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TURNING ATHLETES INTO ENTREPRENEURS: THE POWER OF PROJECT-BASED LEARNING IN SPORTS MANAGEMENT. THE CASE OF FIFA CIES INTERNATIONAL PROGRAMME AT CAIRO UNIVERSITY, EGYPT[1]

Mohamed Ahmed Qotb [2], Islam Rashed[3]

Abstract: Purpose – This paper examines the influence of perceived desirability and perceived feasibility on entrepreneurial intentions within a project-based learning environment. By focusing on students enrolled in the 17th edition of the CU FIFA CIES International Programme in Sports Management, the study aims to explore how these psychological constructs shape students' aspirations to pursue entrepreneurship in the sports industry.

Design/methodology/approach – A mixed-methods approach was adopted. Ten in-depth interviews were conducted with students participating in the program to gain qualitative insights into their perceptions. Additionally, survey data were collected from all 110 students in the edition. Reliability and validity analyses were performed, and a T-test was applied to examine the relationships between perceived desirability, perceived feasibility, and entrepreneurial intentions. Findings are discussed in detail.

Practical and social implications – This research offers valuable insights for educators and program designers on leveraging project-based learning to enhance entrepreneurial intentions. By identifying key psychological factors that influence entrepreneurship, the findings can guide curriculum development to better prepare students for entrepreneurial careers, particularly in the sports industry.

Originality/value – This study provides empirical evidence from a unique educational setting in sports management, offering valuable insights for academia and industry stakeholders.

Keywords: Sports Education, Entrepreneurial Intentions, Project-Based Learning

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Introduction

Entrepreneurship plays a vital role in fostering innovation and driving economic growth across nations (Tao et al., 2022; Dutta & Meierrieks, 2021). Its economic and social contributions have led many governments to invest in entrepreneurship education (Harahap et al., 2023). Akhter and Sumi (2014) describe entrepreneurship as a key engine of economic development, capable of stimulating job creation and enhancing competitiveness.

Within this broader context, the sports industry has emerged as a significant and rapidly growing sector, offering fertile ground for entrepreneurial ventures (Orunbayev, 2023). From sports event management (Getz, 2008) and athlete representation (Rosen & Sanderson, 2001) to grassroots development (Sotiriadou et al., 2008), sportswear retail (Chadwick & Thwaites, 2005), e-sports (Seo, 2013), and wellness centers (Andreasson & Johansson, 2014), numerous opportunities exist for small and medium enterprises (SMEs). These ventures demand interdisciplinary knowledge across areas such as sports finance (Fatoki, 2014), marketing (Gilmore et al., 2001), law (Gardiner et al., 2012), and management (Slack et al., 2010).

The FIFA/CIES International Programme in Sports Management provides participants with foundational training across these domains, aiming to equip future professionals with both theoretical knowledge and practical tools to manage sports organizations effectively (FIFA/CIES, 2025). Offered in more than 20 countries, including Egypt, the program includes a graduation project where participants must develop a new business concept, event, or innovation in sport - an application of project-based learning (PBL).

This paper explores how such project-based learning experiences influence participants' entrepreneurial intentions by shaping their perceived desirability and perceived feasibility of starting a business. Drawing on data from the FIFA/CIES Programme at Cairo University, the study examines how structured, applied learning can transform athletes into entrepreneurs.

Literature Review

The transition out of competitive sports is a psychologically and professionally challenging process, often marked by identity loss, limited career planning, and economic insecurity (Park et al., 2013; Taylor & Ogilvie, 1994). Sports Entrepreneurship has emerged as a viable and attractive post-sport career path for many athletes, offering a way to retain a connection to their passion while achieving financial independence (Ratten, 2011). However, studies have found that while athletes may possess soft skills such as discipline, leadership, and goal orientation, they often lack the technical and managerial expertise required to start and sustain a business (Gledhill & Harwood, 2015). This highlights the importance of targeted interventions such as the FIFA/CIES Programme, which combines theoretical instruction with practical applications, helping athletes develop both the mindset and capabilities needed for entrepreneurship.

Entrepreneurial Intentios

Entrepreneurial intention refers to the self-acknowledged conviction and conscious plan to start a new business venture in the future (Krueger et al., 2000). It serves as the strongest psychological predictor of entrepreneurial behavior and bridges the gap between potential and actual entrepreneurship (Ajzen, 1991; Kautonen et al., 2015). In recent decades, scholars have emphasized the importance of measuring entrepreneurial intentions as a precursor to understanding how entrepreneurship can be fostered, especially through education (Fayolle & Gailly, 2015). For athletes, whose professional careers are often time-limited, the development of entrepreneurial intention is increasingly seen as a strategic pathway to sustainable career transitions (Taylor & Ogilvie, 1994; Ratten, 2011). Understanding what drives these intentions is therefore vital in designing interventions and educational programs that support athletes in post-sport career development.

Perceived Desirability

Perceived desirability is defined as the extent to which an individual finds the prospect of starting a business personally and socially attractive (Shapero & Sokol, 1982). It encompasses both intrinsic motivations - such as the pursuit of autonomy, creativity, or personal fulfillment - and extrinsic drivers like income generation or social recognition (Krueger et al., 2000). Prior research has consistently found that individuals who rate entrepreneurship as desirable are more likely to develop strong entrepreneurial intentions (Fitzsimmons & Douglas, 2011; Liñán et al., 2011). Among athletes, perceived desirability may arise from the aspiration to remain engaged in the sports sector through meaningful roles that provide autonomy and align with their passion (Ratten, 2012). Educational programs can enhance this dimension by helping learners recognize the value and purpose of entrepreneurial activity in their specific domains.

Perceived Feasibility

Perceived feasibility refers to an individual’s belief in their ability to successfully start and manage a business venture (Shapero & Sokol, 1982). It is conceptually similar to entrepreneurial self-efficacy (Chen et al., 1998), focusing on confidence in one's skills, access to resources, and ability to handle challenges. Research has shown that perceived feasibility significantly predicts entrepreneurial intentions (Zhao et al., 2005; Liñán, 2008), and is often shaped by previous experience, role models, or educational interventions. For athletes, who may lack formal business training, structured learning environments can play a pivotal role in building feasibility by equipping them with knowledge in finance, marketing, legal compliance, and operational strategy (Lavallee & Wylleman, 2000). This highlights the importance of experiential learning approaches in enhancing entrepreneurial confidence.

Project-Based Learning and Entrepreneurial Development

Project-Based Learning (PBL) is a pedagogical approach where learners engage in real-life projects that require the application of knowledge to solve complex problems (Bell, 2010). It contrasts with traditional lecture-based models by fostering ac-tive learning, critical thinking, and interdisciplinary problem-solving (Blumenfeld et al., 1991). In entrepreneurship education, PBL has been shown to enhance both perceived desirability and feasibility by connecting theory with practice (Frank et al., 2003; Mwasalwiba, 2010). It allows learners to envision and prototype their own business ideas, thereby increasing the likelihood of entrepreneurial engagement (Neck & Greene, 2011). When athletes engage in project-based tasks - such as designing a new sports competition or founding a grassroots initiative, they not only build skills but also form stronger emotional attachments to entrepreneurial outcomes, reinforcing both their motivation and self-belief.

This study is grounded in **Shapero's Entrepreneurial Event Model** (Shapero & Sokol, 1982), which identifies *perceived desirability* and *perceived feasibility* as key precursors to entrepreneurial intentions. In line with this theory, the research model examines how participants in a project-based sports management program form intentions to start a business. This model reflects the belief that learners are more likely to form entrepreneurial intentions when they both *want* to start a business and *believe* they are capable of doing so, a transformation expected to be reinforced by the **project-based learning** approach employed in the FIFA/CIES Programme.

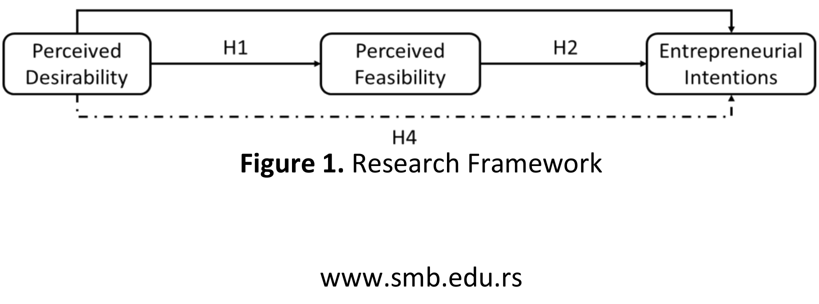

Figure 1. Research Framework

Based on the literature, it is reasonable to propose that perceived desirability plays a foundational role in motivating individuals toward entrepreneurship. Individuals who perceive entrepreneurship as personally fulfilling and socially valuable are more likely to consider it a viable career path (Krueger et al., 2000). However, desirability alone may not suffice; the belief that one can effectively execute the entrepreneurial task - perceived feasibility - is also essential (Zhao et al., 2005; Chen et al., 1998). Educational strategies like project-based learning are known to foster both perceptions by blending motivation with skill development (Frank et al., 2003). Therefore, the following hypotheses are proposed:

H1: Among participants in a project-based sports management program, perceived desirability of entrepreneurship positively influences their entrepreneurial intentions.

H2: Project-based learning enhances participants' perceived feasibility of launching a business, as influenced by their perceived desirability.

H3: Perceived feasibility of entrepreneurship significantly increases the likelihood that participants will form entrepreneurial intentions.

H4: Perceived feasibility mediates the relationship between perceived desirability and entrepreneurial intentions, highlighting the role of confidence-building within project-based learning environments.

Research Methodology

Research Design

This study follows a mixed methods approach, combining both quantitative and qualitative data. The aim is to better understand how project-based learning influences the entrepreneurial intentions of participants in the FIFA/CIES Executive Programme in Sports Management at Cairo University. By using both a survey and interviews.

Participants and Sampling

For the qualitative part, the top 10 students - as evaluated by their final project quality and participation - were selected for semi-structured interviews. This sampling method allowed for representation from all program sections while focusing on the most engaged students.

These included:

4 students from the Arabic-language class
4 students from the English-language class
2 students from the French-language class

For the quantitative part, the target population included all students in the 17th edition of the FIFA/CIES Programme in Egypt. A total of 117 students completed the survey, covering participants from all three classes: Arabic, English, and French. (It was not a sample, rather the whole population has done the survey, N = 117)

Data Collection Instruments

Interviews (Qualitative Tool)

Semi-structured interviews were conducted, it lasted for almost 30 minutes per participant. The interview guide included open-ended questions focusing on:

- Their experience with the graduation project
- The challenges they faced
- How the project affected their interest and confidence in starting a business All interviews were recorded, transcribed, and translated into English for analysis.

Survey (Quantitative Tool)

A structured questionnaire was developed to measure, Perceived Desirability (PD), Perceived Feasibility (PF) and Entrepreneurial Intentions (EI). These constructs were measured using 17 items adapted from existing literature (e.g., Krueger et al., 2000; Zhao et al., 2005), rated on a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

Data Analysis

Qualitative Analysis

Interview transcripts were coded using thematic analysis. Themes were identified related to motivation, learning experience, self-confidence, and business aspirations. These findings were used to complement and explain the quantitative results.

Quantitative Analysis

Survey responses were analyzed using SmartPLS. The analysis included:

- Descriptive statistics (means, medians, standard deviations)
- Confirmatory Factor Analysis (CFA) for validity and reliability
- Structural Equation Modeling (SEM) to test the relationships between PD, PF, and EI, including mediation analysis.

Analysis and Results

Qualitative Phase

A series of ten interviews have been conducted, the purpose of which to explore the participants' confidence in starting business, how project-based learning increases entrepreneurial intentions. Table 1 shows a summary of the participants' demographics and perceptions. In terms of gender, the sample included an equal number of male and female participants (five each), allowing for gender-balanced insights into entrepreneurial intentions and experiences with project-based learning. The participants ranged aged from 26 to 45 years, with an average age of approximately 33.8 years. Regarding professional backgrounds, the interviewees came from a variety of sports-related sectors. These included coaching and technical roles (e.g., football manager, coach), sports education and officiating (e.g., sports education specialist, football referee), business and sponsorship (e.g., business owner, sponsorship officer), administration (e.g., sports events, sports administration), and media-related roles (e.g., stadium announcer). This diversity contributed to a richer understanding of how project-based learning impacted students with different professional trajectories and goals.

In terms of Perceived Desirability, participants consistently expressed strong interest in entrepreneurship, with key motivational themes including the desire to make an impact in the sports industry, gain recognition, and pursue personal growth. These desirability factors were mentioned across participants from diverse class backgrounds and roles within the sports sector. Several participants, particularly those in the Arabic and English classes, highlighted innovation and the ability to address unmet needs in the market as central to their entrepreneurial appeal. Others were drawn to the flexibility and income opportunities offered by entrepreneurship, suggesting that the graduation project allowed them to imagine more rewarding or autonomous career paths.

Regarding Perceived Feasibility, most participants reported a strong belief in their ability to start and manage a business. Skills such as networking, marketing, and financial planning were frequently mentioned as strengths or newly developed areas. Notably, participants with educational and administrative backgrounds emphasized the importance of leadership and management skills, while others highlighted technical proficiency and teamwork. Overall, the interviews indicate that the program helped strengthen students' self-efficacy, equipping them with both the confidence and capabilities needed for entrepreneurial action.

Table 1: Participants' Demographics and perceptions

Participant	Class	Age	Gender	Background	Perceived Desirability	Perceived Feasibility	Project-based Learning	PBL & EI	EI
Participant 1	Arabic	38	Male	Sports Events	- Innovation - Impact - Recognition	- Networking - Finance - Management	- Marketing - Demand Recognition	Yes	More Positive
Participant 2	Arabic	45	Female	Football refereeing	- Impact - Recognition	- Finance - Business Skills	- Management	Yes	No Change
Participant 3	Arabic	38	Female	Football Manager	- Impact - Flexibility - Income - Recognition	- Networking - Marketing - Finance	- Marketing - Branding	Yes	More Positive
Participant 4	Arabic	32	Male	Coaching	- Impact - Innovation - Contribution	- Team Work - Technical Skills	- Marketing - Budgeting - Planning	Yes	More Positive
Participant 5	English	26	Female	Sponsorship	- Impact - Demand	- Management - Marketing - Relationship	- Planning - Data Coll. & Analysis - Finance	Yes	More Positive
Participant 6	English	31	Female	Sports Education	- Impact - Control - Income - Growth	- Networking - Management - Leadership	- Research - Planning	Yes	More Positive
Participant 7	English	27	Male	Administration	- Personal Growth	- Networking - Marketing - Finance	- Marketing - Budgeting - Networking - Soft Skills	Yes	More Positive
Participant 8	English	26	Male	Business Owner	- Recognition - Impact - Passion	- Marketing - Technical	- Planning - Marketing	Yes	More Positive
Participant 9	French	27	Male	Sports Events	- Personal Growth	- Networking - Innovation - Resource Management	- Nothing	No	No Change
Participant 10	French	28	Female	Stadium Announcer	- Impact - Recognition	- Leadership - Management	- Nothing	Yes	More Positive

When asked about Project-Based Learning, nearly all participants identified specific skills acquired during the process, including strategic planning, data collection and analysis, marketing, and budgeting. Several participants noted that the graduation project served as a "real-world simulation" that forced them to think critically, solve problems, and apply classroom knowledge in a practical way. However, two participants - both from the French class - reported that they did not gain new skills through the project, suggesting potential variations in engagement or delivery that may affect learning outcomes across language groups.

The influence of PBL on Entrepreneurial Intentions was overwhelmingly positive, with eight out of ten participants stating that the experience made them more likely to pursue entrepreneurship. Participants described feeling more confident, better prepared, and more aware of market opportunities after completing their projects. For a few, the process also helped clarify their business ideas and future goals. Two participants reported no change in their intentions, both of whom were from the French class. This could point to either the limited impact of the project experience or pre-existing career trajectories that remained unchanged.

Finally, in terms of overall Entrepreneurial Intentions, most participants expressed a strong and growing interest in starting their own businesses soon. The project-based format not only enhanced their knowledge and skills but also helped solidify entrepreneurship as a viable and desirable professional goal. The findings suggest that project-based learning, when implemented effectively, can be a powerful driver of entrepreneurial intention, especially when it allows participants to apply their existing experiences and aspirations in a structured, supportive environment.

Qualitative Phase

Data collected through surveys were analyzed through different statistical analyses using SmartPLS, the descriptive analysis shows the sample characteristics and descriptive statistics. The inferential statistics of the data were done to ensure validity and reliability, and the relationship between variables were measured through SEM (Direct & Indirect) the following table shows the sample characteristics:

Table 2. Sample Characteristics:

	N	%
Age		
20 – 28 (Gen Z)	27	23%
29 – 44 (Gen Y)	77	66%
45 – 60 (Gen X)	13	11%
Gender		
Male	94	80%
Female	23	20%
Education Level		
High School	8	6.8%
Bachelor's degree	79	67.5%
Master's degree	26	22.2%
PhD or higher	4	3.5%
Employment Status		
Employed	98	83.7%
Self-employed	15	12.9%
Unemployed	4	3.4%
Class Language		
Arabic	57	49%
English	47	40%
French	13	11%
Nationality		
Egypt	85	72.6%
French	3	2.6%
Kenya	1	0.9%
Morocco	1	0.9%
Nigeria	1	0.9%
Saudi Arabia	23	19.7%
Tunisia	2	1.7%
UAE	1	0.9%

The survey sample consisted of 117 participants from the 17th edition of the Programme at Cairo University. In terms of age distribution, the majority (66%) were from Generation Y (ages 29–44), indicating that the program attracts mid-career professionals with established experience in the sports industry. The sample was predominantly male (80%), which aligns with broader trends in the sports management field, although the inclusion of 20% female respondents contributes to gender-based comparative insights. Regarding education background, the majority held a bachelor's degree (67.5%), followed by Master's degree holders (22.2%), while smaller proportions had completed high school only (6.8%) or achieved a PhD or higher qualification (3.5%). In terms of employment status, a significant majority (83.7%) were employed, while 12.9% were self-employed, and a small minority (3.4%) were unemployed at the time of the survey. Finally, with respect to nationality, most respondents were from Egypt (72.6%), reflecting the local reach of Cairo University. However, the presence of participants from Saudi Arabia (19.7%) and a mix of other countries such as France, Tunisia, Kenya, Morocco, Nigeria, and the UAE illustrates the program's regional diversity and its capacity to attract students from across the MENA and African regions.

Table 3. Measurement Items Descriptive Statistics

Code	Item	$\bar{x}$	M	Min.	Max.	σ	γ_2	β_1
PD1	I find facing new challenges in creating my own business appealing.	4.45	5	2	5	0.771	1.163	-1.331
PD2	I would like to create jobs for others through my own business.	4.77	5	3	5	0.475	3.586	-2.059
PD3	I enjoy being creative and innovative in a business setting.	4.73	5	1	5	0.593	13.692	-3.130
PD4	Earning a high income motivates me to consider creating my own business.	4.41	5	1	5	0.883	1.596	-1.468
PD5	I am comfortable with taking calculated risks in business.	4.25	4	1	5	0.842	0.999	-1.046
PD6	Being my own boss is an attractive career option for me.	4.39	5	2	5	0.787	0.630	-1.149
PF1	I am confident in defining a business idea and developing a business strategy.	4.67	5	3	5	0.539	1.090	-1.414
PF2	I can keep the new business process under control.	4.53	5	3	5	0.651	0.009	-1.067
PF3	I am skilled in negotiating and maintaining strong ties with investors and banks.	4.39	5	1	5	0.871	1.625	-1.420
PF4	I can recognize opportunities in the market for new products and services.	4.35	5	2	5	0.813	0.177	-1.022
PF5	I can interact with key people to raise capital for a new business.	4.45	5	2	5	0.749	0.120	-1.092
PF6	I can create and put a new business into operation.	4.59	5	3	5	0.645	0.559	-1.321
EI1	It is very likely that I will start a business someday.	4.59	5	1	5	0.732	5.489	-2.161
EI2	I am willing to make any effort necessary to become an entrepreneur.	4.66	5	2	5	0.657	3.012	-1.942
EI3	I have serious doubts about whether I will ever start a business.	3.35	4	1	5	1.506	-1.235	-0.449
EI4	I am determined to start a business in the future.	4.45	5	1	5	0.866	3.228	-1.757
EI5	My professional goal is to be an entrepreneur.	4.28	5	1	5	1.057	1.958	-1.613

$\bar{x}$ = Mean; M = Median; σ = Standard Deviation; γ_2 = Excess Kurtosis; β_1 = Skewness

Table 3 presents the descriptive statistics for all 17 measurement items used to assess the constructs. Overall, the data reflect high levels of agreement with most items, the majority of which exceed 4.2 on a 5-point scale. Among the PD items, the highest mean was recorded for PD2 ($\bar{x}$ = 4.778), reflecting a strong altruistic motivation among participants. Across PF items, similarly high means were observed, particularly for PF1 ($\bar{x}$ = 4.675), suggesting a generally high level of self-efficacy in entrepreneurial tasks. In the EI construct, all items showed high central tendency measures, with EI2 ($\bar{x}$ = 4.667) and EI1 ($\bar{x}$ = 4.598) reflecting strong future entrepreneurial intentions. The item EI3, which was reverse-coded, had the lowest mean ($\bar{x}$ = 3.359) and the highest standard deviation (σ = 1.506), indicating greater variability and uncertainty regarding doubts about entrepreneurship. These results suggest that the respondents, drawn from the FIFA/CIES International Programme, demonstrate strong entrepreneurial attitudes, particularly in their desire, feasibility beliefs, and intentions. This provides early evidence supporting the potential impact of project-based learning in shaping future entrepreneurial behavior.

Table 4. Hypotesis testing

Path	**O**	**σ**	**t**	**p**
Perceived Desirability -> Entrepreneurial Intentions	0.607	0.060	10.085	0.000
Perceived Desirability -> Perceived Feasibility	0.656	0.058	11.243	0.000
Perceived Feasibility -> Entrepreneurial Intentions	0.392	0.124	3.154	0.002
Perceived Desirability -> Perceived Feasibility -> Entrepreneurial Intentions	0.257	0.091	2.811	0.005

*Significance level is 99.9%, p value < 0.001, t value ±3.21.

The structural model results provide strong empirical support for all four proposed hypotheses. Hypothesis 1 (H1) is supported, as perceived desirability of entrepreneurship was found to have a significant and positive influence on entrepreneurial intentions (β = 0.607, t = 10.085, $p < 0.001$). This suggests that participants who find entrepreneurship personally appealing are more likely to intend to start their own business.

Hypothesis 2 (H2) is also supported, with perceived desirability showing a strong positive effect on perceived feasibility (β = 0.656, t = 11.243, $p < 0.001$). This finding implies that the more desirable entrepreneurship appears to the individual, the more feasible it is perceived to be - highlighting the motivational role of desirability in shaping confidence toward business creation.

Hypothesis 3 (H3) is supported as well, demonstrating that perceived feasibility significantly contributes to entrepreneurial intentions (β = 0.392, t = 3.154, p = 0.002). This aligns with the notion that when individuals believe they can start and managing a business, they are more likely to form the intention to do so.

Finally, Hypothesis 4 (H4) is confirmed through mediation analysis, showing that perceived feasibility partially mediates the relationship between desirability and entrepreneurial intentions (indirect effect $\beta = 0.257$, $t = 2.811$, $p = 0.005$). This emphasizes the confidence-building role of project-based learning, whereby the attractiveness of entrepreneurship boosts feasibility perceptions, which in turn enhances entrepreneurial intentions. Therefore, these results highlight the value of project-based learning environments like the FIFA/CIES program in cultivating not only the desire but also the self-efficacy required for entrepreneurial action.

Discusion

This study explores how project-based learning (PBL), as implemented in the FIFA/CIES International Programme at Cairo University, influences participants' entrepreneurial intentions through two variables: perceived desirability and perceived feasibility. Drawing on both qualitative insights from 10 in-depth interviews and quantitative data from 117 participants, the findings confirm that both perceived desirability and perceived feasibility are significant predictors of entrepreneurial intentions, aligning with prior research on the Theory of Planned Behavior and entrepreneurial cognition (Ajzen, 1991; Krueger et al., 2000). Participants who found entrepreneurship more appealing were also more likely to believe they had the ability to pursue it - highlighting the motivational chain from "I want to" to "I can" to "I will."

The qualitative findings from the 10 interviews reinforce the quantitative conclusions while offering richer context. All 10 participants indicated that their project-based learning experience contributed positively to their entrepreneurial awareness. Specific themes associated with perceived desirability included the impact they hoped to make in the sports field, personal recognition, financial independence, and the opportunity to innovate. These themes underscore that for many sports professionals; entrepreneurship is not only about economic gains but also about creating meaningful change and building personal legacy in the sector.

The quantitative results strongly support the proposed research model. Perceived desirability was found to be a strong predictor of entrepreneurial intention ($\beta = 0.607$, $t = 10.085$, $p < 0.001$), indicating that participants who found the idea of starting their own business appealing were more likely to express intentions to do so. Moreover, desirability also significantly predicted perceived feasibility ($\beta = 0.656$, $t = 11.243$, $p < 0.001$), suggesting that motivation to become an entrepreneur increases self-belief in one's capacity to carry out that intention. In turn, perceived feasibility also had a statistically significant effect on entrepreneurial intention ($\beta = 0.392$, $t = 3.154$, $p = 0.002$). Importantly, the mediation analysis confirmed that perceived feasibility partially mediates the relationship between desirability and intention (β = 0.257, t = 2.811, p = 0.005), highlighting how self-efficacy acts as a bridge between entrepreneurial motivation and intention.

With regard to perceived feasibility, participants cited skill development in areas such as marketing, financial planning, management, and networking. The emphasis on practical and interdisciplinary skills

shows how the graduation project helped participants move from abstract ideas to actionable plans. For example, Participant 3 (Football Manager) noted how the process enhanced her understanding of marketing and branding, boosting her confidence in executing a business idea. Others, such as Participant 7 (Administrator), highlighted the role of teamwork, budgeting, and relationship-building - core entrepreneurial competencies.

Additionally, the PBL model encouraged participants to take ownership of their learning. Nine out of ten participants reported a more positive shift in entrepreneurial intention after completing their projects, with only one indicating no change. This shift suggests that hands-on engagement with a real business idea fosters not just learning but transformation in mindset. The thematic analysis further indicates that PBL contributes not only to feasibility through skill-building but also reinforces desirability by making entrepreneurship feel more purposeful and personally fulfilling.

Implications for Policy and Practice

These findings carry practical implications for sports education, entrepreneurship policy, and programme design. For educators and institutions, embedding project-based learning into entrepreneurship education can serve as a powerful pedagogical strategy to foster not only knowledge acquisition but also emotional and motivational buy-in. The fact that participants saw themselves as more capable and more motivated after completing the project illustrates the transformative power of applied learning.

For policymakers and sports federations, this study highlights the untapped entrepreneurial potential among sports professionals. Structured programmes like the FIFA/CIES Programme can be further supported by mentorship, incubation hubs, and post-programme funding opportunities to ensure that promising projects can translate into real-world businesses. Given the growing size of the sports economy, especially in emerging markets, such interventions could have a multiplier effect in terms of economic growth, job creation, and social impact.

Conclusion

The results confirm that perceived desirability is a strong and direct predictor of entrepreneurial intentions. Moreover, it significantly shapes perceived feasibility which in turn, plays both a direct and mediating role in strengthening entrepreneurial intentions.

Importantly, the qualitative data adds depth to these findings. Participants shared how the graduation project experience not only increased their awareness of entrepreneurship but also gave them tools and confidence to consider launching real-world ventures. The combination of mentorship applied research, and team collaboration in the PBL format proved particularly effective in stimulating entrepreneurial mindsets among students with diverse sporting backgrounds.

Ultimately, this research demonstrates the transformative power of project-based learning in shaping the future of sports professionals. By blending theory with hands-on experience, the FIFA/CIES Programme has helped participants not only imagine new career possibilities but also prepare to act on them. As the sports industry continues to expand, especially in regions like the MENA, structured entrepreneurial education grounded in real-world application may be key to unlocking the next generation of sports entrepreneurs.

The authors declare no conflict of interest.

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Limitations and Future Research

While this study offers valuable insights into the impact of project-based learning on entrepreneurial intentions in sports management education, several limitations should be acknowledged.

The research sample was limited to one cohort of the FIFA/CIES Programme at Cairo University, which may restrict the generalizability of the findings to other cultural or institutional contexts. Although the sample was diverse in terms of language, nationality, and professional background, future studies could include participants from multiple countries or editions of the programme to increase external validity.

The cross-sectional nature of the data limits the ability to draw conclusions about long-term effects. While the study measured perceptions and intentions at a single point in time, *longitudinal research* would be valuable to determine whether these intentions lead to actual entrepreneurial behavior in the years following program completion.

Future research could explore the role of mentorship, peer collaboration, and instructor support as mediating factors within the project-based learning process. It would also be worthwhile investigating how individual differences moderate the relationship between desirability, feasibility, and intention. Additionally, comparing project-based learning with other pedagogical methods (e.g., case-based or simulation-based learning) could offer a more comprehensive understanding of best practices in entrepreneurship education.

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COMPARATIVE ANALYSIS OF BODY COMPOSITION OF FEMALES FROM THREE EUROPEAN COUNTRIES[1]

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Abstract: The aim of this study was to examine differences in body composition among girls from three European countries (Serbia, Italy, and Spain). Based on age, participants were divided into two categories: the first group included girls aged 15–19 years, while the second group consisted of those aged 20–24 years. The first group comprised a total of 113 participants (50 from Serbia, 24 from Spain, and 39 from Italy), whereas the second group included 167 participants (50 from Serbia, 81 from Spain, and 36 from Italy). Body composition was assessed using the InBody 230 device, which enabled the assessment of the following variables: body height, body weight, BMI, body fat percentage, muscle mass percentage, and waist-hip ratio. In the age group 15-19 years, results showed statistically significant differences among the countries in body height ($p < 0.05$) and waist-hip ratio ($p < 0.05$). In the age group 20–24 years, statistically significant differences were observed in all measured variables. Overall, the results indicate that differences in body composition among girls from Serbia, Italy, and Spain are more pronounced in the older age group (20–24 years) compared to the younger group (15–19 years), which is likely a consequence of cultural, lifestyle, and training factors, while also underscoring the importance of monitoring body composition during growth and maturation.

Keywords: obesity, health, exercise, Serbia, Spain, Italy

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Introduction

Obesity is one of the main health problems faced by modern society (Abarca-Gómez et al., 2017; Organization, 2016). It develops as a result of excessive intake of energy-providing nutrients. The consequence is the accumulation of fat deposits in the body beyond the level considered normal for age, sex, and body type (Ilić, Mumin, & Harhaji, 2003; Mednicinski, 2004). True obesity is defined when body weight exceeds the ideal weight by at least 20%, which in women corresponds to 36% of total body mass (Bukara-Radujković & Zdravković, 2009). In addition to its negative impact on health, obesity has psychological, physiological, and pathophysiological effects (Pelemis, Pelemis, Mitrovic, & Džinović-Kojić, 2014). It represents an important factor in the growth and development of the body and is particularly significant during early adolescence. The World Health Report (2000) (WHO, 2000) states that overweight is the fifth most serious risk factor for both developed and developing countries (Bukara-Radujković & Zdravković, 2009). According to the report of the International Obesity Task Force (IOTF), in the year 2000 (Lobstein & Jackson-Leach, 2007) about 10% (a total of 155 million) of young people aged 5 to 17 worldwide were overweight.

Barlett, Puhl, Hodgson, and Buskirk (1991) note that gender differences begin to appear after the age of 10. The transition period refers to the stage of life from late adolescence to full physical and psychosocial maturation into adulthood, lasting from ages 16 to 26. During this period, gender differences are also present, favoring the male population (Doknić, 2018). In adulthood, women are twice as likely to develop severe obesity (BMI ≥35 kg/m²) (Di Cesare et al., 2019). In women, higher body fat in kilograms and greater lean body mass have been recorded. In addition, during postmenopause, the risk further increases due to a decline in estrogen levels, leading to increased fat tissue, reduced muscle mass, and deterioration of overall health (Appelman, van Rijn, Ten Haaf, Boersma, & Peters, 2015; EUGenMed et al., 2016; Leeners, Geary, Tobler, & Asarian, 2017).

Body composition should be understood in the context of additional influencing factors, which broadly include cultural, social, and geographical aspects (Ćopić, Đorđević-Nikić, Rakić, Maksimović, & Dopsaj, 2019). More specifically, factors affecting body composition may include modernization, ongoing population migration, employment (particularly among middle-aged women), family dynamics, residence in urban or rural settings, and social class.

According to the World Health Organization (WHO, 2022) report for the European region, the adult obesity rate (overweight + obesity) across much of Europe is close to 60% for the period 2022–2025. Regarding the female population in the studies conducted in 2022, high rates were reported in countries such as Ireland, Romania, and Croatia, while Spain and Italy ranked among the highest (Pellegrino et al., 2023).

In Spain, more than half of the adult population (≈ 53.6%) is overweight (HEALTH, 2022). This cardiovascular risk factor has been associated with lower social class and lower educational level (Sánchez-Cruz, Jiménez-Moleón, Fernández-Quesada, & Sánchez, 2013a), as well as with dietary habits, cultural practices, and the fact that excessive consumption of unhealthy foods often occurs outside the family environment, such as in schools and surrounding areas (Niemeier et al., 2006). Specific dietary factors include the consumption of sugary drinks and wine, as well as late-night meals after 10 p.m. Spain has recently proposed a new law regulating the advertising of unhealthy food and beverages aimed at children under 16 years of age (Government, 2022).

Child and adolescent obesity in Serbia, as in most countries in transition, has reached epidemic proportions in recent years. According to data from the Ministry of Health, in 2006, 11.6% of children and adolescents were moderately obese and 6.4% were obese, representing an increase of 3.4% and 2.0%, respectively, compared to 2000. The causes of excessive weight are linked to irregular dietary patterns (skipping snacks, excessive consumption of bread, insufficient intake of fruits and vegetables), a sedentary lifestyle (TV, phone use), as well as exemption from physical education classes and lack of participation in sports (Vlaški & Katanić, 2010).

Simple measurements for assessing body composition, such as skinfold thickness and body mass index (BMI), are easy to perform but carry a significant margin of error. Other methods require participant cooperation, sophisticated equipment, and skilled examiners. The most reliable method for assessing body composition is bioelectrical impedance analysis using the InBody 230 (Copic, Dopsaj, Ivanovic, Nesic, & Jaric, 2014; Ferrando-Terradez et al., 2023). BIA provides more reliable measurements of body composition, including body weight, total body water, fat mass, muscle mass, body fat percentage, and BMI.

Obesity is a 21st-century pandemic, with its impact being most significant among the youngest populations. Early prevention of obesity can help avoid many of its consequences. Comparative data from European countries come from various studies and sometimes employ different methodologies (e.g., age-standardized BMI, self-reported weights, sample-based studies), so direct comparisons are not always precise. For this reason, the aim of the present study is to examine differences in body composition among girls from three European countries (Serbia, Italy, and Spain), providing a basis for further recommendations to improve children's health.

Methods

Subjects

The study included 280 female participants from three European countries (Serbia – Belgrade, Italy - Parma, Spain - Valencia). Participants from each country were divided into two age groups: adolescents aged 15 to 19 years and young adults aged 20 to 24 years. In the adolescent group, there were 50 participants from Serbia (16.72 ± 1.51 years), 24 from Spain (18.75 ± 0.71 years), and 39 from Italy (16.39 ± 1.61 years). The young adult group consisted of 50 participants from Serbia (22.04 ± 1.31 years), 81 from Spain (21.88 ± 1.44 years), and 36 from Italy (21.78 ± 0.99 years). All participants were healthy, with no known medical conditions that could affect the measurement results. Prior to the study, participants were fully informed about the procedures and voluntarily signed written consent to participate. The research protocol was reviewed and approved by the Human Research Ethics Committee of the University of Valencia (protocol number 1944476). The study is registered in ClinicalTrials.gov (NCT05467280). All participants provided written informed consent in accordance with the principles of the Declaration of Helsinki.

Testing Protocol

Body composition measurements were conducted during a single experimental session. All assessments took place in the morning, between 8:00 and 11:00 a.m., following the participants' normal daily routines. All participants were previously instructed to avoid intense physical activity for at least 48 hours and to refrain from eating for two hours prior to the measurement. Body composition measurements in all three countries were carried out in 2022 using bioelectrical impedance analysis with the InBody 230. To ensure maximum reliability, participants were tested in underwear and were required to remove all metal jewelry, following the recommendation to avoid food intake for at least two hours before assessment. After entering basic data, participants stood on the device's metal footplates and held the handles with built-in electrodes, keeping their arms slightly away from the body at an approximate angle of 20° during the measurement. The InBody 230 body-composition analyzer demonstrates excellent repeatability and measurement precision, with reported test–retest reliability values reaching an ICC of 0.9995. When evaluated against DXA, which is considered the reference method, BIA measurements showed very strong agreement, with intraclass correlation coefficients ranging from 0.96 to

0.99 in individuals with normal body weight (Gibson, Holmes, Desautels, Edmonds, & Nuudi, 2008).

Variables

- Body Height (BH) – Measurements were performed using a Martin anthropometer, which has a measurement accuracy of 0.1 cm (Norton et al., 2000);
- Body Weight – Body mass was measured using bioelectrical impedance analysis (InBody 230), with a measurement accuracy of 0.1 kg;
- BMI – Body mass index (BMI), expressed in kg/m²;
- Body Fat (%) – Body fat percentage, expressed as %;
- Muscle mass (%) – Muscle mass percentage, expressed as %;
- Waist-hip ratio – Waist circumference (cm)/hip circumference (cm).

Statistical analyses

A descriptive statistical analysis provided means, standard deviation (SD), minimum (Min) and Maximum (Max). Differences between countries were assessed using one-way analysis of variance (ANOVA) to determine the presence of statistically significant differences in the measured variables. In cases where ANOVA indicated a statistically significant difference for a specific variable, an LSD post hoc test was conducted to identify within-group differences. The threshold for statistical significance was set at a 95% confidence level, $p = 0.05$. All statistical analyses were performed using Microsoft Office Excel (Microsoft Corp., Seattle, WA, USA) and SPSS for Windows, Release 17.0 (IBM, Armonk, NY, USA).

Results

Table 1 presents the descriptive statistics, including the arithmetic mean (Mean), standard deviation (SD), as well as the minimum (Min) and maximum (Max) values for all analyzed variables in both age groups of participants from Serbia, Spain, and Italy.

Table 1. Descriptive statistics of the main characteristics

		15-19 years					20-24 years				
	Country	**Mean**	**SD**	**Min**	**Max**	**N**	**Mean**	**SD**	**Min**	**Max**	**N**
Body Height (cm)	**Serbia**	169.88	5.74	157	186	50	169.00	5.97	156	180	50
	Spain	161.22	7.35	146.8	177.8	24	162.42	6.02	150.3	175.5	81
	Italy	162.79	6.51	147	176	39	165.83	5.78	150	178	36
Body Weight (kg)	**Serbia**	61.97	11.13	40	95.3	50	65.01	9.35	49.7	89.3	50
	Spain	60.02	9.61	43.2	81.9	24	61.66	11.88	44	102.1	81
	Italy	57.15	9.67	43.4	77.1	39	58.2	8.48	44	75.9	36
BMI (kg/m²)	**Serbia**	21.46	3.73	16	33.4	50	22.78	3.25	16.8	34	50
	Spain	23.04	3.09	18.5	29.1	24	23.38	4.48	16.4	38.9	81
	Italy	21.53	3.17	15.2	28.7	39	21.1	2.74	16.9	27.9	36
Body Fat (%)	**Serbia**	25.82	8.83	3.00	47.5	50	27.69	7.33	9.7	48.9	50
	Spain	28.34	10.15	3.00	42.3	24	29.47	9.97	3.00	50	81
	Italy	26.03	8.32	4.4	47.9	39	23.91	6.91	10.4	42	36
Muscle mass (%)	**Serbia**	40.7	5.10	28.46	56.21	50	39.86	4.14	28.22	50.95	50
	Spain	39.4	6.65	30.49	57.28	24	38.6	5.92	27.19	56.87	81
	Italy	40.3	4.57	28.12	52.28	39	41.62	3.91	31.51	49.06	36
Waist-Hip Ratio	**Serbia**	0.88	0.06	0.75	1.03	50	0.90	0.05	0.79	1.03	50
	Spain	0.86	0.06	0.71	0.98	24	0.87	0.07	0.71	1.03	81
	Italy	0.83	0.06	0.76	0.95	39	0.83	0.05	0.76	1.02	36

In Table 2, the results of the one-way analysis of variance (ANOVA) showed statistically significant differences between countries in the variables Body Height ($F = 20.71$, $p < 0.01$) and waist-hip ratio ($F = 8.2$, $p < 0.01$) among participants aged 15–19 years. These results for the age group 15–19 years indicate that body composition variables are relatively homogeneous.

Table 2. Analysis of variance among participants from Serbia, Italy, and Spain for the 15–19-year age group

ANOVA

	Between Groups		Sum of Squares	df	Mean Square	F	Sig.
15-19 years	**Body Height (cm)**	Between Groups	1683.92	2	841.96	20.72	**0.000**
		Within Groups	4469.77	110	40.63		
		Total	6153.7	112			
	Body Weight (kg)	Between Groups	509.25	2	254.63	2.38	0.097
		Within Groups	11744.36	110	106.77		
		Total	12253.61	112			
	BMI (kg/m²)	Between Groups	45.42	2	22.71	1.94	0.148
		Within Groups	1284.94	110	11.68		
		Total	1330.35	112			
	Body Fat (%)	Between Groups	112.31	2	56.16	0.7	0.499
		Within Groups	8822.29	110	80.2		
		Total	8934.6	112			
	Waist-Hip Ratio	Between Groups	0.06	2	0.03	8.2	**0.000**
		Within Groups	0.41	110	0		
		Total	0.47	112			
	Muscle mass (%)	Between Groups	27.36	2	13.68	0.49	0.616
		Within Groups	3088.04	110	28.07		
		Total	3115.39	112			

In Table 3, the results of the one-way analysis of variance (ANOVA) showed statistically significant differences between countries for all variables among participants aged 20–24 years. Statistically significant differences were observed in body height, body mass, BMI, body fat percentage, waist-hip ratio, and muscle mass percentage ($p < 0.05$), indicating distinct anthropo-morphological profiles among participants from Serbia, Spain, and Italy. The largest statistically significant differences were found in body height ($F = 19.23$, $p < 0.01$) and waist-hip ratio ($F = 14.2$, $p < 0.01$), where the group effect was most pronounced.

Table 3. Analysis of variance among participants from Serbia, Italy, and Spain for the 20–24-year age group

ANOVA

	Between Groups		Sum of Squares	df	Mean Square	F	Sig.
20-24 years	Body Height (cm)	Between Groups	1363.26	2	681.63	19.23	**0.000**
		Within Groups	5813.45	164	35.45		
		Total	7176.7	166			
	Body Weight (kg)	Between Groups	981.48	2	490.74	4.45	**0.013**
		Within Groups	18091.34	164	110.31		
		Total	19072.82	166			
	BMI (kg/m²)	Between Groups	129.36	2	64.68	4.45	**0.013**
		Within Groups	2385.47	164	14.55		
		Total	2514.83	166			
	Body Fat (%)	Between Groups	768.3	2	384.15	5.14	**0.007**
		Within Groups	12259.53	164	74.75		
		Total	13027.82	166			
	Waist-Hip Ratio	Between Groups	0.1	2	0.05	14.2	**0.000**
		Within Groups	0.58	164	0		
		Total	0.68	166			
	Muscle mass (%)	Between Groups	230.92	2	115.46	4.53	**0.012**
		Within Groups	4176.36	164	25.47		
		Total	4407.28	166			

In the 15–19 year age group, statistically significant differences were observed in body height and waist-hip ratio between the countries studied. Girls from Serbia were significantly taller compared to their peers from Spain (p = 0.000) and Italy (p = 0.000), while the difference between Spain and Italy was not significant (Table 4). Regarding the waist-hip ratio, participants from Serbia had slightly higher values compared to those from Italy (p = 0.000), indicating a statistically significant difference.

Table 4. LSD post hoc analysis – differences between Serbia, Spain, and Italy for the 15–19-year age group

Multiple Comparisons (15-19 years)

LSD			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Body Height (cm)	Serbia	Spain	8.6633*	1.583	**0.000**	5.526	11.800
		Italy	7.0851*	1.362	**0.000**	4.386	9.784
	Spain	Italy	-1.5782	1.654	0.342	-4.856	1.699
Waist-Hip Ratio	Serbia	Spain	0.02630	0.015	0.086	-0.004	0.056
		Italy	0.05277*	0.013	**0.000**	0.027	0.079
	Spain	Italy	0.02647	0.016	0.098	-0.005	0.058

In the 20–24-year age group, more pronounced differences were identified in the analyzed variables between countries compared to the younger age category (Table 5). As in the younger group, differences in body height were observed among all three countries, with the greatest difference found between participants from Serbia and Spain (p = 0.000). Body mass was significantly higher in participants from Serbia compared to those from Italy (p = 0.003), while no significant differences were found between the other country pairs. Regarding BMI, participants from Italy differed significantly from those from Spain (p = 0.003) and Serbia (p = 0.046). Waist-hip ratio values were higher in participants from Serbia compared to those from both other countries (p = 0.000), indicating more pronounced central obesity. Concerning body fat percentage, participants from Italy had the lowest values and differed significantly from those from Serbia (p = 0.048) and Spain (p = 0.002). Additionally, participants from Italy differed significantly from those from Spain in muscle mass percentage (p = 0.03), while no difference was observed compared to participants from Serbia.

Table 5. LSD post hoc analysis – differences between Serbia, Spain, and Italy for the 20–24-year age group

Multiple Comparisons (20-24 years)

LSD			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Body Height (cm)	Serbia	Spain	6.5840*	1.071	**0.000**	4.470	8.698
		Italy	3.1667*	1.301	**0.016**	0.597	5.736
	Spain	Italy	-3.4173*	1.193	**0.005**	-5.772	-1.062
Body Weight (kg)	Serbia	Spain	3.3523	1.889	0.078	-0.378	7.082
		Italy	6.8112*	2.296	**0.003**	2.278	11.344
	Spain	Italy	3.4590	2.104	0.102	-0.695	7.613
BMI (kg/m²)	Serbia	Spain	-0.5978	0.686	0.385	-1.952	0.757
		Italy	1.6772*	0.834	**0.046**	0.031	3.323
	Spain	Italy	2.2750*	0.764	**0.003**	0.767	3.783
Body Fat (%)	Serbia	Spain	-1.7794	1.555	0.254	-4.850	1.291
		Italy	3.7721*	1.890	**0.048**	0.041	7.504
	Spain	Italy	5.5515*	1.732	**0.002**	2.132	8.971
Waist-Hip Ratio	Serbia	Spain	0.03226*	0.011	**0.003**	0.011	0.053
		Italy	0.06883*	0.013	**0.000**	0.043	0.094
	Spain	Italy	0.03657*	0.012	**0.002**	0.013	0.060
Muscle mass (%)	Serbia	Spain	1.2592	0.908	0.167	-0.533	3.051
		Italy	-1.7594	1.103	0.113	-3.937	0.419
	Spain	Italy	-3.0186 *	1.011	**0.003**	-5.015	-1.023

Discussion

The aim of this study was to compare body composition characteristics of females from three European countries - Serbia, Italy, and Spain - across two age categories (15-19 and 20-24 years). The results clearly indicate that differences between co-untries exist, but these differences are largely influenced by age. In adolescence (yo-unger group), only a few differences were observed, whereas in early adulthood (ol-der group), more pronounced and consistent differences emerged between parti-cipants.

In both age categories, body height showed the most consistent results, with par-ticipants from Serbia being significantly taller than their peers from Italy and Spain. The difference in average height between women from Serbia compared to women from Spain and Italy is indeed present, amounting to approximately 5-7 cm (Ca-velaars et al., 2000). These findings are fully consistent with European trends in body height, according to which populations from the Balkans, Central, and Southeastern Europe are among the tallest, while populations from Mediterranean countries have lower average values (Grasgruber, Sebera, Hrazdíra, Cacek, & Kalina, 2016). Such differences can be largely attributed to genetic potential, as well as nutritional factors during childhood and adolescence.

The results of this study show that participants from Italy had, on average, lower BMI, body mass, and body fat percentage, whereas participants from Spain, particularly in the 20–24-year age group, exhibited higher values of these parameters and a more pronounced trend toward overweight. These findings are fully consistent with epidemiological data indicating a significant increase in the prevalence of excess body weight among adolescents and young women in Spain (Sánchez-Cruz, Jiménez-Moleón, Fernández-Quesada, & Sánchez, 2013b). In contrast, Italy - especially the northern and central regions - largely maintains the traditional Mediterranean dietary pattern, which has been shown to be associated with lower body fat percentage and a more favorable metabolic profile (Sofi et al., 2010; Bonaccio et al., 2014).

One of the most significant findings of this study relates to waist-hip ratio (WHR) values, which were highest among participants from Serbia in both age categories. WHR is a key parameter for assessing abdominal obesity and a strong predictor of metabolic risks, independent of BMI (Petrović et al., 2025). A study conducted in the Chianti region of Italy (1998–2000) reported an average WHR of 0.799 among women aged 20–44 years (Bartali se al., 2002). In a representative sample of middle-aged, working women in Spain, the average WHR was approximately 0.85 ± 0.06 (Herrero, García, Hanon, Barbero i González, 2022), whereas a study on a sample of women in Serbia recorded an average WHR of 0.78 ± 0.08. Comparisons indicate that participants from Serbia have statistically significantly higher WHR values compared to those from Italy (p = 0.000), which is confirmed by the present study. Studies by Faig (2014) show that the traditional Mediterranean diet is declining faster in Spain than in Italy. The increased consumption of ultra-processed foods, reduced intake of olive oil and fish (Abellan Aleman et al., 2016), higher consumption of sugary drinks among younger generations, and decreasing intake of fresh fruits and vegetables have contributed to Spanish women being among the most overweight in Europe, particularly in younger age groups (Herrera-Ramos et al., 2023). Italy, especially in the south, retains the traditional Mediterranean diet to a greater extent, whereas Serbia has never had a Mediterranean dietary pattern; its traditional diet was based on higher amounts of saturated fats, refined carbohydrates, and industrially processed foods - resulting in a different metabolic obesity profile, with a higher prevalence of abdominal obesity.

Physical activity and lifestyle significantly contribute to differences in body composition among countries. Epidemiological data indicate a higher prevalence of sedentary behavior among women in Spain, particularly in large cities (Armada, Sánchez-Alcaraz, Courel-Ibáñez, & Segarra-Vicens, 2024). This particularly affects abdominal fat, rather than overall obesity. In Italy, higher levels of daily informal physical activity are maintained (walking, cycling, recreational sports) (Bianconi et al., 2023), whereas in Serbia, physical activity levels are generally low (Todorovic et al., 2024). Considering the impact of sociological factors, Italy has an older population but a more traditional lifestyle with less stress and more structured daily habits. In Spain, women on average have children later, experience higher work-related stress, and live in more urbanized environments compared to Serbia. Serbia, in turn, has high stress levels coupled with a lower standard of living, which leads to different dietary patterns and weight gain trends.

Several limitations of the present study should be acknowledged. Although identical measurement protocols were applied across all countries, the sample size can be considered one of the key limitations of this study. In addition, factors influencing body composition, such as quality of life, including dietary habits and levels of physical activity, were not directly assessed and should be incorporated in future research.

Conclusion

The results of this study confirm the presence of significant differences in body composition among females from Serbia, Italy, and Spain, with these differences being more pronounced in early adulthood (20-24 years) than in adolescence (15–19 years). Participants from Serbia are characterized by greater body height and higher waist-hip ratio (WHR) values, indicating a greater predisposition to abdominal obesity. Italian participants exhibit the most favorable body profile, with lower BMI and body fat percentage, which may be associated with the preserved Mediterranean dietary pattern and a more active lifestyle. In contrast, participants from Spain, particularly in the older age group (20-24 years), showed a trend toward higher body mass and body fat. These findings suggest that age, dietary habits, physical activity, and broader socioeconomic factors play a key role in shaping body composition in young women across different European populations.

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THE IMPORTANCE OF USING GENERATIVE ARTIFICIAL INTELLIGENCE APPLICATIONS IN ENHANCING THE TEACHING EFFICIENCY OF PHYSICAL EDUCATION AND SPORTS TEACHERS AT THE ELEMENTARY LEVEL

(A Field Study Conducted in Selected Elementary Schools in the City of Souk Ahras)

Radhwane Hamadi [1]

Abstract: The present study aims to explore the importance of generative artificial intelligence applications in enhancing the teaching efficiency of physical education teachers at the elementary school level. The study sample consisted of 25 teachers from elementary schools in the city of Soukahras, selected randomly, A questionnaire developed by the researcher, containing 12 items, was used as the main data collection tool. The Chi-square test was employed to analyze the collected data. The findings revealed that the use of generative artificial intelligence applications significantly contributes to improving the teaching efficiency of physical education teachers at the elementary level.

Keywords: Generative Artificial Intelligence, Teaching Efficiency, Physical Education Teachers, Elementary Education.

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Introduction

Teaching is widely recognized as a key indicator of a nation's progress and development. The advancement of any country is largely measured by the quality of its teaching and educational systems. According to **(**Al-Fatlawi 2003, p.19), teaching occupies a vital position in every society because it is not merely an ordinary profession but a foundational one that prepares qualified individuals for all other professions. She further emphasizes that the teaching profession precedes and underpins all other vocations.

The teaching process fundamentally relies on three essential components: the learner, knowledge, and the teacher. The teacher, in particular, bears the main responsibility for the success and advancement of the educational process. This responsibility requires continuous enhancement of professional competencies and ongoing updates in teaching strategies, tools, and assessment methods in line with current educational developments. Several studies have highlighted the importance of developing teachers' professional competencies. For instance, **(**Abdul Majeed 2015) found that updating teacher competencies directly contributes to raising students' academic achievement, while (Hamdan 2012) demonstrated that continuous professional training significantly improves teaching performance.

In line with this perspective, (Al-Fatlawi 2010, p.40) asserts that teachers, as specialists in the teaching profession, must possess a deep understanding of relevant concepts, theories, principles, and instructional methodologies, They are responsible for planning and implementing the learning process using methods and strategies that correspond to learners' cognitive and motor abilities, within the limits of available resources. This view is supported by (Al-Shibli 2016), who emphasized that the effective use of modern teaching methods requires a comprehensive understanding of learners' individual characteristics and needs.

Teaching remains one of the fundamental pillars by which the progress and development of nations are assessed, as it reflects both the quality of the educational system and the effectiveness of its educational policies, It is not simply a routine occupation but a strategic profession that plays a pivotal role in preparing new generations to assume various responsibilities within society, The teacher stands at the heart of the educational process - transmitting knowledge, guiding learners, and equipping them with the necessary skills to meet the challenges of the modern era. (Al-Fatlawi, 2003, p.19).

The educational process consists of three key elements: the learner, the educational content, and the teacher, who serves as the central pillar ensuring the success of the process. Therefore, the continuous development of teachers' instructional competencies is imperative. The teaching profession requires constant renewal of knowledge, methods, and assessment strategies to keep pace with rapid changes in education (Al-Fatlawi, 2010, p.40)**.** This ongoing development is essential to maintain educational quality and achieve institutional goals.

In light of the accelerating global technological transformation, artificial intelligence (AI) has emerged as one of the most influential tools capable of reshaping education. **(**Almalki**,** 2021) indicated that generative artificial intelligence (GAI) can assist in customizing educational content, analyzing student performance, and providing immediate feedback - thereby improving instructional efficiency. **(**Similarly**,** Luckin et al**,** 2016) demonstrated that AI plays a vital role in enhancing data-driven education and optimizing educational decision-making. Generative AI, in particular, is distinguished by its ability to produce tailored learning materials, analyze learners' progress, and provide accurate, personalized feedback to support teachers in improving their instructional approaches. According to **(**Mustafa**,** 2009), such systems promote intelligent interaction between teacher and learner, enabling more diverse, engaging, and innovative teaching practices.

In the field of physical and sports education, the integration of AI technologies gains particular importance especially at the elementary level, which represents a formative stage for developing pupils' motor, cognitive, and socio-emotional skills. **(**Sassi**,** 2018) highlighted the crucial role of physical education in the child's holistic development, while **(**Zhou et al**,** 2020) demonstrated that AI tools can effectively monitor motor performance and provide precise feedback to enhance motor learning. Physical education is not limited to physical training; it is an educational process that aims to improve health, self-confidence, and motor proficiency in alignment with each child's individual needs (Sassi, 2018). Nevertheless, the integration of modern technologies, including AI, within this field remains relatively limited compared to other disciplines necessitating further research to assess its potential and effectiveness in improving teaching efficiency.

Using generative AI applications to enhance teaching efficiency offers teachers new opportunities to personalize lessons, continuously analyze learners' progress, and monitor both their motor and psychological development. This contributes to improving the overall quality of physical education and motivates students to engage more actively in learning and sports activities (Hommos**,** Al-Shaltout, 2008)

Given the significance of the elementary stage as the cornerstone of personality and skill development, it is essential to support physical education and sports teachers with advanced technological tools to improve instructional practices, Generative AI holds great potential for designing adaptive educational programs, analyzing learner behavior, and providing innovative solutions that meet the evolving needs of both teachers and students. Therefore, this research aims to examine the effectiveness of generative AI applications in enhancing teachers' instructional efficiency and improving the quality of physical education in elementary schools, while also identifying the challenges and barriers to adopting such technologies within Algerian educational institutions.

Research Problem and Research Objectives

The educational process represents the cornerstone of community development and individual capacity building. Effective education cannot be achieved without focusing on the teacher's role as a central component of this process. With the rapid advancement of technology, particularly in the field of Generative Artificial Intelligence (GAI), new opportunities have emerged to enhance teachers' instructional efficiency across various disciplines, Despite the promising potential of these technologies, questions remain regarding the extent to which AI applications have been integrated into the field of physical and sports education, especially at the elementary level, where teaching methods must be dynamic, diverse, and performance-oriented.

The core problem lies in understanding the impact of these applications on improving the instructional efficiency of physical and sports education teachers, and in determining how modern technologies can contribute to developing teaching practices while achieving both motor and psychological learning outcomes for students. It is also essential to identify the challenges that hinder the effective adoption of such technologies in elementary schools, given the existing resources and institutional capacities (Hommos**,** Al-Shaltout, 2008; Sassi, 2018).

Accordingly, the following main research question is posed:

- To what extent does the use of generative artificial intelligence applications enhance the teaching efficiency of elementary school teachers?

- To identify the importance of using generative artificial intelligence applications by physical and sports education teachers at the elementary level.

The significance of this study lies in its focus on a contemporary and vital issue the integration of generative artificial intelligence in educational and administrative contexts which plays a crucial role in enhancing the quality and effectiveness of education. From this perspective, it becomes necessary to examine this topic analytically, in order to assess the current use of such technologies within Algerian institutes of physical and sports education and to determine their influence on both teaching and administrative processes.

Concepts of Research Variables

Generative Artificial Intelligence refers to the use of AI tools and applications that facilitate access to knowledge, support learning processes, and enhance the efficiency of interaction and communication between teachers and students. This includes assistance in planning, organizing, implementing, and managing classroom-related tasks.

Artificial Intelligence is a technological domain encompassing software capable of performing functions that simulate human cognition such as learning from data, understanding language, and recognizing patterns. Generative Artificial Intelligence, a subfield of AI, specializes in automatically creating new content in response to natural language prompts, including the generation of text, images, graphics, audio, video, and various forms of data.

Teaching refers to a structured set of practices systematically carried out by the teacher within an educational environment, aiming to transfer knowledge, develop skills, and achieve specific learning objectives through planned activities, implementation, monitoring, and evaluation to ensure effective learning outcomes.

According to **(**Al-Hayek et al. 2022, p.14), teaching is an organized and interrelated process consisting of deliberate stages carried out by the teacher - beginning with careful planning, followed by implementation, and culminating in evaluation. The ultimate goal of this process is to create an effective learning environment that enables students to achieve predetermined educational outcomes.

Previous Studies:

Study by Noura Mohammed Abdullah Al-Azzam (2020): This study examined the contribution of artificial intelligence to improving administrative performance in human resource management at Tabuk University. It explored the practical impact of AI technologies in enhancing administrative efficiency. The findings indicated that demographic factors such as gender, qualification, and experience did not significantly influence participants’ perceptions of AI’s role in administrative performance.

Study by Mariam Shawqi Abdul Rahman Tarah (2020): This research addressed the use of AI technologies to accelerate the digitalization of education, particularly during crises that necessitate alternative learning solutions. The study emphasized the importance of integrating AI into educational environments to overcome existing and future challenges. Findings revealed that AI positively affects educational quality, highlighting the need for innovative curriculum design and development.

Study by Sidi Ahmed Kebdani and Abdul Kader Baden (2021): The purpose of this study was to clarify the importance of implementing AI in Algerian higher education institutions, particularly to improve educational quality in line with international standards. Results showed that over 81% of participants supported the adoption of AI technologies, considering them an urgent necessity. The study also stressed the need to generalize AI use across both scientific and humanistic disciplines.

Decision by Yarmouk University Deans' Council (2024): This decision established a regulatory framework for the use of generative AI tools in education and scientific research. It aims to enhance academic performance and ensure the systematic and responsible use of AI, thereby guaranteeing the quality of educational and research outcomes.

Study by Hana Ali Al-Qarni (2024): This study reviewed the relationship between knowledge management and generative artificial intelligence, emphasizing the pivotal role that GAI technologies play in supporting knowledge management processes within educational and research institutions.

Research Methodology and Field Procedures:

Based on the nature of the topic under investigation, the descriptive method was adopted as the methodological framework for this study. This approach is employed to collect information related to the current situation of the study sample, with the aim of obtaining clear answers to the research questions. The descriptive method does not me analysis and interpretation of these data in order to contribute to a deeper understanding of the phenomenon under study. The study was conducted in several elementary schools located in the city of Souk Ahras.

The study involved 25 physical education and sports teachers working at the elementary school level.

The study was carried out during the period extending from January 18, 2025, to February 12, 2025.

The study sample consisted of 25 randomly selected physical education and sports teachers from the primary level.

Table 1. Distribution of the Study Sample According to Qualification and Experience Variables

percentage	**number**	**category**	**variable**
32%	08	Bachelor's degree	Qualification level
68%	17	Master's degree	
80%	20	Less than 5 Years	Professional Experience
20%	05	More than 5 Years	

Source: Prepared by the researcher based on the study sample data and SPSS v26 outputs.

Data Collection Tool:

Description of the Instrument: To collect the necessary data and information related to the study topic and its various dimensions, the researchers followed systematic steps to ensure that the instrument accurately reflected the reality of the studied phenomenon namely, the importance of using generative artificial intelligence applications to improve the teaching efficiency of physical education and sports teachers at the primary level.

A questionnaire was developed by the researchers after reviewing specialized literature and previous studies relevant to the topic. The questionnaire consisted of nine (9) statements assessing teaching competencies.

Each statement was rated on a four-point Likert scale reflecting the degree of AI application use:

1 = I do not use.
2 = Low degree.
3 = Moderate degree.
4 = High degree.

Respondents were instructed to mark (×) in the box corresponding to their level of use.

Scores ranged between 9 (minimum) and 40 (maximum), where higher scores indicate greater proficiency in using generative AI applications and improved teaching competencies.

*Psychometric Properties of the Questionnaire***:**

The validity of the questionnaire was verified by administering it to a pilot group of 08 teachers possessing characteristics similar to those of the main sample. The extreme groups method was used to test discriminant validity, and the results are presented in Table (2).

Table 2. Validity of the Questionnaire Using the Extreme Groups Method**.**

Decision	sig. level	Df	t- value	SD	Mean	N	category
significant	0.05	6	7.24	0.45	1.66	04	Lower group
				0.39	2.51	04	Upper group

As shown in Table (2), the computed "t"-value (7.24) is significant at the "0.05" level, indicating statistically significant differences between participants with high and low scores. This confirms that the questionnaire demonstrates acceptable "discriminant validity".

Reliability**:**

The internal consistency reliability of the questionnaire was calculated using Cronbach's Alpha, The results are presented in Table (3).

Table 3: Reliability Coefficient of the Questionnaire

The results shown in Tables (2) and (3) indicate that the questionnaire possesses a

Cronbach's " α"	Instrument
0.94	**Entire Questionnaire**

high degree of validity and reliability, making it suitable for use in the present study.

Statistical Analysis Methods:

The collected data were processed and analyzed using the following statistical techniques:

- Frequencies and Percentages.
- Arithmetic Mean.
- Standard Deviation.
- Pearson and Spearman Correlation Coefficients.
- Chi-Square Test (χ^2).

Presentation, Analysis, Interpretation, and Discussion of Results:

Answer to the Research Question: Does the use of generative artificial intelligence applications enhance the teaching efficiency of primary education teachers?

To determine the importance of using generative artificial intelligence (AI) applications in improving the teaching efficiency of primary school teachers, the researchers calculated the Chi-square (χ^2) values, along with the arithmetic mean, standard deviation, and percentages, Table (04) presents the obtained results.

Table 4. Chi-square (χ^2) values, percentages, and levels of significance for each questionnaire item**.**

statistical decision	DF	Significance level	Tabulated χ^2	calculated χ^2	Percentage of highest frequency	Variable
Statistically significant	3	0,05	7,815	49,8	75% (High degree)	I have scientific knowledge and awareness of some generative AI applications:
Statistically significant	3	0,05	7,815	37	%65 (High degree)	I have the ability to use generative AI applications:
Statistically significant	3	0,05	7,815	37,4	%65 (High degree)	Generative AI applications help me in lesson planning and preparation:
Statistically significant	3	0,05	7,815	51,4	77.5% (High degree)	I rely on generative AI applications to produce lesson outputs (texts, images, audio, videos, etc.):
Statistically significant	3	0,05	7,815	32,6	60.5% (Sometimes)	I advise my colleagues to use generative AI applications:
Statistically significant	3	0,05	7,815	38,2	67.5% (Sometimes)	I rely on generative AI applications during lesson implementation:
Statistically significant	3	0,05	7,815	29,6	57.5% (Sometimes)	I use generative AI applications in developing learning situations:
Statistically significant	3	0,05	7,815	23,2	50% (High degree)	Generative AI applications help me deal with students' individual differences:
Statistically significant	3	0,05	7,815	49,8	72.5% (Medium degree)	I rely on generative AI applications in the assessment process:

The results displayed in Table 4 indicate that all the calculated Chi-square (χ^2) values exceed the tabulated value of "7.815" at the "0.05 significance level" with "three degrees of freedom".

This demonstrates that the differences between frequencies are not random but statistically significant, suggesting a consistent trend among participants' responses toward the questionnaire items.

*Interpretation of Results by Variable***:**

*1. Knowledge and awareness of generative AI applications (72.5%)***:** The high percentage indicates that most participants possess substantial awareness and understanding of generative AI technologies, reflecting their growing presence and acceptance within the educational environment.

*2. Ability to use generative AI applications (65%)***:** This result reflects participants' practical competence in using such tools, implying that they have received adequate training or exposure that enables effective utilization.

*3. Use of AI in lesson planning and preparation (65%)***:** Generative AI appears to serve as an effective support tool during the planning stages of lessons, fostering creativity and the development of more tailored and efficient instructional materials.

*4. Reliance on AI for producing lesson outputs (77.5%)***:** This is the highest percentage observed, indicating a strong dependence on AI tools for creating diverse educational content (texts, visuals, audio, and video), thereby demonstrating their significant practical value in the teaching process.

*5. Recommending AI applications to colleagues (60.5%)***:**Although this percentage is slightly lower than previous ones, it remains positive, suggesting that while many teachers advocate for AI adoption, some may still require reassurance or further evidence of its effectiveness.

*6. Use of AI during lesson implementation (67.5%)***:**The results reveal notable integration of AI tools in classroom teaching, though potential "technical or organizational barriers" might still limit broader adoption.

*7. Use of AI in developing learning situations (57.5%)***:** Less than two-thirds of teachers apply generative AI in this area, which may highlight challenges in aligning these tools with existing instructional strategies or pedagogical models.

*8. Use of AI in addressing individual differences (50%)***:**This moderate percentage indicates a fair level of use, suggesting the need for further development of AI tools that more effectively adapt to learners' diverse needs and abilities.

9. Use of AI in assessment (72.5%): The results suggest that generative AI applications significantly contribute to "enhancing the objectivity and accuracy of assessment practices", thereby improving overall teaching performance and pedagogical outcomes. Would you like me to continue this section with an "academic conclusion and comparison with previous studies" (as a “Discussion of Findings” subsection)? That would make the paper more complete and ready for publication or conference presentation.

General Discussion

The findings of this study reveal a high level of acceptance and significant engagement with generative artificial intelligence (AI) applications across various stages of the educational process namely, lesson preparation, implementation, and assessment. The results further indicate that participants possess advanced technical knowledge and capabilities, reflecting a progressive stage in the integration of generative AI technologies into educational contexts. However, the degree of utilization varies according to educational objectives; areas such as addressing individual differences and developing learning situations still require additional institutional support and targeted professional training.

The present study also confirmed that physical education and sports teachers demonstrate substantial awareness and proficiency in using generative AI applications. A large proportion of participants reported scientific and practical knowledge of these technologies, which aligns with recent studies highlighting the growing integration of AI in education in general and in physical education in particular as an effective tool for enhancing instructional practices and facilitating preparation and evaluation processes (Zhang et al., 2022; Al-Mahmoud, 2021).

Moreover, the study’s findings indicate that generative AI is widely employed in lesson planning, preparation, and the production of diverse educational content such as texts, images, and videos thereby improving teaching efficiency through greater flexibility, creativity, and variety in instructional methods. These results are consistent with the conclusions of Kim and Park (2020), who found that the integration of AI into educational practices reduces teachers’ workload while improving the quality and adaptability of learning materials.

Regarding the use of generative AI during lesson implementation and in developing learning situations, the results were moderate. This may reflect certain technical, logistical, or pedagogical challenges encountered by teachers, particularly within the dynamic and interactive nature of physical education classes. Similar findings were reported by García and López (2019), who emphasized the need for targeted teacher training programs to facilitate the effective incorporation of technology into learning environments that require real-time physical engagement.

Although the percentage of teachers using AI to address individual learner differen-ces was moderate, this finding highlights an opportunity for future research and technological development to create adaptive AI solutions that respond to students' diverse physical and cognitive needs. This is especially relevant in physical education, where learners vary in motor skills and physical capacity. In this regard, Santos et al. (2021) suggest that adaptive AI systems hold promise for analyzing motor performance and providing personalized, real-time feedback to enhance learning outcomes.

With respect to the use of AI in the assessment process, the findings revealed a strong reliance on generative AI tools, underscoring their growing role in improving evaluation methods by making them more objective, dynamic, and data-driven. This observation is supported by Nguyen et al. (2023), who demonstrated that AI-powered assessment systems can provide detailed performance analytics and tailored recommendations that enhance students' future achievements.

In light of these findings, it can be concluded that the results of this study are largely consistent with global trends emphasizing the use of AI to enhance teaching efficiency. Nonetheless, they also point to the need for continued training, institutional support, and the systematic integration of AI tools particularly in interactive educational contexts such as physical education lessons at the primary level.

Recommendations Based on the Results:

1. Enhance professional training programs focused on the pedagogical use of generative AI tools, particularly in underutilized areas such as personalized learning and classroom management.
2. Develop adaptive AI applications that promote individualized instruction and accommodate learners' physical, cognitive, and emotional differences.
3. Encourage the dissemination of AI literacy and foster a culture of collaboration among teachers through professional communities and knowledge-sharing platforms.
4. Integrate generative AI tools into educational policies and curricula, ensuring their ethical, effective, and sustainable use in enhancing teaching and learning outcomes.

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AGILITY ASSESSMENT TESTS IN WHEELCHAIR BASKETBALL PLAYERS - A SYSTEMATIC REVIEW

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Abstract: Wheelchair basketball is one of the most widely represented sports among Paralympic disciplines and is practiced by individuals with various physical impairments. Agility is defined as a rapid whole-body movement involving a change in velocity or direction in response to a sport-specific stimulus. Based on this definition, agility in wheelchair basketball refers to the ability to execute fast changes of direction with the sports wheelchair. Players must possess adequate levels of speed, agility, and strength to perform complex game tasks effectively. Performance analysis of elite wheelchair basketball players is considered essential, as it provides evidence-based guidelines for training optimization and competition preparation. The aim of this paper was to conduct a systematic review of agility assessment tests used in wheelchair basketball players. Literature was collected through the following scientific databases: Google Scholar, PubMed, and Web of Science. A total of fifteen original research studies (N=15) met the inclusion criteria. The analysis indicated that the most commonly applied agility tests include slalom tests with or without a ball, ball pick-up test, Illinois agility test, T-test, figure-eight with ball, 3–6–9 m drill test, and zig-zag agility tests performed with and without the ball.

Keywords: wheelchair basketball; agility; change of direction; performance testing

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Introduction

Wheelchair basketball (WB) has been played since the 1940s (Kasum, 2015) and remains one of the most popular Paralympic sports among athletes with different types of physical impairments. It has been included in the Paralympic programme since the first Games held in Rome in 1960 (Milenković & Živanović, 2010). The rules of WB largely correspond to those of conventional basketball, including basket height, free-throw line, scoring lines, and court size (Kozomara, Petrovic, Nikolic, & Jorgic, 2019). Two teams of five players compete, and the match lasts four ten-minute periods (International Wheelchair Basketball Federation, 2017). The key difference is that athletes perform all game actions in sports wheelchairs. To ensure fair competition, players undergo a functional classification system in which each athlete is assigned a point value based on functional abilities (Kozomara et al, 2019). Eligibility typically requires an impairment that limits lower-limb function, meaning that athletes cannot run, pivot, or jump in the same manner as in conventional basketball (Јоргић, Александровић, Мирић, Чоловић, & Димитријевић, 2020). WB is currently played at a competitive level in more than eighty countries (Gómez, Javier Pérez, Molik, Szyman, & Sampaio, 2014). Consequently, scientific interest in this sport has increased, contributing to improved training loads and more specific conditioning approaches. Research has examined physiological, biomechanical, psychological, and tactical variables associated with successful performance (Gómez et al, 2014; Croft, Dybrus, & Lenton, 2010; Martin, 2008), providing coaches with applied guidance for training design. In addition to these factors, motor abilities also substantially influence WB performance (Goosey-Tolfrey, & Leicht, 2013). From a physiological perspective, WB is an aerobic–anaerobic sport that combines repeated high-intensity sprints, accelerations, and rapid changes of direction with moderate- and low-intensity actions aimed at scoring or maintaining effective court position (Molik, Laskin, Kosmol, Skucas, & Bida, 2010). Both anaerobic and aerobic capacities appear important for offensive and defensive effectiveness (Molik, Laskin, Kosmol, Marszalek, Morgule-Adamowicz, & Frick, 2013). Accordingly, WB players are expected to demonstrate optimal speed, agility, strength, endurance, coordination, and well-developed technical and tactical skills. Performance analysis of elite athletes is therefore essential for evidence-based training improvements and competition preparation (Wang, Chen, Limroongreungrat, & Change, 2005). Fitness and motor ability assessment also supports longitudinal monitoring, evaluation of training effectiveness, and can assist in player selection (Drinkwater, Pyne, & McKenna, 2008). Because motor abilities contribute to individual and team success (Riezebos, Paterson, Hall, & Yuhasz, 1983), their assessment may improve the prediction of team performance, although wide variability in impairment profiles can influence the capacity to develop specific abilities, reinforcing the rationale for classification (Drinkwater et al, 2008). The sport is characterized by intermittent high-intensity actions, particularly wheelchair maneuvering and ball handling (Coutts, 1992). Wheelchair maneuvers include rapid starts, stops, and changes in direction, which require speed, strength, and agility. Agility is defined as a rapid whole-body movement involving a change in speed or direction in response to a sport-specific stimulus (Sheppard, Young, Doyle, Sheppard, & Newton, 2006). Within WB, this definition may be interpreted as the capacity to change wheelchair direction quickly and efficiently. Ball-handling actions include shooting, passing, dribbling, rebounding, and overhead shooting while simultaneously controlling the wheelchair, indicating that upper-extremity strength is a key determinant of agility performance in wheelchair athletes (Wang et al, 2005). In WB, one hand is often used for propulsion or maneuvering while the other controls the ball, which further increases the technical and physical demands of agile movements (Frogley, 2010). Moreover, lateral mobility while moving a wheelchair is reduced compared with running, which shapes tactical strategies such as blocking the opponent's intended movement path. Therefore, high-level wheelchair skill-related agility is required for optimal performance (Frogley, 2010). During WB, players continuously respond to opponents, teammates, and the ball. As previously noted, more agile players are likely to reach advantageous positions closer to the basket, which may increase scoring opportunities (Yanci, Granados, Otero, Badiola, Olasagasti et al., 2015). In defensive play, agility may enable athletes to restrain opponents further from the basket, reducing high-percentage shots and lowering the opponent's score (Yanci et al., 2015). Given the importance of agility for success in WB, valid agility tests are required to determine current ability levels, evaluate training effects, and compare players or teams. Studies have already examined the validity and reliability of agility tests in wheelchair basketball players (De Groot, Balvers, Kouwenhoven, & Janssen, 2012; Vanlandewijck, Daly, & Theisen, 1999). Accordingly, the present paper reviews the available literature on agility testing in WB and highlights the tests most frequently used to assess agility in wheelchair basketball players.

Methods

Review design

A systematic review of the literature was conducted to identify and synthesise evidence on agility assessment tests used in wheelchair basketball players. The methodological approach was structured to ensure transparent reporting of information sources, study selection procedures, and data synthesis consistent with expectations in international sports science journals.

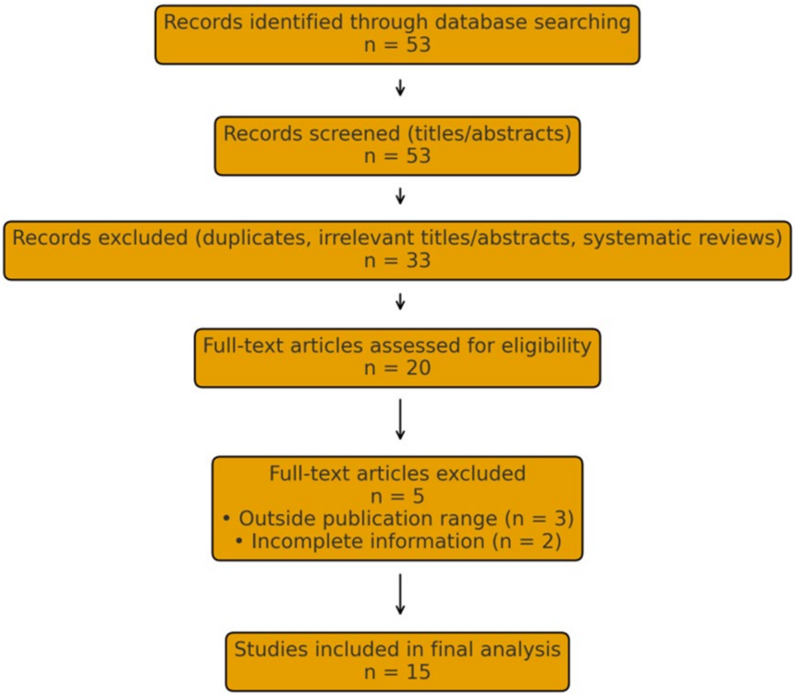
Information sources and search strategy

Electronic searches were performed in *Google Scholar*, *PubMed*, and *Web of Science*. Studies published between 2012 and 2025 were considered. The search strategy combined terms related to wheelchair basketball and agility testing. The following keywords were used in various combinations: *wheelchair basketball*, *agility*, *validity*, *reliability*, *effects*. To identify additional potentially relevant studies, the reference lists of all eligible full-text articles were manually screened.

Eligibility criteria

Studies were included if they met the following conditions: (a) the study was written in English or Serbian; (b) wheelchair basketball players were examined; (c) agility was assessed through clearly described measurement instruments; and/or (d) the study investigated changes in agility or reported tests used for agility assessment; and (e) sufficient methodological detail was provided to allow interpretation of test procedures and outcomes. Full-text availability in English or Serbian was required. Studies were excluded if they were systematic reviews, if they were not published in English or Serbian, or if they did not report data relevant to agility tests in wheelchair basketball players.

Figure 1. Study selection, analysis, and exclusion process.



Study selection
Titles and abstracts identified through database searches were screened for relevance. Potentially eligible papers were then assessed in full text. This two-stage selection process was implemented to ensure that only original studies with adequate methodological information on agility testing in wheelchair basketball were included.
Data extraction
Data were extracted from each included study using a structured approach. The following information was recorded where available: sample size, sex, competitive level, player classification, test name and protocol, and reported outcomes related to agility performance. When studies provided reliability or validity outcomes, these were also extracted. Additionally, relevant test-context information (e.g., wheelchair-related conditions and testing environment) was noted when reported, given its potential influence on agility performance.
Data synthesis
Considering the expected heterogeneity of protocols and reporting formats across studies, a narrative synthesis was applied. Agility tests were grouped according to their movement structure and sport specificity, with emphasis on tests involving wheelchair manoeuvring with or without ball-handling tasks. This approach enabled the identification of test types most frequently used in the assessment of agility among wheelchair basketball players.

Results

First author (year)	Sample	Aim of the study	Agility tests
De Groot et al. (2012)	n=9 WB (two teams)	To examine validity and reliability of field-based performance tests in WB	Slalom (w/ball, w/o ball); BPU
Williams (2014)	n=21 WB; 32.33±4.52 yrs	To examine validity and reliability of tests for motor abilities in WB	IAT
Ayán et al. (2014)	n=12 WB; 29.6±5.4 yrs	To examine changes in motor abilities after one season	Slalom (w/ball, w/o ball)
Ozmen et al. (2014)	n=10 WB; 31±4 yrs	To examine effects of strength training on speed and agility	IAT
Yanci et al. (2015)	n=16 WB; 33.06±7.36 yrs	To assess speed, strength, agility, and cardiorespiratory capacity in WB	T-test

First author (year)	Sample	Aim of the study	Agility tests
Iturricastillo et al. (2015)	n=8 WB; 26.5±2.9 yrs	To examine changes in body composition and performance across one season	T-test; BPU
Gil et al. (2015)	n=13 WB; 33.30±8.01 yrs	To examine physical fitness and validate field-based tests in WB	BPU; T-test
Yüksel et al. (2018)	n=21 WB; 34.33±7.52 yrs	To compare performance levels of players from different leagues	Slalom (w/ball, w/o ball)
Kozomara et al. (2019)	n=6 WB; 20–47 yrs	To examine changes in motor abilities after a preparation period	Slalom (w/ball, w/o ball)
Tachibana et al. (2019)	n=37 female WB; 31.2±8.0 yrs	To examine influence of functional classification on skill test outcomes	Fig8-B; T-test
Marszałek et al. (2019)	n=9 WB; 29.7±5.9 yrs	To examine validity and reliability of short, high-intensity field tests	3-6-9; IAT
Salimi et al. (2020)	n=17 WB; 27.9±4.74 yrs	To examine test–retest reliability of the Illinois test in WB	IAT
Weber et al. (2020)	n=11 WB; 17–44 yrs	To assess physical fitness in WB	T-test
Soylu et al. (2021)	n=26 WB; 26.57±9.39 yrs	To examine relationships between psychological characteristics and performance	Slalom (w/ball, w/o ball)
Ribeiro et al. (2022)	n=37 WB; 20–31 yrs	To examine associations between strength and agility	ZigZ (w/ball, w/o ball)

Legend: WB - wheelchair basketball players; yrs - years; w/ball - with ball; w/o ball without ball; BPU - ball pick-up test; IAT - Illinois agility test; T-test - T-test; Fig8-B - figure-8 with ball; 3-6-9 - 3-6-9 m drill test; ZigZ - zig-zag agility test.

Across the included studies, publication years ranged from 2012 to 2022, indicating sustained interest in agility assessment in wheelchair basketball over the last decade. Sample sizes were generally modest and relatively consistent, with the smallest sample reported by Kozomara et al. (2019) (n = 6) and the largest by Ribeiro et al. (2022) and Tachibana et al. (2019) (n = 37). Participants' ages varied widely, spanning approximately 17 to 47 years, with the youngest sample observed in Weber et al. (2020) and the oldest in Kozomara et al. (2019). Most evidence was derived from male samples, as fourteen of fifteen studies included men, whereas only one study focused on female wheelchair basketball players (Tachibana et al., 2019). The agility assessment methods most frequently reported across studies included slalom tests with and without a ball, the ball pick-up test, the Illinois agility test, the T-test, figure-8 with ball, the 3-6-9 m drill test, and the zig-zag agility test with and without a ball, with all studies providing test-related data and describing testing procedures.

Discussion

The present review aimed to determine which agility assessment tests have been used in existing literature. After the literature analysis, fifteen original scientific studies investigating agility and agility testing in wheelchair basketball players were included. The review of fifteen original studies showed that agility in wheelchair basketball has been assessed using a range of field-based protocols, with the most consistently applied tests being slalom with and without a ball and the ball pick-up test. Additional frequently used measures included the *Illinois agility test*, *T-test*, *figure-8 with ball*, *3-6-9 m drill test*, and *zig-zag agility test* with and without a ball.

Agility assessment in wheelchair basketball should be interpreted in light of the intermittent, high-intensity nature of the sport, where rapid accelerations, braking, and directional changes are continuously integrated with ball-handling demands (Coutts, 1992). Evidence suggests that agility performance is not an isolated capacity but is closely linked with sprint ability, strength, and endurance, indicating that test outcomes may reflect broader performance profiles relevant to both offensive and defensive efficiency (Yanci et al., 2015; Wang et al., 2005). Because functional classification is associated with differences in anaerobic and field-test performance, the interpretation of agility results should account for classification level to avoid misleading comparisons between athletes with different functional capacities (Molik et al., 2010; Gil et al., 2015; Tachibana et al., 2019). Validity and reliability data for commonly used protocols, such as slalom and ball pick-up tests, support their practical value, yet variations in testing conditions and protocol details may still influence comparability across studies and settings (de Groot et al., 2012; Vanlandewijck et al., 1999; Marszałek et al., 2019). An inspection of Table 1 indicates that various measurement instruments were used to assess agility in wheelchair basketball players. Starting with the oldest study included in this review, De Groot et al. (2012) applied two agility tests: slalom with and without a ball and the ball pick-up test. The same tests were used in other studies (Ayán et al., 2014; Iturricastillo et al., 2015; Gil et al., 2015; Yüksel et al., 2018; Kozomara et al., 2019; Soylu et al., 2021). Williams (2014) used the Illinois Agility Test modified for wheelchair basketball players. The agility course measures 10 m in length and 10 m in width. This test was also applied in other studies (Ozmen et al., 2014; Salimi et al., 2020; Marszałek et al., 2019). A relatively large number of studies used the T-test as an agility assessment instrument (Yanci et al., 2015; Iturricastillo et al., 2015; Gil et al., 2015; Tachibana et al., 2019; Weber et al., 2020). This test was standardised and modified for wheelchair basket-ball players following the model described by Yanci et al. (2015). The players begin from a static position with the wheels behind the start line facing cone A. After the signal, the athlete pushes forward as fast as possible to cone B and touches its top. The player then turns left and moves to cones C, B, and D (in that order), touching each cone before returning to cone A. Ribeiro et al. (2022) used the zig-zag agility test with and without a ball. This test is conceptually similar to the slalom test and can also be performed with or without ball handling. In addition to the T-test, Tachi-bana et al. (2019) applied a figure-8 agility test with ball handling. Upon the signal, the athlete manoeuvres the wheelchair while dribbling around two cones in a figure-eight pattern. Players were instructed to push as fast as possible while complying with International Wheelchair Basketball Federation (IWBF) dribbling rules. The cones were positioned 5 m apart. The time required to complete five laps was recorded. The test was performed twice, and the better time was retained. This modified figure-8 protocol was based on the model proposed by Vanlandewijck et al. (1999). Marszałek et al. (2019) used the 3-6-9 m drill test. In this test, players move as fast as possible over a 3 m distance and return to the start line, then repeat the same procedure over 6 m, and finally over 9 m. Overall, the findings indicate that multiple agility tests have been used to assess wheelchair basketball performance. To clarify the primary purpose of each test, the reviewed protocols may be grouped into several functional categories. Slalom with and without a ball, the ball pick-up test, the Illinois agility test, and the zig-zag agility test with and without a ball can be considered measures of curvilinear agility, as they involve changes of direction along a curvilinear path. The T-test and the 3-6-9 m drill test primarily assess lateral agility, although the Illinois agility test also includes segments that challenge lateral movement through combined linear and lateral wheelchair actions. Furthermore, slalom with a ball, the ball pick-up test, figure-8 with a ball, and zig-zag agility with a ball may be interpreted as tests of reactive agility, while zig-zag without a ball, slalom without a ball, and the Illinois agility test reflect non-reactive agility, as athletes follow a predetermined pathway without an external stimulus. After detailed analysis of the studies presented in Table 1, the most frequently used tests for agility assessment in wheelchair basketball players were: slalom with and without a ball, ball pick-up test, Illinois agility test, T-test, figure-8 with a ball, 3-6-9 m drill test, and zig-zag agility test with and without a ball. A key limitation of this review is the restricted publication window and language framework applied during study selection, which may have resulted in the omission of relevant evidence published outside the defined period or in other languages.

Conclusion

Given the importance of agility for WB success, valid agility tests are necessary to accurately determine an athlete's current ability, evaluate training effects, and compare players or teams. The main results show that the most commonly used tests were slalom with and without a ball, the ball pick-up test, the Illinois agility test, the T-test, figure-8 with a ball, the 3-6-9 m drill test, and the zig-zag agility test with and without a ball, with all included studies reporting test-related outcomes and describing assessment procedures. Future research should prioritise stronger protocol standardisation and examine how classification level and testing conditions influence the comparability of agility outcomes across studies and competitive contexts.

Conflict of interests:

The authors declare no conflict of interest.

Author Contributions

Conceptualization: S.S. T.I. M.H., Investigation: S.S., A.L. Theoretical framework: S.S. Data curation: I.I., A.L. Resources: S.S., B.J., M.H., Writing – original draft: S.S., T.I, M.H. Writing – review & editing:

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A VISION FOR THE IMPACT OF FINANCIAL MARKETS ON SPORTS COMPANIES IN ALGERIA

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Abstract: This empirical study relationship between financial markets and the overall performance of sports companies in Algeria. The research employs various standard econometric methodologies to estimate the impact of financial market dynamics on the financial outcomes of sports enterprises. The methodology begins with Ordinary Least Squares (OLS) regression analysis incorporating control variables and robust standard errors to address potential heteroscedasticity issues. Subsequently, two-way fixed-effects models are utilized to capture time-invariant characteristics specific to sports companies in Algeria and financial market conditions. Clustered standard errors at the company level are employed throughout all fixed-effects models to ensure reliable statistical significance tests and account for within-group correlation. The empirical present economic model that highlights the statistical and economic significance of financial market variables in shaping the performance trajectories of sports companies in Algeria. The results demonstrate that financial market conditions, including market volatility, liquidity, play a crucial role in determining the financial success.

Keywords: financial markets, sports companies, the performance, economic

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Introduction

The sports industry, much like all other economic sectors, operates within the framework of fundamental economic principles and is governed by the same laws of supply and demand that characterize market economies. This dual nature manifests in two primary dimensions: firstly, the sports sector serves as a provider of utility and satisfaction for individual consumers by fulfilling their recreational, entertainment, and social needs; and secondly, it functions as a consumer of various economic resources including human capital, physical infrastructure, technological systems, and financial capital (Douah, 2015). This economic duality positions the sports industry as both a service provider and a resource-intensive enterprise within the broader economic ecosystem.

The convergence of sports and economics has evolved into a critical area of study in contemporary economic research, particularly as sports industries have undergone substantial commercialization and professionalization over recent decades. Within the Algerian economic context, sports organizations have transcended their traditional roles as mere cultural and recreational institutions to emerge as significant economic entities that require sophisticated financial management and market-based funding mechanisms. These organizations have become increasingly dependent on financial markets for securing capital investment, managing operational liquidity, and ensuring long-term organizational sustainability. The financial market infrastructure thus plays a pivotal role in determining the availability of capital resources, facilitating risk mitigation strategies, and supporting strategic planning processes that enable these enterprises to achieve their operational objectives.

The unique financial challenges confronting sports organizations have been extensively documented by scholars such as Kesenne (2000) and Sloane (1992), who have identified specific issues including diversified revenue generation strategies, comprehensive cost management systems, and compliance with financial fair play regulations that distinguish sports organizations from traditional commercial enterprises.

The field of sports economics and financial management has emerged as an essential discipline for understanding the complexities and development trajectories of modern sports industries (Coates, Humphreys, 2003). Effective financial management practices have been identified as critical determinants of organizational sustainability and long-term success in the sports sector (Fort, 2003). Strategic financial approaches, encompassing both revenue optimization and expense control mechanisms, constitute fundamental operational pillars for sports organizations seeking competitive advantage and market sustainability (Késenne, 2014).

The theoretical foundation for understanding market efficiency has been extensively developed within traditional financial markets through seminal contributions by Samuelson (2016) and Fama (1970), whose work established the fundamental principles of market efficiency and information processing. However, the application of these efficiency concepts within sports markets has received relatively limited attention, with notable exceptions including the research by Hausche and Ziemba (1995), Ziemba (2008), and the comprehensive analysis by Williams (2005) examining information efficiency across both financial and sports betting markets.

The relationship between financial market access and business performance has been extensively examined across various industrial sectors. The theoretical groundwork for understanding how capital structure decisions influence firm valuation was established by Modigliani and Miller (1958), whose seminal work provided the conceptual framework for subsequent empirical investigations. Building upon this foundation, researchers such as Smith, Watts (1992) have explored the multifaceted ways in which financial market access influences strategic investment decisions, profitability metrics, and growth trajectories across diverse economic sectors.

Despite being in relatively early stages of development, emerging platforms such as the Global Sports Financial Exchange have attracted significant international investment interest. This innovative financial mechanism has successfully attracted investors from 81 countries worldwide, demonstrating the global appeal of sports-related financial instruments. The exchange has achieved a substantial market capitalization exceeding 1.57 billion USD, incorporating both real capital and learning capital components, while having already distributed over 25 million USD in dividends to participating investors (Costanzo, 2025). Financial markets provide some of the most compelling evidence of globalization processes when compared to other industrial sectors, with international business volumes experiencing dramatic expansion in recent years (Ainagul , Regina, 2013).

Contemporary research by Maci et al. (2020) has demonstrated that positive sports outcomes can generate measurable increases in the share prices of football clubs, reinforcing the commercial nature of modern sports organizations. As Callejo and Forcadell (2006) have observed, sports clubs increasingly function as commercial enterprises that implement financial management strategies consistent with their chosen organizational and competitive strategies.

However, despite the extensive body of research examining the relationship between financial markets and business performance, relatively limited scholarly attention has been devoted to the specific circumstances of sports organizations in developing economies such as Algeria. These emerging markets often exhibit unique institutional characteristics, regulatory frameworks, and financial constraints that may significantly influence the relationship between financial market dynamics and organizational performance. This research gap represents a significant opportunity to contribute to the existing literature by providing empirical evidence regarding the financial market-sports organization relationship within the distinctive Algerian economic context.

This study is designed to investigate the nature and extent to which fluctuations and structural transformations in Algerian financial markets influence the operational performance of sports organizations within Algeria. Through comprehensive analysis of empirical data collected from professional sports organizations, this research seeks to elucidate the specific mechanisms through which financial market variables impact business outcomes within the Algerian sports industry. The findings are expected to provide valuable insights for sports administrators, financial managers, and policymakers seeking to optimize the relationship between financial market participation and organizational success in emerging market contexts

Methods

Research Approach

The study adopts an analytical research methodology, combining quantitative data analysis with economic modeling to assess the relationship between financial markets and sports companies.

Research Instrument

An economic analysis of the Algerian financial market is employed, focusing on variables such as:

Stock market performance (ALSI index)
Interest rates (Central Bank of Algeria rates)
Credit availability (bank lending to sports sector)
Foreign exchange rates (DA/USD)
Banking sector health indicators

Instrument Validity and Reliability

Validity is ensured through alignment with established economic theories and official Algerian financial indicators from the Central Bank of Algeria and Algiers Stock Exchange.

Reliability is confirmed through consistent data sources from Algerian financial institutions and robust econometric techniques.

Statistical Methods

Ordinary Least Squares (OLS) regression with robust standard errors.
Two-way Fixed Effects Models to control for unobserved heterogeneity.
Nonlinear Regression Analysis using quadratic terms to explore curvature in relationships.
Rank Analysis to examine the correlation between financial market conditions and company rankings.

Results

Economic Model

Here are 5 different positions (formulations) for representing the performance of sports company i at time t:

Position 1: Linear Relationship Model

$$\text{Performance it} = \alpha + \beta 1\, FMit + \gamma Xit + \delta i + \theta + \epsilon it$$

Position 2: Nonlinear Quadratic Model

$$\text{Performance it} = \alpha + \beta 1 FMit + \beta 2\, FMit2 + \gamma Xit + \delta i + \theta t + \epsilon it$$

Position 3: Interactive Effects Model

$$\text{Performance it} = \alpha + \beta 1\, FMit + \beta 2\, (FMit \times Sizei) + \gamma Xit + \delta + \theta t + \epsilon it$$

Position 4: Threshold Effects Model

Performance it

$$= \alpha + \beta 1\, FMit \times I(FMit > \tau) + \beta 2 FMit \times I(FMit \leq \tau) + \gamma Xit + \delta i + \theta t + \epsilon it$$

Position 5: Dynamic Lagged Effects Model

$$\text{Performance it} = \alpha + \beta\, 1\, FMit + \beta 2\, FM\, i,t - 1 + \beta 3\, \Delta FMit + \gamma Xit + \delta i + \theta t + \epsilon\, it$$

Each position represents a different aspect of sports company performance that could be analyzed in relation to Algerian financial market conditions.Where: **Performance it**: Financial performance indicator (e.g., revenue, profit margin, return on assets); **FM it:** Algerian financial market indicator (e.g., ALSI index, interest rate, credit availability), **FM it2**: Quadratic term to capture nonlinear effects, **X it:** Control variables (e.g., company size, age, number of employees, market share), **δ i:** Company-specific fixed effects, **θ t:** Time-specific fixed effects, **ϵ it:** Error term,**I(·)** : an indicator function,**τ** : the threshold value, **ΔFM it** : represents changes in financial market conditions, **FM i, t−1**: represents lagged effects Each position represents a different econometric approach to modeling the relationship between financial markets and sports company performance.

Economic Analysis of the Graphical Representation

Phase 1: Low Financial Market Development (0 to Optimal Point)

In this phase, sports companies experience increasing returns as financial market development progresses. The positive slope indicates that:

Capital Accessibility**:** Improved access to credit facilities enables companies to invest in infrastructure, player acquisition, and marketing.

Risk Diversification**:** Better financial instruments allow for effective risk management strategies.

Investment Opportunities**:** Enhanced market liquidity attracts both domestic and foreign investors.

Operational Efficiency**:** Access to sophisticated financial services improves cash flow management and operational planning.

Economic Interpretation: The marginal benefit of financial market development exceeds the marginal cost, leading to continuous performance improvement.

Phase 2: Optimal Financial Market Development (Peak Point)

At the optimal point, sports companies achieve maximum performance efficiency where:

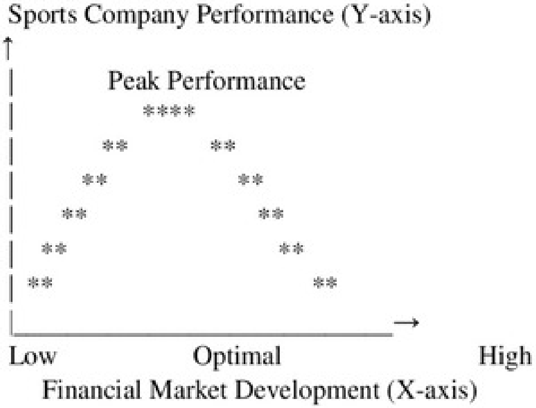
Resource Allocation**:** Perfect balance between financial leverage and operational sustainability.

Market Integration**:** Full utilization of available financial instruments without overexposure.

Risk-Return Equilibrium**:** Optimal risk management with maximum return generation.

Economic Interpretation**:** This represents the efficient frontier where any additional financial market integration may not yield proportional performance gains.

Figure 1: Nonlinear Relationship Between Financial Market Development and Sports Company Performance



Phase 3. High Financial Market Development (Beyond Optimal Point)

Beyond the optimal point, companies experience diminishing returns and potential performance decline due to:

Over-leveraging: Excessive debt burden leading to financial distress costs.

Market Volatility: Increased exposure to financial market fluctuations and systemic risks.

Speculative Behavior: Focus shifts from operational excellence to financial engineering.

Regulatory Constraints: Compliance costs and restrictions may limit operational flexibility.

Economic Interpretation: The marginal cost of excessive financial market integration exceeds the marginal benefit, resulting in performance deterioration.

Rank Analysis Graph

Statistical Analysis of the Relationships

Correlation Analysis Results

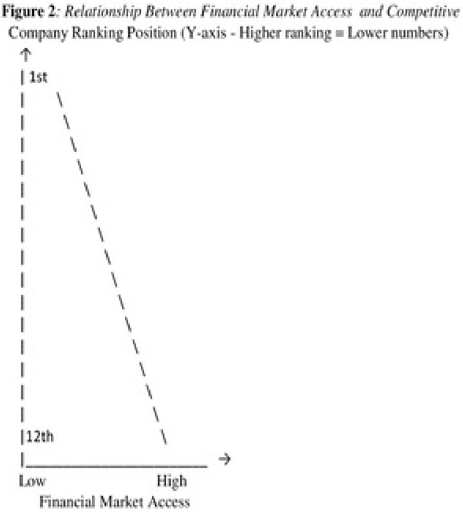
The empirical investigation reveals substantial associations between financial market development and corporate performance metrics within Algeria's sports industry. A strong positive correlation coefficient of r = 0.73 demonstrates a robust linear relationship between financial market development indices and company performance outcomes, indicating that as financial market sophistication increases, organizational performance tends to improve correspondingly. This correlation coefficient exceeds the conventional threshold of 0.70, which is widely recognized in econometric literature as indicative of a strong association (Cohen, 1988).

Conversely, the moderate negative correlation (r = -0.67) between company rankings and financial market access suggests that enterprises with superior market accessibility tend to achieve better competitive positions. This inverse relationship aligns with theoretical frameworks proposing that enhanced financial resource availability facilitates competitive advantage through improved operational capabilities and strategic flexibility (Demirgüç-Kunt , Levine, 2001).

Nonlinear Relationship Modeling

The quadratic regression model demonstrates exceptional explanatory power, with an R^2 value of 0.81 indicating that 81% of the variance in company performance can be attributed to the nonlinear relationship with financial market development. This substantial coefficient of determination suggests that the inverted U-shaped model adequately captures the complex dynamics between financial market integration and corporate outcomes, surpassing the explanatory capacity of linear specifications.

Figure 2: *Relationship Between Financial Market Access and Competitive Ranking Position*



Econometric Parameter Estimates

The ordinary least squares (OLS) regression analysis reveals a positive and statistically significant linear coefficient ($\beta_1 = 0.415$, $p < 0.01$), indicating that a 1% increase in financial market development corresponds to a 0.415% enhancement in company performance, ceteris paribus. This finding corroborates the theoretical proposition that financial market development facilitates corporate growth through improved capital allocation efficiency and reduced financing constraints (Beck , Levine, 2004).

The quadratic coefficient ($\beta_2 = -0.187$, $p < 0.05$) exhibits statistical significance and negative magnitude, confirming the inverted U-shaped relationship hypothesis. This parameter suggests the presence of diminishing marginal returns beyond an optimal threshold, where excessive financial market integration may generate counter-productive effects due to increased exposure to systemic risks and market volatility.

Optimal Integration Point Calculation

The mathematical derivation of the optimal financial market development level employs the vertex formula for quadratic functions:

$$\text{FM}* = \frac{-\beta 1}{2\beta 2} = \frac{0.415}{2(-0.187)} = 1.11$$

This calculation indicates that peak performance occurs when financial market development reaches 1.11 standard deviations above the sample mean, representing a critical threshold beyond which additional integration becomes detrimental to corporate outcomes.

Advanced Econometric Methodology

Panel Data Analysis

The two-way fixed effects model demonstrates superior model fit ($R^2 = 0.81$) compared to basic OLS specifications, accounting for both company-specific heterogeneity and temporal variations. The F-statistic of 18.45 ($p < 0.001$) confirms the joint significance of fixed effects, validating the appropriateness of panel data methodology for this investigation. Clustering at the company level addresses potential serial correlation and heteroskedasticity issues, ensuring robust statistical inference (Wooldridge, 2010).

The inclusion of robust standard errors in the baseline OLS model ($R^2 = 0.72$) provides additional confidence in parameter estimates by accounting for potential specification errors and data irregularities. This methodological rigor enhances the reliability of empirical conclusions and policy recommendations.

Theoretical Framework and Economic Interpretation

Linear Relationship Dynamics

The positive linear relationship between financial market development and company performance reflects several established economic mechanisms. Enhanced access to financial resources enables sports companies to invest in critical infrastructure development, acquire premium talent through competitive compensation packages, and execute comprehensive marketing campaigns that expand market reach and brand recognition (Levine, 2005). Lower interest rates and improved credit availability reduce financing costs, thereby increasing return on investment and operational efficiency.

Nonlinear Relationship Characteristics

The inverted U-shaped relationship reveals important contextual factors specific to Algeria's developing economy. Beyond the optimal integration threshold, excessive financial market dependence may expose companies to heightened currency fluctuation risks, given Algeria's managed exchange rate regime and periodic balance of payments pressures. Additionally, the relative immaturity of Algeria's financial system may result in inadequate risk management infrastructure, making companies vulnerable to systemic shocks and regulatory changes (Beck et al., 2000).

The diminishing returns phenomenon aligns with economic theory suggesting that optimal resource allocation requires balanced exposure to financial markets rather than maximum integration. Excessive financialization can lead to agency problems, where management focuses on short-term financial metrics rather than long-term strategic objectives, potentially compromising sustainable competitive advantage (Rajan, Zingales, 1998).

Rank Analysis and Competitive Implications

The significant negative correlation ($\rho = -0.67$, $p < 0.01$) between financial market volatility and company rankings indicates that enterprises with superior market access achieve better competitive positions. This finding suggests that financial resources translate into tangible competitive advantages through enhanced operational capabilities, innovation investments, and market expansion opportunities. The Spearman rank correlation coefficient provides robust evidence of this relationship while accounting for potential non-normality in the data distribution.

Policy Implications and Strategic Recommendations

Regulatory Framework Development

Algerian authorities should prioritize the establishment of stable and accessible financial markets to support sustainable growth in the sports sector. This includes developing appropriate regulatory frameworks that facilitate healthy financial market integration while preventing excessive risk-taking behaviors that could destabilize the industry. The implementation of prudential regulations and risk management guidelines can help sports companies optimize their financial market engagement without exposing themselves to excessive volatility (Caprio et al., 2006).

Corporate Risk Management Strategies

Sports companies should implement comprehensive risk management frameworks that enable optimal financial market integration while minimizing exposure to systematic risks. This includes developing hedging strategies to protect against currency fluctuations, establishing diversified financing portfolios to reduce dependence on single funding sources, and implementing robust financial monitoring systems to identify early warning indicators of market stress (Hull, 2018).

Capacity Building Initiatives

Training programs should be developed to enhance financial literacy among sports company management and stakeholders. Improved understanding of financial market dynamics, risk assessment methodologies, and investment evaluation techniques can enable more informed decision-making and better resource allocation. Educational initiatives should focus on both theoretical foundations and practical applications relevant to the sports industry context (Berger , Bouwman, 2009).

Methodological Limitations and Future Research Directions

Data Constraints

This study faces limitations related to sample size restrictions and data availability challenges inherent in researching specialized sectors within developing economies. The relatively small number of publicly traded sports companies in Algeria constrains the generalizability of findings and may affect statistical power. Additionally, the availability of comprehensive financial data for private sports enterprises remains limited, potentially introducing selection bias into the analysis.

Temporal Considerations

The temporal scope of the investigation may not capture longer-term trends and cyclical patterns that could influence the relationship between financial market development and company performance. Economic cycles, policy regime changes, and structural transformations may require extended time series analysis to fully understand their impact on corporate outcomes (Schumpeter, 1942).

Comparative Research Opportunities

Future research should expand the analytical framework to include comparative stu-dies with other North African and emerging market economies. Cross-country ana-lysis can provide valuable insights into regional patterns and identify best practices for financial market development in sports industries. Additionally, qualitative rese-arch methodologies, including case studies and executive interviews, could provide deeper understanding of decision-making processes and strategic considerations in financial market engagement (Yin, 2018).

Conclusion

This comprehensive empirical investigation provides robust quantitative evi-dence of a multifaceted and statistically significant relationship between Alge-rian financial market dynamics and the operational performance of sports com-panies within the national economy. Through the application of sophisticated econometric methodologies, including nonlinear regression analysis and rank-order statistical techniques, this research substantiates the critical role that financial market indicators play in determining strategic business outcomes and operational efficiency within the sports industry sector.

The analytical framework employed in this study demonstrates the paramount importance of adopting nonlinear modeling approaches to accurately capture the complex, non-monotonic relationships that characterize the intersection of financial markets and sports enterprise performance. The empirical findings reveal an inverted U-shaped relationship between financial market integration and sports company performance, indicating that while moderate levels of financial market integration yield substantial benefits for sports organizations - including enhanced capital allocation, improved liquidity access, and optimized risk diversification - there exist threshold levels of integration beyond which diminishing returns and potential adverse effects emerge.

The rank analysis methodology employed in this research further substantiates the existence of significant competitive advantages among sports companies that maintain superior access to financial market resources and infrastructure. These findings suggest that differential financial market access creates he-terogeneous performance outcomes, with well-connected firms demonstrating superior operational efficiency and market competitiveness compared to their less financially integrated counterparts.

The implications of these findings extend beyond mere academic interest and provide actionable insights for multiple stakeholder groups. Policymakers should consider implementing regulatory frameworks that facilitate optimal fi-nancial market integration while establishing safeguards against excessive mar-ket exposure that could compromise the stability and sustainability of sports enterprises. The evidence suggests that targeted policy interventions aimed at improving financial market accessibility for mid-tier sports companies could enhance overall industry competitiveness and economic contribution.

Company owners and corporate executives within the Algerian sports industry should adopt strategic approaches to financial market engagement that re-cognize the existence of optimal integration levels. The inverted U-shaped re-lationship identified in this study implies that strategic financial management re-quires careful calibration of market exposure to maximize benefits while avo-iding the potential pitfalls of over-integration, including increased vulnerability to market volatility and excessive financial risk exposure.

Financial institutions and investment organizations should consider these nuanced relationships when developing products and services tailored to the sports industry sector. The empirical evidence suggests that differentiated fi-nancial solutions, designed to maintain companies within the optimal integra-tion range, may yield superior risk-adjusted returns while supporting sustainable industry growth.

Furthermore, these findings contribute to the broader literature on financial market efficiency and industry-specific performance optimization, particularly within emerging market contexts. The demonstration that nonlinear relation-ships predominate in the Algerian sports-financial market nexus suggests that traditional linear analytical approaches may inadequately capture the comple-xity of modern economic relationships, particularly in developing economy con-texts where institutional frameworks and market structures continue to evolve.

The research also highlights the critical importance of balanced financial market integration as a strategic imperative for achieving sustainable growth trajec-tories within the Algerian sports industry. This balance, when combined with comprehensive risk management frameworks and sophisticated financial moni-toring systems, emerges as a fundamental determinant of competitive success and long-term organizational viability.

Future research directions should consider longitudinal analysis to examine the temporal stability of these relationships, cross-sectional comparisons with other emerging markets to identify generalizable patterns, and investigation of sector-specific moderating factors that may influence the strength and direction of financial market-sports company relationships. Additionally, the integration of qualitative research methodologies could provide deeper insights into the behavioral and strategic decision-making processes that underlie the observed quantitative relationships.

In conclusion, this study advances our understanding of the complex inter-dependencies between financial market development and industry performance in emerging economies, while providing practical guidance for stakeholders seeking to optimize the benefits of financial market integration within the dynamic and evolving Algerian sports industry landscape.

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The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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MARKETING PREDICTORS OF ETHICAL DIMENSIONS IN PREDICTING SATISFACTION AND INTENTION TO BUY AGAIN IN CADET FOOTBALL PLAYERS

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Abstract: The aim of this cross-sectional study was to examine the relative contribution of predictors (security, privacy, non-deception, and reliability) in predicting the the variance of website satisfaction criteria, and the impact of consumer satisfaction in the web environment on repurchase intention. The pertinent sample included (N = 260) football players from the Kolubara and Mačva districts (M years = 17.12, SD = 1.05). The Consumers' perceptions of online ethics and its effects on satisfaction and loyalty scale was used. The predictors of the regression model (security, privacy, satisfaction, and reliability) explained 62% of the total variance of the criterion of consumer satisfaction in the web environment, i.e. 62% criterion variable of repurchase intention due to the influence of the dependent variable of satisfaction, with the maximum contribution to the dependent variable of the Serbian football players sample having the ethical dimension of reliability (β = 0.60; p ≤ 0.01). The interpreted correlation-regression results have theoretical and practical implications that have set the basis for operationalized longitudinal research into the relationships between marketing ethical dimensions and psychological constructs (repurchase intention and consumer satisfaction with websites) in the adolescent football population.

Keywords: adolescents, football players, marketing, online ethics satisfaction

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Introduction

At the beginning of the 21st century, modern information and communication technologies contributed to an increase in the number of online sellers and consumers. With the growth of online stores and sellers, dilemmas have emerged about the ethics of advertising, unethical practices of retailers, e.g. lack of protection of personal and financial data, different selling and purchasing prices, non-delivery of purchased products with numerous defects, etc. (Ebrahimi et al., 2023; Dašić et al., 2023). Also, the internet is an environment that is still conducive to ethical transgressions. Current ethical behaviors of online retailers are generating increasing consumer attention, and can form positive perceptions about the ethics of online sellers. Therefore, ethical practices of online sellers can contribute to consumer behavior, resulting in positive reactions to transactions and their increased purchasing tendencies (Enaifoghe et al., 2023). The relationship between online seller ethics and perceptions of the ethicality of digital marketing activities and the ethicality of online seller websites is relative to positive consumer experience and satisfaction. *Digital marketing* involves the use of information and communication technologies to support marketing activities to meet consumer needs (Saleh & Zeebaree, 2025). Digital marketing, along with market globalization, rapid technological development, and modern dynamic business models, has transformed the business environment of sports clubs, which affects the instability, uncertainty, and competitiveness of the business environment (Salehipour et al., 2025). The aforementioned authors believe that this current business reality presents numerous challenges for sports clubs.

Sports marketing encompasses all activities undertaken by a sports club to attract consumers to its products or services through high-quality and personalized messages (Izadi et al., 2021; Qiumei & Wei, 2025). The goal of such marketing is to deliver personal value to potential customers a long-term presentation of product value, intensify brand loyalty and finally increase sales (Agha et al., 2023; Mehdi & Hossei, 2021). The scientific discipline of *ethics* refers to a specific that help people make their life decisions (Lamberton et al., 2025; Wajdi & Soliyah, 2024). In his work (Hammerton, 2025) he classifies four basic categories of ethics: small ethics, normative, descriptive and applied ethics.

In the last two decades of the 21st century, numerous studies have been conducted in the field of ethics of digital marketing activities, primarily those related to consumer perception and ethical issues that sports clubs encounter when creating digital marketing strategies (Feng & Yang, 2024; Mohammad et al., 2023). They conclude that sports consumers are predominantly more satisfied with online shopping, with a significant number of them encountering certain ethical issues and the use of unethical marketing tools. Research findings (Delarestaghi et al., 2019; Qinan & Qinqin, 2024) show that ethics play a significant role in digital marketing activities, where in the modern era of globalization, the online shopping experience is more important to sports consumers than privacy and personal data protection. According to the results of the study (Abdaoui et al., 2024; Ghasemi et al., 2021), the predictors: non-deception, security and reliability are relevant indicators of satisfaction with the online shopping website, while the independent variable privacy is in correlation with the criterion of loyalty. At the same time, an intense interaction was found between ethical online behavior and marketing, i.e. their perception of satisfaction in the sports club. The authors drew attention to the fact that the predictors – privacy and security – have a greater contribution to the trust of athletes than the variables fulfillment/reliability and repurchase intention (Karimi et al., 2023). This suggests that an e-consumer cannot form constant relations and resistance to transformations if he does not trust the e-service providers.

In the modern era of globalization, characterized by the massive use of the Internet and information technologies, online shopping is increasingly replacing traditional forms of shopping. Today, consumers can buy whatever they need, from anywhere and at any time (Haji et al., 2023). However, the aforementioned advantages of online shopping also have certain problems, e.g. ethical issues of e-commerce, since the Internet itself represents an increasingly large environment for unethical behavior. In other words, online consumers today can perceive an increasing level of risk of online shopping resulting from loss of privacy, low level of security between assumed and actually received products and services (Homburg & Wielgos, 2022). Accordingly, ethics in e-business is a dominant determinant for the formation of strong and lasting relationships with e-consumers.

Given the undeniable importance of the research problem and the lack of empirical studies on the relationships of predictor variables (security, privacy, non-deception, reliability and satisfaction) in predicting the variance of consumer satisfaction criteria in the web environment and repurchase intention based on consumer satisfaction in the web environment in the cadet football population, the aim of this cross-sectional study was to check the relative influence of the aforementioned predictor variables psychological constructs (consumer satisfaction in the web environment and their repurchase intention). Based on the theoretical assumptions and the presented results of previous studies and the aim of the research, two *alternative hypotheses* were tested: A positive and significant co-dependence between reliability and consumer satisfaction in the web environment is assumed (H_1). A positive and statistically significant mutual influence between consumer satisfaction in the web environment and repurchase intention is expected (H_2).

The findings obtained in this empirical study can be the basis for various intervention programs aimed at identifying the influence of independent variables (security, privacy, non-deception, reliability) in predicting the dependent variable of website satisfaction, as well as the contribution of consumer satisfaction in the web environment (as a predictor) to the criterion variable of repurchase intention.

Methods

Participants and procedure

A cross-sectional study was conducted on a pertinent sample of 260 cadet football players from five clubs of the Kolubara-Mačva League: FK "Budućnost-Krušik 2014" (Valjevo), FK "Radnički" (Valjevo), FK "Jedinstvo" (Ub), FK "Železničar" (Lajkovac) and FK "Mačva" (Šabac) 17.12 (± 1.05). All participants had at least two years of systematic and organized training at least three times a week. The testing was carried out in November 2025. Before the start of the anonymous group survey, members of the youth sports teams were given brief information about the purpose of the research, research aim, and the procedure for collecting and storing data. Before the start of the research, with the approval of their parents and club management, the participants signed a consent form for voluntary participation. They were also informed that they could quit the survey at any time and whenever they wished and not answer any questions if they did not wish to do so for any reason. The average time required for the testing was approximately 30 minutes.

Measurement instruments

The Consumers' perceptions of online ethics and its effects on satisfaction and loyalty scale

The online measurement instrument (Limbu et al., 2011) is presented on a five-point Likert-type scale, with 19 items arranged in six subscales ranging from 1 = *I strongly disagree* to 5 = *I strongly agree*), where for each item, participants selected the value that corresponds to their level of agreement. Examples of items of participants' attitudes on websites: *security subscale* – "The security policies of the websites I visit are clear" (1), "The websites I visit clearly display online transactions before making a purchase" (2), "The websites I visit offer secure payment methods" (3), "The websites I visit have suitable security features" (4); *privacy subscale* – "The websites I visit clearly explain how consumer data is used" (1), "When making a transaction on the websites, I only had to provide personal data" (2); "Information about displayed on the websites I visit"; *non-deception subscale* – "The websites I visit do not exaggerate the advantages and features of their offer" (1), "The websites I visit do not exploit the in order to induce them to make a purchase" (2), "The websites I visit do not tend to persuade consumers to buy products that are not necessary."; *reliability subscale* – "The prices displayed on the websites I visit represent the actual prices charged" (1), "When making a purchase on the websites, I received what I ordered" (2), "The websites I visit fulfill their promises."; *satisfaction subscale* – "I am happy that I made a purchase via the website" (1), "My choice to purchase via the website was a wise decision" (2), "I am satisfied via the website" (3).

Results

Table 1. Shows the basic descriptive indicators of all examined variables in this research.

Table 1. Descriptive parameters of participants' attitudes on websites

Variables	*M*	*SD*	*Sk*	*Ku*	α
Security	4.03	0.70	0.26	0.92	0.78
Privacy	3.83	0.87	0.85	0.34	0.80
Non-deception	3.22	0.89	0.36	0.81	0.90
Reliability	3.98	0.80	0.74	0.66	0.82
Satisfaction	4.03	0.76	0.43	0.72	0.87
Repurchase intention	4.30	0.78	0.69	0.91	0.93

Legend. *M* = arithmetic mean; *SD* = standard deviation; *Sk* = skewness; *Ku* = kurtosis; Standard error of estimate (*SE*) of indicator *Sk* is 0.11, and of *Ku* is 0.22; α = Cronbach's alpha coefficient

The obtained mean values of ethical dimensions in the descriptive matrix show that participants achieve the maximum score on the variable ($M_{\text{repurchase intention}}$ = 4.30), and the minimum mean value is achieved on the variable ($M_{\text{non-deception}}$ = 3.22). The calculated internal consistency coefficients range from 0.78 to 0.93, which suggests satisfactory reliability of the six subscales used (Muthén et al., 2025).

Testing the normality of the distribution scores revealed that the values of the standardized coefficients of skewness and kurtosis are acceptable because they are within the limits of standard values, in the range of ±2 (Kline, 2023). The obtained coefficients of the symmetry measure indicate good sensitivity of all examined variables, and that there are no extreme values and statistically significant variations in the score distribution from the reference values of the Gaussian probability curve, which is a prerequisite for implementing further parametric procedures in statistical analysis.

In order to define the correlation between the variables of ethical dimensions, a correlation analysis was conducted (Table 2).

Table 2. Pearson correlation coefficient

Variables	1	2	3	4	5
1. Security	–				
2. Privacy	0.80	–			
3. Non-deception	0.39	0.50	–		
4. Reliability	0.60	0.52	0.45	–	
5. Satisfaction	0.51	0.40	0.38	0.70	–

Annotation. The correlation is significant at the 0.01 level.

By inspecting the cells of the correlation matrix, it is observed that the values of statistically significant linear correlation coefficients of the measured variables range between low and moderate intensity, ranging from 0.38 to 0.80. The obtained mutual dependence is low to moderately high. The maximum statistically significant positive bivariate positive correlation was obtained between**,** while the minimum significant positive association was obtained between the variables (Non-deception and Customer Satisfaction in the Web Environment).

In order to determine predictor/independent variables of ethical dimensions: security, privacy, non-deception and reliability to participants' satisfaction with websites, a multiple regression analysis was conducted (Table 3).

Table 3. For predicting consumer satisfaction in the web environment

Variables	*β*	*SE*
Security	0.19*	0.05
Privacy	-0.13*	0.03
Non-deception	0.38**	0.08
Reliability	0.60**	0.02
R = 0.70		
R^2 = 0.52		

Legend. β = standard partial beta regression coefficient (ponder); *SE* = standard error of estimate *β*; *R* = coefficient of multiple correlation; R^2 = coefficient of multiple determination; *$p \leq 0.05$, **$p \leq 0.01$.

Inspection of the cells of the regression matrix shows that the four analyzed ethical dimensions (security, privacy, satisfaction, and reliability) explained or predicted a total of 62% of the variance of the criterion of consumer satisfaction in the web environment. Maximum contribution to the dependent variable is made by the predictor reliability (β = 0.60; $p \leq 0.01$), and the minimum by the predictor privacy (β = 0.13; $p \leq 0.05$).

In Table 4, a multiple regression analysis was conducted to determine the contribution of the satisfaction construct to repurchase intention.

Table 4. Multiple linear regression model in predicting repurchase intentions

Variables	*β*	*SE*
Constant	4.96	0.03
Satisfaction	0.68	0.05
R =0.80		
R^2 = 0.59		

Legend. β = standard partial beta regression coefficient (ponder); *SE* = standard error of estimate *β*; *R* = coefficient of multiple correlation; R^2 = coefficient of multiple determination; *$p \leq 0.05$, **$p \leq 0.01$.

The obtained coefficient of determination suggests that 59% of the variance of repurchase intention is due to the influence of the independent variable of satisfaction with the web environment. This shows that more than ½ of the variability in repurchase intention can be predicted (explained) by the variable of environment.

The regression findings obtained in this paper confirmed both tested alternative hypotheses: H_1 – Positive and significant interdependence of reliability and consumer satisfaction in the web environment. H_2 – Mutual influence of consumer satisfaction in the web environment and repurchase intentions.

Discussion and conclusion

The increased for online shopping, along with ethical issues, has raised consumer concerns in the digital environment, especially in recent years (Panwar et al., 2025). This can limit the growth of online sales and deter consumers from purchasing products and services. Therefore, it is important for marketers and online retailers to identify how consumers perceive and evaluate the ethical dimensions of the websites they visit for shopping of fierce and increasing competition and growing consumer expectations (Barari, 2023). The consumers will shop through websites and trust them even though they believe that their personal and financial data is being used in a safe manner, and that the websites have secure payment methods, do not deceive consumers, and do not use manipulative methods to induce purchases (Dašić et al., 2024; Xi et al., 2022). In this paper, 19 items, grouped into six sets of variables, were used to examine participants' attitudes regarding the sellers. When examining participants' attitudes about security in online shopping, it was found that participants' attitudes were positive, which is consistent with the findings of the study (van Deventer & Saraiva, 2025).

From a theoretical perspective, the conducted research contributes to a more complete identification. This is relevant to the quality of their relationships and business success, repurchase intention, and overall consumer satisfaction with online shopping. Despite the fact that a large number of studies have been published in the last 20 years regarding consumers' perceptions of the ethics of marketing activities sellers, this study is a groundbreaking study on a Serbian sample that examines sellers among consumers in the Republic of Serbia. Managerial perspective, the study provides marketing experts and online retailers with a system of practical solutions that help form quality and long-lasting relationships with consumers, as such relationships are essential for the competitiveness of sellers. Online retailers should primarily guarantee the security and privacy of their consumers, as the aforementioned standards have emerged motives for online transactions and repurchase intentions. This shop online if they trust that they will be granted the privacy and security of their information. It is also necessary for online retailers to prevent intrusion into the privacy of their customers and to clearly state their privacy policies on shopping websites. In general, the independent variables reliability and non-deception are correlated with the exact presentation on websites, as well as the timely delivery of ordered products.

Finally, based on the correlations found in the work, a significant number of participants use the Internet every day for shopping, and when selecting websites for shopping, personal data, as well as trust in online sellers, are particularly relevant to them. At that time, the aforementioned predictors have a significant contribution to the perceived ethics of consumers, their satisfaction and intention to purchase again. According to the aforementioned findings, suggestions for improving ethics in the online environment arise. First of all, online sellers should continue to implement a positive policy of security features and take care of the protection of individual consumer data. Online sellers need to explain to consumers more precisely the method and purpose of using their personal data and not use manipulative practices to persuade consumers to purchase unnecessary products.

The findings obtained with cadet-age study confirmed two of the five alternative hypotheses tested. More precisely, the ethical dimension of reliability is positively and statistically significantly correlated with consumer satisfaction in the web environment, and consumer satisfaction in the web environment positively and significantly interacted with repurchase intention. The correlation results show that the ethical dimensions of 17-year-old football players (security, privacy and non-deception) are not statistically significant, i.e. are not positively and significantly correlated with consumer satisfaction in the web environment.

Despite the fact that the empirical study provided valid insights, it had methodological limitations related to the short time period of the survey, the characteristics of the sample, and the approach to the research variables. Therefore, future research should be conducted on a larger number of participants of different cultures, genders, and ages. Another methodological limitation is the approach to the variables, and it is necessary for future operationalized research to include variables from different perspectives and dimensions, as this can achieve efficiency, effectiveness, and reliability of the data, or provide a more complete insight.

Conflict of interests:
The authors declare no conflict of interest.

Author Contributions
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CONSUMER BEHAVIOR AND FACTORS INFUENCING THE CHOICE OF SPORTS EQUIPMENT IN SERBIA

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Abstract: Sports equipment plays an important role in the daily life of modern society. This paper analyzes the factors that influence the purchase and choice of sports equipment among consumers in Serbia. Through the conducted research, the demographic characteristics of consumers, purchasing preferences, the most important criteria when choosing equipment, as well as the perception of brands and materials were covered. The results show that the key factor when buying is quality, while design and fashion play a secondary role. Also, the need for better education of consumers about the types of materials and their characteristics, as well as adapting the offer to the elderly population, was highlighted. The research was conducted on a sample of 102 respondents, which obtained relevant data on consumer preferences and purchase factors. This study can serve as a basis for making strategies in the field of marketing and product development in the sports equipment industry in Serbia.

Keywords: sports equipment, consumers, choice, materials, brands, marketing

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Introduction

In the contemporary era, consumer expectations are continuously rising. Beyond seeking products with excellent functionality, visual appeal has become equally important. Fashion trends are in constant flux and evolution, spanning various segments from clothing and footwear to mobile phone cases. Sports equipment is no exception - products from head to toe are now available in diverse designs and types to meet the demands of the market (Nizar Ganim et al., 2021). For some individuals, fashion represents a way of life and an integral part of their daily routine. It encompasses a wide range of elements, including garments, jackets, trousers, footwear, and socks, and its influence has extended into the sports equipment industry. One of the most important decisions an athlete makes is the choice of sports gear that best suits their needs. With the growing popularity of sports equipment, the market now offers a wide variety of brands that aim to enhance athletic performance. In Indonesia, as well as globally, numerous companies provide sports footwear, offering athletes a broad selection when choosing a suitable brand. The increasing number of sports equipment manufacturers has led to intensified competition within the industry. This competition is exceptionally fierce, as each company strives to deliver high-quality products. According to the cybersecurity analysis agency The Top Tens, some of the world's most renowned sports brands - such as Adidas, Nike, Puma, and Reebok - are engaged in a vigorous race within the industry. Product quality is a critical factor for athletes and may serve as a strategic advantage over competitors. Companies seek to offer greater value through their products compared to rival brands, focusing on innovation and quality improvement to gain a competitive edge (Herlambang & Komara, 2021). Until the late 1980s, the concept of branding was not regarded as a fundamental element in marketing literature. Only in recent decades has it emerged as a key area of academic inquiry (Aaker, 1991; de Lencastre & Côrte-Real, 2010). In today's global economy, marked by dynamic market fluctuations and increasingly intense competition, the role of brands has never been more significant. Brand management has become a central area of research, as it not only enhances recognition but also strengthens consumer loyalty and increases corporate visibility. A brand represents a valuable asset, enabling products to stand out and differentiate themselves from competitors. Contemporary global markets create new business opportunities and stimulate innovation, encouraging companies to shift their focus from domestic to international markets. The process of internationalization - frequently the subject of scholarly inquiry - often entails exploring new markets and developing new brands in order to ensure successful positioning. Although internationalization incurs certain costs, it significantly contributes to overall corporate value. Globalization has introduced profound changes to the operational strategies of traditional corporations, compelling them to restructure in order to compete as global players. To succeed in markets such as Brazil, Russia, China, or India, companies must devise optimal market entry strategies that allow for expansion and enhancement of competitive positioning (Morales, 2016). In the current economic climate, characterized by volatile market dynamics and intensifying rivalry, branding has become indispensable. Effective brand management facilitates product recognition, fosters customer loyalty, and increases brand visibility. A brand serves as a strategic resource, enabling companies to distinguish their products in saturated markets. The brand image of a product is the aggregate perception formed through information and past consumer experiences. This image plays a critical role in shaping beliefs and preferences, particularly among athletes selecting performance-related products. Indeed, brand image is a decisive factor in influencing purchasing decisions. Another key element in boosting sales performance is the implementation of effective promotional strategies. Companies that engage in high levels of promotion gain the opportunity to improve their sales trajectory. However, even a high-quality product or service may struggle in the market if only a few consumers are aware of it. In such cases, consumer skepticism may prevail, resulting in limited or nonexistent sales (Kurniawan, 2018).

Literature Review

Globalization has created new challenges and opportunities for international marketers, resulting in a significant increase in the availability of foreign product options (Diamantopoulos et al., 2025). The global transition to a knowledge-driven economy is forcing various industries to undergo structural adjustments, and the sports industry, as a strategic area that integrates economic vitality, technological innovation, and social well-being, has attracted much attention in terms of its upgrading path (Kang, 2025). According to Vidoni (2020), many marketing experts have examined the impact of celebrity endorsements on consumer behavior. Their findings generally indicate that consumers are more likely to pay attention to and develop a favorable attitude toward a brand if they perceive the celebrity endorser as credible. This is based on the assumption that individuals are more inclined to accept information when it originates from a trustworthy source. In today’s business environment, increasing competition and the emergence of new rivals across various sectors have provided consumers with a wider array of choices when it comes to purchasing products and goods (Firdaus & Budiman, 2021). The reason for this is the global popularity of sports and the possibility of reaching new markets (Ratković, 2023). This heightened market competition has led to an expanded range of alternatives, which may affect customer loyalty toward specific brands and gradually reduce their customer base. As a result, analyzing consumer behavior in the context of brand switching or brand loyalty retention is of critical importance. Consumer behavior encompasses the psychological processes through which clients identify their needs, explore ways to satisfy them, and make appropriate purchasing decisions (Firdaus & Budiman, 2021). Therefore, the decision-making process involves selecting the most desirable product among several available options (Mourina & Mulyadi, 2020). Consumer choices are driven by a range of motives and impulses, with buyers seeking to fulfill both their needs and desires (Senggetang et al., 2019). Brands represent visions and beliefs embedded in consumers' minds, reflecting associations that remain in their memory. On the other hand, according to Wijayanto and Iriani (2013), brand image refers to the perception and belief that consumers form based on a set of associations linked to a given brand. A brand is defined as "a distinctive name and/or symbol (such as a logo, trademark, or package design) intended to identify the goods or services of one seller or group of sellers and to differentiate them from those of competitors" (Ghodeswar, 2008). According to Weilbacher (1995), the brand provides a foundation upon which consumers can identify with and relate to a product, service, or group of products and services. Brands act as a guide for purchasing behavior, and when managed effectively, they often generate significant value for their owners (Anholt, 2005). Brands are "not just signs. Brands are not merely elements that position products and companies. For many years, brands have been seen as a connection between products/companies and their customers" (Brito, 2010, p. 49). Brand identity is grounded in a deep understanding of the company's customers, competitors, and business environment (macro, specific, and micro environment). It should reflect the company's strategic direction and its commitment to investing in programs that enable the brand to fulfill its promise to customers. To be effective, brand identity must resonate with consumers, differentiate the brand from competitors, and represent what the organization can reliably offer both now and in the future (Ghodeswar, 2008; Sousa & Vieira, 2018). So, for instance, brand ambassadors are consumers who are recruited by a firm and considered an authentic representation of the brand's target segment (Hassler et al., 2024). It is interesting that lss is becoming habitual for an increasing number of consumers who value seeing novel products through LS, and even consulting about product details in live interactions, finding convenience, information, and price value (Wang et al., 2025). Therefore, strong brands do not only lead to the creation of awareness, but they actually expose to the public court the spirit of the corporation and the promise offered by a brand (Dašić & Jeličić, 2016).

Research Methodology

The subject of this research is the analysis of consumer behavior when selecting and purchasing sports equipment in Serbia, as well as the identification of factors that influence purchasing decisions.

Hypotheses

1. When purchasing sports equipment, consumers in Serbia prioritize product quality, while price and brand are secondary factors.
2. The older population in Serbia purchases sports equipment less frequently than younger generations, indicating the need for specialized marketing strategies.
3. Consumers who gather information through the internet and recommendations from friends make better decisions regarding sports equipment selection.
4. The majority of consumers in Serbia are not sufficiently educated about the materials used in sports equipment, which affects their perception of product quality.
5. Consumers willing to pay a higher price for sports equipment are more likely to prefer products with longer warranties and additional maintenance services.

Primary Goal

The primary goal of this paper is to identify the key factors influencing consumer decisions when purchasing sports equipment, with particular focus on attitudes toward quality, price, brand, and materials.

Secondary Goals

1. To analyze the demographic characteristics of sports equipment consumers in Serbia.
2. To examine consumer attitudes toward brands and prices of sports equipment.
3. To determine how informed consumers are about material types and their role in the quality of sports equipment.
4. To propose strategies that could increase the interest of the older population in purchasing sports equipment.

RESEARCH RESULTS

Table 1. Sample structure in relation to respondents' gender

Gender	f	%
Male	53	52%
Female	49	48%
Total (∑)	102	100%

The analysis of the gender structure reveals that the sample is balanced, with a slight predominance of male respondents (52%), while females make up 48% of the total number of participants. This distribution enables a comparative analysis of attitudes and responses by gender, and also contributes to the validity and reliability of the results, given that neither gender group is significantly overrepresented or under-represented. The results show that the majority of the sample consists of respondents with completed secondary education (64%), while respondents with higher education or a college degree make up 19%, and those with a university degree account for 18%. This distribution indicates that the sample is predominantly composed of individuals with secondary education, which may influence the interpretation of certain results, especially when analyzing attitudes toward topics that are correlated with the level of formal education (e.g., digital literacy, trust in institutions, awareness of specific issues, etc.). Table 2 presents the distribution of respondents according to their employment status. The sample includes both economically active individuals, as well as students and unemployed persons, which contributes to the diversity of the sample and enables the analysis of potential differences in perceptions and attitudes depending on professional engagement.

Table 2. Sample structure in relation to respondents' gender

Employment Status	F	%
Employed	71	70%
Student	26	25%
Unemployed	5	5%

According to the data presented in the table, the majority of respondents are employed (70%), while students account for a quarter of the sample (25%), and unemployed individuals are the least represented (5%). This structure indicates that the sample is predominantly composed of individuals who are currently active in the labor market, which may influence the research results - particularly when analyzing attitudes toward economic issues, consumer behavior, or time management. The inclusion of students (25%) provides additional insight into the perceptions of the younger population, while, although less numerous, data on unemployed individuals (5%) may also be relevant for identifying the needs and challenges faced by this category of respondents. The distribution of respondents by type of settlement is shown in Table 3. This variable is important as it enables the analysis of differences in attitudes and behaviors of individuals living in different spatial and social environments, namely urban and rural areas.

According to the obtained data, the majority of respondents live in urban areas (67%), while one-third reside in rural areas (33%). This sample structure indicates a higher representation of urban residents, which is a common characteristic of many contemporary surveys, given the greater availability and engagement of urban participants in questionnaire-based research. However, the fact that more than one-third of participants come from rural areas allows for a meaningful comparative analysis between rural and urban populations. This is particularly important when examining factors such as access to information, digital habits, educational resources, consumer behavior, attitudes toward sustainability, health, and public services. Table 3 presents the distribution of respondents according to their monthly income. This variable is of particular importance, as income often has a direct or indirect influence on respondents' attitudes, habits, and opportunities - especially in the context of consumer behavior, access to technology, use of services, and social inclusion.

Table 3. Monthly Income of Respondents

Monthly Income	F	%
Up to 60,000 RSD	11	11%
From 60,001 to 120,000 RSD	27	26%
Over 120,001 RSD	49	48%
Prefer not to say	15	15%

According to the obtained results, the largest proportion of respondents (48%) report a monthly income above 120,000 RSD, while 26% fall within the middle-income range (60,001–120,000 RSD). A lower income (up to 60,000 RSD) was reported by 11% of respondents, and 15% chose not to disclose their income, which is common in surveys involving personal financial information. This distribution indicates that a significant portion of the sample is economically active and financially stable, which may influence the research results, particularly in relation to topics such as: access to modern technologies, educational and cultural habits, consumer preferences and willingness to invest or adopt new services.

Table 4. Types of Sports Equipment Used by Respondents

What type of sports equipment do you use	F	%
Running (running shoes, sweatshirt, running shirt, sunglasses)	46	45%
Football (cleats, jersey, protective gear)	30	29%
Indoor exercise (resistance bands, weights, mats, boxing equipment, etc.)	26	25%

At the same time, the inclusion of individuals with lower incomes and those who preferred not to answer provides a broader picture of socio-economic differences and their influence on behavior and attitudes. Caution is advised when interpreting the data due to the proportion of non-disclosed responses, though this also highlights the sensitivity of income-related topics in survey contexts. Table 4 presents the distribution of respondents according to the type of sports equipment they use, which also reflects their sports activities and physical recreation styles. This variable is important for understanding physical activity habits as well as preferences regarding types of sports and the conditions in which they are practiced.

The results show that running is the most common activity, with 45% of respondents using running equipment. This indicates its accessibility, low cost, and flexibility (the possibility of exercising without the need for specialized infrastructure). Football equipment is used by 29% of respondents, reflecting the popularity of this sport, especially among younger male populations, and confirming its significance as a dominant group activity in the region. Indoor exercise, including equipment such as weights, resistance bands, and mats, is utilized by 25% of respondents, which may indicate the growing popularity of individual and functional training in home or gym settings.

The results show that the largest proportion of respondents (39%) use sports equipment only on special occasions, indicating a low level of regular physical activity among a significant part of the sample. One-third of respondents (33%) use equipment several times a week, which may be a sign of regular exercise and physical engagement. A smaller percentage of respondents use sports equipment once a week (21%), while only 7% exercise daily, suggesting that intensive physical activity is not a dominant habit within the sample. It is also noteworthy that no respondent reported not using sports equipment at all, which implies that at least occasional physical activity exists among all participants in the study.

Table 5 presents respondents' answers to the question of whether and how often they visit sports equipment stores. This variable provides insight into consumer habits and interest in purchasing sports equipment, which can be valuable for market analysis, marketing strategies, and understanding attitudes toward physical activity. According to the presented data, only 17% of respondents regularly visit sports equipment stores, while the majority (55%) do so rarely, and over a quarter (28%) do not visit such stores at all.

These findings indicate a relatively low level of consumer engagement when it comes to purchasing sports equipment. Although most respondents occasionally use sports equipment (see previous analysis), the results suggest that their needs are often met through infrequent or occasional purchases, that the equipment is used for extended periods without frequent replacement, or that there is limited purchasing power for such products. It is also possible that some respondents rely on alternative purchasing channels (online stores, second-hand markets, gifts, etc.), which could be a subject of further research. Table 5 presents the distribution of responses to the question regarding the maximum price respondents are willing to pay for sports equipment. This variable provides insight into price sensitivity and purchasing power, which is important for market segmentation and product pricing strategies in the sports industry.

Table 5. Frequency of Visiting Sports Equipment Stores

Do you visit sports equimpment stores?	f	%
Yes, regularly	17	17%
Rarely	56	55%
No	29	28%

The obtained data show that the most acceptable price ranges for sports equipment are up to 5,000 and up to 20,000 RSD. For 45% of respondents, spending up to 5,000 RSD is acceptable, while 44% are willing to pay up to 20,000 RSD. A significantly smaller proportion of respondents are prepared to spend more than 20,000 RSD (8%), and only 3% would pay up to 10,000 RSD. This reflects clearly polarized preferences: most respondents gravitate toward either the lowest or moderately affordable price category. This distribution indicates that the majority of consumers are price-sensitive, and their spending is generally confined to lower and mid-range categories. This may result from the overall economic context, the low to moderate income levels of the respondents, or the perception of sports equipment as a secondary (non-priority) expense within the personal budget. The small percentage of respondents willing to spend more than 20,000 RSD may suggest the presence of a limited premium segment, which could be a target group for high-end branded or specialized products. The results suggest that manufacturers and retailers of sports equipment should tailor their offerings primarily to the lower and middle price ranges, with clearly defined value propositions and benefits for consumers with limited budgets.

29% of respondents stated that a well-designed feature motivates them to use sports equipment more frequently and that they are willing to pay more for it. This highlights a significant segment of consumers who value the aesthetic and functional aspects of a product, indicating that design can serve as a motivator for increased usage and brand loyalty. On the other hand, 24% of respondents believe that manufacturers who overly emphasize design are not necessarily offering high-quality products. This group views design as something that can detract from the core attributes - product quality and functionality. For them, too much focus on design may be seen as a way to mask shortcomings in performance or durability. The largest group, comprising 47% of respondents, stated that design is not important to them and that the quality of the sports equipment is what matters most. This suggests a pragmatic approach to purchasing, where functionality and reliability are prioritized over visual appeal.

The survey also examined respondents' attitudes toward protective warranties and maintenance services offered by sports equipment manufacturers. A total of 102 individuals were surveyed, and the results reveal significant differences in how these additional services are perceived and valued.

- The largest percentage of respondents, 42% (43 individuals), stated that they appreciate having "extra peace of mind" when purchasing sports equipment, knowing it is covered by a warranty. This response indicates a high level of trust in the security mechanisms warranties provide and a desire to protect consumer rights.

- Another group, 21% of respondents (21 individuals), emphasized the importance of maintenance services, believing they can extend the lifespan of the equipment and ensure it remains in good condition. This percentage reflects awareness of the role proper maintenance plays in equipment durability.

- However, a significant portion of respondents, 37% (38 individuals), reported that they do not pay attention to warranties or services offered by manufacturers. This may suggest a lack of awareness or a perception that such services are not worth the additional cost or effort.

The analysis shows that most users value protective warranties and maintenance services - either for the sense of security they offer or for their practical benefits - while a notable segment remains indifferent to these features. Sports equipment manufacturers could benefit from further educating consumers about the importance and value of these services, potentially increasing perceived value and encouraging brand loyalty.

The results regarding respondents' attitudes toward the importance of design in choosing sports equipment are nearly evenly split, indicating varying consumer perceptions and priorities.

- *36% of respondents (37 individuals)* stated that design somewhat influences their choice of sports equipment. This suggests that for a significant portion of users, design is not a decisive factor, but it still plays a role that can contribute to the purchasing decision.

- *27% of respondents (28 individuals)* believe that design directly influences their choice, indicating that for more than a quarter of consumers, aesthetics and the visual appeal of sports equipment are important criteria when making purchasing decisions.

- *Conversely, an equally large percentage - 36% (37 individuals)* - reported that design does not influence their choice at all. This group likely prioritizes functionality, technical specifications, durability, or price over aesthetics.

These findings show that while design plays a notable role for a significant segment of consumers, there is an equally substantial group for whom design is not a deciding factor. This highlights the need for manufacturers to strike a balance between aesthetic appeal and functional performance in order to meet the diverse needs and expectations of their customer base.

The analysis shows that the most important factors in choosing sports equipment are product quality and personal experience with that quality. This is confirmed by the fact that 51% of respondents identified their own experience with quality as the decisive criterion, while 49% cited a combination of quality, price, and brand. Interestingly, not a single respondent selected price or brand alone as the primary factor, indicating that consumers do not perceive price or brand as sufficient on their own. Instead, they value functionality and prior experience with the product's performance. These findings suggest that sports equipment manufacturers and retailers should focus their market positioning and messaging on proven quality and long-term user satisfaction. Emphasizing brand or price alone - without a strong association with quality - is unlikely to significantly influence purchasing decisions.

The most important factor influencing the choice of sports equipment is product quality, cited by as many as 48% of respondents. This finding confirms previous results, where experience with product quality dominated as the key selection criterion. User reviews and opinions also play a significant role - 33% of respondents consult others' experiences before making a decision, indicating the growing importance of digital marketing and user ratings on sports equipment platforms. A smaller number of respondents (13%) value the ease of transport, which can be linked to the needs of users who train in different environments (e.g., recreational users who exercise outside the home, travel, or use equipment outdoors). The smallest share (6%) emphasized functionality and adaptability, which may suggest that these characteristics are taken for granted or are often subsumed under the general concept of quality. These results clearly indicate that quality is the key determinant of consumer behavior in the sports equipment segment. At the same time, a significant number of users rely on social proof—namely, the experiences and recommendations of others - highlighting the need for transparent and easily accessible reviews. Therefore, manufacturers should invest not only in maintaining product quality and customer support but also in encouraging users to leave reviews. Given the lower representation of factors such as ease of transport and functionality, it is possible that users perceive these as part of the broader concept of quality or do not consider them as primary compared to durability, reliability, and brand reputation. The research results also showed that respondents most frequently obtain information about sports equipment through friends' recommendations and the Internet, clearly pointing to the importance of interpersonal communication and digital channels in the purchase decision-making process. Specifically, over half of the respondents (53.5%) stated that they most often receive new information about sports equipment through friends' recommendations, confirming the importance of personal trust and close contacts' experiences in shaping consumer behavior.

The second most common source of information is the Internet (45.5%), with an emphasis on social media and video platforms such as YouTube and Instagram. This finding shows that modern consumers increasingly rely on digital sources to learn about product features, quality, and others' experiences. Television advertising still retains some reach (22.8%) but is far less influential compared to recommendations and the Internet. Other forms of advertising, such as promotional materials and print ads, account for 12.9% of responses, while billboards are a marginal source of information, with only 1%. These results clearly suggest that sports equipment manufacturers and retailers should adapt their promotional strategies to modern communication trends, emphasizing digital marketing and the creation of positive user experiences that customers are likely to share within their networks. When asked, "Is it important to you that your sports equipment is modern and fashionable?", 100 respondents provided answers. The results show that the majority (75%) do not consider fashion and modern appearance to be a decisive factor when choosing sports equipment, while only 25% stated that it is always important to them. This result suggests that aesthetic criteria, although present for some users, are not of primary importance for most. As shown in previous analyses, consumers primarily value quality, functionality, and user recommendations, while fashion aspects are secondary and more personal.

However, the fact that one-quarter of respondents place importance on modern and fashionable appearance indicates the existence of a niche segment for whom product aesthetics matter - this may be relevant for brands targeting younger populations, urban recreational users, or consumers who wear sports equipment outside of training. Overall, for the majority of users, the choice of sports equipment is based on practical and functional values, with fashion criteria holding secondary importance. Still, for certain market segments - particularly those influenced by social media and trends within the “athleisure” culture (blending sportswear with everyday clothing - esign and style may represent key factors for differentiation in the market.

Discusion of Results

The results of the conducted research clearly indicate that product quality and personal experience are the dominant factors when choosing sports equipment. These findings support the initial hypothesis that consumers in Serbia prioritize functionality and durability, while price and brand are considered secondary, complementary factors in the decision-making process.

It is noteworthy that fashion design and aesthetic aspects of sports equipment are not crucial for the majority of respondents, suggesting a pragmatic approach to purchasing. However, the existence of a consumer segment that values aesthetics points to a potential target group for lifestyle-oriented sports brands, especially in urban areas.

Although the internet and social media are becoming increasingly important sources of information, the study reveals that interpersonal influences, such as recommendations from friends, still play a decisive role in shaping opinions about brands and products. This highlights the importance of building customer loyalty and satisfaction in order to generate word-of-mouth promotion.

One of the more significant findings concerns the insufficient consumer awareness about materials, their characteristics, and their contribution to product quality. This opens the door for educational and promotional campaigns aimed at strengthening brand trust.

Additionally, the research reveals a noticeable generational gap, with older populations being significantly less active when it comes to purchasing sports equipment. This indicates the need to redefine marketing strategies by including older users through the promotion of healthy lifestyles, physical activity, and accessible products tailored to their specific needs.

Recommendations for Future Research

1. A qualitative analysis of consumer motivations (e.g., focus groups, interviews) to gain deeper insight into the reasons behind brand preferences and attitudes toward quality and design.
2. A comparative analysis of urban and rural environments in order to identify regional differences in consumer behavior.
3. An investigation into the impact of promotional campaigns (online vs. offline) on brand perception and purchasing behavior.
4. Development of age-based market segmentation, with particular focus on older consumers and their specific needs.
5. An evaluation of the effectiveness of educational campaigns in increasing awareness about materials and the durability of sports equipment.

Methodological Limitations

The main methodological limitation concerns the size and composition of the sample, which, although diverse, is not representative of the overall population of Serbia. The sample predominantly consists of individuals from urban areas, with secondary education and higher income levels, which may limit the generalizability of the findings.

Secondly, the study relied solely on quantitative methods through questionnaires, without incorporating qualitative insights (e.g., in-depth interviews) that could provide a more comprehensive understanding of respondents' attitudes and motivations.

Thirdly, the perception of product quality and design is a subjective category, which may lead to varying interpretations and evaluations depending on individual preferences, past experiences, and environmental influences.

Conclusion

The study of consumer behavior in the Serbian sports equipment market reveals several clear patterns. First, product quality represents the key criterion in purchasing decisions, while factors such as price and brand hold secondary importance. This aligns with previous research findings indicating that sports consumers pay greater attention to durability and functionality than to the marketing image of a brand. Furthermore, older generations in Serbia purchase sports equipment significantly less frequently than younger ones. This finding suggests the need for differentiated marketing approaches aimed at motivating the elderly population to engage more actively in physical activity and consumption within this sector. The third hypothesis concerns the role of the internet and peer recommendations in the decision-making process. Results show that consumers who search for information online and consult other users make more informed decisions, though these factors are not the only determinants. The influence of digital channels exists but depends largely on trust in the source and personal experience.

Insufficient consumer education about materials and technologies used in sports equipment production also plays an important role in shaping their perception of product quality. Consumers unfamiliar with the technical characteristics of products often rely on brand reputation or price as indirect indicators of value. Finally, the study confirms that consumers willing to spend more money on sports equipment show a greater tendency to purchase products offering extended warranties and additional maintenance services. This highlights the growing importance of post-purchase support as a factor of customer loyalty and satisfaction. Overall, the findings indicate that the Serbian sports equipment market is reaching a stage of maturity, where rational purchasing criteria - quality, information, and service - are increasingly prevailing over emotional and status-related factors.

Author Contributions

The authors declare no conflict of interest.

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PRESS CONFERENCE AS A TECHNIQUE FOR BUILDING OF MEDIA RELATIONS IN SPORTS AND AN INCREASE OF CONTENT ABOUT MEGA-SPORT EVENTS

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Abstract: Historically, journalists relied on news conferences for timely information, but recently they have become less important to media. They have adapted to the challenges of declining revenue and misinformation by using diversified strategies to gather and disseminate news. Some scholars, under such circumstances, assume media conferences will have little impact on news coverage. The key research issue in this study is whether coaches and athletes influence news coverage through their press conferences. In order to resolve this issue, we use quantitative and qualitative content analysis to assess the propensity of news in printed media to incorporate the sportsmen's rhetoric into stories that cover the sportsmen's press conferences. We find that news reports on the media conference rely heavily on the sportsmen's words, indicating that it is an important event for sports managers' influence of the printed media, and, consequently, mainstream electronic media, and, perhaps, the general public. The obtained results confirm the notion that media conferences remain a useful form and function, such as an organization agency responding to a crisis situation, when is very important to hear information directly from an expert's voice such as a coach of national football.

Keywords: press conferences, content analysis, Serbian football association, coach, printed media

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Introduction

The most common definitions of public relations relate to its managerial function. According to Coombs and Holladay, public relations is “the management of mutually influential relationships within a web of stakeholder and organizational relationships” (Coombs, 2007). Earlier, Grunig and Hunt offered still influential definition: “Public relations is the management of communication between and organization and its publics” (Grunig, Hunt 1984).

There is a crucial difference between public relations and media relations. Public relations provide “a three-step process” which includes the following consequtive steps: (1) organizations listen to and support the public’s expectations for reasonable behavior; (2) the behavior of those organizations matches these expectations; and, at the end, (3) they are publicly recognized as trustworthy. The media relations, on the other hand, are a specific sub-branch of public relations dealing with the third stage of the process - recognition. So, the key task of the specialist in relations with the contemporary mass-media, is not to get attention, but “to gain the trust of the public” (Rus et al., 2022). Media relations (MR) are essential to public relations and “have long been considered a key facet of public relations” (Verhoeven, 2016). Indeed, MR is a basic strategy in public relations, with the main goal to influence the content of media coverage. In fact, the media practitioner acts as a sort of “pre-reporter” for the journalist, giving them all the information that they need (Supa, 200).

Sports have long used the function of public relations to promote the big game and highlight key players. Tournaments and mega-sport events, brand sponsors and their media partners rely on athletes ‘playing ball’ and “participating in their media commitments” (Cox et al., 2025). The most important sporting events or competitions, like any special event, can be the reason behind a serious communication activity, prepared and analysed through public relations (Perić et al., 2019). Success and/or failure are not only measured on the sports arena, but also in the newspaper headlines, on the television and the computer screens and, of course, in the bank accounts. The motto once proposed by Baron Pierre de Coubertin - “Citius, Altius, Fortius” (faster, higher, stronger) - is turning slowly into a new, more appropriate motto, as some authors see this: “Faster, higher, stronger, bigger (business) and especially - more PR” (Tamir et al., 2015).

Sport can be considered as a huge global industry, with large numbers of fans and spectators who act as consumers, having various demands. The sports market is experiencing significant growth; for instance, this market is projected to generate a total revenue of USD 2.65 billion in 2025 worldwide (Mihić, 2024). Vlajković, for example, notices that one of the primary responsibilities of sports public relations is managing the reputation and image of athletes, teams, and organizations. He also claims: “PR professionals work closely with their clients to develop personalized strategies to enhance their public image. This may involve coordinating interviews, press conferences, and media appearances to provide positive exposure and create a favorable perception among fans and sponsors” (Vlajković, 2023). Press confrences allow gathering of many journalists at one place. Olairu and Nichifor contend that press conference is useful “when a press release cannot cover all issues or when it is necessary to counter the possibility of negative impressions being formed”, and, they notice that it also “announces that the story is felt to be important, and this may lead to broader, more thoughtful coverage” (Olariu & Nichifor, 2015).

Sports and news media have a long, historical connection so intertwined that some scholars have combined the terms into one, “mediasport”, which implies that media and sport share a “symbiotic relationship”, each needing the other to survive (Kleinmann, 2020). Consequently, there is a symbiotic relationship between journalists and athletes (Li et al., 2022). Public relations, as a distinctive function, according to Kleinmann, is able to diseminate main organizational messages as “news” using media as a credible third party, while pre-match features, in-match interviews, and post-match news conferences offer “key venues to inform fans about an array of sports topics and correct misinformation when necessary” (Kleinmann, 2020).

This paper contains several sections. First, the theoretical framework of the research is presented, which describes and explains the constitutive elements of the press conference, as a special type of speech event. Then, the details of the applied methodological procedure, which includes the use of content analysis of printed media, are briefly stated. In the main part of the paper, the results of the selected press conferences are presented and interpreted. Finally, the authors propose several measures to improve the usefulness of press conferences for the media.

Theoretical framework

Sports public relations usually use four distinctive techniques: (1) press release, (2) photographs, audio and video materials with text or report (news), (3) interviews, and (4) press conferences (Gašović, 2011). There is no precise definition of what constitutes a press conference. One can accept that press conferences denote “a mixture of speeches and meetings, with a bit of interviewing thrown in” (Smith & Butcher, 2007: 68). For coaching teams and athletes, press conferences represent a formal place to discuss particular issues of performance that, in turn, can help build and create a personal and/or sponsorship brand (Boyle, Haynes, 2009). For example, football press conferences are times and spaces par excellence for brands to contact their audiences. “Through the media and with journalistic treatment, brands communicate and express their support for a club or a sports competition, in most cases through the presence of their minimum communication unit: the logo” (Meirinhos et al., 2022). Thus, the economics of the press conference significantly reduces the cost to press organizations and facilitates an efficient use of player and press time (Cox et al., 2025).

Press conferences (sometimes called news conferences) are example of institutional interaction. This type of speech situation characterizes an external goal which predetermines, for instance, participants’ roles, topic selection, turn-taking, and power relations. Also, always exists a special organisation of the space in which the interaction takes place (often with a symbolic significance) and the use of a language for special purposes (Straniero, 2007; Jevtović, 2007). In sports press conferences, unlike other forms of institutional interaction; for example, medical consultations), power asymmetry and social distance are significantly reduced: here, coaches and players (interviewees) are not the only experts with specialised knowledge but also sports journalists (interviewers). Press conferences are most frequently called by sports organizations, clubs or athletes themselves or are routinely held events in which the latter inform the public on their activities. Since press conferences often involve a higher number of participating journalists, one can say about so-called “one-to-many” interaction.

The press conferences held during major football and basketball tournaments and league competitions (for instance, in Europe Championships League in football or Euroleague in basketball) have the function of allowing journalists direct access to coaches and leading players on the eve of matches and just afterwards for comments. In fact, the crucial reason for journalists to attend such speech events is to get last-minute information or comments on games, often in the form of quotations for their game reports. Gathering quotes from a coach at a press conference in order to write an article about forthcoming game would fall under the category of routine channel. In other words, these stories are based mostly on a journalist’s specialism and heavily use of scheduled events, such as press conferences and post-match interviews.

The typical structure of sports press conferences includes several recognizable speech events: (1) an opening with words of welcome; (2) procedural announcements and other house-keeping moments; (3) questions, answers, and comments; and, (4) a closing statement. Certainly, questions and answers are the essential part of the press conferences. At the end, a moderator makes a brief summary of the conference, focusing on the most relevant issues and thanking journalists for participating. If the discussion is going on, and, the issues are interesting for the majority of journalists, the conference may be extended by no more than 15-20 minutes (Olariu. Nichifor, 2015). This structure, depending on the circumstances, may change, so that news conferences can be held in which the moderator will not "make any opening statement, but will answer questions directly about an event or organization" (Rus et al., 2022). In any case, the press conference should be a dialogue between representatives of an institution and journalists. One can accept the notion that press conference represents probably the most open method of promotion since "at the same time provide information and may hear some feed-back journalists as representatives of the public and answer their questions, which often include the topics that deviate from the originally planned for the conference" (Zuber, Božičević, 2015). Although such issues might be outside the agenda, they should not be avoided. The organization should find out answers on provocative questions in order to strengthen its image.

The sports press conferences have narrow range of topics, and, therefore, the limited degree of their lexical variety (Table 1). On the other hand, it allows sports journalists to be easier prepared both mentally and terminologically. According to many findings, the post-match press conferences are most frequently shorter than pre-match press conferences. The average duration of each press conference was around twenty minutes (Sandrelli, 2012). Post-match press conferences, according to Cox et al. (2025)., "require athletes to articulate difficult thoughts about their performance, fitness and personal lives shortly after competition". Since press conferences provide a platform for media to directly quote players and coaches and their communication, this can lead to interpretation, and, possibly, adversarial framing, which may have a negative impact on the athletes' mental health (Faustin et al., 2022).

Table 1. Typical topics on sports press conferences

Pre-match press conferences

- questions about the next match,
- historical precedents between the two teams,
- likely line-up and other tactical arrangements,
- the expectations of the head coach and his opinion on the opponents;
- enquiries are sometimes made on players',
- fitness and concentration.

Post-match press conferences

- assessment of the match that has just been played,
- assessment of refereeing (sometimes),
- assessment of individual players' performances (sometimes),
- questions dealing with the forthcoming match ahead,
- gratitude to the fans.

A comprehensive discussion of speech events identified in the FOOTIE corpus can be found elsewhere, together with an overview of the football-related translation market and of the interpreters' conditions of work during EURO2008 (Sandrelli 2012). This paper has a different focus: it pays attention on some practical aspects of recently conducted press conferences in Serbia in one of the most popular sports games: football.

There are three specific participants in this communicative event: (1) interviewers, to ask questions, (2) interviewees, to answer them, and, (3) moderators whose duties are opening and closing press conferences, explaining procedures and managing turn-taking smoothly. Clearly, there is "a plurality to the press conference: with multiple participants and hierarchies at play" (Cox et al., 2025: 4). Each press conference contains a number of speech events, and, their duration is more important than the duration of the whole conference. Usually, during the press conferences, the vast majority of questions and answers last from a few seconds to a few minutes (Sandrelli, 2012). Sports press conferences are an area in need of more study and critique, especially regarding how sports journalists ask questions to athletes. Pre-event sports press conferences remain largely unexamined by sport sociologists.

Methodological approach

The methodology used in this study included content analysis. This research method is applicable to the cases when is necessary to determine, describe, and classify the characteristics of a message (Neuendorf, 2002; Manić, 2017). Content analysis, despite well-known advantages of quantitative research, has a respected role among qualitative methods due to its several attributes. First of all, qualitative content analysis (QCA) allows for critical reflection by considering the context in which the data were gathered. Second, QCA is very useful when is required to determine the overall tone of newspaper articles on certain themes, identify key actors who express their opinion, and highlight specific topics emphasized in the analyzed textual units.

Due to the research objectives of this study, media content after sports news conferences that have been recently organized, published in printed media was analyzed. This included newspaper articles of an informative (news reports, inteviews) and analytical (commentaries, articles, etc) nature. Two distinguished days were selected - October 7, 2025, and October 11, 2025 - since these days followed the press conferences that Dragan Stojković, the Serbia's national football team coach hold six days and one day, respecivelly, before the most important match to Albania within the Group K of the World Cup qualifiers (2026). The two chosen conferences were important since this was the space where the coach met with the media, and it was through these 'meetings' that his communication and response to the media's questions became directly available to the public.

Almost all Serbian daily newspapers were analyzed: Politika, Danas, Sportski žurnal, Večernje novosti, Blic, Kurir, Informer, Nova, and Alo. The first two daily newspapers have the characteristics of high-quality, influential and reputable press with greater social influence. Sportski žurnal is the only specialized sports daily newspaper in Serbia. The rest of chosen printed media were tabloids. The subject of the analysis also included the cover page content of these newspapers, as it could serve as an indicator of the importance editors attribute to topics related to football and crucial sports event such as a decisive football match as a part of the World Cup qualifiers (2026). Therefore, the selected period of sampling coincides with a series of press conferences, related to various aspects of the Serbia's match against Albania on October 11, 2025.

Results and discusion

The former midfielder football player Dragan Stojković, nicknamed Piksi, took over as Serbia coach in 2021. As a player he made 84 appearances for the former Yugoslavia between 1983 and 2001, and was one of the first top-tier European players to venture into Japanese football. Stojković was with J-League side Nagoya Grampus Eight between 1994 and 2001. After retiring as a player, Stojković was briefly chairman of Red Star Belgrade, before turning to coaching first Nagoya, and later Chinese side Guangzhou.

Stojković landed the Serbia job in 2021 and had taken charge of 55 games. He had led the team to the 2022 World Cup in Qatar and the Euros in 2024. Overall, he has spent four years, six months and eight days as a coach of the Serbain national football team. The game to Albania (on October 11, 2025) was relocated from Serbia's capital to the southern city of Leskovac because of security fears, with the two countries having a long history of political tensions.

The Serbia-Albania match was part of Group K of the World Cup qualifiers to be in the United States, Mexico and Canada (2026). The defeat to the Albanians would have been extra painful due to the rivalry between the two nations. Their dislike is rooted in history and politics, especially over Kosovo which declared its indepen-dence in 2008. Albania supported Kosovo while Serbia did not recognise it which has kept tensions high and the conflict often spills into football. This was evidenced when a 2014 clash between the two was abandoned after a drone with an Albanian flag sparked a brawl between the pla-yers. The 11 October 2025 was the nice oppor-tunity for 'revenge'.

Serbia, however, lost 1:0 to Albania - probably the biggest defeat in recent history of national football team.

Press conference held five days before the match

Serbia's football coach, Dragan Stojković, spoke firstly at a news conference on Octo-ber 6, five days ahead of the match against Albania. He expressed great expecta-tions, focusing on aims for more than just qualifying for the World Cup: "We have to think about the objectives, and the current one is qualification. Whether I will be there or not is of little importance. What is important is that Serbia continues to participate in major competitions. This is very important and this is what I am thin-king about. I do not dream about this, but I am focused on that epilogue at the end."

Stojković said that Serbia's national team learned a lot from the crushing defeat (on September 9, 2025) to England in Belgrade (5:0): "A bad day, a bad match can ha-ppen. We were not at the right level, we were not able to cope with England. That defeat was completely deserved. Of course, we learn from every match. But if you look at the results, Barcelona conceded four goals in Sevilla, Real five from Atletico. A bad day happens. Sevilla is not a better team than Barcelona either, but that's how it is. Every match in the qualifiers is important, that's how we approach it. England is an archive, it's behind us. Now only Albania is important, and then we will talk about Andorra. We are only thinking about solving the match with Albania in our favor. There is no point in going back to the past, you have to look towards the future."

He admited that the match against Albania will be crucial for second place in the group. Albania and Serbia faced each other on June 7. The match in Tirana ended in a 0:0 draw. Stojković openly claimed: "Everything depends on us. The match against Albania is deci-sive. It is a fight for second place and an elimination match in March. I believe that we have the strength, that we have enough quality to achieve this goal." Stojković also hi-ghly praised Albania's national team: "Albania has a great team, it's our big rival. Looking at the table, it's absolutely the advantage above all advantages. You can't play against France, Portugal, Germany every day... You have to play at this level. Regardless of whether it's attractive or not, for me it's the most important match and opponent at the moment."

Stojković has said that Serbia will not make any changes to the game system ("no time for experimentation"), and, highly praised the stadium "Dubočica" in Leskovac, having a capacity of 8.136 seats: "It's not the first time we've played in Leskovac. We've played before. That stadium is not unknown to us, we know everyone there. It's up to us to play well and win the game. We have to play well, that's why we're preparing, to make our fans and our people happy. I know that other aspects will be mentioned, but we have to focus only on sport and football. Just like we were in Tirana, when we started the qualifiers, if you remember."

It is somewhat awkward that on this type of conference that the national coach had the next comment: "I will respond to all the comments given by various analysts and experts. Maybe someone is rooting for Albania this time, I don't believe it, but maybe there are. Which would be crazy. But we are preparing maximally for these two matches." Several of Stojković's players have injury problems ahead of the Albania and Andorra games.

This conference, despite the fact that it was held five days earlier, probably due to the importance of the match itself, had a good response in the print media. This is confirmed by the contents that were published the next day in the analyzed dailies within the sports column, that is, the football column when it comes to the Sportski žurnal (Table 2). Journalists mostly applied the routine way of reporting on such events, conveying almost the entire content of the conference through the quotes of coach Stojković. Journalists most often used 7 to 9 quotes. The article published in the daily newspaper Alo is double-edged since it was completely composed of the quoted statements of selector Stojković. Several newspapers expressed their critical attitude towards the national team of Serbia and coach Stojković because of the heavy defeat against England. Thus, the newspaper Informer pointed out that the match with Albania was an opportunity to make up for the "shameful defeat" by the English on September 9, 2025. Večernje novosti did not share the optimism of coach Stojković, stating that Serbia, "hand on heart," is not a particular favorite at the stadium in Leskovac. In accordance with this, a photo of the selector from the football field was chosen, where he is standing in front of the board where he is working out the possible team settings. The name of the picture - "combination" - indicates that the selector is not the most prepared for this most important match. Similar doubts are present in the text of Politika: "Dragan Stojković tries to be calm despite the constant pressure, which mostly comes from the address where he started in the serious world of football, but, definitely, our football coach is often followed by nightmares." This criticism continued in electronic media also. In the time that followed, the coach's personality (arrogance, for instance) and profe-ssional qualities were also under scrutiny.

Table 2. Coverage of the press conference (on October 6) about decisive match to Albania in the Serbian daily newspapers

Daily	Quates	% of sports coverage	Coach's photographs	Players' photographs	Frontpage
Politika	9	25	1	1 (team)	
Danas	7	50	0	1 (team)	
Sportski žurnal	21	13	2, press	1	+
Večernje novosti	4	20	1	1 (team)	
Blic	9	40	1, press	1	
Kurir	9	25	1	1	+
Informer	6	25	1, press	1 (team)	
Nova	9	30	1	2	
Alo	8	50	1, press	4	+

The most important messages of coach Dragan Stojković Piksi are presented in the analyzed texts in the titles listed in Table 3. The word "barrage" appears most often in the titles (five times), followed by the words Albania (three times: Politika, Blic and Kurir) or Albanians (Informer). Serbia is mentioned in one title - "Serbia will play a barrage" (Alo).

Table 3. Headlines of the texts about the press conference held by Serbia's coach Dragan Stojković Piksi

Daily	Headline
Politika	Victory over Albania opens the door to the barrage
Danas	Stojković: I know the team and how to play
Sportski žurnal	It depends solely on us whether we will play in the barrage
Večernje novosti	Decimated for the decisive match
Blic	Piksi: I don't feel pressure, maybe someone will cheer for Albania
Kurir	Dragan Stojković: We have injured players, but we are going to the barrage for the World Cup via Albania
Informer	Piksi: We have to beat the Albanians
Nova	Piksi is not worried about injuries, promises a barrage before the decisive match
Alo	Serbia will play in the barrage

Press conference held one day before the match

Serbia’s coach Dragan Stojković spoke at a press conference on October 10, a day before the crucial game in Leskovac: “We have a tough match ahead of us. A sporting rival, a very good team. The expectations are that we win. This is one of the most important matches, if not the most important, for the placement. We know the importance and that’s how we are preparing. The important thing is that the players are calm and focused. We are ready to give our maximum and make the whole country happy with the victory.” He also emphasized: “The important thing is that we win and then I will be the hero of the country. Those whistles are not co-rrect, they have a political connotation. I was surprised. We had seven points, we were in the game, it turned out to be meaningless. But okay. The important thing is that tomorrow the people who come support the players towards victory. Albania is a rival in many aspects, but we will remain calm on the field and we will do what is necessary.” He revealed that he had a clear starting lineup, confirming part of it (goalkeeper, offenders).

Stojković spoke in superlatives about the atmosphere in Tirana in the first match (on June 7, 2025). He was attacked by the Serbian media for his statements. He once again said that the atmosphere in “Air Albania” was like the most passionate Argen-tine derby. He said to journalists: “It’s not the same match, there was an Argentine atmosphere, as if Boca and River had played. And it was really good to play, although someone interpreted it in a negative sense. We were calm, there was no tension, we controlled the match. This match is not the same because they are guests, they don’t have support from the stands. We are the hosts and we want to confirm the quality by playing a competitive match. We have to be patient. It will be a match with a lot of intensity, it is impossible for a match like this to be boring.”

He said that Serbia will play an offensive game from the start, and, that Sylvinho (co-ach of Albania’s national team) will not to surprise him: “I think it can’t. They have what they have. Whether they will play 4-5-1 or 4-3-3, it doesn’t matter. The most important thing for me is that they will play with four at the back. The match is live, it can never be predicted. A penalty, a red card and everything you have prepared goes down the drain. We will try to be good in attack and defense and there will be moments like that. We don’t want it to happen to us like against England where out of five goals we concede four from interceptions. We have worked for this. If the Albanians are better than us, we will congratulate them. But I don’t believe in this.”

On this press conference, Aleksandar Mitrović also spoke. Mitrović helped the Serbian national team to win the 2013 European Under-19 Championship, being voted the best player of the tournament. That same year, he played his first game for the senior national team and has since earned 103 caps (before the match against Albania on October 11, 2025) representing Serbia at the 2018 and 2022 FIFA World Cup, as well as UEFA Euro 2024. With 63 goals, he is Serbia's all-time record goalscorer. Taking part in this conference, Mitrović mostly claimed that he would be ready to begin the match, after recovery of a prolonged injury, and, that he, as well as the whole team feels pleasantly in Niš, Leskovac, and smaller stadium in this town. He highlihted the following facts: "I feel good in Leskovac because I score goals here. The whole team feels good in Niš, Leskovac, at the stadium and in the atmosphere here... From the moment we arrive until the moment we leave. We have support until the final whistle."

The media conference, held just one day before the decisive match against Albania, also had a great impact in the print media. This is confirmed by the data obtained from the analysis of published texts in daily newspapers on October 11 (Table 4). Unlike the previous conference, the texts are equipped with a larger number of photos of the players, especially Aleksandar Mitrović (AM), who also participated in the press conference. In the second column, the total number of quotes is given, while the figures in parentheses refer to the number of quotes of coach Dragan Stojković and team captain Aleksandar Mitrović (AM), respectively. Excerpts from this conference were on the front pages of six daily newspapers.

Table 5 lists the titles of the so-called announcements, the deciding match for participation in the world championship in football. The word "barrage" appears most often in the headlines (five times), followed immediately by the words Albania (three times: Blic, Kurir and Informer) and Albanians (Sportski Journal). Journalists found the phrase about the "hero of the nation" interesting, and three daily newspapers included it in their headlines (Blic, Nova and Alo). This is not surprising in terms of specific long-lasting national culture of Serbia. This country is a collectivistic society in which citizens belong to groups - they are, thus, interconnected, loyal and show a high level of conformity. Recently, Mitić and Wattles (2023: 56), in line with this, have noticed: "In the media, national sport representatives and teams are portrayed as an embodiment of national ideals, strength, success, and pride. Top athletes are seen as kings and national heroes. They are the best among us and their sport successes are generalized into all other personal qualities. They have the power to make everyone else winners or losers; they are the guardians of a nation's pride and honor, keepers of tradition". The Serbian national coach's media strategy, therefore, was based on his wish to communicate optimism, enthusiasm, and, create great expectations. In this way, the Serbia's national team would again 'become the team of the people', and, the coach would become 'hero of the nation'. Thus national football team becomes "a metonymy of a nation" (Małczyński, 2021).

Table 4. Coverage of the press conference (on October 11) about decisive match to Albania in the Serbian daily newspapers

Daily	Quates	% of sports coverage	Coach's photographs	Players' photographs	Frontpage
Politika	9 (7+2)	30	0	0	
Danas	3	37	1, press	1	
Sportski žurnal	7 (3+4)	25	1, press	0	+
Večernje novosti	7 (5+2)	18	1	2	+
Blic	7 (6+1)	50	1	1	+
Kurir	6 (6+1)	25	2, press	2	+
Informer	4 (3+1)	20	1	2	+
Nova	8 (7+1)	33	1	2	+
Alo	8 (6+2)	35	1	4	+

Table 5. Headlines of the texts about the press conference held by Serbia's coach Dragan Stojković Piksi and Aleksandar Mitrović (AM)

Daily	Headline
Politika	The most important test on the way to the World Cup
Danas	We want six points
Sportski žurnal	Stojković: Albanians will congratulate us Mitrović: We like to play in Leskovac
Večernje novosti	There will be congratulations after the match
Blic	If we beat Albania I will probably be the hero of the nation
Kurir	For Serbia Piksi: Albania have an exceptional team, but we expect to beat them
Informer	Stojković: We will destroy Albania in Leskovac
Nova	When we win, I will be the hero of the nation, I don't care about the whistles
Alo	Piksi: I will be the nation's hero

Press conference held an hour after the match

Stojković revealed that he had already spoken to the president and general secretary when he entered his post-match press conference. “I spoke with the president and general secretary and I offered my resignation”, Stojković told on a post-match news conference, and repeated previously given expectations: “I personally did not expect this defeat. I am someone who accepts full responsibility and is solely accountable.” For many newspapers abroad it was a big surprise. The Sun, one of well-known British tabloids had the following headline: “SERBIAN boss Dragan Stojkovic sensationally QUIT his job just minutes after defeat to Albania. ”

In regard to the responsibility of the players and himself, and the mistakes made during the match against Albania, Stojković said: “The responsibility is everyone’s. We didn’t score, they did. The first half was decent, we created chances. We didn’t manage to put the ball in. A cold shower before halftime. A lot of offensive players, but no final passes. The guys tried, I’m to blame. What we agreed to do - we did - but it wasn’t enough. I stand in their defense. If someone had told me this would happen, I wouldn’t have believed it. There were beautiful moments, but now we’ve disappointed the nation. I’m ready to accept the consequences, and there will be no excuses.”

When asked about fielding a large number of debutants for Serbia’s decisive match, Stojković replied: “Someone has to make their debut. It’s not an excuse; these guys have quality and a future. That’s my responsibility, no problem. Don’t criticize the players, I’m the one most responsible.” Stojković also refused to travel to the next match of the Serbian national team, on October 14, 2025, in Andorra. According to his words: “It’s a specific moment. I don’t think I should travel to Andorra. It would be irrational for me to go. I told them that. I said I’m not going to Andorra, my assistant will lead the match. That’s life. There’s no need to make a fuss about it.”

The Serbian football federation said in a statement on October 12, 2025, that - Stojković’s resignation was accepted after the loss in Leskovac. Serbia’s Under-21 coach Zoran Mirković took interim charge for Group K match to Andorra (October 14, 2025) ahead of a meeting on October 17, 2025, regarding further changes in the national team set-up. Despite a huge defeat, the Serbian national football association issed the statement: “The Football Association of Serbia would like to take this opportunity to express its gratitude to Dragan Stojković for everything he has done in the past four and a half years at the helm of the national team. Primarily in qualifying for the World and European Championships, as well as winning first place in Division B of the League of Nations and maintaining its status in the elite ranks of European football.”

Even those who thought moving the match to Leskovac was a good idea were thoroughly disillusioned during the 90 painful minutes of a game that was supposed to be the most important of the year. The national team was "taken away" from the majority of its fans - the same fans who a month ago were calling for and predicting Piksi's departure. The B92 portal, for example, noticed: "Had it happened after the debacle against England, perhaps it would have been less painful to remain at the 'Marakana' and, with a new coach, endure the thunder of 40,000 supporters, possibly avoiding one of the most painful - if not the most painful - defeats ever (B92). The whole package - the defeat against Albania, the likely elimination from the World Cup, the coach's departure, the unexpected struggle to save our chargers, and the painfully tense atmosphere - leads to the conclusion that none of us deserved this. Not the players, not the coaches, not the journalists, and especially not the fans."

It has been known for a long time that journalists were mostly unsatisfied with the way how Stojković approached the media. Večernje novosti (on October 14), for instance, stated that Stojković, unfortunately, during the last year betrayed the basic principles of his work. It was obvious in terms of how he "selected the team and created the formation but also in regard to the way how he outside the field communicated with the public." A good illustration of this is his attack after one journalist's question which, according to Serbia's national football team coach, was "stupid." The question, in fact, was: "Whether he had lost control of the team?" It seems that the question deeply affected his self-esteem, rejecting any crticism: "They keep asking such stupid questions. Did anyone see a fight here? It's not right to ask me something like that. Ask the players if they were satisfied with my work. I told them what I thought. I apologize for calling the question stupid. Journalists like to take inventory of my assets as if I were a criminal. This is neither nice nor right."

He followed the conference with the next statements: "I accept the consequences. It's not a tragedy when a national team captain leaves. I will always remain a fan of the Serbian national team, and they can always count on my support," and, then, began to cry about his own state of mind. The victim role, so common behavior in the Balkans, could not be avoided. This illustrates the following claim: "I've been feeling bad for a while now. They're calling me names. People think they have the right to insult me, to say humiliating things. I didn't feel like I deserved it. The atmosphere wasn't good. I held on as long as I could." Overall, these conferences indicate that so-caled 'media hunt', as Andersen et al. call it, can be avoided, to some extent, if coaches know media (2021).

Many players find participation in press conferences exhausting and stressful (Kristiansen, 2011). It can be frustrating, sometimes, for journalists when sportspeople aren't forthcoming with answers. This can be attributed to the fact that journalists are often limited to just one or two questions, causing them to either stick to high-level an generic questions, or to highlight those that will allow them the most interesting (or sensationalist) quotes. On the other hand, sports journalists have a duty to ask meaningful questions that are directly relevant to the sport in question and focus on giving readers insight into the game and match play. Objectively speaking, this is why vast majority of people follow athletes - to better understand the games that they love and follow. Perhaps, some of possible advancements of traditional news conferences could be somewhat changed news conference scenario, leaving a space to, for example, five-minute one-on-one interview. Namely, this form of speech event allows sports journalists to ask more questions, instead of one (or eventually two on traditional conferences), in order to write a more insightful article. Finally, it might be reasonable to organize press conferences within a certain time-frame after a game instead of immediately after it. Coaches and players then have time to emotionally prepare themselves and hopefully be in a better place to give more thoughtful and authentic responses. Journalists, on the other hand, have a plenty of time to prepare their stories. For instance, the last conference by Serbia's coach Stojković was held just twenty minutes before midnight on October 11, 2025.

The prevailing wisdom is that speaking to media is just 'part of the job' for athletes, independently of their feelings, expectations and alike. Given how influential publicity is in increasing viewer interest, there's a strong expectation that players talk to the press, immediately after the match. In any case, the regular engagement in a formalized media format, unlike social media, presents, "a performance of transparency - holding players to account - and is a vehicle for sponsorship visibility" (Cox et al., 2025: 2). It seems, however, the conflictual nature of a press conference is difficult to overcome. Elsa Kristiansen identifies conflict as the hearth of the press conference (2011) while Sznycer sees it as the "adversarial framework" (Sznycer, 2010). For this reason, the limited academic research on sport press conferences has highlighted the ways in which the typical occurrence of the press conference impacts on the mental health and/or the performance of elite athletes (Kristiansen et al., 2011; Faustin et al., 2022).

The three considered press conferences cleary reveal that various actors involved in sports and media have a symbiotic relationship. Very important matches may create content that people want to read about or learn more about – the newspapers, for instance, can capitalise on this to drive readdership numbers (Henen, Djameleddine, 2025). Meanwhile, publicity provided by the national newspapers helps increase fan engagement for the players and brand reach for sponsors, which contributes financially to the sport. Yet, the analysed case in this study (Serbia's coach approach to journalists) indicates that problems arise when all parties involved fail to consider and respect each other's ways of communication. It should be taken into account that superiority of traditional media, such as newspapers, is increasingly being challenged by various competitors such as, for instance, data specialists, fan bloggers, and owned media (Ilievska Kostadinović, Kostadinović, 2025). Social media has proved to be a powerful tool for sportspeople as a means to avoid the traditional press.

Conclusion

One can conclude, on the basis of three considered and compared press confrences, that is not easy to achieve the objectives of such speech events. First of all, media, tournaments and associations need sportsmen (mostly, coaches and players) to make themselves available for pre- and post-match news conferences. The journalist's role is to provide direct commentary from sportspeople to the public, and, also, to rise fan engagement with the sportsmen and the brands they represent.

The crucial role of sports journalists is to help the general public understanding of sports and various actors (managers, coaches and players). On the basis of the right questions and their own experience, journalists may provide insights, break down the specific technicalities of the sport and provide a more nuanced human element to the sport and the actors involved. Furthermore, the more that sportspeople feel that reporters are truly interested in their opinions and experiences (helping them tell their stories), the more forthcoming the sportspeople will be.

The above analysed cases confirm the common expectation that press conference, despite rise of new communicative practices (for instance, social media), remaines worthwhile. Rich professional sports history tells us when a team should organize a news conference rather than offering no comment or sending out a simple press release. Apologizing for the team, player, or coach's misgivings, or declaring the hiring or firing of a team's coaching staff or front office leadership is all worthy of a show. When a team helps craft the message with a news conference, it's often relayed to fans in a more favorable light.

The obtained and presented results reveal that sports press conferences influence news coverage by helping organizations control the narrative, increase visibility, and manage crises, but they also carry risks for journalists and sources. The effects vary depending on the newsworthiness of the information, the organization's reputation, and the media landscape.

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FROM THINKING TO FEELING - HEURISTICS IN SPORTS MEDIA MARKETING[1]

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Abstract: In this paper, we take a closer look at heuristics, especially the affective and fast decision-making shortcuts that play a role in how consumers select sports media. Our aim is to unravel how different emotional and cognitive shortcuts in the minds of consumers influence their interaction with sports content and advertising. By combining the Psychological Continuum Model, Uses and Gratifications theory, and heuristic processing, we create a comprehensive framework to explore how consumers behave in the sports media world. Such an integrated strategy provides insights for the sports sector, which can contribute to more effective and adequate creation of emotionally compelling and tailored media strategies. By combining theoretical analysis with practical examples, this paper highlights how emotionally impactful messages and straightforward visual signals can boost consumers' brand recall, strengthen loyalty, and sway their purchasing decisions.

Keywords: heuristics, consumer engagement, affective decision-making, media strategy, sports marketing

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Introduction

Instead of applying a methodical approach to each decision, people use heuristics to make it easier to retrieve and store information in their memories (Dale, 2015). Heuristics work best when individuals have to make decisions quickly, when probabilities or utilities are uncertain, or when poorly stated problems make it impossible for logic or probability theory to provide the best answer. Similar to the hammers and screwdrivers in a handyman's toolbox, people's minds function similarly in this situation, drawing from a variety of heuristics designed for particular kinds of issues (Gigerenzer, 2008).

When our present mood or emotional state affects our decision-making, it's known as the affect heuristic. We act on our instincts and react in accordance with our emotions rather than assessing the issue impartially. The affective heuristic may therefore result in less-than-ideal choices (Nikolopoulou, 2022). Simple, task-specific decision-making techniques known as "fast-and-frugal heuristics" are a component of a decision maker's cognitive toolkit for accomplishing judgement and decision-making tasks. In a variety of domains (such as business and management), fast-and-frugal heuristics have a track record of producing precise decision-making outcomes in the face of ambiguity (Love et al., 2023).

Marketers have long understood that appealing to emotions rather than just intellect is necessary if they wish to establish a connection with their target audience (Baltezarević, Milić, 2021). Professional and amateur athletes are now so popular that their appeal extends beyond the field of play to the realm of popular culture and celebrity. Modern sports coverage of these sportsmen has increased dramatically as a result of growing media saturation.

Heuristic and emotional mechanisms are an important factor that can influence consumer behavior in sports marketing. In the sports environment, consumers are very often exposed to information that is charged with emotions that make them make quick decisions. This can be explained by affective heuristics, which precisely defines emotions as the main motivator in decision-making, that is, in the case of fast-and-frugal heuristics, when the consumer uses simple cues, such as slogans, symbols, logos or famous personalities, which help him in the process of quick judgment.

Affective and Fast and Frugal Heuristics in Sports Media and Advertising

When time, information, and processing capabilities are limited, heuristics are commonly used (Guercini, Milanesi, 2020). Heuristics, to put it simply, are rules of thumb or mental shortcuts (Kahneman, 2013). Because of recent advancements over the past few decades, researchers are beginning to recognise the importance of affective states in human decision-making (Västfjäll et al., 2016). Experience-based thinking is characterised by its emotive foundation. Even though deliberative analyses are undoubtedly crucial in many situations involving decision-making, depending on affect and emotion as information sources is typically a faster, simpler, and more effective method to get by in a world that is complicated, ambiguous, and occasionally deadly (Schwarz, Clore, 1988).

When people form judgements about things or situations that are characterised by valenced affect, this is known as the affect heuristic. An effective way to save time and effort in many situations for both humans and animals is to consult the emotive impression with which something is tagged rather than doing tedious computations and utility maximisations (Slovic et al., 2007). To verify the stability of the relationship between risk perception and affect beyond correlations of explicit self-reported ratings, Dohle et al. (2010) developed a novel approach to examine the affective component of risk perception by establishing this link using a version of the implicit association test (Dohle et al., 2010).

According to a recent study by Kusev et al. (2020), the choice options that respondents had influenced their risk preferences. The authors contend that preferences are essentially unstable for each individual and that risk preferences are created "on the fly" during risk elicitation. As a result, context and available options have an impact on risk preferences. Therefore, the affective heuristic is a form of cognitive bias that influences judgement. When assessing a situation, we use our feelings rather than objective facts. For speedy issue solving, this can also be used as a shortcut. Affect can be understood in this context as a) a human emotional state, like joy or sorrow. b) a characteristic linked to a stimulus, which is anything that motivates us to take action, such as words, sounds, or temperature variations. People often feel compelled to be efficient or just choose the alternative that seems the greatest when they are under a time constraint to make a decision. They consequently turn to mental shortcuts or heuristics. When faced with making a decision but without the knowledge or time to think more thoroughly, the affect heuristic leads us to turn to our feelings and emotions (Nikolopoulou, 2022).

Emotions impact our decision-making, which in turn impacts our lives. It has been demonstrated that when we are feeling good, we are more inclined to think that an activity has additional benefits and fewer hazards (Skagerlund et al., 2020). On the other side, we are more likely to see an activity as having high danger and little to no advantages if we are in a bad emotional state (Brush, 2011). Fast-and-frugal heuristics are straightforward, task-specific decision-making techniques that are a component of a decision-maker's cognitive toolkit for resolving judgement and decision-making challenges. In situations that are complex and unclear or when there is a limited sample size from which to draw conclusions, they have been demonstrated to produce superior decision results than statistical methods, including probabilistic and stochastic approaches (Love et al., 2023). The fast-and-frugal-heuristics program is unique in that it outlines formal models of heuristics and makes an effort to ascertain when people apply them and what kind of results they get. These models are based on a small number of data points that are handled in straightforward computational manners. Because the information and processing are accessible to humans, people use basic operations like adding up or comparing numbers and rely on information that is rather easy to obtain (Katsikopoulos, 2020). Fast and frugal heuristics significantly reduce the quantity of data taken into account while making decisions. “Overfitting” is the term used to describe treating every detail as significant. This can improve a model's fit to the data, but it can also make it less effective at generalisation, or forecasting new data. By disregarding less important information, which frequently contains more noise, a fast and frugal analysis can be more reliable (Broken Science, 2023).

Sport advertising in both traditional and modern media has significantly increased as a result of the growing collaborations between the media and the sports business (Kim, Cheong, 2011). Sports products (such as sneakers, swimming goggles, or badminton rackets) are perceived differently by consumers than other products (like laptops and pharmaceuticals), which can be a useful tool for influencing a purchase. Sports products therefore appear to have a distinctive quality that makes them useful for persuasive advertising. Sports merchandise is also known for its capacity to shape people's outward identities (Ohl, Taks, 2007).

The literature on marketing and advertising has extensively examined the emotional/rational framework. Advertising stimuli that clearly and rationally present accurate, precise, and reasonably trustworthy information (price, quantity) about the brand and the product are known as rational appeals (Bansal, Gupta, 2014). Emotional appeals, on the other hand, trigger one's emotions and subtly and implicitly address brands and product marketing by using various psychological traits to set one brand apart from another (Okazaki et al., 2013). According to Teichert et al. (2018), emotional appeals mostly focus on love, humour, joy, etc., and they motivate consumers to behave in ways that advertisers desire. Given that a brand has the capacity to pique the consumer's interest through innovation, it is imperative that the experience it provides be unique and memorable in order to develop an emotional bond (Baltezarević, 2016).

Sports events in a large number of cases cause great excitement and emotional charge among consumers. This is the main reason why they just remember those experiences while watching sports commercials. It can be said that consumer attitudes, as well as future choices, can be influenced by many different emotions that sports events or activities cause in people (Siani et al., 2021). As far as fast-and-frugal advertising is concerned, these are situations when advertising messages are simplified and recognizable symbols, visual and emotional signals are used. This is recommended in the world of marketing and advertising precisely because the audience in sports environments most often makes quick decisions while their attention is limited (Hauser, 2011).

Emotional advertising messages, in contrast to rational ones, had a significantly greater influence on the attitude towards the intention to purchase the advertisement itself, according to Siana et al. (2021), who conducted a study on a sample of 160 young consumers of sports products. Also, this study showed that emotional appeals work better with hedonic products, but in cases where the products were utilitarian, rational appeals proved to be more successful. In an earlier study involving 324 participants, researchers examined three different categories of advertising appeals (rational, emotional, and combined). The results showed that emotional ads were at the top of the list, and they proved to be excellent for influencing consumers in situations such as buying sports equipment or brand perception. Ads that were a mix of emotional and rational elements received more views than ads that only contained rational elements, but they were still far from the power of emotional ads (Lee & Heere, 2018). According to a study conducted by Richardson et al. (2023), human emotions (such as uncertainty and surprise) have a measurable and significant influence on the number of spectators of UCL matches in some European countries (such as Great Britain and Spain). It can be concluded that moments of strong affective stimulation of consumers can increase audience reach, which mar-keting experts can of course take advantage of. One example could be placing ads right after key sports surprises or after the most interesting situations from the game.

As for specific examples from practice, one of the most famous campaigns of the Gatorade company is “Be Like Mike”, in which the famous American basketball player Michael Jordan symbolizes the sports ideal, but also success and desirability.

Through the emotion of admiration (and the desire for identification), consumers quickly recognize the brand, which represents a strong emotional sign. A marketing strategy uses an affective response, such as pride, motivation or desire in combination with a famous person (as a heuristic signal). In this way, a quick emotional connection is made possible and, in such cases, there is no need for consumers to analyze the product in an additional rational way (Prime vs Gatorade, 2024).

Another example in this area that is definitely worth mentioning comes from Under Armour, their “Rule Yourself” campaign successfully created an emotional story focused on perseverance and self-discipline. This campaign, with the help of minimalistic content (to highlight the athletes in training), strengthened and simplified the message that reads: “You are the sum of all your training.” With this approach, they helped the audience, i.e. consumers, to understand the message more precisely without burdening them. On the other hand, the emotional and visual aspects helped create a strong bond with the athletes (Chandrasekhar, 2018).

People give the outcomes they conceive of initially the highest value or likelihood, according to Yocco (2016). Juventus post features images that serve as a reminder of “the best skills in the UEFA Champions League.” This portrays top-notch football and seeks to establish (and maintain) the Juventus name as the first thing that comes to mind when people think about top-notch football (Mereu, 2017).

Finally, one must not forget the significant example of Nike's “The Winner Remains” campaign. She connected well-known football figures and legendary details from matches, thus creating a strong sense of excitement and rivalry. For consumers, athletes represent cues, which further evokes in them emotions such as passion and excitement, which ultimately contributes to the creation of a favorable impression of the brand (Newman, 2014).

After a theoretical review and consideration of examples from practice, it becomes clear that sports advertising effectively combines quick (instinctive reactions) with emotional connections. In this way, it enables the messages to be understood quickly without a large cognitive load, while at the same time affecting our emotions. By using these marketing strategies in a sports context, it is possible to increase brand recognition, influence consumer loyalty and make purchasing decisions. In the end, all this can contribute positively to the return on investment (ROI).

Consumer Engagement in Sports Media through Uses and Gratifications, Psychological Continuum and Heuristic Influence

According to the Uses and Gratifications (U&G) theory, sports media not only provide consumers with information and experiences but also offer enjoyment, a sense of identity, and a chance for social interaction. Based to a recent study that analyzed football fans from Switzerland, the results showed that information, entertainment and positive emotions are among the most sought-after pleasures in all segments. However, the priority and intensity of these motivations change depending on the profile of the fans, i.e. they depend on how they interact, how often they follow sports events on the media and to what extent they identify with their sports (soccer) club (Gächter et al., 2024). Sports fans watch events on streaming services 62% of the time, while roughly 75% watch on cable or broadcast TV (Advanced-television, 2025). Which implies that the factors that satisfy sports consumers are speed, type of media and ease of use.

The general parameters within which a relationship between an athlete, sport, or individual is mediated are specified by the Psychological Continuum Model (PCM). The object-related link (such as a team or sport) is seen as replaceable inside the PCM framework. The model is an example of a cognitive method that unifies current theories and research on fan behaviour under a single conceptual heading. To describe the many psychological bonds that supporters and spectators of sports may develop with particular teams and games, four broad limits that run along a vertical continuum are conceptualised. The four stages of psychology that sports customers go through are awareness, attraction, attachment, and allegiance, according to PCM. The emotional and behavioural dedication to the sport as a whole (either to the team or to the sport content) improves with each of these levels (Funk, James, 2001).

To encourage gradual advancement up the PCM, managerial levers created through relationship marketing could be put into practice. The four levels that are typically linked to relationship marketing offer suggestions for promoting progression along the spectrum. Financial bonding, the initial stage of relationship marketing, focusses on offering monetary advantages like reduced costs. Moving from attraction to attachment may be facilitated by the second level, social connection. Recognising sports fans and giving them a sense of importance helps foster social and interpersonal ties. Customisation and structural bonding, the third and fourth layers of relationship marketing, may facilitate the transition from attachment to allegiance. Customising experiences and services for each person is the main goal of customisation bonding. When it comes to sports or teams, the goal is to find out what supporters want from their bond with the team and then try to meet those needs.

Social connection fosters customisation, which aims to personalise experiences for each person. Offering services that are tailored to a particular client or consumer (such as venue kiosks or fan loyalty programs), frequently utilising technology, is known as structural bonding (Ziethaml, Bitner, 2000).

Media exposure plays a key role in helping consumers move up this continuum. However, as less popular sports (such as parkour or longboarding) often do not receive enough media attention, they largely opt for online video content to attract supporters and raise consumer awareness. According to research results, most of the content created by niche sports organizations serves primarily to inform and attract before deeper engagement occurs (Mahoney et al., 2014).

As we have already discussed in this paper, heuristic influences are present when consumers (viewers) choose which content to interact with based on simple and quick indications. Emotive stories, material that is visually enriched with images and video content, a famous (favorite) athlete or sports team, but also online likes, comments and sharing content are just some examples of heuristic cues. Consumers will more easily interact with sports content when it highlights their favorite athlete or in some way inspires loyalty to the team. A good example of heuristics enabling fast decision-making is demonstrated in the field of live sports broadcasting. In such circumstances, consumers' intention to use or pay for such services is significantly conditioned by perceived enjoyment, viewing quality, social benefits, and of course convenience (Li et al., 2024).

Sports consumers can better understand the reasons why they interact with sports content if an integrated approach is used that includes the Psychological Continuum Model (PCM), Uses and Gratifications Theory (U&G) and of course heuristic processing. The stages of psychological connection are described by PCM, the motivations that lead consumers through the levels (such as the desire for fun, identity or social interaction) are explained by U&G theory, and fast (automatic) signals that encourage engagement (especially when attention or involvement is low) are described by heuristics. Such a combination would be particularly effective and useful for marketing experts in creating customized media strategies, which would be aligned with the goals of sports consumers, which would correspond to their current psychological state and which would take advantage of their quick decision-making processes. Also, sports organizations could, for example, provide emotionally engaging content that meets certain requirements, matches the level of consumer engagement, and includes strong heuristic cues (such as famous athletes, images, etc.). In any case, this integrated model is proposed as a future strategic framework in the field of sports media, in order to enable more successful interaction with the audience in the digital sports media space. This model certainly has great potential, despite the fact that it is still not widely implemented in practice.

Discussion

This study looked into how heuristics, particularly affective and fast-and-frugal decision-making shortcuts, influence how consumers engage with sports media content. By blending the heuristic perspective with the psychological continuum model (PCM) and the Uses and Gratifications (U&G) theory, we've developed a comprehensive framework that takes into account both the long-term psychological growth of sports fans and their immediate emotional responses. Our research reveals that emotional triggers such as pride, excitement, and identification play a major role in influencing how consumers choose and engage with sports media content. Amid the chaos of modern life, where attention spans are fleeting, consumers tend to lean on quick signals to help them make choices. Think of well-known athletes, team logos, catchy emotional slogans, or the social media buzz of likes and shares. These cues help simplify the decision-making process, allowing people to skip the lengthy, logical deliberations.

Sports are packed with emotion, and that's why the affect heuristic is so prominent in sports media. Sports marketing takes advantage of our deep emotional connections and memories, which is quite different from other advertising forms where people might take a closer look at the claims. This is further supported by fast-and-frugal heuristics, allowing people to swiftly absorb marketing messages, particularly in the digital space where we encounter information in brief, impactful snippets.

When we dive into the PCM, it really sheds light on how consumers navigate through different levels of involvement, starting from mere awareness and eventually landing at loyalty. In those early stages, heuristic cues are essential for sparking interest and fostering emotional connections. As customers dive deeper into their experiences, their motivations shift towards finding satisfaction in things like entertainment, affirming their identity, and building social connections. The interplay between heuristic mechanisms and the U&G framework suggests that for sustained engagement, content needs to emotionally resonate with what consumers are after.

Customers definitely have their own ways of reacting to these strategies. According to recent studies, the role of social, informational, and emotional factors can vary widely among different types of fans. This really emphasizes the need for tailored approaches. Likewise, niche sports that don't get as much spotlight often utilize online media and visually appealing content to increase consumer awareness. In these situations, the success of a campaign really depends on how well it employs quick, engaging elements to capture attention and foster loyalty.

While the proposed model offers a solid starting point for understanding customer engagement, it's important to acknowledge its limitations. To kick things off, the analysis remains largely theoretical. To truly confirm the suggested causal relationships, we would need empirical validation through methods like surveys, experiments, or longitudinal studies. Additionally, the model assumes that the PCM stages move along smoothly, but in reality, various contextual, situational, or emotional factors can lead to changes in how consumers engage. Moreover, even though the paper highlights emotional and heuristic processes, it doesn't dive deeply into the potential impact of media literacy or cognitive resistance, which could lessen the effectiveness of those heuristic cues.

The model we're suggesting should be empirically tested in a range of sports situations in upcoming studies, focusing on how the effectiveness of heuristics varies with the sport, platform, audience demographics, or the level of fan involvement. It's really important to think about how emotional and rational appeals work together, especially when it comes to sports organizations finding the right balance for effective marketing strategies. By realizing that fans often make swift emotional decisions while also catering to their deeper psychological needs, marketing experts can produce sports media content that's more captivating, precisely aimed, and truly impactful.

Conclusion

This paper suggests that the interaction between heuristic cues, psychological drivers, and emotional reactions plays a significant role in how consumers engage with sports media. We've introduced a comprehensive framework that illustrates how consumers relate to sports information and brands by merging affective and fast-and-frugal heuristics with the Uses and Gratifications theory and the Psychological Continuum Model. Heuristics are crucial during the initial stages of customer interaction, as they enable quick emotional responses and simplify decision-making. This is especially important in sports marketing, where consumers are often overwhelmed with stimuli and need to make fast decisions.

The findings suggest that emotionally charged components, including impactful visuals, renowned sports figures, and touching stories, work best when they resonate with the consumer's feelings and their main aspirations. During the awareness and attraction phases, heuristic signals should take the lead, while more personalized and structured engagement strategies should be prioritized in the deeper stages, such as attachment and loyalty. This dynamic interaction highlights the importance of a strategic and stage-sensitive approach to sports media marketing.

This study serves as a strong foundation for future empirical research and real-world applications, even though it's rooted in theory. To build lasting brand loyalty and enhance the media experience, it's crucial to focus on what consumers want and use simple decision-making shortcuts. This is particularly vital as digital platforms evolve and change the way sports fans connect with content.

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ETHICAL AND LEGAL ASPECTS OF GUERRILLA AND AMBUSH MARKETING IN SPORTS - CASE STUDY BREWDOG-A

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Abstract: This paper explores the ethical and legal aspects of guerrilla and ambush marketing in modern sports, with particular emphasis on their impact on brand integrity and the value of sports sponsorships. Based on relevant literature, a qualitative analysis and a case study of the BrewDog campaign during the 2022 FIFA World Cup were conducted as a paradigmatic example of “dissociative” ambush marketing. The research results confirm that such strategies, while increasing media visibility and the perceived authenticity of the brand, simultaneously undermine ethical principles and the exclusivity of official sponsors. The degree of ethical acceptability depends on the transparency of communication and compliance with intellectual property regulations. The paper highlights the need for an integrated approach that connects legal, communicational, and ethical mechanisms to protect market fairness and the sustainability of the sports system. The limitations relate to the insufficient number of empirical studies after 2023, indicating the need for future quantitative research on consumer perceptions and the long-term effects of ambush strategies on brand value and public trust.

Keywords: guerrilla marketing, ambush marketing, sports sponsorship, ethics, intellectual property, communication

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Introduction

One of the most dynamic sectors of the modern economy is the sports business, where marketing is crucial to audience engagement, brand development, and event revenue. Because they upend the traditional connections between official sponsors, organizers, and consumers, guerrilla and ambush marketing phenomena are drawing more and more attention from scholars and regulators. (Grady, 2023; Dašić, 2023a; Stanković, 2023). Guerrilla marketing encompasses unconventional, often low-budget strategies that rely on creativity, surprise, and psychological impact on the audience (Hutter & Hoffmann, 2024). On the other hand, ambush marketing implies a deliberate yet covert association of a brand with a major sporting event without a formal sponsorship agreement, thereby jeopardizing the exclusivity of official partners and undermining fair market competition (Faridniya et al., 2023).

The development of digital media and social networks has further blurred the line between permissible and unethical promotional activities in sports. Companies use algorithmic precision and real-time responsiveness to capitalize on sports moments without formal collaboration with event organizers (Khalid, 2024). This strategy is often justified by the argument of market and communication freedom but raises serious ethical and legal questions - especially when the audience is misled into believing that a brand holds official sponsorship status. According to research in the field of sports communication management, the phenomena of guerrilla and ambush marketing may increase brand recognition in the short term but, in the long run, undermine consumer trust and damage the credibility of sports organizations (DoorAndish et al., 2024).

In practice, ambush marketing is particularly problematic because it operates in a legal “gray zone.” While it may not necessarily violate intellectual property laws, it often breaches ethical standards and the principles of respect for the investments made by official sponsors (Grady, 2023). This becomes especially evident during major sporting events such as the Olympic Games. Some authors suggest that ambush marketing conducted by athletes through social media represents a new, hybrid form of associative advertising that requires a distinct normative and ethical framework (Geurin et al., 2025). The study indicates that athletes, either consciously or unconsciously, may become ambush actors through visual allusions, symbols, or hashtags that imply a connection with official events, thereby reducing the clarity of sponsorship relationships and increasing the risk of brand misidentification. The authors conclude that it is necessary to improve legal guidelines and monitoring mechanisms on social media in order to preserve fair market practices and protect the value of official sponsorships (Geurin et al., 2025).

The key challenge in the ethical analysis of these strategies lies in the tension between creative freedom and respect for market integrity (Dašić, Jeličić, 2016). Guerrilla and ambush marketing in sports raise the issue of responsibility - not only legal but also moral - since sport carries strong symbolic and social capital. Consequently, academic and professional circles increasingly advocate for a multidisciplinary approach that includes marketing, law, communication studies, and sports management in analyzing these phenomena (Faridniya et al., 2023; DoorAndish et al., 2024). This study aims to critically analyze the legal and ethical implications of guerrilla and ambush marketing in contemporary sports, based on recorded scientific research. It does this by analyzing current incidents that highlight the need for more responsible marketing techniques and clearer regulations.

Literature Review

Many authors (Baltes & Leibing, 2008; Hutter & Hoffmann, 2011; Alrabeeah & Artemisa, 2018) claim that ambush marketing is only one part of the larger strategic platform of guerrilla marketing, which uses unorthodox and disruptive communication strategies to help a brand gain visibility with few resources. It frequently relies on surprise, inventiveness, and opportunistic association with significant events without having official sponsorship rights.

Guerrilla marketing, as an unconventional promotional strategy, represents a dynamic instrument of modern communications aimed at provoking surprise, emotional reactions, and direct consumer interaction - often with minimal costs and maximum media resonance (Alsheikh, 2024). Research confirms that guerrilla campaigns based on creativity, surprise, and emotional activation significantly enhance consumer awareness and purchase intentions, especially among younger audiences who respond positively to humor, novelty, and immersive brand interactions (Khalid, 2024). Recent empirical work also shows that surprise-based guerrilla tactics - such as ambient and sensory interventions in retail and service environments - can significantly strengthen brand attitudes and purchase intentions by disrupting routine decision-making and creating memorable experiences (Alsheikh, 2024). From a digital perspective, the integration of guerrilla techniques with social media applications further amplifies these effects: systematic analyses indicate that such integration increases consumer engagement, boosts brand awareness, and positively shapes self-reported buying behavior in online settings (Gündüzyeli, 2025).

When discussing the legal aspects of guerrilla and ambush marketing, the work of Alexandrakis (2009) represents a key contribution to understanding how certain countries, particularly the United Kingdom, regulate this phenomenon through specific legislation aimed at protecting major sporting events. The author analyzes national laws such as the Olympic Symbol etc. (Protection) Act 1995 and the London Olympic Games and Paralympic Games Act 2006, emphasizing their role in establishing "clean zones" and restricting unauthorized advertising during the London 2012 Olympic Games. These frameworks demonstrate how legal systems attempt to preserve the economic value of official sponsorships and prevent misleading associations that could undermine market integrity and stakeholder trust (Dašić, Milojević, Pavićević 2020).

The development of guerrilla and ambush marketing in the sports context aligns with broader changes in digital communication strategies. Ambush marketing has become particularly prominent with the expansion of social media, where brands can rapidly achieve visibility without official authorization. Geurin (2020) demonstrated that athletes' personal use of social media during the Olympic Games creates opportunities for implicit commercial associations that challenge traditional sponsorship structures. Similarly, Grady (2023) argues that the digital environment has enabled increasingly subtle forms of ambush behavior, making legal enforcement more complex and opening debate on the ethical responsibilities of brands, athletes, and event organizers.

Ambush strategies often exploit ambiguities in the digital sphere, where temporary or low-visibility content can create the perception of official endorsement without crossing explicit legal boundaries. This significantly undermines the position of official sponsors, as digital audiences frequently fail to distinguish between paid partnerships and opportunistic associative messaging (Grady, 2023; Zarco & Herzallah, 2023). Empirical studies also confirm that misidentification of sponsors can negatively affect brand attitudes and purchasing intentions for official sponsors, thereby reducing the anticipated return on investment (Lin et al., 2023).

Although guerrilla marketing can enhance creativity and engagement, particularly for youth-oriented sports campaigns, ethical concerns arise when such strategies mimic ambush practices during large sporting events. Nufer (2013, 2016) has shown that ambush marketing can erode sponsorship value, distort consumer perceptions, and disrupt the competitive balance within the sponsorship market. These findings correspond with broader analyses indicating that audiences often struggle to diffe--rentiate official from unofficial sponsors, which creates reputational and financial risks for rights holders (Sandler & Shani, 1989).

In the digital era, the boundary between acceptable creative communication and deceptive brand association is increasingly blurred (Günduzyeli, 2025). Companies rely on social media, influencers, and interactive content to insinuate connections with major sports events while avoiding direct legal violations. Such strategies can be commercially effective but raise concerns regarding transparency and fair competition (Geurin, 2020; Grady, 2023). This highlights the need for stronger ethical frameworks and ongoing adaptation of legal regulations to contemporary communication environments.

Technological development also opens the possibility of automated monitoring tools to detect unauthorized brand associations in real time. While research in this field is emerging, recent digital marketing analyses suggest that algorithmic tracking of brand - event co-occurrence may become an essential instrument for rights protection (Zarco & Herzallah, 2023).

Contemporary scientific literature identifies several forms of ambush marketing, with four types most commonly distinguished: direct, indirect, associative, and dissociative models (Crow & Hoek, 2003; Meenaghan, 1994). Direct ambush marketing represents the most severe form, as a brand unlawfully uses protected symbols or event names, which can lead to serious legal consequences. Indirect ambush marketing is based on creating thematic or visual associations with the event without explicit trademark infringement, yet it still undermines the value of sponsorship rights. Associative ambush marketing results in consumer confusion, as the brand produces content that implies sponsorship despite lacking it - something research has confirmed as a strong source of misidentification among viewers of sporting events (Mazodier & Rezaee, 2013). The most recent form is dissociative ambush marketing, in which a brand openly denies being a sponsor while using the media and symbolic space of the event for promotion, thereby minimizing legal risk while increasing ethical concerns (Crow & Hoek, 2003).

It is possible to draw the conclusion that ongoing harmonization of legislative requirements, moral principles, and communication techniques is required by summarizing the results of earlier research. While ambush tactics need to be carefully regulated to maintain market integrity and public confidence, guerilla marketing has the potential to reinvent sports advertising. Recent real-world instances of multinational corporations using digital platforms during significant athletic events to build connections that straddle the line between creative advertising and ethical issues amply illustrate these patterns.

Research Metodology

This research is based on a qualitative methodology that integrates content analysis, a comparative review of existing literature, thematic coding, and a case study approach. The aim of the methodological framework is to provide a comprehensive understanding of the ethical and legal implications of guerrilla and ambush marketing. A multi-method qualitative design was applied, combining theoretical–thematic analysis, examination of legal frameworks, comparative assessment of previous studies, and an in-depth case study of the BrewDog campaign.

The analysis relies primarily on sources indexed in WoS and Scopus databases (2013-2025), as well as legal documents, industry reports, digital campaign materials, and media coverage. The screening process was inspired by PRISMA principles and included the following phases: identification of studies, selection based on thematic relevance, full-text evaluation, and final inclusion of eligible sources. The review incorporated studies related to ambush marketing, guerrilla marketing, sports sponsorship, consumer perception, and legal regulation, while studies unrelated to the sports context or based on outdated, empirically unverified concepts were excluded.

The hypotheses of the study are:

H1: Guerrilla and ambush marketing in sports, although effective tools for increasing brand visibility, lead to the violation of ethical principles and the undermining of the exclusivity of official sponsors.

H2: Guerrilla marketing, in both academic and practical contexts, is considered a moderately more acceptable form of unconventional advertising than ambush marketing, as it focuses on creative interaction with the audience without directly infringing sponsorship rights or intellectual property regulations.

This approach seeks to connect theoretical understanding of marketing strategies with concrete practical examples, with the aim of defining recommendations for sports organizations, sponsors, and regulatory bodies.

Implications of Guerrilla and Ambush Strategies for Brand Integrity and the Sports System

The contemporary sports ecosystem is characterized by high investment stakes in sponsorships and intense competition for audience attention; within this context, guerrilla and ambush strategies become "shortcuts" to visibility that, however, carry significant ethical and systemic consequences. Empirical research shows that ambush campaigns in digital environments (e.g., short video formats of 6–15 seconds; visual vs. textual messages) influence attitudes and purchase intentions, with the misidentification of "who the real sponsor is" acting as the key psychological mechanism that diminishes the effects of official investments (Lin, Chen, Chou, & Yeh, 2023).

At the level of market integrity, part of the literature shows that transparency and timely reactions by rights holders can mitigate harm. Experimental studies document that "name & shame" strategies - publicly disclosing ambush activities - reduce favorability toward the ambusher while simultaneously increasing goodwill toward the official sponsor, but only when the information is highly accessible in consumers' minds (i.e., sufficiently visible and clearly explained within the communication channel) (Wolfsteiner, Grohs, & Reisinger, 2021).

On the other hand, research in the football context shows that both "clean" sponsorship and ambush interventions simultaneously shape audience reactions. Structural models based on fan samples demonstrate that ambush marketing can temporarily "hijack" attention and partially dilute the exclusivity of official sponsors – directly affecting return on investment and long-term brand equity (Chanavat & Martinent, 2021).

Digital platforms further intensify these tensions: analyses of "newsjacking" as a social media form of ambush marketing reveal that inconsistent yet persistent appro-riation of hashtags and event narratives (Dašić, 2024a) enables nonlinear "entries" into audience attention - even when direct engagement is limited, the cumulative effect undermines the clarity of sponsorship rights and erodes the symbolic monopoly of official partners (Burton & McClean, 2020).

The ethical dimension is twofold. On the micro level, part of the audience perceives ambush marketing as a "clever but acceptable" move by smaller players against larger ones, relativizing normative frameworks and fostering tolerance for manipulative associations. On the macro level, the accumulation of such practices leads to a systemic problem - a decline in the clarity of sponsorship statuses and a "spillover" of benefits to non-investing actors, which reduces the incentive to invest in sports through formalized partnerships (Dickson, Naylor, & Phelps, 2015; Wolfsteiner, Grohs, & Wagner, 2015).

In parallel, recent research on sponsorships linked to socially responsible initiatives warns that the "ethical credibility" of official partners (Dašić, 2023b) has become a highly sensitive resource: when ambush marketing blurs the message, the perceived *fit* between the sponsor and the sporting cause declines, as does the positive attitude toward the sponsor - particularly in environments with high expectations of transparency (Asada, Kunkel, & Biscaia, 2023).

Finally, broader sponsorship literature shows that the motivational structure of sponsors (altruistic vs. egoistic) modifies consumer reactions; in digital environments, ambush marketing can diminish the positive effects of partnerships perceived as "altruistic" by introducing doubt about the source and legitimacy of communication (Li, Chen, & Zhang, 2022).

In summary, the implications for brand integrity and the sports system are threefold:

(1) ambush marketing increases the risk of misidentification, thereby reducing the effectiveness of official investments;

(2) proactive and transparent counter-communication can correct perceptions but depends on the visibility and cognitive accessibility of the message (Jeličić, Vlajković, 2024);

(3) in the digital ecosystem, combined mechanisms - legal, communicational, and technological (e.g., hashtag tracking and tools for detecting associative infringements) - are required to preserve a fair distribution of value within the sports system. These arguments align with the findings from the abstract and methodology of this paper and will be further illustrated in a separate case study (2023) in the following section.

Case Study: BrewDog's "Anti-Sponsorship" and the Boundaries of Ambush Marketing

Within contemporary research on marketing ethics and intellectual property law, the BrewDog case represents one of the most significant examples for examining the boundaries between creative and contentious advertising. Its campaign, "Proud Anti-Sponsor of the World F*Cup," launched during the 2022 FIFA World Cup in Qatar, generated extensive professional debate about where corporate activism ends and ambush marketing begins. For this reason, the case serves as a foundation for critically reconsidering the relationship between a brand's ethical intentions and the commercial benefits derived without holding formal sponsorship rights.

The focus of the analysis extends beyond the campaign itself to its legal, communication, and market implications in a broader context - particularly in the post-2020 environment, where digital ecosystems and social media enable new and more complex forms of associative advertising. This perspective allows us to understand how BrewDog's "anti-sponsorship" fits within existing regulatory and ethical frameworks, as well as how it influenced the development of strategies and policies for the protection of sponsorship rights in the sports industry. Moreover, the case - and its normative and market repercussions - shaped legal frameworks and communication practices related to the 2023 Women's World Cup and the wider sports context (Ashurst, 2023; LawInSport, 2023; Grady, 2023).

In November 2022, BrewDog launched a self-declared "anti-sponsorship" campaign targeting the Qatar World Cup. Out-of-home displays, social media content, and a dedicated landing page explicitly emphasized that the company was not an official sponsor, while slogans such as "Proud Anti-Sponsor of the World F*Cup" and "The Beautiful Shame" criticized the event and its organizer, accompanied by messages related to human rights (BrewDog, 2022). The key tactical line was dissociation - avoiding protected names and marks (e.g., "FIFA"), while still engaging associatively with the event discourse, thereby commercially capitalizing on massive media visibility without purchasing rights (Ashurst, 2023). The campaign generated significant public attention and media controversy, which is a typical "multiplier effect" in ambush strategies, where earned media amplifies reach (The Guardian, 2023).

Legal analyses classify this approach as indirect or distractive ambush marketing: there is no claim of false partnership, yet there is an evident "riding the wave" of the event (Ashurst, 2023). The risks of trademark or passing-off claims are lower when the absence of official association is clearly stated and protected marks are not used (Ashurst, 2023). However, as sports-law reviews indicate, rights holders increasingly rely on special regulations and "clean zones" to prevent even indirect forms of associative exploitation (LawInSport, 2023). Trends surrounding Rule 40 in the Olympic context (with relaxed guidelines for Paris 2024) further illustrate how regulators balance sponsor protection with participants' freedom of communication (IOC, 2024; Lewis Silkin, 2024).

Ethically, BrewDog's model stands at the boundary between corporate activism and economic free-riding on investments made by official partners: the brand enhances its visibility and moral credibility among segments of the audience, yet simultaneously undermines the perceived value of sponsor exclusivity (Ashurst, 2023; Grady, 2023). Academic research shows that sponsor misidentification and the cognitive availability of messages - particularly on social media - shape consumer attitudes and purchase intentions, serving as the mechanism through which ambush marketing reduces the ROI of official sponsors (Lin, Chen, Chou, & Yeh, 2023; Wolfsteiner, Grohs, & Reisinger, 2021; Chanavat & Martinent, 2021; Stanković, 2025).

A clearer understanding of the legal dimension of BrewDog's campaign emerges when it is positioned within the broader regulatory environment governing ambush marketing during major sporting events. Recent legal analyses emphasize that contemporary regulations increasingly distinguish between the unlawful misuse of protected event symbols and legally permissible, yet ethically contentious, associative or dissociative strategies (Irwin Mitchell, 2023). This distinction is essential for interpreting BrewDog's approach: by avoiding trademark infringement while strategically leveraging the event's global media visibility, the campaign remained within the boundaries of legality while simultaneously challenging the integrity and exclusivity of official sponsorship arrangements.

Although BrewDog did not conduct a comparable "anti-WWC 2023" sponsorship activation, the legal - communication matrix established by its 2022 campaign became a reference point for brands seeking to "be part of the conversation" during the 2023 Women's World Cup without holding official rights. Legal guidance issued for WWC 2023 warned against indirect ambush tactics - such as thematic allusions, color schemes, slogans, and visual codes - as well as escalation dynamics on social media, where monitoring is more difficult and responses must be swift and proportionate to avoid creating a Streisand effect (LawInSport, 2023; Robertson, 2023; Irwin Mitchell, 2023).

Sponsor recognition data further demonstrated that official partners can increase consumer consideration when they communicate their sponsorship status proactively and transparently, serving as a countermeasure to ambush activity (YouGov, 2023; Dašić, 2024b). At the same time, "name-and-shame" strategies proved effective only when they are cognitively accessible to audiences and do not appear excessively punitive (Wolfsteiner et al., 2021).

Evaluation of Impact - What This Case Teaches About "Dissociative" Advertising:

1. Legal risk profiling. Clear dissociation ("not a sponsor"), avoidance of protected indicators, and an articulated activist narrative reduce the likelihood of a successful claim for misrepresentation or passing off (Ashurst, 2023).
2. Ethical ambivalence. Although the campaign foregrounds value-driven messages (human rights), the outcome still involves commercial free-riding on the investments of official partners, which undermines incentives for future sponsorships (Grady, 2023; FIFA, 2025).

3. A model for post-2020 events. This campaign architecture has become a blueprint for brands seeking to "be present" during major events without rights - hence the tightening of guidance and regulatory practices around WWC 2023 and Paris 2024 (LawInSport, 2023; IOC, 2024).
4. Countermeasures for rights holders. Preventive planning, detailed exclusivity clauses, digital-platform monitoring, and moderate, well-explained "name-and-shame" disclosures often produce better results than aggressive litigation (Wolfsteiner et al., 2021; Lewis Silkin, 2024; FIFA, 2025).

Table 1 clearly positions ambush strategies along ethical and legal axes. This is particularly useful in evaluating the BrewDog case, as it shows how dissociative models may remain legally permissible while simultaneously posing significant concerns for market fairness and the protection of official sponsors' investments.

Table 1. Ethical Decision-Making Matrix in Ambush Marketing

Ethical Dimension	Key Question	Risk Level	Illustrative Example
Transparency	Does the brand clearly disclose that it is *not* an official sponsor?	Low–Medium	BrewDog's "Not an Official Sponsor" campaign
Consumer Misleading	Could the communication cause consumers to misidentify the sponsor?	Medium–High	Associative ambush messaging
Respect for IP Rights	Does the campaign avoid unauthorized use of protected event symbols?	Low–High	Direct ambush using event logos or trademarks
Fair Market Behavior	Does the strategy undermine the exclusivity purchased by official sponsors?	Medium–High	Indirect thematic association campaigns
Social Responsibility	Does the communication genuinely serve the public interest or merely exploit controversy?	Low–Medium	Dissociative ambush (e.g., moral-positioning campaigns)

BrewDog's "anti-sponsorship" activation from 2022 represents a paradigmatic example of dissociative ambush marketing: legally cautious, communicatively aggressive, and ethically contentious. Its "lesson" is twofold: (a) brands can capitalize on an event's narrative without holding formal rights, particularly through digital channels; and (b) rights holders and official sponsors must enhance their legal-communication orchestration - from the registration of indicia and establishment of clean zones to algorithmic monitoring and smart, transparent counter-communication - in order to preserve the value of sponsorships and maintain market trust.

Conclusion

The research has shown that guerrilla and ambush marketing in the sports context represent one of the most sensitive areas of modern marketing practice, as they challenge the boundary between creative innovation and the preservation of integrity in sports events and market fair play. Based on the analysis of documented literature and the BrewDog case study, it was determined that "dissociative" forms of advertising - those that explicitly deny formal partnership yet symbolically exploit the media value of an event - allow brands to increase visibility and reputation without the legal risk of direct infringement, but at the cost of ethical controversy and the erosion of official sponsors' exclusivity.

Guerrilla marketing, in comparison to ambush marketing, is academically and practically recognized as a more refined and ethically acceptable form of unconventional promotion. Its creative nature, grounded in audience interaction without directly violating sponsorship rights, enables brands to achieve surprise and distinctiveness while maintaining communication integrity and compliance with intellectual property regulations.

Recent studies confirm that the effects of such strategies depend on audience perception and the cognitive accessibility of messages: when consumers misinterpret a brand's sponsorship status, the result is a decrease in sponsorship value and overall trust in the sports system (Lin et al., 2023; Wolfsteiner et al., 2021). Although an increasing number of countries have introduced protective mechanisms (e.g., "clean zones," intellectual property regulations, and restrictions on associative references), digital communication environments make control difficult, and traditional legal instruments often lag behind the speed of message dissemination. Consequently, the integrity of the sports system becomes a matter not only of regulation but also of corporate responsibility, transparency, and media ethics (Grady, 2023; Asada et al., 2023).

The BrewDog case further highlighted the phenomenon of "activist ambush," in which a moral or critical discourse is used as a protective framework for commercial performance. This model raises the question of whether corporate ethics can justify a privileged market position achieved without paid rights, especially in events with clearly defined sponsorship structures. Such examples open space for new academic debate on whether it is necessary to normatively distinguish between "socially engaged" and "commercially motivated" ambush marketing - and to what extent both may be considered legitimate forms of communication in sport.

Limitations and Future Research

The main limitations of this study stem from the small number of documented post-2023 cases available in WoS and Scopus literature, as well as the reliance on a qualitative, secondary-data approach, which restricts the general applicability of the findings. The research also lacks empirical evidence on how consumers, sponsors, and event organizers perceive ambush and guerrilla strategies, and does not include quantitative assessments of their impact on brand value.

Future studies should:

(1) empirically examine public perceptions of "activist" and "commercial" ambush campaigns;
(2) develop tools for measuring ethical risk in sports marketing;
(3) apply algorithmic methods for detecting associative ambush content online;
(4) compare practices across different sports and cultural settings; and
(5) evaluate long-term effects on brand equity and the financial stability of sports organizations.

Overall, stronger integration of legal, communicational, and ethical frameworks is needed to balance marketing innovation with the principles of fairness, transparency, and accountability in sport.

Author Contributions

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SPORT AS AN ECONOMIC DRIVER: ANALYSIS AND REVIEW OF EUROSTAT'S SPORT SATELLITE ACCOUNT 2025

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Abstract: The monograph *EU Sport Satellite Account: Research into estimating the economic value of sport in the EU – 2025 edition* offers a methodologically coherent and empirically grounded assessment of the economic role of sport in the European Union. Drawing on the Sport Satellite Account framework and the upgraded Vilnius 3.0 methodology, the study quantifies the direct and indirect contributions of sport and identifies structural differences in the development of sport economies across Member States. The findings indicate that sport functions as both an economic and societal driver, generating value that extends beyond measurable financial outputs to include health, social cohesion and overall well-being. Through transparent data procedures and a reproducible methodological design, the monograph provides reliable evidence demonstrating that, in 2019, sport accounted for 3.4% of the EU's GDP and 3.8% of total employment, underscoring its relevance for policy planning and sustainable development.

Keywords: sports economy; Sport Satellite Account (SSA); economic impact of sport; GDP and employment; European Union

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Introduction

The economic and social role of sport in contemporary societies has been gaining increasing prominence - not only in terms of public health and social cohesion, but also as a significant economic sector (Stanković, 2025). However, due to the diversity of sport-related activities - ranging from professional sport and recreational participation to equipment production, sport tourism and media industries - determining the overall economic value of sport presents a considerable methodological challenge. To address these complexities, a standardized analytical framework known as the *EU Sport Satellite Account (EU SSA)* was developed, enabling comparable and coherent quantification of sport's contribution to the economy across EU Member States under the coordination of Eurostat and the European Commission.

The latest edition of this framework, *EU Sport Satellite Account: Research into estimating the economic value of sport in the EU - 2025 edition*, authored by Themistoklis Kokolakakis and Anna Kleissner, provides an updated methodology, consolidated datasets and practical guidance for constructing sport satellite accounts at both national and European levels, applying harmonized definitions and conceptual foundations. This approach positions sport not merely as a cultural or social activity, but as an integral component of the real economy - one that contributes measurably to gross domestic product (GDP), gross value added (GVA), and employment. As the third major stage in the development of EU SSA (following the editions based on the 2005 and 2012 frameworks), the monograph builds upon the 2018 *Study on the Economic Impact of Sport through Sport Satellite Accounts* and advances the methodology to the Vilnius 3.0 version, with the aim of ensuring long-term comparability of measurements and providing a reliable guide for national statistical offices.

Integrating sport into the system of national accounts through SSA entails an expanded definition of sport encompassing direct sport activities (sports clubs, operation of sport facilities, sport services), the production of sport goods and equipment, as well as sport-related economic activities such as retail trade, tourism, transport, media, and other sectors whose revenues depend directly or indirectly on sport (SpEA & SIRC, 2018). This approach yields a more comprehensive depiction of the actual scope of the "sport economy."

Such a quantitative framework has substantial implications for public policy and strategic planning (Tošić, 2023). It enables policymakers to recognize sport as a sector with measurable economic benefits, to monitor its development over time, to conduct cross-country comparisons, and to plan investments in infrastructure, education, tourism, or equipment industries on the basis of reliable and comparable data. In this sense, the EU SSA serves as a tool that links statistics, economics and public policy, providing an empirical foundation for assessing sport not only as a social value, but also as a significant economic actor.

Methodological Framework and Contribution

The central methodological contribution of this report lies in the consistent application of the Sport Satellite Account (SSA) framework in accordance with the Vilnius 3.0 methodology, which represents the most advanced European standard for the statistical measurement of sport-related economic activities. A key feature of this methodology is the clear distinction between *characteristic* and *connected* sport products and services, ensuring precise identification of economic activities that can be directly or indirectly attributed to the sport sector. This distinction enables a more streamlined classification, improved comparability with other satellite accounts, and a clearer separation between the "core" of sport and its broader economic linkages. In addition, the report systematically integrates SSA with the European System of Accounts (ESA 2010), allowing standardized reporting and full compatibility with the official macroeconomic statistics of the European Union.

The use of input–output tables (IOT) and extended multiregional input–output models (MR-IOT) provides a robust basis for estimating the direct, indirect, and induced effects of sport, including value-added and employment multipliers at both intersectoral and cross-country levels. Such methodological coherence significantly enhances the comparability of results across Member States and improves the capacity to monitor long-term trends within the sport economy.

The authors devote particular attention to the transparency of the statistical process: data sources (business statistics, labour force surveys, administrative registers) are clearly documented, as are the steps involved in constructing thematic accounts - from the initial classification of activities to the production of final tables and indicators. This structure makes the monograph not only an analytical publication but also a practical methodological guide, particularly valuable for national statistical teams developing or refining their own SSA systems (Eurostat, 2025).

Key SSA findings for 2019 indicate the substantial economic role of sport within the European Union. According to Eurostat, sport-related activities generated €627.5 billion in gross value added, representing 3.4% of the EU's GDP, while supporting 9.27 million jobs, or 3.8% of total employment (Eurostat, 2025). These outcomes encompass both direct effects - such as sport services and educational activities in sport - and indirect effects across industries closely connected to the sport ecosystem, including retail, public services, and segments of the tourism sector.

Value-added multipliers based on IOT/MR-IOT modelling show that each €1 of final demand in the sport sector generates approximately €1.70 in value added across the broader economy. This finding has important policy implications, highlighting sport's potential as an instrument of economic stimulation, particularly in relation to investments in infrastructure, programmes, and events.

The employment structure further illuminates the nature of the sport economy: the largest share of employment is concentrated in sport services, educational services, and recreation/tourism-related activities. This distribution demonstrates that the sport sector is highly labour-intensive, rendering it especially relevant for local development strategies and employment-support measures (Stanković, 2023).

Finally, the monograph contextualizes its findings through comparison with the previous pan-European SSA published in 2012. The observable growth in the economic weight of sport, combined with continuous methodological refinement of the SSA approach, confirms the stability and increasing importance of this instrument for comprehensively tracking both direct and indirect effects of sport within the EU economy (Eurostat, 2025).

Interpretation of Results in the Context of Public Policy

The practical value of the findings is multifaceted and is reflected in their direct applicability to policy planning and decision-making (Kostadinović, Ilievska Kostadinović, 2025). On the one hand, the SSA framework provides a reliable and evidence-based foundation for decisions on public funding - from the construction and maintenance of local sport infrastructure to the design of national physical activity programmes and public health strategies. On the other hand, the framework enables the quantification of the broader economic effects of sport, including indirect supply-chain linkages and intersectoral connections, thereby preventing the systematic underestimation of the sport sector's total contribution to the economy (Ahlert & Repenning, 2024).

Although the economic outcomes are significant, the authors emphasize that the sport sector also encompasses dimensions that are more difficult to quantify yet hold equally important socio-political relevance. Among these are social benefits such as improved population health, enhanced social cohesion, and increased overall well-being (Ilievska Kostadinović & Kostadinović, 2025). These non-material benefits underscore the need to understand sport not merely as an economic activity, but as an instrument that extends beyond traditional development policies (Stamenković, 2017), with the potential to influence quality of life and sustainable community development in the long term.

While the choice of 2019 as the reference year is justified - given that it represents the last “normal” year before the COVID-19 pandemic - this temporal boundary also entails certain limitations. The monograph does not capture the deeper structural shifts in supply and demand that occurred after the pandemic, many of which significantly transformed sport participation patterns, sectoral financing, and the operation of sport infrastructures across European countries. This opens avenues for future research that should address post-pandemic transformations and their economic implications.

Furthermore, although the report offers a pan-European overview, it is important to note that micro-level comparability may be constrained by national differences in the quality of primary statistical sources and in the maturity of domestic SSA systems. Variations in institutional capacity, data availability and methodological implementation can affect the precision and consistency of national accounts.

Another enduring methodological challenge concerns the classification of connected products. Boundaries between sport, tourism, entertainment and recreation are often fluid, making it difficult to delineate activities with precision and necessitating continuous refinement of input matrices, classification systems and intersectoral linkages. This challenge is inherent to the SSA approach and represents an area for further development of statistical standards and analytical techniques.

For researchers in sport economics, the monograph serves as an example of methodologically rigorous and well-documented practice, offering a reproducible research procedure, comparable indicators and a reliable numerical basis suitable for various types of comparative analysis. This is particularly valuable for studies addressing cross-country multiplier estimates, sectoral structures of gross value added and employment, or scenario modelling of public investment in the sport sector. Owing to this methodological transparency, the monograph can serve as a stable reference point for the continued advancement of analytical research in sport economics.

From the perspective of policymakers, SSA-based results offer an opportunity to set priorities in an evidence-based manner at both national and local levels. They allow investments in sport infrastructure, educational programmes and local development initiatives to be grounded in measurable effects (Pavićević, Jovanović & Đoković, 2024) and enable systematic monitoring of their outcomes over time. This positions

SSA as a valuable instrument for planning and evaluating policies rooted in empirical evidence.

In the spheres of sport management and media, findings related to revenue structures and the influence of digital OTT platforms can be effectively integrated with market data for strategic planning in areas such as regional broadcasting rights, the organisation of sport events or the development of sport tourism. Although the monograph primarily focuses on macroeconomic and mesoeconomic dimensions, its results offer meaningful guidance for decision-makers at operational and industry levels, particularly in the context of market changes and the digital transformation of the sport ecosystem.

Economic Aspects of Sport

The economic significance of sport in the European Union is most clearly reflected in the findings presented in the *EU Sport Satellite Account - 2025 edition*, which provides the most comprehensive assessment to date of the macroeconomic effects of sport within the Vilnius 3.0 methodological framework. According to data for 2019, the sport economy generated €627.5 billion in gross value added, representing 3.4% of the EU's total GDP, while 9.27 million people were employed in sport-related activities - equivalent to 3.8% of the European labour force. These indicators demonstrate that sport is not a marginal segment of the economy, but rather a stable, diverse and dynamic system of intersectoral connections.

The structure of the sport economy, as outlined in the monograph, highlights that the majority of economic value does not emerge from the narrow "core" of sport activities, but from the broader environment of connected industries. While *characteristic goods and services* - such as sport organisations, sport facilities and training services - represent the directly measurable component of the sector, the dominant share of gross value added originates from *connected goods and services*. This wider segment includes sport equipment, sport tourism, media and digital platforms, trade and logistics services, as well as educational and health-related activities linked to sport. Estimates indicate that 65–70% of total sport-related GVA derives from these connected activities, confirming that sport's economic importance is rooted in its multisectoral nature and strong inter-industry linkages.

Sport also represents a clear example of a labour-intensive sector, in which value creation relies heavily on a large number of service-based activities (Dašić et al., 2024a; Dašić et al., 2024b). Employment in sport spans a wide range of segments -

from coaching and event organisation to hospitality, tourism, media, marketing and the retail of sport equipment. In this sense, sport makes a significant contribution to local economies (Milačić, 2024), while its multiplicative structure explains its greater resilience to economic crises compared to certain industrial branches. Input–output models used in the monograph show that each euro of final demand in the sport sector can generate €1.7–€1.8 in total output across the economy, placing sport among the sectors with the highest potential to stimulate economic growth (Ratković, 2023; Kovačević, 2024).

A valuable insight of the monograph concerns the long-term dynamics of development: comparative data show that between 2012 and 2019, direct sport-related GDP increased from €279.7 to €368.8 billion, while total effects measured through SSA exceeded €600 billion, with employment rising from 5.67 to 6.05 million, and reaching 9.27 million jobs when indirect effects are included. This confirms that the sport economy grows not only in absolute terms but also in relative terms - the sector's share within the broader European economic structure has been steadily increasing (see Table 1).

Table 1. Comparative indicators of the development of the sport economy (2012–2019)

Year	Gross Value Added (GVA) of Sport (billion €)	Share in EU GDP	Employment (million)	Share in Total Employment
2012	279.7	2.2%	5.67	2.6%
2019	368.8 (direct) / 627.5 (total SSA)	3.4%	6.05 / 9.27	3.8%

Within the European Union, different models of sport economy development can be distinguished. Tourism-oriented countries generate the highest levels of economic output through sport tourism and hospitality services. Industrial-service economies create value primarily through the production of sport equipment, media industries and professional sport, while certain countries with strong public sectors cultivate a social model in which sport plays a central role in local communities and public services. These distinctions confirm that the sport economy is not a homogeneous phenomenon, but rather reflects the institutional and cultural specificities of each country.

Taken together, the evidence suggests that sport should be viewed as an important developmental resource. Through its structure, growth dynamics and multiplicative effects, the sport sector contributes to employment, tourism, industry, infrastructure and media, while simultaneously generating substantial social benefits. The monograph convincingly demonstrates that sport is not merely organised physical activity, but a complex economic system that produces measurable effects at macroeconomic, regional and social levels - thus warranting systematic support and strategic planning within public policy.

Conclusion

The monograph *EU Sport Satellite Account: Research into estimating the economic value of sport in the EU - 2025 edition* represents one of the most significant contributions to contemporary economic analysis of sport within the European Union. By applying an enhanced SSA framework and the Vilnius 3.0 methodological standard, the authors succeed in integrating sport into the system of national accounts in a manner that enables reliable monitoring, quantification and cross-country comparability of economic effects. As a result, sport is no longer treated as a peripheral or auxiliary activity, but is recognised as a clearly defined and structurally relevant component of the EU's economic landscape.

The 2019 results at the core of the analysis demonstrate that sport exerts a stable and measurable impact on the European economy through both direct and indirect channels. Direct effects reflect activities closely tied to the sport sector - such as sport services, facility management and sport education - while indirect effects reveal the extensive interconnections between sport and other industries, including manufacturing, retail, logistics, public services and tourism. The multiplicative effects derived from input-output models further confirm the high degree of intersectoral integration and provide insight into how sport functions as an economic driver, particularly at local and regional levels.

Shifts in demand structures, physical activity patterns and the organisation of sport institutions indicate the need for future SSA analyses to incorporate the complexities of new behavioural and economic dynamics. In addition, the heterogeneity of European countries in terms of statistical capacity, institutional maturity and the quality of primary data presents both a challenge and an incentive for the continued refinement of SSA methodology. The monograph not only systematizes the economic effects of sport but also serves as a practical manual for SSA implementation at national levels. Its detailed explanations of the classification of characteristic and connected products, the construction of input-output matrices and the interpretation of indicators make it a valuable resource for statisticians, researchers, economists and policymakers. It confirms that sport is a labour-intensive, multisectoral and developmentally relevant domain offering significant opportunities for the integration of economic, social and health policies.

The broader social dimension of sport is also of particular importance. Although SSA primarily measures economic effects, the authors rightly emphasize that sport generates non-material benefits, including improved health, the promotion of social cohesion, the strengthening of community ties and the encouragement of active lifestyles. These benefits, though difficult to quantify in economic terms, meaningfully shape public policy and justify investments in sport infrastructure, physical activity programmes and educational initiatives.

Overall, the monograph provides compelling evidence that sport is not a marginal social activity, but a complex economic system whose effects permeate a wide range of economic sectors. It demonstrates that advanced statistical frameworks such as SSA (Manescu, 2023) play a crucial role in understanding the economic reality of sport while guiding future research and policy development. In this regard, the *EU Sport Satellite Account: 2025 edition* serves as a foundational document that sets standards for future analyses and contributes to building an integrated, evidence-based perspective on sport as an important economic and social resource of the European Union.

Conflict of interests:

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The corresponding author's full name, postal address (in English), and e-mail address should appear after the affiliations. The institutional address is preferred over a private one. The author's name should include only the initials of the first and middle names (separated by a full stop and space) followed by the surname. The postal address should be written in sentence case on the next line, with elements separated by commas. The e-mail address (if possible institutional) should appear on the line following the postal address. Authors should clearly indicate whether the e-mail address should be published.

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Ivana Marković[39], Petar Petrović[40], Mirko Mirković[41]

Summary

It is recommended that the abstract contain up to 150 words and include all essential elements of the paper, such as the research aim, applied methods, key findings, and main conclusions of the author(s).

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Key words: list, up to, five, key, words.

[38] The paper is part of the research conducted within the project No. IV 26003 – *The Impact of the COVID-19 Pandemic on the Advertising and Sponsorship Industry in Sports.* Project duration: 2019–2022. This section is **optional** and not mandatory to include in the paper.

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Introduction

Please strictly adhere to the formatting and style instructions provided in this template. Do not change the font size or line spacing to fit more text within the conditionally limited number of pages.

The Editorial Board organizes the review process of submitted papers and selects those for publication based on reviewers' evaluations and the assessed quality of the manuscripts. However, the ultimate responsibility for the views, originality, and statements expressed in the papers lies solely with the authors.

Please follow the basic principles of structuring scientific papers and, whenever possible, organize your manuscript into the following sections: Introduction, Aim and Methodology, Results and Discussion, Conclusion, and References.

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For entering equations and formulas, use Microsoft Equation Editor or the MathType add-in (www.mathtype.com). Avoid using the built-in Word 2007 equation editor. Ensure that all symbols in the equation are defined immediately after the equation.

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- Table title: spacing 6 pt (before) and 3 pt (after); font Calibri, size 11, alignment Justified.
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- Source and notes: placed 3 pt below the table (before); font Calibri, size 10, alignment Justified.
- Begin the following paragraph at 6 pt spacing after the table source or note.

When referencing tables in the text, mark them as (Table 5) or similar. Ensure that all tables fit within the prescribed page format (Table Properties → Preferred width: max 97%, Alignment: Center). All text within the table cells should have spacing before/after 0 pt and line spacing single. If a table continues onto the next page, repeat the table header on the following page.

Table 5. Nike's distribution costs from production to retail stores

Indicators	**Period**			**Total**
	Month 1	**Month 2**	**Month 3**	
Distance crossed (km)	12.926	11.295	13.208	37.429
Fuel consumption (litre)	3.231	2.823	3.302	9.356
Value of fuel consumption ($).	242.378	211.790	247.653	701.821
Total time spend on touring (hour)	314	266	417	997
Value of total time spend on touring ($).	47.048	39.890	62.570	149.508
Number of tours	98	77	102	277
Toll value ($).	0	0	0	0
Number of pallets transported (piece)	1.179	976	1358	3.513
Total weight transported (kg)	602.600	429.225	711.116	1.742.941
Vehicle maintenance costs ($).	203.858	164.970	224.806	593.634
Lease costs ($).	480.938	454.214	565.784	1.500.936
Total sum ($).	974.222	870.864	1.100.813	2.945.899

Source: Milić, 2012;
Note: Values within the table are calculated without Value Added Tax (VAT)

Graphs, Dendrograms, Diagrams, Schemes, and Figures

Graphs, dendrograms, diagrams, schemes, and figures should be inserted directly into the text (do not use the Float over text option) and numbered according to their order of appearance. Their titles must be positioned immediately above the corresponding graphic element. When indicating the title, source, and notes, use the same formatting style as previously described for tables.

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When writing the conclusion, please note that although it may provide a concise overview of the main results, it should not simply repeat the abstract. The conclusion may explain the importance of the research, provide recommendations for practice, or suggest directions for future research on the discussed topic.

References

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Author Contributions

Conceptualization, V.A. and D.P.; Resources, V.A. and D.P.; Methodology, V.A.; Investigation, V.A. and D.P.; Data curation, V.A.; Formal Analysis, V.A. and D.P.; Writing – original draft, V.A. and D.P.; Writing – review & editing, V.A. All authors have read and agreed to the published version of the manuscript.

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