise. A expert athlete will nearly continually offer offerings beneathneath a agreement with a membership, opposition organizer or country wide federation. The bizarre nature of the offerings provided, the surroundings wherein the ones offerings are implemented and the notion of recreation as a beyond time, enjoyment or "fun", or the view that an athlete is gambling for the "honour and glory" of representing a us of a, group or membership, may also deliver the affect that an athlete isn't always an worker or a worker.

So too may also the notion that recreation isn't always a business. The guidelines of a few sports activities may additionally outline an athlete as an novice or a person who does now no longer acquire charge for participation in the game. Determining the character of a contractual courting among events isn't always continually easy. In the United Kingdom, the label that the events connect to the courting, the contractual terms, and paintings practices aren't determinative of legal fame however factors, which a court takes under consideration whilst figuring out the character of a contractual courting. The country wide regulation relevant to the agreement determines an athlete's legal fame and can be supported via way of rules in a few nations or require affirmation on a case-via way of-case foundation from a country wide courtroom docket. An athlete who's an worker has the identical entitlement to employment rights as any worker in every other enterprise. An athlete's criminal fame beneathneath country wide regulation is essential for figuring out the athlete's rights and the duties owed via way of a membership, group or federation.

Participation

Two very essential medicolegal troubles associated with the PPE (Preparticipation exam) were debated and have to be reviewed (Bytomski, 2010). The number one criminal trouble is the athlete's proper to take part. The proper to make a very last choice

on whether or not to interact in athletics has been again and again diagnosed via way of the courts as resting with the athlete or together along with his or her parents.

A health practitioner who disqualifies an athlete from play have to talk over with professional physicians. Both the analyzing and the consulting health practitioner have to virtually evaluation all motives why the athlete have to now no longer take part with the athlete and his or her parents.

Should the athlete select to take part in opposition to clinical advice, an exculpatory waiver mentioning that the health practitioner(s) has virtually knowledgeable the own circle of relatives of all dangers accompanying the participation of play have to be signed. An exculpatory waiver is a written shape mentioning that the own circle of relatives acknowledges and assumes the danger of damage and releases the physician(s) and the school from legal responsibility. The validity of those waivers isn't always nationally diagnosed, and legal suggest is suggested for the physician on an individual-case foundation.

The different predominant legal trouble is expert legal responsibility for physicians appearing PPEs as volunteers. Until recently, Good Samaritan legal guidelines did now no longer cowl preparticipation critiques although achieved with out charge. Some states have now instituted safety for examiners for athletic applications beneathneath Good Samaritan statutes. The health practitioner have to end up acquainted together along with his or her very own country's statutes.

Strategies

There are 3 important techniques for sports activities federations wishing to shield their regulatory autonomy (ie the *lex sportiva*) from 'regular regulation' (ie the regulation of states or of global corporations set up via way of states including the ones of the EU) (Weatherill). These 3 techniques are, in short, contractual, legislative, and interpretative in nature.

First, carrying our bodies may also require contributors to agreement in to the *lex sportiva*, and to agree now no longer to remedy carrying disputes earlier than 'regular' courts. This is the contractual technique to attaining carrying autonomy. It is more and more more not unusualplace to discover this version followed via way of the constitutions of predominant sports activities governing our bodies, including Fédération Internationale de Football Association (FIFA) and the International Olympic Committee (IOC), and it has lent growing prominence to the function of the Court of Arbitration for Sport (CAS), that's the dominant adjudicative frame withinside the gadget shaped via way of the *lex sportiva*. But precious and in exercise widespread alevn though this 'contracting out' is for the ones espousing the virtues of carrying autonomy, it does

now no longer reap a watertight department among 'regular regulation' and the *lex sportiva*.

Second, sports federations may also be seeking for to set off states or global corporations to undertake or enforce the *lex sportiva* (in complete or in part). This can be summarized because the legislative answer—despite the fact that in to date because the regulator is an global enterprise, it's miles a Treaty-primarily based totally answer. The entice of the wealthy prize of hosting a first-rate occasion including the Olympic Games or the Football World Cup has approved sports activities our bodies to extract exquisite concessions granting them autonomy from the regular legal guidelines of the host us of a and/or unique safety in their business interests, and on different activities narrower and greater sector-particular exemptions were secured, specifically within-side the shaping of tax regimes and in country subsidies. The EU, however, has been continuously immune to strain to supply recreation an express exclusion from the software of EU regulation. And no country and no global enterprise is going to date as to confer on recreation a popular amnesty from legal regulation.

Third, sports federations typically are seeking for to steer courts (in states and in global corporations) that the unique person of recreation have to be taken under consideration withinside the interpretation and alertness of 'regular' regulation. This is the interpretative—or adjudicative—answer. It does now no longer declare formal autonomy from the regulation of states or of global corporations, however as a substitute it seeks to assert a useful autonomy inside that regulation, via way of persuading judges that the application of applicable legal guidelines falls for change in which the peculiarities of recreation are at stake. Its price to carrying our bodies is evidently depending on the extent of fulfillment they experience in persuading judges that their unique fame is merited and have to hence be translated into a few shape of adjusted or softened interpretation and alertness of the usually relevant legal guidelines within-side the precise jurisdiction at stake.

These 3 techniques are at heart all based on claims that 'recreation is unique', however they're built differently, and they're right here organized in descending order of desire from the attitude of carrying federations. The contractual answer generally has maximum enchantment, the legislative is 'subsequent first-rate', and the interpretative answer is probably to be the least favoured, as it entails recreation making its case on 'enemy' territory, this is, consistent with regionally relevant regulation. Where, beneathneath the third approach, sports federations try to enchantment for interpretative leniency, one will typically take a look at a anxiety wherein carrying our bodies push for a greater beneficent scope of autonomy than can be easily on offer. But it's miles at the 0.33 approach that carrying our bodies are often pressured to rely, as soon as the contractual answer reaches its limits and in which the legislative answer is una-

tainable, and it's miles right here—withinside the exercise of the establishments that interpret and observe the regular regulation of states and of global corporations—that plenty of the vibrant pleasure of 'sports activities regulation' as an highbrow idea and a sensible task emerges as litigation erupts.

Corruption

Corruption in recreation changed into first of all supposed to consult any motion that ambitions at and succeeds in getting cash with distorting the final results of sports activities contests by using bribing gamers to throwing a sport for cash or non-economic monetary compensation (Andreff, 2019). Defined as such it overlaps with numerous aforementioned recreation manipulations. Nowadays, corrupt recreation has prolonged to different unethical behaviour including rigging the awarding system of mega-carrying events, biasing a few selections made via way of recreation governing our bodies, and match-fixing. With developing cash streams fowing into recreation and monetary globalisation of diverse sports activities, corruption can deal with all and sundry and plague, as much as a few point, all of the sides of the sports activities enterprise.

In its only shape, corruption is defined as "cheating or unlawful behaviour" (Collins English Dictionary). To virtually discover it withinside the midst of different recreation manipulations, corruption in recreation is thought as any unlawful, immoral or unethical interest that tries at intentionally distorting the final results of a recreation contest for the non-public fabric benefit of 1 or greater events worried in that interest. Various recreation manipulations embody corruption, however now no longer all of them. Technological manipulations including using a motorised bike withinside the Tour de France do now no longer appear to have any corrupt dimension. Therefore recreation manipulations cowl a much broader scope than corruption.

A typology of corrupt recreation has already been featured. It begins offevolved with instances presently taken into consideration as petty corruption among recreation insiders triggering 'minor' recreation manipulations that are at odds with recreation ethics however do now no longer endanger the very lifestyles of present day sports activities. In a few instances, corruption operates with out significant quantities of cash this is coined barter corruption. Corruption may additionally have an effect on the very best or lowest recreation governing our bodies.

With elevated cash streams fowing into recreation, new sorts of corruption emerged via significant match-fixing and recreation having a bet scandals. With monetary and recreation globalisation, international crook networks invested in the game playing business. Now they organise match-fixing on a global scale associated with international on-line rigged recreation having a bet. The trouble of corruption in recreation is

turning into ever greater essential and controversial, particularly given the worldwide attain of recreation and all of the hundreds of thousands of greenbacks invested in recreation via way of companies. This high-fying and complex mode of getting cash from corrupting recreation crosses the border of monetary crime, the remaining aspect of the darkish aspect of recreation.

Illegal Medical Practice

In a few times, unlawful clinical exercise and simple doping can be initiated via way of the physician him or herself (Ronsen et al., 2003). This is honestly unethical and a crook offence each withinside the clinical area and withinside the sports activities community. However, in different times a group health practitioner can be 'involuntarily' worried in unlawful clinical manoeuvres and doping due to questionable or bad decisions in different components of clinical exercise or lifestyles in popular. The mechanics of the 'companions in crime' approach likely works as properly inside a sports activities group because it does in different social settings. Therefore, any group health practitioner have to keep away from moving into a compromising state of affairs rendering him or herself greater prone to the improvement of unethical and unlawful sports withinside the group. If put 'beneathneath strain', it's miles essential to record this to a right authority immediately, despite the fact that this can appear hard on the time.

Such instances are very sensitive and hard to handle including big media insurance if it have to contain a famous athlete. Even if plenty of the group health practitioner's attempt is targeted on the way to keep away from such an incident, it's miles first-rate to have notion via a 'worst case scenario' and feature a approach on the way to cope with this. It is essential to have mentioned it with the relaxation of the clinical group in addition to the supervisor and coaches. Athlete confidentiality and drawback of facts earlier than each the A and B pattern is analysed are key troubles if this type of state of affairs have to occur. Furthermore, it's miles essential to appreciate the take a look at consequences and take delivery of the findings, with out arguing that there have to be some thing incorrect with the trying out or that this may now no longer appear to one in every of your athletes. This mindset and preliminary function isn't always in warfare with the alternative essential responsibility of being concerned for the athlete as his or her non-public medical doctor and friend. No count if the fine drug take a look at is a end result of planned or unintended consumption of banned substances, it creates a non-public disaster in which human help is vitally essential. However, it's miles essential that the group health practitioner is capable of separate those components of the process and act professionally.

Management

While preserving the economic scope of the game enterprise in mind, it's miles essential to observe that during some thing section of the game enterprise they paintings, recreation managers want so as to prepare and paintings with the maximum essential asset of their enterprise— humans (Barr et al., 2019.). A supervisor in a recreation enterprise can pass via way of many extraordinary titles: athletic director, popular supervisor, director of advertising, instruct, health club supervisor, ski resort operator, social media supervisor, and so on. No count the title, each recreation supervisor wishes to apprehend the fundamentals of being a supervisor withinside the twenty-first century, even as additionally mastering approximately the complexities of the control feature implemented to the function that the supervisor is in. For example, handling an area may also contain complexities and methods which are pretty extraordinary from the ones required to manipulate a advertising department, despite the fact that the overarching ideas of control can nevertheless be implemented.

Management has been described in some of extraordinary ways, however not unusualplace factors of those diverse definitions consist of (1) desires/goals to be achieved (2) with restrained sources and (3) with and via humans. The intention of managerial paintings and the function the supervisor performs inside an enterprise is to get people to carry out in a manner with a purpose to cause assembly organizational desires and fulfillment in an efficient and cost-effective manner. The control system consists of know-how regions including planning, organizing, leading, and evaluating.

Today, it's miles not unusualplace to view the examine of human conduct inside corporations as a aggregate of the clinical control and human members of the family methods. Organizational conduct is function of the present day technique to control. The area of organizational conduct is worried with the examine and alertness of the human aspect of control and corporations. Organizations have passed through severa modifications over the last decades, along with downsizing to deal with monetary recessions, globalization, set up and use of facts technology, and embracing of an increasingly diverse workforce. Managers were preoccupied with restructuring their corporations to enhance productiveness and meet the aggressive demanding situations created via way of organizational modifications. Through all of the organizational modifications and evolution of control notion and practices, one issue stays clear: A lasting aggressive gain for corporations comes via human sources and the way they're managed. Current control principle stresses the principles of worker involvement, worker empowerment, and managers' issue with the human thing of employees. Topics explored inside organizational conduct studies consist of communication, choice making, leadership, and motivation, amongst others. However, the essence of corporations is productiveness, and accordingly managers want to be involved with getting the process done.

Conclusion

Regardless of the fact that various sports originated in certain historical conditions and in various countries, there is a general connection between sports activities conditioned by the process of globalization that affects all segments of society: trade, capital flows, investments, technology transfer, exchange of people, health of athletes, etc. For popularity socio-economic conditions are important for a particular sport. The process of globalization has affected all segments of socio-economic development, and thus also sport on the international level, which has reduced its significance within national borders. Today, large sports clubs have become multinational companies that operate outside national borders with a tendency to expand their popularity and conquer new markets. With the accelerated development of society as a whole, sport has become the flagship of the ubiquitous trend of merciless competition and results in the foreground. In doing so, the organism sometimes forces itself. These important issues are considered by Sports Law, that is, its legal regulations that determine the scope of legal relations that develop in the field of sports, as well as the requirements arising from sports activities.

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MEDIA REPRESENTATION OF SPORTS IN DAILY NEWSPAPERS IN SERBIA

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Abstract: In pursuit of higher readership and viewership, the media devotes particular attention to sports content, aligning with audience expectations. In doing so, they significantly contribute to the promotion and popularization of sports—not only among sports enthusiasts but also among advertisers and the general public. This paper examines the way daily newspapers in Serbia cover sports, with a particular focus on the representation of less popular sports and women's sports. The research aims to determine the extent to which the media contributes to the unequal representation of sports in their coverage. The study employs both quantitative and qualitative content analysis across nine daily newspapers: Politika, Večernje novosti, Danas, Blic, Nova, Alo, Informer, Kurir, and Srpski telegraf. The results indicate a dominant presence of football, basketball, and men's sports overall, while women's sports and less popular disciplines are significantly underrepresented.

Keywords: sport, media, daily newspapers, women's sport, journalism

Media in Sport

Sports content has become an almost indispensable component of most mainstream media outlets worldwide. Media organizations have dedicated editorial teams that focus exclusively on sports coverage. Daily newspapers often include sports sections, and major television networks regularly broadcast large-scale sporting events. The relationship between sport and the media spans centuries. Various sources identify different historical origins of sports journalism, ranging from the 15th century—when the word "sport" was first mentioned in published articles (English, 2018: 2)—to the

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18th century, when sports journalism began to emerge as a distinct field (English, 2018: 2; Beck and Bosshart, 2003: 6).

The influence of mass media has turned the sport into a “global phenomenon” (Dziubiński, Jankowski, Lenartowicz, et al., 2012: 287), and accordingly, a large body of academic literature and research has been dedicated to this domain. The popularity of sport, in line with audience expectations, has steadily increased over the years. This trend has been further accelerated by the development of new technologies, resulting in a “noticeable increase in demand” (Schultz and Arke, 2016: 6).

Numerous studies have confirmed the public's interest in sports content in the media. For example, a 1978 study found that sports ranked second in terms of the percentage of time readers spent on daily newspaper content—17 percent—right after “hard news,” which accounted for 40 percent of readers’ time (Weaver and Mauro, 1978, as cited in Wanta, 2006: 117).

According to academic research on the relationship between sports and media, it is widely acknowledged that sports have become “more than just a game and athletic competition” (Penezić, 2020: 546) and that mass media are “crucial for the advancement of any sporting activity” (Gulam, 2016, as cited in Carvalho and Fazenda, 2018: 1981). Consequently, various theories of sports mediatization have emerged, recognizing that sport is one of the “most popular and most productive media events” (Milenković and Milenković, 2022a: 1232). Some scholars, however, argue that the process is reciprocal, with “media being sportized” (Rowe, 2009: 544).

Researchers also highlight the link between sports content and commercial interests, pointing to the commodification of the sport–media relationship. Sports content is described as “attractive merchandise” (Dziubiński, Jankowski, Lenartowicz, et al., 2012: 287), with media outlets following audience expectations “in the race for profit” (Penezić and Selenić, 2025: 58). As James Potter explains, while the public shows significant interest in sports, “to increase revenue flow, it was necessary to increase the number of sports fans each year” (Potter, 2011: 487).

Beyond factual reporting and live broadcasts, sports journalism has, in recent years, increasingly leaned toward “infotainment,” combining information with entertainment. As a result, journalists “must be aware of the trend toward celebrity-oriented reporting” (Schultz and Arke, 2016: 11). Many scholars emphasize that mass media today play a significant role in creating sports stars or superstars—idols and champions alike (Penezić, 2020; Ilić and Sobek, 2014; Planinić and Ljubičić, 2020).

Turning to audiences, one study on Croatian media found that readers are most interested in “stories highlighting the success of athletes, clubs, or national teams” (Lacković, Pavić & Tkalec, 2023: 66). This is somewhat intuitive, considering that sports

consumption is often tied to “national sentiment” (Dugalić, 2018: 57). Nevertheless, a cursory look at media content reveals that coverage is heavily skewed toward popular and team sports, while many other sports are frequently neglected. This pattern, too, is linked to audience interest—and, by extension, to commercial factors.

A 2023 Gallup survey conducted in the United States found that 41 percent of respondents identified football as their favorite sport to follow (Gallup, 2023). Basketball ranked second with 10 percent, followed by baseball at 9 percent. Similar patterns are observable in other countries, as will be discussed later in this paper.

Football is often referred to as “the most important unimportant thing in the world” and is considered a “social phenomenon” (Carvalho and Fazenda, 2018: 1980–1981). It is also the sport that is “most popular and most prominently represented in media coverage” (Milenković and Milenković, 2022a: 1248), with mass media playing a central role in transforming it into “a top-tier entertainment show” (Milenković and Milenković, 2022b: 216).

Millions of people around the world watch football broadcasts, elevating football players to celebrity status and making them some of the highest-paid athletes globally. As a result, football has become “significantly more expensive” (Milenković and Milenković, 2022a: 1234) and is often considered “the most profitable media product” (Milenković and Milenković, 2022b: 205).

Football holds a prominent position in newspapers and prime-time TV slots, which contributes to its “central place in the lives of a large number of people worldwide” (Bajić, 2023: 90). Some researchers argue that this prominence is reinforced by the “active interaction between the game and the audience” (Carvalho and Fazenda, 2018: 1982), prompting many media outlets to develop “audience engagement strategies” (Cleland, 2011: 20).

Another topic frequently debated in academic, media and sports circles is the underrepresentation of women’s sports in media coverage. In addition to insufficient presence, scholars often criticize the way female athletes are portrayed. Critics argue that media content tends to emphasize “traditional female roles and ‘acceptable’ sports for women, such as gymnastics, tennis, swimming, and diving” (Wanta, 2006: 113).

In their study, theorists Daniel Beck and Louis Bosshart observe that male athletes are generally portrayed as athletic and physically powerful, whereas female athletes are depicted in terms of “beauty, physical attractiveness, and desirability, with particular emphasis on their bodies” (Beck and Bosshart, 2003: 16).

The often-used argument that “the media simply provide the public with what it wants (i.e., men’s sports)” (Carlisle Duncan, 2003: 252) has been rejected by researchers such as Margaret Carlisle Duncan as unfounded and inadequate.

Sports Coverage in the Serbian Media

Research findings vary regarding the level of audience engagement with sports content in Serbian print and online media. The Digital News Report (2022) indicates that 44% of the audience is interested in sports news but that sports rank seventh among topics of interest—after local news, international affairs, politics, health, the economy, and entertainment news (Kleut, Ninković Slavnić, Ilić, et al., 2022: 15). In contrast, data from the Center for Media Professionalization and Media Literacy (CEPROM, 2023) show that sports are the most followed content among online media users, with 38.1% of respondents expressing primary interest in this category, followed by society, economy, and politics (Nedeljković, 2023).

As for specific sports, football receives the most media coverage in Serbia—“regardless of the actual results achieved by Serbian footballers” (Milenković and Milenković, 2022a: 1233). This trend began as early as the late 19th century when *Večernje novosti* reported on the first football match played in Belgrade in 1896 (Milenković and Milenković, 2022b: 232).

The issue of sports representation in domestic media was addressed decades ago by Professor Sergije Lukač, founder of the Journalism Department at the Faculty of Political Sciences in Belgrade. He noted that sports journalists primarily focus on commercial sports, “chasing record-breaking sensations, while amateur and smaller sports are completely sidelined” (Petrović and Penezić, 2023: 151).

An analysis of front pages in Serbian daily newspapers from 2018 revealed that this trend persists, with football dominating coverage, followed by tennis, volleyball, and, to a much lesser extent, basketball and wrestling (Bajić and Petrović, 2019: 32).

Similar findings have been reported in studies on electronic media, particularly television programming. In 2017, regulatory authorities analyzed 18 TV channels and nearly 200 hours of programming across six countries², with Serbia’s Regulatory Authority for Electronic Media (REM) among the participants. Football emerged as the most frequently broadcast sport across all surveyed regions (MNRA, 2017: 33).

Data specific to Serbia confirmed football’s dominance in televised sports news, with a total of 288 football-related stories. Basketball followed with 186, then tennis with 160, futsal with 46, athletics with 22, and both water polo and volleyball with 20 each. Sports such as handball, skiing, Formula 1, fencing, and others were mentioned fewer than 20 times (MNRA, 2017: 19).

This level of media coverage aligns with the popularity of sports among Serbian citizens. According to a 2025 survey by Ipsos Strategic Marketing, football remains the most popular sport in Serbia, named by 37% of respondents, followed by basketball (33%) and tennis (13%) (RTS, 2025).

² The research included Spain, Croatia, Morocco, Portugal, Serbia, and France.

The cultural significance of football in Serbia is perhaps best captured by theorists Vesna Milenković and Dejan Milenković, who wrote that “great victories are celebrated, while great defeats are mourned” (Milenković and Milenković, 2022a: 1233), noting that, unfortunately, defeats have been more frequent. In contrast, basketball—which “belongs to the group of most successful sports in Serbia, especially when it comes to national teams” (Penezić and Selenić, 2025: 131)—receives far less media attention than football.

Domestic research on the visibility of women’s sports in the media echoes global findings. Again referencing Sergije Lukač, he had long ago highlighted the “unequal position of women in sport compared to men” (Petrović and Penezić, 2023: 151).

According to the aforementioned report by media regulatory bodies on televised sports content, 82.86% of sports news was devoted to men’s sports, while only 17.14% covered women’s sports (MNRA, 2017: 14). Regarding live broadcasts, men’s sports accounted for 84% of all air time, compared to 16% for women’s events (MNRA, 2017: 29).

A 2023 study by the sports association “Women Sport Society” addressed the same issue and found that 76.2% of airtime in electronic media was devoted to men’s sports, compared to only 23.8% for women’s sports (Pančić, 2023).

This lack of visibility extends beyond sports. Studies indicate that women are generally underrepresented in Serbian media. The Who Makes the News, Serbia – National Report from 2020 found that women accounted for only “20% of the people who were talked about, written about, or shown in newspapers, on television, on radio, and in digital news” (WACC, 2021: 11).

Methodology

The subject of this research is the representation of sports in the context of nationally distributed daily newspapers. The analysis included nine newspapers—Politika, Danas, Informer, Alo, Srpski telegraf, Nova, Blic, Kurir, and Večernje novosti—covering the period from April 7 to June 1, 2025. A constructed week sample design was applied, whereby a different day was analyzed in each week to ensure representation across all days of the week, from Monday to Sunday. The only exception was the week in which Thursday fell on May 1 (a national holiday), when newspapers were not published. The analyzed dates included Monday, April 7; Tuesday, April 15; Wednesday, April 23; Thursday, May 8; Friday, May 16; Saturday, May 24; and Sunday, June 1. Newspapers that publish weekend double issues, such as Danas, Nova, and Informer, were analyzed in the final week using the content from the Saturday, May 31 issue, which was also available for sale on June 1.

The constructed week sample was chosen to avoid bias from the overrepresentation of particular sports that may have been prominent during specific events and which could receive disproportionate media attention over multiple days in a given week.

The research employed both quantitative and qualitative content analysis of the representation of sports in media coverage, including the presence of men’s and women’s sports, as well as the appearance of sports stories on newspaper front pages.

One of the primary objectives of this study is to identify reporting trends in sports journalism and to highlight potential inequalities in the coverage of specific sports, as well as women’s sports, in the media.

Research Findings: Daily Newspapers in Serbia

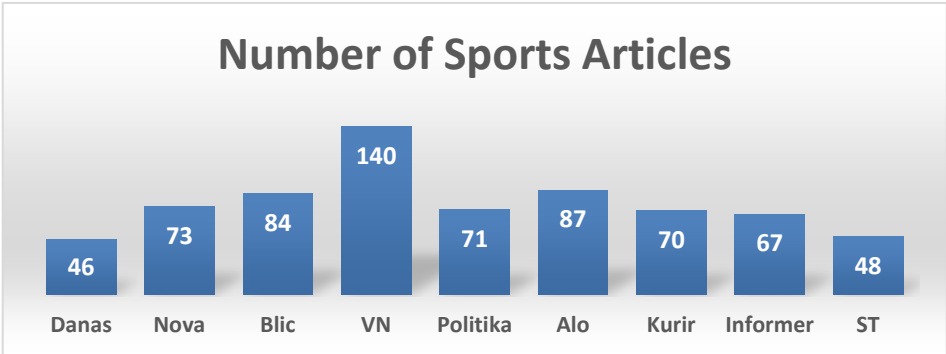
Representation of Sports

This study examined nine daily newspapers in Serbia—Politika, Danas, Večernje novosti, Blic, Kurir, Nova, Informer, Alo, and Srpski telegraf—over a seven-day period, from April 7 to June 1, 2025. All nine newspapers include dedicated sports sections, typically located on the final pages of each issue.

On average, the sports sections comprised two to three pages per issue. The only paper with a special sports supplement was Večernje novosti, which published an eight-page sports insert on Thursday, May 8. During the research period, the nine newspapers published a total of 686 articles related to sports.

Večernje novosti featured the highest number of sports articles—140 in seven editions. It was followed by Alo with 87, Blic with 84, Nova with 73, Politika with 71, Kurir with 70, and Informer with 67. The lowest numbers were recorded in Srpski telegraf and Danas, with 48 and 46 articles, respectively (Table 1).

Table 1. Number of Sports Articles in Serbian Daily Newspapers



Regarding the representation of specific sports, the findings support previous global and national research indicating that football dominates sports coverage. Out of the 686 total articles, football accounted for 264, or 38.5%. It was followed by basketball, which appeared in 238 articles or 34.7% of the total.

During the research period, five articles were categorized as “mixed,” referring to reports on sporting events that featured multiple disciplines, such as the Olympic Games, school sports competitions, and similar formats.

In addition, three articles categorized as “miscellaneous” reported on general investments in sports in Serbia and the activities of the Ministry of Sport.

Sports on Front Pages

During the seven observed days and across 63 front pages, a total of 16 sports-related news items appeared on the front pages of daily newspapers in Serbia. Proportionally, every fourth front page featured a headline from the field of sports. The only two newspapers that did not highlight sports topics on their front pages were Danas and Nova.

On four of the 16 front pages mentioning sports, the news about the “Belgrade Marathon” was featured on April 7, 2025. This event, already mentioned in the text as the most prominent manifestation of its kind in Serbia, received prominent coverage in the newspapers Blic, Večernje novosti, Alo, and Politika — the latter being the only front page to feature a sports-related headline.

Two front pages, both from Blic, were dedicated to Serbia’s best tennis player and one of the greatest players in the history of the sport, Novak Djokovic. Additionally, Večernje novosti promoted their special sports supplement, “Sport,” which was published in the same issue.

Among other notable headlines is “Nikola at Bogdan,” highlighted by Alo as a preview of an NBA game featuring basketball players Nikola Jokić and Bogdan Bogdanović. Furthermore, Informer featured two headlines: one reporting a statement from Bogdan Bogdanović expressing confidence that Nikola Jokić will participate in the upcoming EuroBasket, and another announcing that “Bukari is back at Zvezda.”

The remaining six headlines were less directly related to sports events but concerned athletes themselves. Three of these six fall into the category of “crime news,” two of which appeared on the front pages of Srpski Telegraf and Alo, titled “Karlik maimed a man” and “Karlik nearly killed a man,” respectively. Both newspapers reported sensationally on a fight at a nightclub in which Partizan basketball player Karlik Jones allegedly smashed a bottle over another participant’s head.

Similarly, on May 24, Srpski Telegraf ran a front-page headline: “Survived bombs in Israel, died in his homeland,” providing an extensive report on the death of basketball player Marko Andrić Brka from Sremska Mitrovica, who died in a traffic accident.

Kurir dedicated its only two sports front pages to news that “Ronaldinho sent a message to Vučić: See you!” announcing his planned visit to Serbia for the opening of

the EXPO 2027 exhibition and to the news that “Jarić refused to sell his Miami villa to Beyoncé and Jay-Z.”

On May 24, Alo published a life story on its front page titled “Teacher worthy of a medal” about Nikolina Gajić, who has won 150 prestigious boxing medals and teaches at the “Dr Archibald Reiss” school in Belgrade.

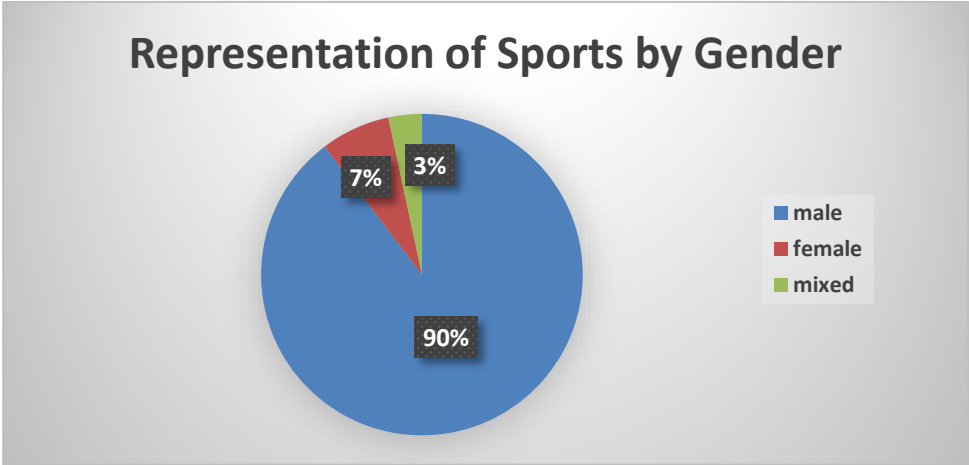
Women’s vs. Men’s Sport

One segment of this research focused on the disparity in coverage between men’s and women’s sports. The results reveal a significant imbalance between the two, a phenomenon highlighted by numerous media and sports journalism scholars and researchers. Specifically, during the study period, 90% of the content in the nine Serbian newspapers analyzed was dedicated to men’s sports, while only 7% was devoted to women’s sports, and 3% of the coverage was classified as “mixed” (Table 3).

The “mixed” category includes news about events featuring both female and male participants, such as the Olympic Games, marathons with both men’s and women’s competitions, as well as tennis and chess tournaments and school sports events. There were also reports, for example, on the latest world ranking positions of male and female tennis players. Notably, Kurir was the only one of the nine newspapers that did not publish a single piece about women’s sports.

Women were most prominently represented in athletics coverage during the analyzed period, with the highest number of articles across all nine newspapers—totaling ten, among which six concerned Serbian athlete Angelina Topić and two featured Ivana Španović.

Table 3. Representation of Sports by Gender in Serbian Daily Press



Following athletics, women's handball received nine mentions, mainly due to news about the Serbian national team qualifying for the World Championship, as well as reports in two newspapers on the passing of handball player Vesna Abutović Tomajek.

Women's volleyball was mentioned six times, while women's tennis appeared seven times—four of which concerned former Serbian tennis player Ana Ivanović, focusing exclusively on her private life rather than her sports career. One article featured photographs of her in a swimsuit during a vacation under the headline "Mauritius as a Remedy for Sadness: Ana's Smile from Ear to Ear."

Four articles covered women's football, three covered women's basketball, and three featured chess—specifically, all three articles concerned Serbian player Teodora Injac, who won the European Championship. Women in skiing and "miscellaneous" categories each had two mentions, and there was one mention each for gymnastics and boxing.

Sports journalists in the daily press also covered women who were not athletes, a category included in this study under "miscellaneous." One article focused on a footballer's girlfriend, Miss Argentina, a model and singer; the newspaper *Alo* noted, "Forget football and matches, the Atlético defender is now known as Aldana Maset's boyfriend." The article's headline read "Faust's Miss Sweeter than Any Trophy," accompanied by photos of the woman in a swimsuit.

Another article in the "miscellaneous" category concerned a sports TV presenter, mentioning that she posted "provocative gym photos" with the headline "Diletta Left Breathless," focusing primarily on the presenter's aesthetic appearance.

Conclusion

Does the audience truly demand coverage of certain sports in the media, or do journalists, through their reporting, continually amplify the number of supporters for specific sports segments? Is sport mediatized, or are the media "sportized"? These are among the fundamental questions that academic and professional circles have been raising for years while studying the relationship between mass media and sports. The prevailing view is that both are true—sports and media are so closely intertwined that they exert significant mutual influence. Media gain readership, while certain sports gain popularity and commercial value.

Global and domestic research on the representation and popularity of sports indicates the overwhelming dominance of football in sports journalism. This was confirmed by the results of the present study, which found that nine daily

newspapers in Serbia (Politika, Danas, Blic, Večernje novosti, Nova, Kurir, Alo, Informer, and Srpski Telegraf) reported on football most extensively, accounting for 38.5% of all sports-related media coverage. Basketball closely followed with 34.7%, mainly due to the performances and achievements of Serbian NBA player Nikola Jokić.

The successes of domestic athletes have naturally influenced the coverage of tennis and athletics in the sports sections of Serbian daily newspapers, considering the careers of tennis player Novak Djokovic and athlete Angelina Topić. All other sports were statistically far less represented than football and basketball, with no apparent justification.

Similarly, women's sports receive significantly less coverage in daily newspapers compared to men's sports. The percentage ratio stands at 90% to 7% in favor of men's sports. Women are most prominently featured in athletics, tennis, volleyball, and handball—the latter mainly due to the Serbian national team qualifying for the World Championship during the study period.

The global tendencies in the portrayal of women in sports journalism are also evident in Serbian media included in this study. Examples include articles about former tennis player Ana Ivanović that focus on her private life, some of which emphasize her physical appearance through swimsuit photographs. The emphasis on female figures rather than their sporting achievements is also apparent in texts covering a footballer's partner or a sports presenter working out in the gym.

A clear trend of sensationalism and tabloidization of sport was observed, particularly evident in the selection of stories somewhat related to sport that appeared on the front pages of daily newspapers. Athletes are often portrayed sensationally in a crime-reporting style, with headlines focusing on fights, tragedies, or topics such as the sale of Marko Jarić's villa or Ronaldinho's visit to Serbia for the EXPO 2027 exhibition opening.

Has sport in the media become "more than a game," as cited by one theorist in the first part of this study? Judging by the reports in Serbian daily newspapers, the answer is undoubtedly yes. The unjustified and insufficiently substantiated disparity in the representation of minor sports and women's sports in newspapers has once again been demonstrated. These sports attract less sponsor

interest compared to football (men's), which is sensationalized and spectacularized on a global scale and, consequently, is more attractive to the media.

Journalists must be aware of their significant influence on public opinion and recognize that the media image of topics and fields they report on depends substantially on their editorial and reporting choices.

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HISTORY OF SPORT, ECONOMY, AND GLOBALIZATION IN THE 21ST CENTURY: POLITICAL AND ECONOMIC DIMENSIONS OF A GLOBAL PHENOMENON

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Abstract: The historical evolution of sport reveals its transformation from local physical activity into a global socio-economic institution. In the 21st century, sport has become a key arena where the forces of globalization, economic expansion, and political influence converge. Historical analysis shows that the integration of sport into national economies and global markets intensified after the Cold War, positioning it as both an instrument of economic growth and a means of political diplomacy. The commercialization of sport, supported by digital technologies and transnational media networks, has amplified its economic significance and geopolitical reach. However, the same dynamics have produced new challenges related to social inequality, ethical governance, and sustainability. Based on documented scientific literature, this paper examines the historical trajectory of the relationship between sport, economy, globalization, and politics, emphasizing how global power relations continue to shape the contemporary sports landscape.

Keywords: history, sport, economy, globalization, politics, 21st century

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Introduction

Sport's historical development shows how it has continuously evolved from a regional physical activity into a worldwide recognized industry that simultaneously creates economic value, influences media markets, and becomes significant in global politics. Sport is increasingly seen in the twenty-first century as a distinct "industry of meaning" and as a component of the global economy (Ivanović & Ćosić, 2025). Sports events have become highly visible venues where symbolic capital is transformed into economic and political influence, and its production and consumption occur within transnational value chains, including media rights, sponsorships, digital platforms, tourism, and infrastructure projects (Jackson & Dawson, 2021).

Under contemporary conditions of commercialization and digital mediatization, sport operates as a global market that is increasingly shaped by corporate strategies, negotiations over media rights, algorithmically mediated audience attention, and the international mobility of athletes, capital, and brands (Dašić et al., 2025). This process is not merely economic but also normative: the ways in which sport is organized, financed, and communicated influence what is recognized as "value" in sport (e.g., performance, spectacle, identification, national prestige, organizational reputation). Jackson and Dawson (2021) emphasize that the global sports business, particularly following crisis shocks such as the pandemic, must be analyzed as a field in which dominant market logics confront alternative visions of sports development.

As states and supranational actors increasingly use sporting events and sports organizations as mechanisms for international positioning, image-building, and influence, sport has emerged as one of the most significant tools of public diplomacy and the "return of geopolitics" in the twenty-first century (Kostadinović & Ilievska Kostadinović, 2025; Baltezarević et al., 2025). According to recent studies on sports diplomacy, shifts in the international order and the increasing significance of "non-conventional" diplomatic strategies that depend on events, publicity, and symbolic power have increased the interaction between sport and world politics (Lee & Krieger, 2024). In this way, sport serves as a platform for the simultaneous manifestation of political competition (prestige, legitimation, narratives of modernity, "soft power") and economic competition (investment, sponsorship, tourism).

A particularly important role in this dynamic is played by sports mega-events, which have become "nodes" where economic interests, urban policy, infrastructure development, media expansion, and the global reputation of host states and cities intersect. Recent literature highlights that mega-events are structurally linked to issues of governance, transparency, and public interest, as they are often driven by organizational models that produce democratic deficits, risks of non-transparent decision-making, and contested distributions of costs and benefits (Ludvigsen, Rookwood, & Parnell,

2022). For this reason, a historical examination of the relationship between sport and globalization in the twenty-first century must also encompass questions of the institutional architecture of sport, the relationship between the public and private sectors, and the mechanisms through which public resources are legitimized through sports projects (Dašić, 2021; Stanković, 2025).

Furthermore, since economic "hyper-commercialization" in many sports has advanced more quickly than the development of regulatory and oversight mechanisms, the research corpus of recent years highlights how the global expansion of sport is inextricably linked to issues of good governance, integrity standards, and corruption risks. According to systematic reviews, sport governance concepts are essential for comprehending how institutional flaws arise and why there is still a discrepancy between normative standards and real organizational practices (Thompson, McSweeney, & McCarthy, 2023). This is especially crucial for the current study because the abstract specifically addresses issues like sustainability, ethical governance, and inequality that result from global dynamics.

Finally, sport in the contemporary period should also be understood as part of a broader consumer and media culture, in which global sport becomes a commodity and an experience that is produced, packaged, and distributed through transnational cultural flows. Analyses of the relationship between global sport and consumer culture show that global sports markets have historically passed through phases of acceleration, integration, and "transnational hyper-commodification," particularly since the early 1990s. This directly explains why media, technology, and marketing are central to the economic significance of sport in the twenty-first century (Giulianotti, 2018).

Economic Impact of Globalization on the Sports Sector

Globalization has drastically changed the sports industry's economic structure over the last thirty years, moving from a locally based model of revenues and audiences to a multifaceted global market where sport is concurrently "produced," distributed, and monetized through media, sponsorships, digital platforms, foreign investment, and labor mobility. In many professional sports, broadcast rights, multinational corporate partners, and internationalized capital flows have replaced ticket revenues and local sponsors as the primary economic foundations. Sport is becoming more and more integrated into larger financial and market ecosystems as a result of this change (Andreff, 2024).

In the financial domain, globalization has led to changes in ownership structures and a rise in cross-border investments (e.g., in clubs and leagues), as well as to new practices of financialization, whereby certain sports-related resources—such as athlete con-

tracts, transfer rights, and even specific digital financial instruments linked to sport—are treated as tradable “assets” subject to portfolio logic (Franjić, 2022). Andreff (2024) demonstrates how professional sport, particularly football, has moved toward financing models in which media revenues and global markets serve as primary drivers (Stanković, 2023; Mladenović, 2025), alongside growing interest from investors outside the traditional sports sector (Narančić & Vitković, 2025). This transformation reshapes the economic dynamics of competitiveness: clubs with access to global capital sources and international media markets gain a structural advantage over locally financed entities.

Digitalization and platformization have advanced globalization in the media production and distribution sector. Professional sports increasingly depend on a complex, networked media landscape that blends broad audiences with content personalization rather than a single dominant channel (conventional television). The sports “multi-sided market” (clubs/leagues, media/platforms, advertisers/sponsors, viewers), where value is being created through platform-based models, user data, and novel monetization formats, is conceptually explained by Zheng and Mason (2022). Practically speaking, this means that secondary and tertiary revenue streams like highlight clips, interactive content, social media engagement, subscriptions, micro-transactions, and digital advertising ecosystems now contribute to the economic value of sport in addition to sporting outcomes and the “live event.”

A key market consequence of these developments is the restructuring of media rights markets. The rise of over-the-top (OTT) services and mobile video streaming is reshaping traditional bidding mechanisms, distribution models, and access control to sports content. Large digital platforms have emerged as new intermediaries capable of influencing pricing, accessibility, and packaging strategies for sports broadcasts. Hutchins, Li, and Rowe (2019) analyze how OTT services are characterized by high capital intensity and a strong capacity to intervene in sports media rights markets, altering audience habits and the global economic logic of sports content circulation. For sports organizations, this creates new revenue opportunities, but also new risks, including increased dependence on platforms, shifts in revenue structures, and the need for technological and legal capabilities that exceed traditional sporting competencies.

At the same time, sponsorship and marketing have grown extremely worldwide. Instead of only using on-site brand visibility, sponsorship value is increasingly determined by digital reach, engagement, audience analytics, and conversion rates. According to Koronios et al. (2020), online digital technologies have a substantial impact on the creation, communication, and evaluation of sponsorship since they facilitate world-wide fan connection and have an impact on sponsor awareness, attitudes, and purchase intentions. This “digital sponsorship” reasoning is especially crucial in today's globalized

world, where teams and leagues are relying less on local audiences and more on international fan bases.

Globalization has also significantly transformed the sports sector by extending economic activity beyond national boundaries and integrating sport into global markets for media, labor, and capital. One of the most influential channels of this process is the globalization of media and broadcasting rights. Through international television networks and digital streaming platforms, sports competitions reach global audiences, increasing the commercial value of broadcasting rights. As a result, professional leagues and clubs experience substantial revenue growth, although this also creates dependency on media contracts and exposure to market volatility (Solberg, 2002).

The internationalization of the sports labor market is another significant aspect of globalization. Player transfers have become a global financial structure including clubs, agencies, and regulating organizations due to the cross-border movement of athletes, which is especially noticeable in professional football. Richer teams are better positioned to draw elite players, which leads to financial concentration and competitive imbalance even though this improves talent allocation efficiency and elevates the standard of competition overall (Andreff, 2008; FIFA, 2025).

At the macroeconomic level, globalization has strengthened the recognition of sport as an economic sector linked to tourism, services, and related industries. Empirical studies conducted at the European Union level demonstrate that sport generates measurable contributions to gross value added and employment. However, these findings also emphasize the need for caution when interpreting indirect and induced effects, which depend heavily on methodological assumptions (European Commission, 2012).

Lastly, mega-sporting events like international tournaments and world championships are intimately linked to globalization (Table 1). Research regularly demonstrates that long-term economic advantages are unpredictable and heavily dependent on efficient planning and post-event legacy measures, but these events can boost short-term economic activity through tourism and infrastructure investment (Andreff, 2008).

Table 1. Key Economic Effects of Globalization on the Sports Sector

Area of globalization impact	Mechanism	Main economic effects on sport
Media and broadcasting rights	Global distribution of sports content through television and digital platforms expands audiences and increases competition among broadcasters	Growth in revenues for leagues and clubs; stronger global branding; increased dependence on media markets and commercial cycles
Global labor market and player transfers	Cross-border mobility of athletes and international transfer systems facilitate global allocation of talent	Increased financial flows and player valuations; development of transfer and agent markets; rising inequality between wealthy and smaller clubs
Macroeconomic role of sport	Integration of sport with tourism, services, and education allows sport to be measured as an economic sector	Contribution to GDP and employment becomes visible; indirect effects require careful methodological interpretation
Mega-sporting events	International events attract global spectators, sponsors, and media attention, encouraging public and private investment	Short-term increases in tourism and spending; risk of cost overruns and limited long-term economic benefits without legacy planning

Finally, globalization also reshapes the “production side” of the sports industry through the internationalization of the workforce and management practices. The migration of athletes and coaches, multicultural team structures, and the expansion of clubs into new markets affect costs, revenues, and organizational efficiency. In this context, Gulak-Lipka (2020) demonstrates that internationalization in professional clubs (using the example of basketball) generates high levels of diversity that require deliberate managerial responses. Depending on how these processes are managed, the outcomes may be positive—such as improved quality, market attractiveness, and sporting performance—or negative, including reduced cohesion, higher costs, and increased organizational risk.

Globalization's overall economic effects on the sports industry can be seen in: (a) modifications to ownership and financing models; (b) the restructuring of media rights markets through digitalization and over-the-top (OTT) platforms; (c) the shift in marketing and sponsorship toward digital metrics and international audiences; and (d) the internationalization of the workforce and management practices. These shifts increase reliance on international media and financial players while also creating new revenue sources and market expansion. The sports industry grows commercially as a result, but it also becomes more structurally complicated and susceptible to challenges from around the world.

Sport as an Instrument of International Politics and Diplomatic Strategy

In contemporary international relations, sport functions as a significant resource of public diplomacy and “soft power,” as it enables states and other actors to shape perceptions, narratives, and symbolic capital within the international public sphere through the high global visibility of sporting events. Unlike traditional diplomatic channels, which are often constrained by formal protocols and institutional frameworks, sport provides a broad communicative platform that connects state strategies, media attention, and the emotional identification of audiences. For this reason, contemporary scholarship treats sports diplomacy as a particularly dynamic and interdisciplinary field in which international politics, sports governance, and development narratives intersect (Postlethwaite, 2022).

In practical terms, sport is used to construct international relations at at least three levels. First, at the level of state reputation and image, sporting success and the hosting of major competitions can serve as tools of branding, presenting a country as modern, stable, and “attractive” for partnerships, tourism, and investment. Second, at the level of diplomatic initiatives, sports exchanges and events can open channels of communication and create favorable contexts for political dialogue, particularly in situations where formal diplomatic relations are burdened by tension. Third, at the level of internal and external legitimation, sport can be employed to consolidate political authority and social cohesion through the mobilization of national pride and shared symbols, which are easily internationalized through global media (Postlethwaite, 2022).

Because they are highly concentrated media and political “moments” where states vie for international attention and symbolic status, sports mega-events like the Olympic Games and world championships play a particularly significant role in this dynamic. According to research, states are increasingly using mega-events as tools of public diplomacy. Messages about national identity, development, and international importance are created through planning, ceremonial practices, infrastructural developments, and media storytelling (Grix & Lee, 2013). This use of sport is typical of both incumbent countries looking to restore or preserve their global influence as well as rising governments looking to quicken their international placement.

However, the literature emphasizes that the relationship between sport and soft power is not automatically positive; outcomes depend on context, credibility, and the manner in which strategies are implemented. Analyses of mega-events as components of national soft power strategies demonstrate that long-term planning, institutional coordination, and consistency in value-based messaging are crucial for achieving lasting effects. Otherwise, sports “visibility” may produce only limited or short-term gains (Grix & Houlihan, 2014). At the same time, discrepancies between projected

images and actual practices can generate reputational risks that outweigh potential diplomatic benefits.

Concepts like sports diplomacy, "sportswashing," and more general reputational and communication management techniques are frequently used in more recent studies to characterize this reputational ambivalence. According to studies, governments and other actors may utilize sport to deflect attention from contentious political topics, but doing so also raises the possibility of media criticism, counter-narratives, and civil society mobilization. Consequently, sport ceases to be a one-way tool of image formation and instead becomes a space of symbolic contestation (Grix, 2024).

Moreover, empirical studies highlight that regional and historical context is decisive for understanding the effects of sports diplomacy. Research on China, for example, shows that hosting the Olympic Games can be integrated into a broader strategy of international positioning and influence projection, but that outcomes depend on the interaction of economic capacity, media architecture, and geopolitical relations at a given moment (Jeong, 2024). This is an important consideration for any historical analysis: sport is not merely a "mirror" of politics and economics, but a channel through which political and economic processes are communicated, legitimized, and contested on the global stage.

In conclusion, sport serves as a tool for international politics through: (a) public diplomacy and soft power (perceptions, narratives, image); (b) mega-events as global visibility and symbolic prestige platforms; (c) national branding and reputational management strategies; and (d) diplomatic initiatives and international cooperation that use sport as a low-threshold communication channel. However, these same mechanisms can also have the opposite impact, especially when there is a discrepancy between projected values and real political or social actions. Due to this duality, sport is one of the most prominent platforms for the simultaneous construction and contestation of international legitimacy and prestige in the twenty-first century.

Conclusion

Based on the historical development of sport, the objectives of this paper, and the analyses presented in the introduction and central chapters, it can be concluded that in the twenty-first century sport has transcended the boundaries of an autonomous social activity and has become a complex global phenomenon that simultaneously functions as an economic sector, a media industry, and an instrument of international politics. The historical perspective demonstrates that this transformation was not abrupt, but rather the result of long-term processes of globalization, commercialization, and institutionalization of sport, which intensified particularly after the end of the Cold War.

The analysis of the economic impact of globalization on the sports sector has shown that sport is now deeply integrated into global market flows. Changes in financing models, the growing importance of media rights, the digitalization and platformization of sports content, and the globalization of marketing and sponsorship have transformed sport into a highly capitalized industry. At the same time, the internationalization of the workforce and managerial structures has contributed to greater competitiveness and global visibility, while also reinforcing structural inequalities between actors with access to global resources and those reliant on local sources. These processes indicate that economic growth in sport does not necessarily imply an equitable distribution of benefits, but often generates new forms of dependency and vulnerability within the sports system.

At the same time, this study has demonstrated that the economic expansion of sport cannot be separated from its political function. In the contemporary international context, sport operates as an instrument of public diplomacy and “soft power,” enabling states to shape their international image and positioning through sporting success, mega-events, and global media visibility. The analysis of sport’s role in international politics suggests that it represents a space in which national strategies, symbolic capital, and global power relations intersect. However, the findings also show that the effects of sports diplomacy are not automatically positive, but depend on institutional consistency, long-term planning, and alignment between projected values and actual political and social practices.

A particularly important finding of this paper concerns the ambivalent nature of global sport in the twenty-first century. On the one hand, sport acts as a driver of economic development, media innovation, and international communication, contributing to global interconnectedness and cultural exchange. On the other hand, these same processes raise issues of social inequality, ethical governance, transparency, and sustainability. This confirms that sport is not a value-neutral phenomenon, but a field in which broader economic and political contradictions of the contemporary world are reflected and reproduced.

In the twenty-first century, sport is simultaneously an economic industry, a media spectacle, and a political resource, whose functioning is shaped by global power relations and market logics. The historical approach adopted in this paper has made it possible to understand these processes as the outcome of long-term structural changes rather than as isolated features of the contemporary moment. For this reason, future research on the relationship between sport, economy, and politics should focus on a deeper examination of governance, regulation, and accountability mechanisms, in order to ensure that sport as a global phenomenon develops in a manner that balances economic efficiency, social justice, and institutional integrity.

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THE EMERGENCE AND DEVELOPMENT OF THE "SOKO" (FALCON) SOCIETY IN NIŠ FROM 1907 TO 1914

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Abstract: The paper presents the genesis of the Falcon movement in Niš at the beginning of the 20th century. At the beginning, a brief overview of the origins of the Falcon ideology and the development of the Falcon movement during the second half of the 19th century in the Austro-Hungarian Empire is given, as well as the development of the first sports organizations in Serbia. Then, the emergence of the first sports, primarily gymnastic associations in Niš in the period from 1897 to 1907 is presented. Special attention is paid to the Civic Gymnastics Society "Dušan Silni" (later renamed the Knights' Society "Dušan Silni"), which had a key influence on the introduction of the Sokol model of sports organization in Niš. Then, the activities of the first Niš Sokol organization, the Gymnastics Society "Soko", founded in 1907, as well as the Sokol Society "Dušan Silni" founded in 1910, will be presented, with a special focus on their origins, composition and activities. It is important to emphasize that the Sokol movement was strongly ideologically oriented and politically colored, as it arose at a time of the rise of national romanticism, which is why it will also be viewed in a broader, geopolitical context.

Key words: Sokol Society, Niš, gymnastics, Civic Gymnastics Society "Dušan Silni", Gymnastics Society "Soko", Sokol Society "Dušan Silni"

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Introduction

The emergence of the Sokol movement in Niš represents part of the chronology of significant events in the history of the Sokol organization in Serbia. It should be emphasized that almost the entire sports activity in our regions, from the end of the 19th century until 1941, took place precisely within the framework of Sokol societies. Accordingly, the influence of Sokolism was strongly felt on the political and cultural level. Sokolism, as a Pan-Slavic, cultural, and national liberation movement, was founded in the Czech lands in 1862 by Miroslav Tyrš. In an effort to encompass broader social strata, the Sokols operated under the slogans of the French Revolution: "Liberty, Equality, Fraternity," gathering members regardless of faith, class, or nationality (Šešum, 2014, 22). The Slavic peoples within the Austro-Hungarian Empire lacked opportunities for political, cultural, and economic affirmation, so the leaders of the Sokol movement decided to work through sports on connecting the Slavic nations in order to prepare them for the struggle to achieve "territorial and spiritual freedom" (Žutić, 1991, 5). Among the Serbs as well, the first Sokol organizations appeared precisely in the territory of Austria-Hungary. Following the May Coup of 1903, there was increased activity among Serbian youth in Austria-Hungary. The new foreign policy orientation of Serbia, the collapse of Count Károly Khuen's regime in Croatia, the crisis of the regime in Bosnia and Herzegovina after Kállay's death, as well as the strengthening of the anti-Austrian movement in Dalmatia, influenced the emergence of a new national fervor (Brozović, 1934, 209-211). In this context, the appearance of the Sokol movement among the Serbs should also be viewed. Serbian Sokolism in Austria-Hungary was perceived as a liberal national liberation movement that concealed its true goal—liberation and unification of all Serbian lands—behind physical exercise, while following the idea of Pan-Slavism (Žutić, 1991, 51). The ideological creators and leaders of the Serbian Sokol movement were Dr. Laza Popović and Milan Teodorović, who founded the society "Srpski Soko" in Sremski Karlovci on January 19, 1904 (Dimić, Milošević, Šešum, 2014, 19-24; Šešum, 2014, 54).

The tradition of sports organization in the Principality of Serbia dates back to the mid-19th century. Painter Stevan Todorović founded the First Serbian Society for Gymnastics and Wrestling in 1857 with students of the Painting School, which was active until 1864. The establishment of the Belgrade Society for Gymnastics and Wrestling in 1882 marked the beginning of the continuous development of physical exercise in the Kingdom of Serbia. In 1891, the society fully adopted the Sokol exercise system and changed its name to the Belgrade Gymnastic Society "Soko" (Niške novine, 1934, 2, 4; Ilić, Mijatović, 1994, 79). However, supporters of the old method of work founded the Civil Gymnastic Society "Dušan Silni" in 1892, which in 1907 changed its name to the Chivalric Society "Dušan Silni." A significant event in the development of Sokolism in

the Kingdom of Serbia was the year 1910, when the societies "Soko" and "Dušan Silni" merged into the Union of Sokol Societies "Dušan Silni" (Rašić, 1910, 15-16; Vasić, 1939, 36; Vukašinović, 2016, 25). It is considered that the occasion for this unification was the Annexation Crisis in Bosnia and Herzegovina.

Establishment of the First Gymnastic Organizations in Niš

At the end of the 19th century, the development of sports organization began in Niš as well. The first organized sports collectives were from individual sports, primarily the first shooting association founded in 1881 and the Morava Riding Circle "Prince Mihailo" founded in 1890. The first gymnastic society in Niš was a branch of the Civil Gymnastic Society "Dušan Silni," established in 1897. The members of the board of this branch were: Sreten Stanić – Cukić, Mika Todorović, Miodrag Čavdarević Mika, and others. Particularly prominent in the work was Dobrivoje Đ. Mihajlović – Takić (Privredni list, 1926, 1; Grupa autora, 1984, 537).

Thanks to the first Niš gymnastics and wrestling teacher, Kosta Jovanović, the branch began its work and held its first public manifestation on July 19, 1897 (Ilić, 1998, 11). However, already in 1899, the society ceased operations, only to resume work in 1904 thanks to gymnastics and wrestling teacher Rajko Karaklajić. He managed to enroll a larger number of students from Niš schools, especially commercial youth, whom he then systematically trained in physical exercises. The exercise hall, a kind of physical culture hall, was located in the building of the old Elementary School near the Cathedral Church, and exercises were also held on public city grounds. Already in 1905, the society began providing gymnastics lessons for elementary school students (Grupa autora, 1984, 537). In the same year, gymnastics was introduced as a regular subject in the Niš Grammar School (Grupa autora, 2015, 62).

The work of this society was extremely beneficial and had a stimulating effect on the establishment of similar societies throughout southern Serbia. The society participated in the First Croatian Sokol Rally in August 1906 (Gavrilović, Mijatović, 2024, 269). When in 1907 the Civil Gymnastic Society "Dušan Silni" was renamed the Chivalric Society "Dušan Silni," it opened the possibility for all citizens of Niš who met certain conditions to join. Prospective members had to be Serbian citizens, enjoy civil honor, and be of a prescribed age. The majority of the membership consisted of students from Niš schools, while the higher bourgeoisie approached the society with some skepticism (Savić, 2015, 104).

Establishment and Activities of the Gymnastic Society "Soko"

A group of members from the "Dušan Silni" society separated with the intention of forming a gymnastic society that would operate in the Sokol spirit and according to Sokol ideology (Grupa autora, 2015, 377). On their initiative, preparations began for the establishment of a Sokol society in Niš. It is assumed that the initiators of this society's founding were: Major Dušan Cvetković, Captain Mihajlo Valjarević, and Dimitrije Tasić, Lieutenants Aleksandar Mitić, Dušan Putniković, and Radojica Teodosijević (Savić, 2015, 104).

The initiators sent a letter on April 9, 1907, to the head of the Gymnastic Society "Soko" in Belgrade, informing him that a Gymnastic Society had been founded in Niš in March of the same year and requesting approval for the society to bear the name "Soko." Along with the mentioned letter, they also requested regulations on work and organization, and on May 28, approval for the establishment of the Sokol society arrived. The Gymnastic Society "Soko" thus received moral support and was officially constituted in the following composition: head – Major Dušan Cvetković, deputy head – pharmacist Pera Arandjelović, secretary – Captain Mihajlo Valjarević, treasurer Dimitrije Tadić (Ilić, 1998, 16-17). Some sources suggest that in Niš that year, in addition to the Gymnastic Society "Soko," the Sokol Society "Sinđelić" was also active, about whose work we have no information (Sokolski život, 1937, no. 4; Grupa autora, 1984, 537).

The establishment of the "Soko" society should also be interpreted in a broader geopolitical context. At that time, the Customs War between Serbia and Austria-Hungary had been ongoing for a year. As we have emphasized, the emergence of the Sokol movement has its ideological and political background. Taking into account the foreign policy circumstances in which Serbia found itself in 1907, it is quite evident that the citizens of the Kingdom—at least those who were nationally conscious—felt the need to identify with a sports organization that operated against the interests of Austria-Hungary. In support of this thesis is the fact that in the observed period from 1907 to 1914, similar Sokol organizations were established in almost all cities of Serbia (Gavrilović, 2016, 60-66).

The "Soko" society dedicated itself to organizing exercise classes. Due to the lack of professional gymnastics teachers, the work in the society proceeded without a plan, with numerous improvisations. In the society, Dušan Putniković, Radojica Teodosijević, and other officers worked as leaders (trainers). However, they were not true leaders because they had not completed the leadership courses. Nevertheless, exercise classes were held regularly, as well as preparations for public performances. Since they were not sufficiently familiar with the Sokol exercise system, certain exercises that were unclear to them were not performed consistently and systematically. Doubts in interpreting exercises and unwillingness to perform them correctly were best shown during joint exercises with other societies (Ilić, 1998, 19, 25).

The work of the "Soko" society was not limited only to Niš. On October 6, 1907, members of the society participated in a large public exercise in Kragujevac, which consisted of basic gymnastic exercises and competitions in running and jumping. Simple exercises, i.e., stick exercises, were performed by members of the Belgrade Sokol youth. After them, members of the Kragujevac gymnastic society performed exercises with maces. Finally, a combined group of all societies (including the one from Niš) performed simple exercises from the Croatian Sokol Rally of 1906 and the Prague Sokol Rally of 1907. The Sokols from Niš did not manage to master the standing long jump (Ilić, 1998, 19-20). However, in other disciplines, they achieved notable results: Nikodije Petković ran 100 meters in 15 seconds, while Sreta Stanković won a prize (we do not know what kind or the result) in pole vault (Grupa autora, 2015, 24).

The Niš Sokols visited the Sokol Society "Jug Bogdan" in Prokuplje on June 7, 1908, and on that occasion presented a flag with a ribbon. The flag was received and solemnly carried through the city by the head of the department, Obrad Stanojević, accompanied by a Sokol song. After that, a public class was held where the skills of the Sokol society from Niš were demonstrated. The Sokols from Niš presented themselves to the Sokols and the people of Prokuplje as the Sokol Society "Sinđelić," which was an unofficial name they used when performing in other cities. The societies competed in running, stone throwing from the shoulder, standing long jumps, ball games (football), archery and rifle shooting, pole climbing, apparatus exercises, hurdle running, javelin throwing, as well as rally exercises. The exercises were performed in formation, with impeccable alignment, with "sharp" but harmonious movements and connecting elements of shaping (Zlatanović, 1997, 24-26).

At the end of 1908, Milan Perović arrived in Niš from the Belgrade Society "Soko," bringing with him 50 Sokols with the aim of correcting existing deficiencies and assisting in the further work of the Niš society. Perović was a graduate student of František Hofmann, a Czech Sokol teacher who in 1908, at the summer exercise ground of the Belgrade Sokols, organized exercises twice a week in which about 50 students and Sokol youth participated, as well as about 40 members of the women's group (Jeftimijades, 1939, 18-19; Vukašinović, 2016, 27). Although some members of the Niš society initially received Perović's instructions with distrust, they later became convinced of the positive results of his work (Ilić, 1998, 21-22).

The Serbian Sokols from Niš organized a public exercise on June 14, 1909, in honor of the centenary of the Battle of Čegar and the death of Voivode Stevan Sinđelić. At this event, the following points were performed: simple exercises from the V Czech All-Sokol Rally, exercises on the horizontal bar, pyramids, short stick exercises, javelin throwing competition, wrestling school (Rašić, 1909, 32-34; Ilić, 1998, 20). However, although there were no complaints about the organization of the public exercise, the

Niš society was criticized for not being sufficiently prepared to perform certain points. There was a particularly felt need for a trained leader who would lead the exercises professionally and in accordance with the Sokol system. Therefore, the Sokols from Belgrade promised to provide additional assistance in training leaders (Popović, 1908/1909, 192, 193).

At that time, in the Gymnastic Society "Soko," there were two groups of exercisers – older and younger. Each group had three divisions of exercisers, into which the exercisers were assigned based on achieved results. In the first, highest division, the most successful members exercised. In the second, middle division, those who had mastered the basic exercises were located, while in the third, lowest division, were the beginners. Exercises were held three times a week and lasted one hour each. The society had various apparatus and props: horizontal bar, parallel bars, rings, trapeze, weights, and sticks. In addition to apparatus exercises, simple exercises were also performed, and jumping and stone throwing from the shoulder were practiced. In addition to exercising, social life was also developed within the Sokol organization. Thus, in 1909, a library was established with books on gymnastics and Sokolism. Public lectures on Sokolism were also held, where Sokol ideology was discussed in detail (Ilić, 1998, 22).

Establishment and Activities of the Sokol Society "Dušan Silni"

In order to revive the work of the Pirot gymnastic society, the prominent member of the "Dušan Silni" society, Rajko Karaklajić, left Niš in 1908. This led to stagnation in the society's activities and its gradual merging into the "Soko" society. The unification took place in 1910, when the Chivalric Society "Dušan Silni" and the Gymnastic Society "Soko" appeared under a single name — Sokol Society "Dušan Silni" (Gavrilović, 2016, 66).

At the Sokol rally in Sofia in 1910, the Niš native Sreten Stanić – Cukić distinguished himself in apparatus exercises, winning second place and receiving a laurel wreath as a prize (Gavrilović, 2016, 66). At the Sixth All-Sokol Rally in Prague, held in June 1912, Sokol societies from Serbia also participated, including the Sokols from Niš (Vukašinović et al., 2023, 25). These facts testify to the quality of the work of the Niš Sokols and to the fact that the initial deficiencies in the society's functioning were quickly eliminated.

In the following year, 1911, the society organized a Sokol academy. The program of the academy included a sports part with the following order: greeting; exercises on the pommel horse; exercises with clubs performed by the children's group; exercises on the parallel bars performed by the youth section; simple exercises performed by the members; and group exercises also performed by the youth section. At the end, the orchestra of the Second Infantry Regiment played. The proceeds from this event went toward raising funds for the construction of the Sokol hall "Dušan Silni" (Gavrilović, 2016, 66; Ilić, 1998, 23).

Despite numerous difficulties, the Sokol society continued to develop. However, its faster development was hindered by the lack of professional staff. Part of the problem was solved by organizing internal courses for training leaders (*prednjaci*). In order to improve the quality of work in Sokol societies, the Ministry of Education of the Kingdom of Serbia sent a request to the Sokol community in Prague to send its experts for the training of domestic personnel. Thus, Bohdan Koutek arrived in Niš and began work in the 1911/12 school year as a gymnastics professor at the Niš Grammar School and as a leader in the Sokol Society (Savić, 2015, 106). The last information about the activities of the Sokol Society "Dušan Silni" dates from 1912, when they participated in the rally in Čuprija (Ilić, 1998, 23).

Following the Balkan Wars, there was a halt in the society's activities. When the First World War broke out in 1914, members of the Sokol Society massively responded to the mobilization call. Numerous examples of their heroism were later described in Sokol literature. A well-known case is that of the aforementioned gymnast Sreten Stanić – Cukić, a participant in the Balkan Wars, who, as commander of a bomber detachment in the Battle of Bregalnica in 1913, was severely wounded and died during transport to the hospital in Kumanovo (Popović, 1914, 11). The period from 1912 to 1918, as far as the organization's activities are concerned, is considered a period of inactivity, as all forces were directed toward war preparations and military operations. During the occupation, the entire archive of the Niš Sokol society was destroyed, as well as the exercise hall with all its apparatus and props. Immediately upon their arrival in Niš, the Bulgarians began establishing their own schools, institutions, and sports organizations. They founded the gymnastic organization "Junak"; however, they failed to attract children and youth to their ranks (Ilić, 1998, 22). After the unification in 1918, the golden age of the Sokol movement in Niš began, when it succeeded in developing to its full capacity and in all segments, precisely as the ideologists of Sokolism had envisioned.

Conclusion

The establishment of the Sokol society represents an event of primary importance for the development of sports in Niš. Although a certain degree of sports activity existed even before the appearance of the Sokol movement, it was the Sokols who played the key role in shaping a sports, cultural, and national self-awareness, not only in Niš but in all places where they were active.

However, in the period from 1907 to 1914, the Sokol movement in Niš was in its infancy and did not succeed in approaching the level of development and activity seen in the interwar period. The destruction of the archival material of the "Dušan Silni" society deprived researchers of the opportunity to fully grasp the society's activities. Based on

the preserved sources and literature, the impression is formed that the society operated under modest conditions and was limited in numerous segments, especially regarding the training of professional staff.

In order to better understand the emergence and activities of the Sokol movement in the observed period, attention should also be paid to international circumstances. After the May Coup of 1903, Serbia changed its foreign policy orientation and adopted a hostile stance toward Austria-Hungary, with which it waged the Customs War from 1906 to 1911 and clashed over the annexation of Bosnia and Herzegovina in 1908. In this context, the appearance of the Sokols in Niš and their appeal to broader strata of the population should be interpreted. The newly created political climate favored the rooting of a sports organization with a clear Pan-Slavic orientation, whose roots lay in challenging the official policy and statehood of Austria-Hungary.

By promoting physical education, national solidarity, and moral values, the Sokol Society became a strong factor of local and national identification and integration — until the war years, when its work was suspended. Nevertheless, the tradition established by the movement would become the foundation for a new rise after liberation.

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THE FIRST SPORTS AIRCRAFT OF THE AERO CLUB NAŠA KRILA CAUDRON C-27

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Abstract: In November 1922, the third produced copy of the Codron airplane received the official French registration F-AEIC. Registration number 922 was registered to the company M. Caudron from Ischia, i.e. to the company that manufactured the airplane. However, the airplane changed hands very quickly, namely, it was sold to M. Gervies from Paris. In the summer of 1923, M. Gervies' company used the Codron C-27 to conduct aerial surveys of the marshes in the Skopje field for the needs of the government of the Kingdom of Serbia and Montenegro, with the aim of draining the marshes in order to combat malaria. After the surveys were completed, at the end of the summer of 1923, the airplane was offered for sale to the local authorities in Skopje. The General Board of the Aero Club in Skopje immediately showed interest and submitted a proposal to the Ministry of War to accept the offer. The Ministry of War adopted the proposal of the Aero Club to purchase from Marcel Chrétien, a representative of the Gervis company, a Caudron C-27 aircraft (with a 130 hp Clerget engine) and one spare engine. The aircraft was paid for 20,000 French francs, i.e. 75,000 dinars. This training aircraft was in excellent condition, the engine had not run for more than 12 hours. After acceptance, it was handed over to the General Board in Skopje in September 1923. The aircraft flew until August 1926, when it suffered an accident and was no longer repaired.

Keywords: Caudron C-27 aircraft, Aero Club Naša Krila, early aviation history, Skopje air operations, Serbian aeronautical heritage

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Introduction

In November 1922, the third produced example of the Caudron C-27 aircraft received the official French registration F-AEIC. The registration number 922 was recorded under the company M. Caudron from Issy, i.e., the company that manufactured the aircraft itself. However, very soon the aircraft changed ownership, as it was sold to M. Gervies from Paris.⁴[1] Already in the summer of 1923, the firm of M. Gervies used the Caudron, on behalf of the government of the Kingdom of Serbs, Croats and Slovenes, to conduct aerial photography of the marshes in the Skopje Field with the aim of draining the marshes in order to combat malaria.[Naša Krila No. 89, 1931] After the completion of the photography, at the end of the summer of 1923, the aircraft was offered for sale to the local authorities in Skopje. The Main Board of the Aero Club in Skopje immediately showed interest and submitted a proposal to the Ministry of War to accept the offer.

The Ministry of War accepted the Aero Club's proposal to purchase the Caudron C-27 aircraft (with a 130 hp Clerget engine) and one spare engine from Marcel Cretien, the representative of the Gervies firm. The aircraft was paid for 20,000 French francs, i.e., 75,000 dinars. [Naša Krila No. 14, 1925; Naša Krila No. 24 1926] This training aircraft was in excellent condition, with the engine having no more than 12 hours of operation. The aircraft underwent a commission inspection and, in the presence of the commission members, performed two test flights. It was determined that it was a training aircraft, easy to pilot with a low landing speed. The engine performed excellently during the test flights.[4] After acceptance, it was handed over in September 1923 to the Main Board in Skopje. [Naša Krila No. 89, 1931]

The greatest credit for the acquisition of this aircraft goes to Major Dragutin Mišić, commander of the 3rd Aviation Group based at the Skopje airfield, Captains Mato Švarc and Jerolim Novak, squadron commanders in the same group, as well as the other members of the Main Regional Board in Skopje. At that time, the Skopje Regional Board had only two branches, in Skopje and Strumica. Thanks to this aircraft, another thirty or so local branches were established in Southern Serbia and the Raška region. [Naša Krila No. 89, 1931]

The permanent pilot of the aircraft was Mih. Jarošenko (later a pilot with AEROPUT). He converted this ordinary school transition aircraft into an aerobatic aircraft, making it, at the time, the only light civilian aerobatic aircraft. [Naša Krila No. 89, 1931]

⁴ The aircraft had two construction numbers: The first, 5299, indicated it was the 5299th aircraft built by Caudron, while c/n 3 meant it was the third produced example of the C-27 type.

On September 9, 1925, Aviation Day was celebrated in Strumica. A temporary airfield was prepared on the eastern side of Strumica, to the left of the road to Novo Selo. On Sunday, September 9, the C-27 aircraft arrived from Skopje with Obrad Šobajić and pilot Lieutenant Novak. [Naša Krila No. 16, 1925] A month and a half later, at the invitation of several prominent citizens of Bitola, on October 7, 1925, the C-27 aircraft departed for this city with pilot Jarošenko and the secretary of the Main Board in Skopje, Šobajić. Due to bad weather, the C-27 landed in Prilep, where a large crowd quickly gathered. The flight was later continued to Bitola, where the aircraft remained for a day and a half. [Naša Krila No. 19, 1925] In Gevgelija, on February 20 and 21, 1926, an air meeting was held where the Caudron C-27 flew. Šobajić and Jarošenko flew to the air meeting on the aircraft. [Naša Krila No. 22/23, 1926] The Caudron C-27, with Šobajić and Jarošenko, also participated in the aviation celebrations in Veles on May 16, 1926. They departed from Skopje at 10:00, arriving in Veles at 10:35. They landed near the railway station by the football stadium. They took off back at 17:30 and returned at 18:00. Celebrations and lectures took place. They flew at an altitude of 1,100 m on the way there and returned at 800 m. [Naša Krila No. 25 1926] The Caudron C-27, with Šobajić and Jarošenko, also participated in the Vidovdan celebrations in Kosovo in 1926. They landed in front of the monument at Kosovo Field. On the return, they made a forced landing 5 km from Uroševac near the railway line. That evening they spent the night in Uroševac, and the next day, on Tuesday evening, they continued overland to Skopje. It was not until Thursday that Jarošenko returned for the Caudron, accompanied by the mechanic. [Naša Krila No. 26/27 1926]

Soon afterward, a flying day was organized in Skopje. The start was scheduled for 09:00. Among the military aircraft was the Caudron. The aircraft of the local squadron – reconnaissance Breguet XIVs, along with one Daimler from Novi Sad (which had arrived the previous day in rather bad weather, piloted by Russian Colonel Antonov and reconnaissance Lieutenant Šimunović). First, the reconnaissance Breguet XIVs flew, led by Captain Ferdo Gradišnik, followed by Captain Novak with leader Hauptmann and Lieutenant Rus with Sergeant Jelčić. They targeted free balloons. After the reconnaissance group landed, the white Caudron took off to enthusiastic applause, with Jarošenko and Šobajić aboard. After several circuits, the C-27 landed so that Šobajić could disembark, after which Jarošenko performed aerobatics alone. Then the Brandenburg flew with pilot Antonov and observer Šimunović. They were joined by a Breguet with Captain Jerolim Novak as observer. At 1,000 m, Novak jumped from the Breguet, and at 1,200 m, Šimunović jumped. Then from two Breguets and the Brandenburg, the following jumped by parachute: Sergeant Fr. Kerčik from 3,000 m, Sergeant Al. Trajković from 2,000 m, and the Skopje native Arsić from 1,500 m. [Naša Krila No. 30, 1926]

The Central Administration of Naša Krila requested that the Main Board in Skopje send its Caudron aircraft to the Little Entente aviation competition in 1926. In the last week of August 1926, pilot Jarošenko and Obren T. Šobajić departed from Skopje on the Caudron. The Caudron flew the route Skopje – Kumanovo – Preševo – Vranje – Leskovac – Prokuplje – Niš. In Niš, they landed at the City Field to refuel with gasoline they had brought along. They then continued the flight along the route Niš – Aleksinac – Sokobanja – Ražanj – Čičevac – Paraćin – Čuprija – Jagodina – Bagrdan – Palanka – Azanja – Velika Krsna – Umčare – Avala – Belgrade – Zemun. During the competition, they did not compete. Due to bad weather, they had to remain in Zemun for several days and only departed for Skopje on the fourth day. They flew the route Belgrade – Ralja – Kosmaj – Palanka – Velika Plana – Jagodina – Čuprija – Paraćin – Čičevac – Brajlina – Đunis – Aleksinac – Niš. They were accompanied by exceptionally poor weather conditions throughout the flight. As they approached Niš, the engine began to fail because the carburetor had been ingesting rainwater mixed with gasoline the entire way. They landed at Crveni Krst in Niš to refuel and then continued the flight hoping for better weather. However, they flew into black, rainy clouds. Near Leskovac, they flew at 10 to 15 meters heading toward Predejane. Since the engine continued to run poorly, they decided to return to Leskovac. They landed on the field between the monopoly warehouse and the football pitch. Unfortunately, while trying to avoid a horse, they hit unfinished trenches that had existed in that place since 1915. The aircraft did not overturn, but its landing gear, lower right wing, and propeller were broken. The wheels remained intact. [Naša Krila No. 89, 1931]

The dismantled Caudron was sent to Novi Sad in 1928 for repair, which was never carried out. The spare Clerget engine remained in Skopje. [Naša Krila No. 89, 1931]

The Caudron was deleted from the French register only in October 1931.

General History Caudron C.27

(Jane's All the World's Aircraft 1923; Jane's All the World's Aircraft 1924)

The Caudron C.27 was a French two-seat biplane basic trainer and touring aircraft developed in the early 1920s by Société des Avions Caudron.

Designed as an intermediate trainer between the wartime Caudron G.3 and the more advanced C.59, the C.27 first flew around mid-1922 (exact date uncertain, public debut at Orly in late June 1922). It was presented at the 1922 Paris Air Salon as a simple, forgiving aircraft suitable for basic training, aerobatics, and light touring.

The type proved popular in civil aviation in France and abroad, known for its excellent handling, low landing speed, and aerobatic capability. Notable achievements include:

- Pilot **Georges Patin** winning the 1924 Zenith Cup (fuel efficiency and load-carrying contest).
- French aviatrix **Adrienne Bolland** performing 212 consecutive loops in a C.27 on 27 May 1924 at Orly, setting a women's aerobatic record.

Results General Design Features

(Prospectus d'usine, 1923)

- Configuration: Conventional two-bay equal-span biplane with no stagger and minimal dihedral; fabric-covered wooden wings (two spars) with parallel inter-plane struts and piano-wire bracing; ailerons only on the upper wing.
- Fuselage: Simple cross-braced beam structure, fabric-covered, with tandem open cockpits (pupil forward, instructor aft with a rounded cut-out for visibility).
- Tail: Long shallow triangular fin with a straight-edged balanced rudder extending to the keel; tailplane mounted on top of the fuselage with centrally cut-away elevators for rudder clearance.
- Undercarriage: Fixed tailskid type with wheels on a single axle supported by V-struts from the lower fuselage (initially with shock absorbers, later simplified).
- Construction: Primarily wood with fabric covering; lightweight and forgiving handling made it ideal for basic training and aerobatics.
- Crew: 2 (tandem seating).

Key Variants and Engine Options

The C.27 had several designations due to minor changes and engine swaps:

- C.27 (original, 1922): 80 hp (60 kW) Le Rhône 9C 9-cylinder air-cooled rotary engine.
- C.127 (mid-1924 redesignation): Minor changes, same Le Rhône 9C.
- C.125 (from 1925): Fitted with 130 hp (97 kW) Clerget 9B 9-cylinder rotary (the version used in the Yugoslav example F-AEIC).
- C.128 (later): 120 hp (89 kW) Salmson 9AC 9-cylinder radial; increased span/area (~14% heavier empty weight); some three-seaters with an extra cockpit aft.

At least one flew with a 70–80 hp Anzani engine. Total production was modest (over 20 built, with ~21 on French civil register across variants).

Technical Specifications

(C.127 base variant; 130 hp Clerget versions were similar but slightly improved in performance)

- **Length:** 8.30 m (27 ft 3 in)
- **Wingspan:** 12.00 m (39 ft 4 in) upper/lower (C.128 increased)
- **Height:** 2.83 m (9 ft 3 in)
- **Wing area:** 34.50 m² (371.4 sq ft)
- **Empty weight:** 510 kg (1,124 lb)
- **Gross weight:** 794 kg (1,750 lb)
- **Fuel capacity:** 107 kg (236 lb)
- **Powerplant:**
 - Standard: 80 hp Le Rhône 9C rotary, 2-bladed propeller, partial cowling (upper three-quarters).
 - 130 hp Clerget 9B (C.125): 9-cylinder rotary, air-cooled, 2-bladed fixed propeller.
- **Performance (C.127/Le Rhône):**
 - Maximum speed: 132 km/h (82 mph, 71 kn)
 - Stall speed: 50 km/h (31 mph, 27 kn) — exceptionally low for safe training
 - Service ceiling: 4,000 m (13,000 ft)
 - Wing loading: 23.0 kg/m² (4.7 lb/sq ft)
- **Handling notes:** Very agile, excellent for aerobatics; low landing speed and forgiving characteristics made it popular for civilian use and competitions.

The 130 hp Clerget-powered version (like the one in Yugoslavia) offered better performance than the base 80 hp model while retaining the same forgiving flight qualities.

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THE FIRST SCHOOL AIRCRAFT FOR TRAINING SPORT PILOTS AT THE AERO CLUB „NAŠA KRILA“

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Abstract: Unlike other sports, in order to engage in aviation sports, one must first undergo long and complex training, regardless of whether they are engaged in parachuting, gliding or flying powered aircraft. After World War I, the majority of sports pilots were former military pilots. It was important for all armies in the world that they remain in training, and since flying is expensive, the sport was subsidized by the state everywhere. In addition, until the end of the 1920s, sports aviation was dominated by former military training aircraft everywhere in the world except in Germany. Only from the end of the 1920s, in richer countries, did specially designed sports aircraft begin to dominate sports aviation (for example, the DH-60 Gypsy Moat). In smaller countries, former military training aircraft will dominate until World War II, especially in pilot schools that are starting to be opened by aero clubs. In the same way, Aero Club Nasha Krila received former training aircraft of the Air Force of the Small and Middle Brandenburg and Anrio 320 for training sport pilots.

Keywords: sports aviation, pilot training, aero club, aircraft history, interwar period

Introduction

Unlike other sports, engaging in aviation sports requires first undergoing long and complex training, regardless of whether it involves parachuting, gliding, or flying powered aircraft. Particularly, the training of sports pilots is a prolonged and expensive process. After World War I, the majority of sports pilots were former military pilots, mostly reserve officers. It was important for all armies that reserve pilots remain in training, and since flying is expensive, aviation sports were subsidized by the state everywhere. In addition, until the end of the 1920s, sports aviation worldwide (except in Germany) was predominantly equipped with former military training aircraft. Only from the late

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1920s onward did specially designed sports aircraft begin to dominate in wealthier countries (for example, the de Havilland DH.60 Gypsy Moth). In smaller countries, former military training aircraft continued to dominate until World War II, especially in pilot schools that aero clubs were beginning to establish. In the same way, the Aero Club "Naša Krila" received 1933 old training aircraft from the Air Force – the Mali Brandenburg and Srednji Brandenburg, as well as later the Hanriot 320 – for the training of sports pilots.

During slightly more than 15 years of active work with airplanes (and gliders), in the period 1925-1941, the civil aviation of the Kingdom of Yugoslavia, with its three segments, club, private and traffic, starting with the first Kodron 27 from Skopje, had a total of 175 (known) airplanes, of which 11 are unfinished. There were 104 club airplanes, 44 private ones and 27 from "Aeropot". Of the 175 known Yugoslav civil airplanes, 60 were foreign and 115 of domestic production. The most numerous type was Anrio (27 examples or 15.42% of the total number of civil airplanes) and Fizir FN (20 or 11.43%).

The action of the Aero Club was helped to the greatest extent by Air Force, which from 1933 to 1938 assigned it 64 airplanes. In addition to the old school planes, the Air Force Command sometimes purchased certain prototypes and then assigned them to the Central Administration.

During 1933, the Air Force Command of the Army handed over 18 training aircraft to the Aero Club for the organization of a pilot school, divided into 4 sections: in Belgrade, Zagreb, Ljubljana, and Skopje. A total of 31 tourist pilots were trained in the Aero Club's civilian pilot schools during 1933. [Sondermajer, 1934, 121]

The following aircraft were received: 6 Hanriot aircraft, 8 smaller Brandenburgs, and 4 medium Brandenburgs. The sections began operations as follows: Belgrade on July 14, Zagreb on August 14, Ljubljana on August 28, and Skopje on September 1, 1933. Prior to delivery, the aircraft were stationed in Novi Sad and Zagreb. They were distributed as follows: 6 Hanriots to Belgrade, three Brandenburgs to Zagreb, two Brandenburgs to Ljubljana, and two Brandenburgs to Skopje. In Skopje, one of the Brandenburgs was involved in a fatal accident; during a pilot examination, the trainee was killed. [Sondermajer, 1934, 121]

During 1933, three aircraft were written off because they were 100% damaged in accidents. [Sondermajer, 1934, 121]

During 1933, the first female pilots completed their training: Mrs. Desanka Tomić (wife of Miodrag Tomić) on August 23, 1933, and Miss Gorišek on September 14, 1933. In Belgrade, 40 students were enrolled for tourist pilot training, of whom 24 graduated, 9 were still in training at the end of the year, and 7 dropped out. In Zagreb, there were 6 students and all 6 graduated. In Ljubljana, there were also 6 students who were still

in training at the end of the year because, due to poor weather conditions, they had not yet taken the examination. [Sondermajer, 1934, 121]

However, as early as 1937, politics began to change. Realizing that the small club schools of individual OOs still cannot train a large number of pilots (who were needed by the Air Force for reserve), the Central Administration withdrew more capable and modern school airplanes from the aero-clubs and transferred them to pilot schools (the first such school was founded in Pančevo in 1937). Thus, almost all club Fizirs were gradually withdrawn from the clubs.

This method of training proved to be very effective, so that hundreds of pilots were trained until the war. With the introduction of new Biker Jungmen to the pilot schools during the 1941 season, the FN planes were freed and returned to the clubs, while at the same time maintaining the existing schools and the pace of training new reserve pilots.

At that time, modeling and gliding were pushed in the Aero Club, so in the last two years before the war, a large number of gliders were built (self-built) (most of them were gliders). Almost every club built two or three, and some larger ones even 12 sailboats in one year.

School Aircraft for Initial Pilot Training – Mali Brandenburg

At the beginning of 1923, several businessmen from Novi Sad decided to establish an aircraft factory. Work began on four school aircraft, built according to domestic plans freely provided by the Ministry of War and Navy, but without any guarantee of state purchase. Production of components (wings and fuselages) started immediately.⁴[1] The beginning of operations was marked by significant difficulties, especially regarding skilled labor. When it became clear that the started work could not be completed without reorganizing the factory, it was decided to engage professional management and relieve the company financially. For this reason, on October 11, 1923,[Ilustrovani list No. 16 of April 20, 1924.] a new company was founded under the name "Ikarus," the first Serbian industry of airplanes, automobiles, and engines, Kovačević and partners. The factory was located on Šumadijska Street in Novi Sad. Just two days later, the decision was made to continue building the 4 Mali Brandenburgs, still without any guarantee of purchase by the state.[Jadranska straža No. 8/1927, p. 250]

Under the new management, the primary goal was to complete the already started aircraft first. Unfortunately, a large portion of the already processed material had to

⁴ It is not entirely clear from the preserved material whether these four aircraft were started as new in Ikarus itself or whether work on them began in the Aircraft Workshop in Novi Sad and then handed over to Ikarus as only partially started.

be discarded, due to poor quality as well as faulty workmanship. It can freely be said that work practically had to start over. Completing the plans and drawings, procuring materials, hiring skilled workers, etc., lasted until the beginning of 1924, when systematic work finally began, although it was still far from organized serial production. As a result of this reorganization, actual work on the mentioned four aircraft started in January 1924, and the first one was completed on March 3, 1924, after which it was immediately transferred to the airfield of the 1st Aviation Command for final assembly. After successful test flights (conducted from March 20 to 27), the official handover of the aircraft took place on March 28, 1924, as the Ministry of War and Navy was satisfied with the workmanship. This first "Ikarus" aircraft was the first serially produced aircraft built in the country. The second aircraft was completed in April, and the third in May of the same type. During June, test flights and handover to the Aviation Command were carried out for both of these aircraft. The fourth aircraft was completed in July and delivered on August 28 of the same year.[Ilustrovani list No. 16 of April 20, 1924; Jadranska straža No. 8/1927, 250; D. Ćirović, History of Yugoslav Aviation 1918-1930, Book III; Žutić, 1998, 54 – 73]

While these works were still in progress, the factory succeeded in concluding the first contract with the state for the construction of additional aircraft. This contract concerned the production of school-type seaplanes, which were most needed for the training of student pilots of the Naval Aviation Command. The plans for this type were the property of the Ministry of War and Navy, which had previously purchased them from the later technical director of "Ikarus." The joint-stock company was established on August 1, 1924 (with a capital of 2,000,000 dinars), 5[5] after which a new reorganization took place to achieve the most rational production possible. This gave a stronger impetus to the construction of seaplanes, so the first one was completed by the end of October 1924. The test flights were carried out between November 10 and 24, 1924, with complete success. [Jadranska straža No. 8/1927, 250]

The "Ikarus" factory produced 18 Mali Brandenburgs under the factory designation Ikarus Type ŠB (School Brandenburg).⁶[7] The "Ikarus" examples were equipped with engines of two types with 100 hp power: Mercedes and Blesk (licensed Mercedes), and accordingly, the aircraft were called Brandenburg-Mercedes 100 hp or Brandenburg-Blesk 100 hp.

⁵ The company's capital was increased in 1925 to 5,000,000 dinars.

⁶ There is no written source for the exact number of produced Mali and Srednji Brandenburg aircraft, only annual summary production data. Based on preserved photographs, flight logs, and other documents from units, it was possible to reconstruct the exact number of aircraft produced by type. Only the exact number of Srednji Brandenburgs produced in the Aircraft Workshop in Novi Sad could not be determined.

The carpentry workshop of Ž. Rogožarski, registered on April 21, 1924, as the "First Serbian Aircraft Factory Živojin Rogožarski" (P.S.F.A.Ž.R.), began its first job with the production of Mali Brandenburgs under the designation Rogožarski ŠB (School Brandenburg). The same Mercedes 100 hp engine was used for propulsion. The first example, completed at the end of April 1925, was solemnly delivered on May 10, and by the end of the year the first 10 aircraft of this type had been completed. At "Rogožarski" a total of 22 aircraft of this type were built, also called Brandenburg-Mercedes 100 hp. [Naša krila No. 11, May 1925]

Both domestic versions of the Mali Brandenburg served as standard school aircraft in the Air Force of the Kingdom of SHS until 1926, when they began to be gradually replaced by the new Hanriots, [Popović, 1938, 58] although some examples continued to be used for secondary tasks in the second half of the 1920s. A certain number of aircraft occasionally received skis for winter flying. Repairs and overhauls of the Mali Brandenburgs were most often carried out at the Aircraft Workshop of the 1st Aviation Regiment in Novi Sad, which manufactured a large number of spare parts, so that some examples were almost completely renewed.

As part of the action of handing over old military school aircraft to the Royal Yugoslav Aero Club, the eight remaining old Mali Brandenburgs received civilian registration in the summer of 1933 (YU-PBS, 'V, 'X, 'Y, YU-PCA, 'B, 'D, 'E). Their service continued for several more years, after which they were withdrawn from use due to wear and tear.

Transition Training School Aircraft Srednji Brandenburg

Five countries (Hungary, Poland, Romania, Czechoslovakia, and the Kingdom of SCS) produced their own derivatives based on the Hansa Brandenburg C.I type after the war. The Hungarian "UFAG" continued production of the series 169 (Ba.169), while the Poles manufactured around 30 aircraft of their KW-2 version between 1920 and 1923. The Romanian Arsenal delivered as many as 120 examples of the C.I Ba.269 type in 1922-1923, and Czechoslovakia produced three smaller series at the same time (Aero A-14, A-15, and A-26).

The Aviation Workshops of the 1st Aviation Command in Novi Sad, which initially dealt only with the repair of damaged aircraft, began in the winter of 1923/24 to design new two-seat school biplanes with dual controls, powered by a 185 hp Daimler engine. In terms of construction, these aircraft were very similar to those known in the Air Force as "Srednji Brandenburg," which were already being used in pilot schools as second-stage aircraft (i.e., for transition training – in modern terminology). [Bulletin No. 33/1924, 8–9] The first aircraft of this series, 02-01, was completed at the beginning of August 1924. According to the report of the commission's control member, Aviation

Lieutenant "graduate pilot" A. Kervine, during test flights this aircraft achieved good results. [Bulletin No. 33/1924, 9] After that, a small series was built in the mentioned workshops, but there are no reliable data on the exact number of produced examples. Indirectly, based on photographs, pilot logbooks, and similar sources, it can be concluded that there were at least 5 and at most 9.

As in the case of the Mali Brandenburg, the domestic factories "Ikarus" and "Rogožarski" produced Srednji Brandenburgs according to domestic plans owned by the Ministry of War and Navy. "Ikarus" built a total of 6 aircraft during 1925 and 1926 under the factory designation Sb.1 (Srednji Brandenburg). These aircraft were equipped with Daimler 185 hp engines and were therefore called Srednji Brandenburg-Daimler 185 hp. The "Rogožarski" factory produced a similar type over three years, from 1926 to 1928, with the same factory designation Sb.1 (although on the aircraft itself it was marked as Sr. Brand.). The "Rogožarski" aircraft were fitted with Daimler engines of 160 and 185 hp, and accordingly received the usual alternative names based on the engines. These two sub-variants did not differ externally, since both Daimler engines had the same dimensions. At "Rogožarski," 24 examples were built. [Bjelajac, 1994, 40; Mikić, 1933, 648; Popović, 1938, 57 - 60]

On some aircraft, engines were changed during overhauls, so it is not excluded that the same example appears with Daimler engines of different power. Besides the most common name, the designation Srednji Brandenburg-Mercedes 185 hp is also frequently found in pilot logbooks. However, this still referred to the Daimler engine (incorrectly written as Mercedes due to the later name of the German company "Daimler," although the engines were produced by "Austro-Daimler"). Some examples received skis for winter flying. The Srednji Brandenburg aircraft regularly participated in competitions for the King's Cup from 1927 until the early 1930s, and at that time their operational use in the Air Force ended. Their last use in the Kingdom of Yugoslavia was with the Aero Club, where 4 civilian-registered aircraft flew in the period 1933–1934 (YU-PBT, 'U, 'Z, YU-PCF).

Small Brandenburg

Two-seat school biplane. The aircraft was of wooden construction. One Mercedes 100 hp engine. Maximum horizontal speed: 90 km/h. Time to climb to 3,000 m: 40 minutes. Service ceiling: 3,500 m. Flight endurance: 3½ hours. [Simović, 1928, 61]

Middle Brandenburg

Two-seat school biplane. The aircraft was of wooden construction. One Daimler 185 hp engine. Maximum horizontal speed: 145 km/h. Time to climb to 3,000 m: 45 minutes. Service ceiling: 5,000 m. Flight endurance: 5½ hours. [Simović, 1928, 61]

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EVALUATING HANDGRIP STRENGTH AS A MARKER OF MUSCULAR FITNESS AND BODY COMPOSITION IN STUDENTS

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Abstract: Handgrip strength is widely recognized as an indicator of overall muscle function and health. This study aimed to investigate the relationship between body composition and handgrip strength in a representative sample of university students. Fifty students (balanced by sex and study level) from the Faculty of Sport and Physical Education voluntarily participated. Participants underwent anthropometric and body composition assessment, followed by maximal isometric handgrip strength testing of the dominant and non-dominant hand using a handheld dynamometer. The average maximal handgrip strength of the dominant hand was ~410N, while the non-dominant hand averaged ~385N. Male students demonstrated significantly higher grip strength values compared to females, and students regularly engaged in sports activities showed greater handgrip performance. Preliminary correlation analyses revealed a positive relationship between muscle mass and handgrip strength, and a negative association with body fat percentage. These findings emphasize the relevance of handgrip strength as a practical and reliable measure of muscular fitness and body composition in young adults. Future research with larger, sex-stratified samples is recommended to validate these observations and better understand the role of physical activity and hand dominance.

Keywords: handgrip strength, body composition, young adults, muscle mass, health marker

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Introduction

Muscular strength is widely recognized as a key component of physical fitness and an important determinant of health, functional capacity, and athletic performance. Adequate levels of muscular strength contribute to efficient movement, postural stability, injury prevention, and metabolic health, while low muscular strength has been associated with increased risk of chronic diseases and reduced quality of life (Faigenbaum et al., 2019; García-Hermoso et al., 2018). Consequently, identifying valid, reliable, and practical methods for assessing muscular fitness remains a central objective in both sports science research and health-related assessment.

Handgrip strength (HGS) has emerged as one of the most commonly used indicators of muscular fitness due to its simplicity, low cost, and high reliability (Roberts et al., 2011). Measured using a handheld dynamometer, HGS provides an objective estimate of maximal isometric force generated by the forearm flexor muscles. Although the test primarily assesses upper-limb strength, numerous studies have demonstrated strong associations between handgrip strength and overall muscular strength, lean body mass, and functional performance (Bohannon, 2019; Wind et al., 2010). For this reason, handgrip strength is often considered a surrogate marker of general muscular fitness.

Beyond its relevance in athletic and physically active populations, handgrip strength has gained increasing attention as a health marker across different age groups. Lower grip strength values have been linked to adverse health outcomes such as cardiovascular disease, metabolic disorders, functional limitations, and increased all-cause mortality, particularly in middle-aged and older adults (Leong et al., 2015; Ortega et al., 2012). While much of the existing literature focuses on older populations, there is growing interest in understanding the role of handgrip strength in younger adults, where it may reflect early differences in lifestyle, physical activity habits, and body composition.

University students represent a unique and important population for studying muscular fitness and body composition. This period of life is characterized by significant lifestyle changes, including variations in physical activity levels, training habits, and nutritional behavior. Even among students enrolled in faculties related to sport and physical education, substantial interindividual differences in physical fitness and body composition can be observed (Keating et al., 2005). As such, simple assessment tools such as handgrip strength testing may provide valuable insights into the muscular condition of this population.

Body composition plays a critical role in determining strength and physical performance. Skeletal muscle mass is directly related to force-generating capacity, whereas higher fat mass or body fat percentage may negatively affect relative strength and movement efficiency (Kyle et al., 2004). Previous studies have consistently reported pos-

itive correlations between handgrip strength and indicators of lean mass, as well as negative associations with body fat percentage (Silventoinen et al., 2008; Peterson et al., 2016). However, the strength of these relationships may vary depending on sex, training status, and overall physical activity level.

Sex differences in handgrip strength are well documented, with male individuals generally exhibiting higher absolute grip strength values compared to females, primarily due to differences in muscle mass and hormonal profiles (Dodds et al., 2014). Additionally, regular participation in sports or resistance-based physical activities has been shown to positively influence handgrip strength, further highlighting the importance of physical activity habits when interpreting grip strength values in young adults (Montalcini et al., 2016).

Despite the extensive use of handgrip strength testing, data focusing specifically on its relationship with body composition in university students, particularly within sport-related academic programs, remain limited. Understanding these relationships may help clarify whether handgrip strength can serve as a practical and informative screening tool for muscular fitness and body composition in young, generally healthy populations.

Therefore, the aim of the present study was to examine the relationship between handgrip strength and body composition parameters in a sample of university students from the Faculty of Sport and Physical Education. Additionally, differences in handgrip strength related to sex and involvement in regular sports activities were explored. It was hypothesized that handgrip strength would be positively associated with muscle mass and negatively associated with body fat percentage, and that male and physically active students would demonstrate higher grip strength values.

Methods

Study Design

This study employed a cross-sectional observational design aimed at examining the relationship between handgrip strength and body composition parameters in university students. All measurements were conducted during a single testing session under standardized laboratory conditions.

Participants

The sample consisted of 50 university students (male and female) enrolled at the Faculty of Sport and Physical Education. Participants were recruited on a voluntary basis and represented a generally healthy young adult population. Inclusion criteria were:

(1) age between 18 and 30 years, (2) absence of musculoskeletal injuries or neurological disorders that could affect strength performance, and (3) no acute illness at the time of testing. Exclusion criteria included any condition that could compromise maximal effort during handgrip testing or interfere with body composition assessment.

Prior to participation, all subjects were informed about the purpose and procedures of the study and provided written informed consent. The study was conducted in accordance with the principles of the Declaration of Helsinki and approved by the institutional ethics committee of the Faculty of Sport and Physical Education.

Anthropometric and Body Composition Assessment

Body height was measured using a stadiometer to the nearest 0.1 cm, with participants standing barefoot in an upright position. Body mass was measured to the nearest 0.1 kg using a calibrated digital scale, with participants wearing light clothing.

Body composition parameters were assessed using bioelectrical impedance analysis (BIA). The measured variables included total body mass, skeletal muscle mass, fat mass, and body fat percentage. Participants were instructed to avoid strenuous physical activity, alcohol consumption, and large meals for at least 24 hours prior to testing to minimize potential measurement error associated with hydration status.

Handgrip Strength Assessment

Maximal isometric handgrip strength was assessed using a handheld dynamometer. Prior to testing, participants received standardized instructions and a demonstration of the correct testing technique. Grip strength was measured separately for the dominant and non-dominant hand.

During the test, participants were seated with the shoulder in a neutral position, the elbow flexed at approximately 90 degrees, and the forearm in a neutral position. The wrist was maintained in a neutral alignment. Participants were instructed to squeeze the dynamometer with maximal effort for approximately 3–5 seconds. Verbal encouragement was provided to ensure maximal voluntary contraction.

Each participant performed two maximal trials for each hand, with a rest interval of at least 60 seconds between trials to prevent fatigue. The highest value obtained for each hand was recorded and used for further analysis. Handgrip strength values were expressed in Newtons (N).

Physical Activity and Sports Participation

Participants self-reported their involvement in regular sports or physical activity. Based on their responses, participants were categorized into groups according to whether they engaged in organized sports or structured physical training on a regular basis. This

variable was used to explore potential differences in handgrip strength related to physical activity level.

Statistical Analysis

Descriptive statistics were calculated for all variables and are presented as means and standard deviations. Normality of data distribution was assessed using standard procedures. Pearson’s correlation coefficients were calculated to examine relationships between handgrip strength and body composition variables, including skeletal muscle mass, fat mass, and body fat percentage.

Independent samples t-tests were used to assess differences in handgrip strength between male and female participants and between physically active and less active groups. Statistical significance was set at $p < 0.05$. All statistical analyses were performed using standard statistical software.

Results

Descriptive Statistics

Complete data for handgrip strength and body composition variables were available for 35 participants and were included in the statistical analysis. Descriptive statistics are presented as mean ± standard deviation.

Table 1. Descriptive statistics

Variable	Mean ± SD
Skeletal muscle mass (kg)	33.0 ± 14.8
Body fat (%)	13.6 ± 7.1
Handgrip strength – dominant hand (N)	361.9 ± 187.5
Handgrip strength – non-dominant hand (N)	349.3 ± 170.5

Dominant hand grip strength was consistently higher than non-dominant hand grip strength across participants. A very strong positive correlation was observed between dominant and non-dominant handgrip strength ($r = 0.97$), indicating high bilateral consistency in maximal force production.

Absolute values inspection of mean skeletal muscle mass and mean body fat percentage reflect considerable interindividual variability in body composition within the sample.

Relationship Between Handgrip Strength and Body Composition

Correlation analysis demonstrated a strong positive association between skeletal muscle mass and handgrip strength. Dominant handgrip strength showed a very strong

correlation with skeletal muscle mass ($r = 0.95$), while a strong correlation was also observed for the non-dominant hand ($r = 0.90$). Participants with greater skeletal muscle mass consistently exhibited higher maximal grip strength values.

Body fat percentage displayed a weak negative relationship with handgrip strength. The correlation between body fat percentage and dominant handgrip strength was $r = -0.14$, while the correlation with non-dominant handgrip strength was $r = -0.18$. Although the direction of these associations was negative, their magnitude was small, indicating that fat percentage had a limited influence on absolute handgrip strength in this young adult sample.

Comparison Between Hands

Handgrip strength values were systematically higher in the dominant hand compared to the non-dominant hand. The strong correlation between hands suggests that hand dominance influenced absolute force values but did not substantially alter the overall pattern of association between grip strength and body composition variables.

Discussion

The purpose of the present study was to examine the relationship between handgrip strength and body composition parameters in university students from the Faculty of Sport and Physical Education. The main findings indicate that handgrip strength is strongly associated with skeletal muscle mass, while its relationship with body fat percentage is weak and negative. These associations were consistent for both the dominant and non-dominant hand, supporting the role of handgrip strength as a practical indicator of muscular fitness in young adults.

The strong positive relationship observed between handgrip strength and skeletal muscle mass is in line with previous research reporting that grip strength reflects overall muscular development and force-generating capacity (Silventoinen et al., 2008; Peterson et al., 2016). Skeletal muscle mass represents the primary structural component responsible for force production, and higher muscle mass is generally associated with greater maximal strength. The very high correlation coefficients observed in the present study suggest that handgrip strength is a sensitive marker of lean mass even in a relatively homogeneous, physically active student population.

In contrast, the relationship between handgrip strength and body fat percentage was weak and negative. This finding is consistent with studies conducted in young and physically active populations, where excess fat mass may have a limited influence on absolute strength values (Montalcini et al., 2016). Unlike older or clinical populations, young adults often maintain sufficient muscle mass and neuromuscular function,

which may attenuate the impact of body fat on maximal force production. These results suggest that, in young adults, handgrip strength is more strongly driven by muscle quantity than by adiposity.

The observed differences between dominant and non-dominant handgrip strength align with established findings regarding hand dominance and neuromuscular specialization. Dominant hands typically exhibit higher strength due to greater habitual use and motor coordination. However, the very strong correlation between hands indicates that bilateral grip strength is highly consistent and that measurements from either hand may provide valuable information regarding overall muscular fitness. This supports previous recommendations that handgrip strength testing can be efficiently implemented in field and laboratory settings using simple protocols.

Sex-related differences in handgrip strength, with males demonstrating higher values than females, are well documented in the literature and were also evident in the present study. These differences are primarily attributed to greater absolute skeletal muscle mass and hormonal influences in males (Dodds et al., 2014). Similarly, students who reported regular participation in sports or structured physical training exhibited higher grip strength values, emphasizing the role of habitual physical activity in maintaining muscular strength during early adulthood.

From a practical perspective, the findings support the use of handgrip strength as a quick, non-invasive, and cost-effective tool for assessing muscular fitness and estimating lean mass in university students. Given its ease of administration, handgrip strength testing may be particularly useful in educational, sports-recreational, and preventive health settings, where more sophisticated body composition assessments may not always be available.

Limitations

Several limitations of the present study should be acknowledged. Although the total sample included 50 participants, complete data for both handgrip strength and body composition variables were available for 35 individuals and were therefore included in the correlation analysis. This reduction in sample size may limit the generalizability of the findings and should be considered when interpreting the results. Additionally, body composition was assessed using bioelectrical impedance analysis, which, although practical and widely used, is sensitive to hydration status and may be less accurate than reference methods. Finally, the cross-sectional design of the study does not allow for causal inferences regarding the relationship between body composition and handgrip strength.

Conclusion

The findings of the present study indicate that handgrip strength is strongly associated with skeletal muscle mass in university students, supporting its use as a simple and reliable indicator of muscular fitness in young adults. In contrast, the relationship between handgrip strength and body fat percentage was weak and negative, suggesting that adiposity plays a limited role in determining absolute grip strength in this population.

Consistent patterns were observed for both the dominant and non-dominant hand, and male as well as physically active students demonstrated higher handgrip strength values. These results reinforce the value of handgrip strength testing as a practical, non-invasive assessment tool that can be easily implemented in educational, sports-recreational, and health-related settings.

Overall, handgrip strength appears to be a useful marker of muscular condition and lean mass among young adults. Future research with larger samples and longitudinal designs is warranted to further clarify the role of handgrip strength in monitoring changes in body composition and physical fitness over time.

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Invitation letter

DIGITAL SPORTS MARKETING IN SERBIA: CRM PERSONALIZATION AND CONSUMER PURCHASING DECISIONS

Gruja Kostadinović¹, Stefan Kocić²

Abstract: The paper examines the impact of personalized digital marketing in sports – implemented through CRM systems (email campaigns, club mobile applications, and loyalty programs) – on consumer behavior and brand perception. Building on theories of consumer value, customer relationship management, and fan engagement models, the study proposes a framework in which personalization (message relevance, timeliness, and consistency) influences perceived communication usefulness, emotional engagement, and trust, which in turn strengthen satisfaction, loyalty, and purchase intention (tickets, season passes, merchandise, OTT subscriptions). At the same time, boundary effects such as privacy sensitivity, perceived fairness of data exchange (value-for-data), and message fatigue are explored. The proposed research framework integrates measures of CRM touchpoint quality (e.g., dynamic content, behavior-based recommendations) with consumer behavior and brand equity indicators, allowing for the testing of mediating and moderating relationships. Expected findings indicate that well-timed, transparent, and value-driven personalization increases engagement and conversion, while excessive frequency and insufficient data control diminish effects. The theoretical contribution lies in linking CRM personalization with loyalty formation mechanisms in the sports context, while the practical contribution provides guidelines for designing privacy-by-design campaigns, optimizing segmentation, and measuring impacts on purchasing behavior and brand equity.

Keywords: personalization, CRM in sports, consumer behavior, loyalty and engagement, data privacy

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Introduction

The digital transformation of the sports industry has fundamentally changed the way clubs, leagues, and sponsors create, deliver, and measure value for fans and consumers. Today's sports consumers move across a dense network of interconnected touchpoints—from social media and club mobile applications, through email communications and loyalty programs, to online ticket sales and OTT platforms. In such an environment, customer experience is understood as a dynamic process encompassing the entire customer journey, in which the performance of each individual touchpoint cumulatively shapes overall brand perception and purchasing behavior (Lemon & Verhoef, 2016).

This paradigm amplifies the importance of personalized strategies, in which Customer Relationship Management (CRM) functions as the “backbone” for data collection, integration, and activation. Contemporary CRM extends beyond software solutions; it represents a process-oriented and strategic commitment that synchronizes segmentation, contact management, offer design, and customer value measurement (Payne & Frow, 2005). The conceptual framework of “strategic CRM” emphasizes data integration and multichannel coherence as prerequisites for effective personalization—that is, ensuring that the message, the offer, and the timing of delivery are aligned with the individual's needs and contextual circumstances.

In retail and service industries, the evolution from multichannel to omnichannel management of touchpoints implies that channels are no longer viewed in isolation, but rather as components of a unified system designed to deliver a seamless experience (Verhoef, Kannan, & Inman, 2015). In sport, this practically means integrating data from club applications, email communications, POS and ticketing systems, loyalty programs, and social media into a single fan view, thereby enabling personalized content, offers, and incentives that influence purchasing habits and brand value.

The theoretical foundations for understanding the effects of such interventions are rooted in marketing and sport management research. On the one hand, the concept of customer-based brand equity (CBBE) suggests that strong, favorable, and unique brand associations in memory stimulate positive responses to brand marketing activities (Keller, 1993). On the other hand, sport-specific consumer behavior models, such as the Psychological Continuum Model (PCM), describe the progression of fan attachment from awareness to attraction, attachment, and loyalty; personalization can accelerate movement along this continuum by activating relevant motives and routines (Funk & James, 2001).

Empirical research demonstrates that the adoption and use of branded mobile applications can increase future spending and purchase frequency, partly due to the

constant availability of personalized information, offers, and benefits (Kim, Wang, & Malthouse, 2015; Liu, Lobschat, & Verhoef, 2019). These effects also emerge through enhanced web interactions and higher responsiveness to promotions, aligning with the logic of omnichannel reinforcement (Wang, Malthouse, & Krishnamurthi, 2020).

Personalization in email communication—as a traditional CRM channel—also yields measurable benefits. Randomized field experiments show that even non-informative personalization (e.g., mentioning a recipient's name in the subject line) increases open and conversion rates while reducing unsubscribe behavior, indicating that perceived relevance is a key underlying mechanism (Sahni, Wheeler, & Chintagunta, 2018). At the same time, the literature on triggered messages and marketing automation highlights that timeliness and contextual relevance (e.g., abandoned carts, browsing ticket or seating pages) further amplify the effects of personalized campaigns.

Loyalty programs in sport—ranging from traditional point-based schemes to digital “fan identification” systems—serve as infrastructures for data collection and behavioral rewards. Synthetic reviews suggest that loyalty programs, on average, increase purchasing behavior over time, although their effectiveness depends on program design and customer segmentation; consequently, personalized reward rules and communication strategies maximize returns (Dorotic, Verhoef, & Bijmolt, 2012). In the context of sports brands, team brand equity is closely linked to economic outcomes, implying that personalized CRM initiatives may indirectly influence revenues by strengthening brand associations and loyalty (Bauer, Sauer, & Schmitt, 2005).

Social media have additionally become a central component of the CRM ecosystem in sport, enabling dialogue, content co-creation, and shared rituals that foster extra-role fan behaviors and deeper engagement (Filo, Lock, & Karg, 2015; Yoshida, Gordon, Nakazawa, & Biscaia, 2014). Fan engagement is associated with greater tolerance of performance fluctuations, cooperation with management, and prosocial behaviors—important antecedents of loyalty and purchasing outcomes (Yoshida et al., 2014; McDonald et al., 2022).

Although the benefits of personalization are well documented, issues of privacy and fairness in data processing remain critical. The “personalization–privacy paradox” suggests that willingness to share personal data is contingent upon transparency and the perceived value of the exchange (Awad & Krishnan, 2006). In Europe, the implementation of personalized CRM activities must comply with the General Data Protection Regulation (GDPR), particularly with regard to lawful processing bases, information obligations, and data subject rights. In sports practice, this entails clear consent mechanisms, preference management, and data minimization as core principles (EU, 2016/679).

Literature Review

Existing research indicates that personalization in digital sports marketing has evolved from simple demographic segmentation toward predictive and generative AI systems that dynamically select content, offers, and the timing of message delivery (Herold, Singh, Feodoroff, & Breuer, 2024; Weippert, Slivko, Wengler, & Sigala, 2024). In the sports context, the central challenge lies in aligning commercial objectives—such as ticket sales, merchandise, subscriptions, and memberships—with the preservation of fan relationships and the integrity of the club or league brand. Recent empirical evidence suggests that personalized messages and digital engagement practices influence purchase intentions, while also revealing clear limits to these effects due to message fatigue, privacy perceptions, and contextual factors (e.g., in-game versus out-of-game situations) (Steiner, Pittman, & Boatwright, 2023; Nobile & Cantoni, 2023; Miller, Lukic, & Skiera, 2024/2025).

Herold and colleagues (2024) demonstrate that machine-learning models, including those incorporating biometric signals, can predict consumer responses to dynamic sports media messages with very high accuracy, and that optimization of creative content and placement leads to statistically significant improvements in outcomes (e.g., click-through and engagement probabilities). This finding is important because it reinforces the argument that “fine-tuned” personalization—integrating content, timing, and channel—is a key mechanism through which CRM influences fan behavior (Herold et al., 2024).

At the level of user behavior, Steiner, Pittman, and Boatwright (2023) find that different types of social media activities (e.g., following scores, commenting, posting) predict purchase intention differently depending on context. During live events, informational behaviors are most influential, whereas outside the game context, activities related to cultivating fan identity exert stronger effects. These results support the design of CRM flows that personalize content according to situational context (in-game versus out-of-game) (Steiner et al., 2023).

Recent empirical mapping of digital engagement practices within club communities shows that fan behaviors can be classified into multiple types (e.g., informational, ritualistic, collaborative), with each type contributing differently to brand value and conversion outcomes (Stegmann, Ströbel, & Woratschek, 2024). By extending understanding of what fans do and how they do it in online environments, this research provides a foundation for personalization based on habits and social practices rather than solely on demographic characteristics (Stegmann et al., 2024).

The adoption of fan experience applications as key CRM hubs depends on a balance of “reasons for” and “reasons against,” derived from Behavioral Reasoning Theory. Per-

ceived usefulness, habit, and gamification elements foster usage intentions, whereas privacy concerns and complexity inhibit adoption (Uhrich, 2022). Uhrich (2022) shows that these cognitive evaluations mediate the relationship between technological innovation and spectator behavior, with direct implications for personalized push and email flows, in-app offers, and app-based loyalty programs.

A meta-analysis covering 40 years of loyalty programs (Belli, O'Rourke, Carrillat, Pupovac, Melnyk, & Napolova, 2022) indicates that such programs reliably increase behavioral loyalty (e.g., purchase or participation frequency), whereas shifts in attitudinal loyalty are more difficult to achieve and strongly depend on reward design and industry context. In sport, this implies that personalized, experiential, and gamified elements (e.g., privileges linked to teams or players) are more likely to enhance long-term fan value than flat monetary incentives (Belli et al., 2022).

Beyond direct CRM effects, recent studies emphasize that brand perceptions in sport are formed within relational, reputational, and self-identification frameworks. Mishra, Yousaf, and Gannon (2024) show that team reputation functions as a strategic source of brand equity through relationship satisfaction and commitment, suggesting that personalization should highlight reputational dimensions (e.g., heritage, fan-oriented values) to maximize its impact on brand value.

Broader marketing research suggests that the intensity of personalization within omnichannel customer journeys increases relevance and effectiveness, while simultaneously elevating the risk of negative reactions when perceived consumer control is low (Weippert et al., 2024). Systematic reviews and empirical studies indicate that combinations of human and technological personalization—such as intelligent integration of email, mobile applications, and physical points of sale—are the most effective (Weippert et al., 2024).

More recent evidence also shows that personalization in email marketing is not uniformly effective. Its impact depends on the form and intensity of personalization, as well as the congruence between the message and the existing brand–consumer relationship (Nobile & Cantoni, 2023). Certain forms, particularly overly intrusive personalization, may reduce engagement or provoke resistance (Nobile & Cantoni, 2023).

In Europe, the techno-regulatory environment—particularly the post-GDPR regime governing cookies and tracking technologies—has altered the “raw material” of personalization, resulting in reduced availability of third-party data and a stronger reliance on first-party CRM sources (Miller et al., 2024/2025). Recent analyses of tracking practices document a decline in third-party trackers on European websites and technical adaptations by platforms, while advertising research cautions that AI-driven personalization must balance relevance with consumer autonomy. Perceptions

of excessive algorithmic agency can undermine user experience and behavioral intentions (Miller et al., 2024/2025; Nobile & Cantoni, 2023).

Personalization through CRM in Sports Marketing: Opportunities and Challenges

Contemporary CRM in sport integrates first-party data (memberships, ticket purchases, app usage) and omnichannel touchpoints to enable personalized communications and offers delivered at the “right moment.” Generative and predictive AI facilitate hyper-personalization of content (dynamic recommendations, real-time in-game messaging), accelerating the path from engagement to conversion while simultaneously intensifying requirements for transparent data processing and control over message frequency (Westerbeek, 2025; Dubé, 2025). Meta-analytic evidence from broader markets indicates that omnichannel coordination is more effective than isolated channels; however, excessive “intensity” of personalization increases the risk of fatigue and resistance, particularly when users lack a sense of control (The Effectiveness of Omnichannel Strategy, 2025). In parallel, growing restrictions on third-party trackers and the strengthening of privacy regimes are pushing organizations toward first-party strategies (e.g., club apps, loyalty/membership programs) as the foundation of legitimate and sustainable personalization (Ham, 2025). On social media, research warns that content fatigue can erode the effects of personalization when brand messages appear intrusive or overly frequent, necessitating careful calibration and contextual relevance (Fernandes & Moreira, 2024). In sum, opportunities for personalization in sport (higher engagement, conversions, lifetime value) coexist with challenges (fatigue, perceptions of surveillance, regulatory compliance), making privacy-by-design and reliance on first-party data key prerequisites for sustainable CRM practice (Ham, 2025; Dubé, 2025; Westerbeek, 2025).

In practical terms, effective CRM-based personalization does not depend solely on technological capacity, but primarily on the quality of organizational data integration and internal processes. Sports organizations that establish a unified fan view—integrating marketing, sales, public relations, and customer support—achieve greater communication consistency and reduce the risk of contradictory or overloading messages (Dašić, Baltazarević, & Stanković, 2025). In this context, CRM becomes not only a marketing automation tool, but also a governance platform for managing relationships with key stakeholders, particularly fans as carriers of both symbolic and economic value in sport.

A specific challenge concerns balancing commercial efficiency with the preservation of the authenticity of the sports experience. Unlike traditional consumer industries, sport

is grounded in strong emotional bonds, identity, and a sense of belonging. Excessive or poorly calibrated personalization can undermine this relationship, transforming the fan from an active participant into an object of marketing targeting. Consequently, contemporary practice increasingly emphasizes value-based personalization—communication that offers not merely the “right offer,” but meaningful content aligned with context, season phase, sporting results, and the socio-cultural framework of the audience (Vuković, Urošević, & Dašić, 2023; Pavlović & Marković, 2025).

The ethical dimension of personalization carries particular weight in sport, where fans are often willing to share data due to emotional attachment to a club or athlete. This asymmetry of trust imposes heightened responsibility on organizations regarding the collection, processing, and use of data (Dašić, 2023; Mladenović, 2025). Transparency, clearly defined purposes, and the possibility of active choice become key factors in maintaining the legitimacy of CRM systems. Accordingly, personalization is increasingly viewed less as a technical issue and more as a managerial and ethical question within corporate communications in sport.

The Impact of Personalized Digital Strategies on Consumer Behavior in Serbia

Although empirical studies focused specifically on the Serbian market are still emerging, relevant findings from European and global contexts reveal mechanisms that are transferable to the local sports ecosystem. First, transparency of personalization has dual effects: clear messages about data processing can simultaneously increase perceptions of transparency and feelings of “surveillance,” meaning that the ultimate effect on attitudes and advertising effectiveness depends on balancing these two mechanisms (Lee, Moon, & Song, 2024). Second, privacy concerns and digital fatigue encourage avoidance of personalized advertising and reduced platform usage; therefore, in sports CRM it is crucial to calibrate message frequency and provide users with clear control mechanisms (Zhou & Kim, 2024; Neves et al., 2024). Third, omnichannel experience influences consumer intentions and behavior: factors such as perceived convenience, channel integration, and simplicity of the customer journey significantly shape experience and subsequent purchasing outcomes—indicating that sports organizations in Serbia should prioritize seamless integration of ticketing, apps, email, and POS systems (Khalid et al., 2024). Fourth, the EU/EEA regulatory framework (GDPR) indirectly affects local practices as well: evidence shows that GDPR alters tracker usage and business performance, pushing markets toward first-party data and greater transparency—a direction relevant for Serbian clubs working with European partners (Jelovčan et al., 2024). Finally, in the sports domain, synthetic reviews indicate

that digital strategies (social media, mobile channels) positively influence brand loyalty, provided that content is contextually relevant and perceived as fair in terms of data use—a recommendation applicable to local clubs and leagues (Alghizzawi, Habes, & Hailat, 2024). For Serbia, this practically implies a focus on first-party data (memberships/apps), transparent privacy messaging, preference controls, and omnichannel integration as levers to enhance purchase intentions, frequency, and spending value.

In the Serbian context, the impact of personalized digital strategies on consumer behavior in sport can be understood primarily through a shift in decision-making logic—from impulsive purchasing toward the evaluation of the perceived value of the relationship. Consumers increasingly respond less to isolated promotional messages and more to the overall interaction experience with the sports brand. In this sense, personalization acts as a cognitive framework that simplifies choice, reduces information overload, and creates a sense of relevance. In markets such as Serbia, where resources are limited and choices are more deliberate, personalized strategies have the potential to influence not so much immediate purchases as the formation of stable habits of following, engagement, and gradual increases in spending (Mihić et al., 2023; Ilievska Kostadinović & Kostadinović, 2025).

At the same time, personalized digital strategies affect the emotional dimension of consumer behavior, which is particularly salient in sport. Fan behavior is not based solely on rational assessments of price and utility, but on feelings of belonging, identification, and affective attachment to a club or athlete. When personalization is oriented toward recognizing these motives—through contextually adapted content, temporal alignment of messages, and symbolic communication elements—it can strengthen emotional loyalty and deepen the brand relationship (Dašić et al., 2024; Pavlović et al., 2025). Conversely, reducing personalization to purely commercial stimuli risks undermining the authenticity of the sports relationship and weakening the affective capital that is crucial for long-term consumer behavior (Trkulja et al., 2025; Kostadinović & Ilievska Kostadinović, 2025).

Conclusion

Building on the preceding analysis, the scientific and practical contribution of this study is twofold. First, it integrates insights from general marketing scholarship (CRM, omnichannel strategy, customer-based brand equity, and the customer journey) with sport management perspectives (the Psychological Continuum Model and fan engagement) into a unified framework for examining consumer behavior in sport in the era of digital personalization. Second, the empirical focus on three of the most prevalent CRM levers in sport—personalized email communication, club mobile applications, and loyalty

programs—enables the testing of their effects on two key outcome dimensions: (a) purchasing habits (transaction frequency and value) and (b) brand perception (brand associations, loyalty, and brand equity). In doing so, the study addresses a recognized gap in the sport literature, where channels have often been examined in isolation rather than as coordinated components of a CRM-based omnichannel system (Verhoef et al., 2015; Lemon & Verhoef, 2016).

Ultimately, the implementation of personalized CRM campaigns in sports organizations should be understood as a continuum—ranging from strategy formulation and data governance, through offer and creative design, to impact measurement—in which scientifically grounded principles that have proven effective in related industries must be tested and adapted to the specificities of sports consumption and fan identity. Such a perspective enables not only revenue growth and improved return on investment, but also the long-term strengthening of the fan–club relationship, which constitutes the essence of sports marketing in the era of digital personalization (Payne & Frow, 2005; Yoshida et al., 2014).

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