

# Designing a Model for the Development of Sport for All Through Modern Technologies in Iraq

Jassem Jabbareh Jassem. Al-Tamimi<sup>1</sup>, Nasrin. Azizian Kohan<sup>2\*</sup>, Abbas. Naghizadeh Baghi<sup>2</sup>, Mehrdad. Moharramzadeh<sup>2</sup>

<sup>1</sup> Ph.D. Student of Sport Management, Department of Physical Education and Sport Sciences, University of Mohaghegh Ardabili, Ardabil, Iran

<sup>2</sup> Professor of Sport Management, Department of Physical Education and Sport Sciences, University of Mohaghegh Ardabili, Ardabil, Iran

\* Corresponding author email address: n.azizian@uma.ac.ir

## Article Info

### Article type:

Original Research

### How to cite this article:

Al-tamimi, J. J. J., Azizian Kohan, N., Naghizadeh Baghi, A., & Moharramzadeh, M. (2026). Designing a Model for the Development of Sport for All Through Modern Technologies in Iraq. *AI and Tech in Behavioral and Social Sciences*, 4(4), 1-15.

<https://doi.org/10.61838/kman.aitech.5735>



© 2026 the authors. Published by KMAN Publication Inc. (KMANPUB), Ontario, Canada. This is an open access article under the terms of the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) License.

## ABSTRACT

The present study aimed to design a model for the development of sport for all through modern technologies in Iraq. This study sought to identify the influencing factors, executive strategies, and consequences of using modern technologies to expand public participation in sport. This study was applied in terms of purpose and qualitative in terms of data nature. It was conducted using a grounded theory approach based on the Strauss and Corbin model. The research population included sport management experts, university professors with managerial or executive experience, senior managers of sport and youth departments, and managers of sports federations. Purposeful sampling was used and continued until theoretical saturation was reached. Data were collected through semi-structured interviews with 15 experts. Open, axial, and selective coding were used to analyze the data, and the criteria of credibility, transferability, dependability, and confirmability were applied to evaluate data quality. The findings showed that the causal factors of the model included lifestyle, target population, and the need of sport for all for modern technologies. The contextual factors were identified in four areas: infrastructural, managerial, cultural, and geographical. Economic, political, and socio-cultural factors were also identified as intervening factors. The strategies of the model included educational, managerial, cultural, research-based, and financial strategies. The consequences of the model were also classified into five dimensions: sport development, knowledge development, economic development, health development, and international development. The results showed that modern technologies can provide the basis for the sustainable development of sport for all in Iraq by increasing awareness, facilitating access to sports services, improving information management, and strengthening public participation. Therefore, strengthening technological infrastructures, educating managers and citizens, financially supporting companies active in sport technology, and coordinating sports, educational, and media institutions are necessary in Iraq's sport-for-all policymaking.

**Keywords:** Sport for all; modern technologies; Iraq; grounded theory; sport development.

## 1. Introduction

Societies around the world are experiencing an unprecedented technological transformation. The rapid diffusion of technology across virtually every aspect of human life has fundamentally reshaped the way people live, work, communicate, and interact. In pursuit of greater well-being, security, and quality of life, individuals increasingly rely on a wide range of technologies. Consequently, technological advancement has exerted profound and lasting influences on diverse domains, including culture, the environment, employment, and the economy, with these effects continuing to expand (Patel et al., 2020). Many scholars attribute the rapid pace of contemporary global change to increased access to technology, intensified competition in technological innovation, the globalization of markets, and the growing intensity of international economic competition (Yuldashev, 2021).

The sport industry, as one of the most dynamic sectors influenced by global transformation, has likewise been profoundly affected by technological progress. In recent years, the integration of emerging technologies into sport has accelerated considerably, playing an increasingly important role in reshaping the structure, management, and operation of the industry (Glebova et al., 2023). To remain competitive and sustainable within an increasingly interconnected global environment, sport organizations must embrace technological innovation as an essential component of organizational development and strategic adaptation to emerging challenges (Shilbury et al., 2016).

Despite these developments, much of the literature on technological advancement has traditionally emphasized its adverse effects on physical activity. A prevailing assumption is that technological progress inevitably contributes to sedentary lifestyles and declining levels of physical activity, a perspective supported by several previous studies (Fozonkhah et al., 2021; Mohebi et al., 2019). Existing evidence indicates that technological change has produced both positive and negative consequences for physical activity. While increased reliance on digital technologies has been associated with higher levels of sedentary behavior—particularly among younger populations—it has also created new opportunities for promoting active lifestyles (Rodriguez-Salvador & Castillo-Valdez, 2021). When strategically implemented, modern technologies can serve as powerful tools for expanding participation in sport, especially in the context

of Sport for All initiatives, which play a pivotal role in improving public health and enhancing societal well-being.

Sport for All, often used interchangeably with concepts such as *sport for everyone* or *community physical activity*, refers to regular physical activities undertaken by individuals or organized groups with the primary objectives of improving physical and psychological health, fostering social interaction, promoting enjoyment, and enhancing overall quality of life (Matolić et al., 2023). Beyond its health-related benefits, Sport for All contributes substantially to social vitality, meaningful leisure participation, and psychological well-being. Moreover, it has become an important component of participatory urban governance by encouraging community engagement and strengthening social cohesion (Fakhrzadeh et al., 2016).

Integrating physical activity—particularly Sport for All—into daily life has been associated with numerous individual and societal benefits, including reduced social problems, greater emotional stability, and improved physical and mental health. Growing public awareness of the health benefits of regular physical activity has significantly increased individuals' willingness to participate in sport and exercise (Aju et al., 2021). Consequently, fostering a culture that encourages even short periods of daily physical activity can improve not only individual health outcomes but also social well-being while contributing to the prevention of various social challenges (Moshtaghi et al., 2021).

Modern technologies represent one of the defining characteristics of contemporary society and encompass a wide range of applications, including advanced sporting equipment, internet-based platforms, social media, mobile applications, digital software, and mass media such as television and radio (Lubysheva & Pashchenko, 2022). These technologies offer numerous opportunities to facilitate the promotion and development of Sport for All. Wearable health-monitoring devices capable of collecting and reporting physiological data have become increasingly common in recreational sport and physical activity. Examples include pedometers, fitness applications, digital exercise platforms, smartwatches, and heart rate monitoring devices designed to support health management during physical activity (Gil-Espinosa et al., 2022). Furthermore, social media platforms have emerged as effective channels for promoting physical activity and encouraging healthy lifestyles (Keshkar & Mohammadi, 2022), while sports medicine technologies enable continuous monitoring of health indicators and facilitate evidence-based exercise

prescription (Forberger et al., 2017). Collectively, these technological innovations illustrate the substantial potential of modern technologies to enhance participation in Sport for All and support broader public health objectives.

A growing body of research has examined the role of modern technologies in sport from diverse perspectives across different countries. Woods et al. (2023), for example, emphasized the transformative role of technology in shaping athletes' lifestyles and daily practices (Woods et al., 2023). Similarly, Ramón and Rojas Torrijos (2022) identified cultural factors as key determinants influencing the adoption and effective use of emerging technologies in sport (Ramon & Rojas-Torrijos, 2022). In contrast, Chadwick (2022) argued that economic considerations constitute one of the primary drivers of technological integration into the sport industry, particularly within the context of Sport for All (Chadwick, 2022). Furthermore, Mamo et al. (2022) demonstrated that modern technologies, when incorporated into managerial and organizational reforms, can substantially enhance the development and delivery of community sport programs (Mamo et al., 2022).

From a broader societal perspective, Gramaioli et al. (2022) concluded that expanding Sport for All initiatives can contribute not only to socioeconomic development but also to strengthening international cooperation and sports diplomacy among nations. Likewise, Ferrell et al. (2022) predicted that by 2030 technological innovation would profoundly reshape the sport ecosystem, influencing its three principal stakeholder groups—athletes, consumers, and sport managers.

Evidence from Iran similarly suggests that modern technologies are emerging as key drivers of cultural and social development while offering considerable potential for advancing Sport for All. Gholami Torkeshlouyeh et al. (2023) highlighted the transformative capacity of technology to address current and future communication needs within community sport (Gholami Torkeshlouyeh et al., 2023). Likewise, Torabi and Mohammadi (2023) identified technological advancement as one of the major organizational factors influencing the public culture of Sport for All (Torabi & Mohammadi, 2023). In a similar vein, Amini Komijani et al. (2022) argued that technology should occupy a far more prominent position within the long-term strategic vision of the country's sport system (Amini Komijani et al., 2022).

Further evidence has demonstrated the practical benefits of technological innovation for sport service delivery. Farahani and Seyed Javadin (2022) reported a significant

positive relationship between technology adoption and the performance of sport service providers (Farahani & Seyedjavadin, 2022). In addition, Lotfi et al. (2022) and Babazadeh et al. (2021) identified citizens' quality of life as an important determinant of Sport for All development (Babazadeh & Najafzadeh, 2021; Lotfi et al., 2023). From a policy perspective, Fesanghari et al. (2022) proposed several strategies for enhancing the application of modern technologies in recreational sport, including technology co-creation, facilitating technology adoption, designing sport technology ecosystems, fostering innovation, implementing pilot technology projects, technology marketing, exploiting neighborhood effects, expanding public accessibility, commercializing community sport, and stimulating demand for technology-based sport services (Fesanghari et al., 2022). Earlier, Gholami et al. (2017) demonstrated that technological factors exert the strongest influence on the establishment and growth of small and medium-sized enterprises within the sport industry, emphasizing that such development depends on the availability of appropriate technological infrastructure and equipment (Gholami et al., 2017). Similarly, Irajpour et al. (2016) highlighted the important role of digital media in promoting Sport for All through information dissemination, public education, and continuous awareness campaigns aimed at strengthening community participation and social collaboration (Irajpour et al., 2016).

Despite the growing body of literature, the present study extends beyond the conventional argument that modern technologies simply increase participation in physical activity and sport. Rather, it seeks to provide a systematic understanding of the nature of emerging technologies, their underlying mechanisms, and their practical capacity to facilitate the sustainable development of Sport for All. A review of previous studies indicates that domestic research has generally treated technology as a static phenomenon, paying relatively little attention to its rapid evolution, increasing complexity, and emerging dimensions. Meanwhile, advances in digital technologies have accelerated considerably, creating a need for a comprehensive framework capable of identifying their various dimensions and evaluating their respective contributions to promoting physical activity and expanding community sport participation. Addressing this gap constitutes the central motivation of the present study. Accordingly, this research proposes a context-specific strategic model for promoting Sport for All through modern technologies, with particular emphasis on the

socioeconomic, institutional, and cultural conditions of Iraq. This context-sensitive perspective represents the principal contribution of the present study and distinguishes it from previous research in the field.

## 2. Methods and Materials

This study was conducted as applied research and employed a qualitative research design using the grounded theory approach developed by Strauss and Corbin (1998). This methodological approach was selected because of the exploratory nature of the study and its suitability for systematically identifying and explaining the dimensions, components, and interrelationships between modern technologies and the development of Sport for All within the specific socioeconomic and institutional context of Iraq.

### 2.1. Participants and Sampling

The study population consisted of experts in sport management. For the purposes of this research, experts included university faculty members specializing in sport management who had managerial or executive experience within the Ministry of Youth and Sports, national sport federations, or provincial directorates of youth and sports. The participant pool also included senior administrators from provincial sport organizations and national sport federations, including presidents, vice presidents, and secretaries-general.

Participants were selected through purposive sampling, beginning with two key informants who met the inclusion criteria. Sampling continued using the principle of theoretical sampling, whereby participants were recruited based on their potential contribution to theory development. Data collection continued until theoretical saturation was achieved. Saturation occurred after interviews with 15 experts, at which point no substantially new concepts or categories emerged, and the sampling process was concluded.

### 2.2. Participant Characteristics

The final sample comprised 15 experts in sport management and administration. Participants ranged in age from 36 to 60 years and included both male and female professionals. Most participants held doctoral degrees in Physical Education or Sport Sciences, while a smaller number possessed master's degrees in the same field. Their professional backgrounds included university professors,

senior administrators, and employees within governmental sport organizations. Professional experience ranged from 6 to 25 years, ensuring that participants possessed extensive academic, managerial, and practical expertise relevant to the development of Sport for All through modern technologies.

### 2.3. Data Collection

Data were collected through semi-structured, face-to-face interviews, allowing participants to provide detailed insights while enabling the researchers to explore emerging issues through follow-up questions. The interview guide was developed based on the research objectives and an extensive review of the literature concerning Sport for All and emerging technologies.

To enhance the trustworthiness of the qualitative findings, the study adopted Lincoln and Guba's (1985) four criteria for establishing rigor: credibility, transferability, dependability, and confirmability. Credibility was strengthened through prolonged engagement with participants and continuous comparison of emerging concepts. Transferability was supported by providing detailed descriptions of the research context and participant characteristics. Dependability was ensured through systematic documentation of the analytical process, while confirmability was enhanced by maintaining an audit trail and continuously comparing interpretations with the original interview data.

### 2.4. Data Analysis

Data analysis was conducted in two sequential stages following the Strauss and Corbin grounded theory coding procedure, which comprises open coding, axial coding, and selective coding.

In the first stage, findings from previous studies on Sport for All and modern technologies were systematically reviewed and analyzed using the three-stage coding process. This analysis facilitated the identification of preliminary concepts and categories that informed the subsequent interview phase.

In the second stage, the interview transcripts were independently analyzed using the same coding framework. During open coding, meaningful concepts were extracted from the interview data. These concepts were subsequently organized into broader categories through axial coding, which identified relationships among categories and subcategories. Finally, selective coding was employed to

integrate the major categories into a coherent conceptual framework explaining the role of modern technologies in the development of Sport for All.

The findings from the literature review and expert interviews were subsequently integrated through a comparative analytical process. The resulting concepts and categories formed the basis for developing the final strategic framework for promoting Sport for All through modern technologies in Iraq. This integrative approach enabled the proposed framework to be grounded both in existing scientific knowledge and in the practical experiences of experts familiar with the Iraqi sport system.

**3. Findings and Results**

This section begins by presenting the demographic characteristics of the interview participants (Table 1). The

information includes participants' age, gender, educational qualifications, academic discipline, professional position, organizational role, and years of work experience. These data provide an overview of the expert panel involved in the study and demonstrate the diversity of professional backgrounds and perspectives represented during the qualitative data collection and analysis process.

Consistent with the objectives of the study and the Strauss and Corbin grounded theory approach, the findings are presented according to the outcomes of the three-stage coding process, including open coding, axial coding, and selective coding. The identified concepts and categories were subsequently organized into the core components of the proposed conceptual framework.

**Table 1**

*Participant Characteristics of Interviewees*

No.	Education	Field	Age	Gender	Position	Experience (years)
1	PhD	Physical Education	60	Male	University professor	9
2	PhD	Physical Education	52	Male	University professor	6
3	MSc	Physical Education	45	Male	Employee	10
4	MSc	Physical Education	43	Female	Employee	15
5	MSc	Physical Education	48	Female	Employee	25
6	PhD	Physical Education	36	Male	University professor	7
7	PhD	Physical Education	39	Female	Employee	11
8	PhD	Physical Education	51	Female	University professor	12
9	MSc	Physical Education	44	Female	Employee	9
10	PhD	Physical Education	47	Male	University professor	14
11	PhD	Physical Education	39	Male	University professor	18
12	PhD	Physical Education	53	Female	University professor	11
13	PhD	Physical Education	36	Female	University professor	13
14	PhD	Physical Education	40	Female	University professor	12
15	PhD	Physical Education	43	Male	University professor	8

Within the grounded theory paradigm, causal conditions refer to the factors that give rise to, influence, or explain the emergence of the central phenomenon under investigation. In the present study, the causal conditions comprise lifestyle changes, the characteristics and needs of target populations, and the growing demand for integrating modern technologies into Sport for All initiatives. These categories represent the fundamental drivers that justify and

shape the adoption of technology as a strategic instrument for expanding community sport participation in Iraq.

The causal conditions, together with their corresponding concepts and initial codes extracted from the interviews, are presented in Table 2. Collectively, these findings illustrate the underlying motivations and contextual factors that support the development of Sport for All through the effective integration of modern technologies within the Iraqi context.

**Table 2**

*Causal Conditions Influencing the Development of Sport for All Through Modern Technologies in Iraq*

Open Codes	Concept	Category
Low level of physical activity participation	Unhealthy lifestyle and the need for change	Lifestyle
Prevalence of sedentary lifestyles	Unhealthy lifestyle and the need for change	
The impact of mechanization on physical activity	Unhealthy lifestyle and the need for change	
The need to improve lifestyle behaviors	Unhealthy lifestyle and the need for change	
Technology as a facilitator of physical activity	Unhealthy lifestyle and the need for change	
The necessity of technology in Sport for All	Broad participation and responsiveness	Target Population
The broad target audience of Sport for All	Broad participation and responsiveness	
Limitations of traditional approaches	Broad participation and responsiveness	
The need for health-oriented planning	Community health promotion	
The influence of technology on social engagement	Community dynamism	
Population ageing and the need for sport development	Community health promotion	
Changing needs of a technology-driven society	Community dynamism	
Changing preferences among younger generations	Community dynamism	
Technology as a tool for engaging participants	Broad participation and responsiveness	
Technology as a bridge between sport organizations	Communication needs	The Need for Modern Technologies in Sport for All
The necessity of ensuring safety in sport facilities	Safety and security needs	
Identifying safety deficiencies in sport facilities	Safety and security needs	
Limited public awareness of sport and physical activity	Information needs	
Technology as a tool for enhancing public knowledge	Information needs	
The potential of technology for knowledge management	Information needs	

Contextual conditions refer to the specific environmental and organizational circumstances within which the central phenomenon occurs and through which interactions, decision-making processes, and strategic responses are shaped. Within the grounded theory paradigm, these conditions provide the context that facilitates or constrains the implementation of strategies related to the phenomenon under investigation.

In the present study, the contextual conditions influencing the development of Sport for All through

modern technologies in Iraq were categorized into four major dimensions: infrastructure, managerial, cultural, and geographical conditions. Together, these dimensions establish the environmental context within which technological innovations can either facilitate or hinder the promotion and expansion of Sport for All. The concepts and open codes extracted from the interviews are presented in Table 3.

**Table 3**

*Contextual Conditions Influencing the Development of Sport for All Through Modern Technologies in Iraq*

Open Codes	Concepts	Category
Insufficient public sport facilities dedicated to Sport for All	Sport facilities and equipment	Infrastructure
Inadequate basic equipment in public sport facilities	Sport facilities and equipment	
Lack of safe and secure sport environments for women and children	Sport facilities and equipment	
Limited availability of free and publicly accessible sport facilities	Sport facilities and equipment	
Weak technological infrastructure supporting community sport	Technological infrastructure	
Inefficient organizational structure of the Iraqi Sport for All system	Legal and organizational structure	Managerial Conditions
Dominance of elite sport over Sport for All policies	Organizational structure	
Overlapping responsibilities among Sport for All governing bodies	Organizational structure	
Restrictive laws and regulations limiting Sport for All development	Legal framework	

Strategic role of the Ministry of Youth and Sports in national policy-making	Legal framework	
Positive public attitudes toward modern sport technologies	Social acceptance	Cultural Conditions
Cultural influences on the adoption of sport technologies	Cultural diversity	
High acceptance of technologies compatible with local culture	Social acceptance	
Cultural diversity facilitating the adoption of innovative technologies	Cultural diversity	
Society's potential to embrace various technological innovations	Social acceptance	
Land, air, and maritime accessibility to imported technologies	Accessibility	Geographical Conditions
Strategic geographical location facilitating technology transfer	Accessibility	
Simultaneous access to technologically advanced Eastern and Western countries	Accessibility	
Diverse climatic conditions supporting different sport technologies	Climatic diversity	
Applicability of technologies under varying environmental conditions	Climatic diversity	
Year-round access to diverse climatic environments	Climatic diversity	

Within the grounded theory framework, intervening conditions are broader structural or environmental factors that influence how causal conditions affect the central phenomenon and determine the effectiveness of strategic actions. These factors may either facilitate or constrain the successful implementation of technology-driven Sport for All initiatives.

The findings indicate that the intervening conditions influencing the development of Sport for All through

modern technologies in Iraq can be classified into three principal categories: economic, political, and socio-cultural conditions. These factors play a decisive role in determining the extent to which modern technologies can be adopted, disseminated, and integrated into community sport development. The concepts and corresponding open codes are presented in Table 4.

**Table 4**

*Intervening Conditions Influencing the Development of Sport for All Through Modern Technologies in Iraq*

Open Codes	Concepts	Category
High cost of sport technology equipment	High implementation costs	Economic Conditions
High costs associated with acquiring modern sport technologies	High implementation costs	
Exchange-rate fluctuations increasing equipment costs	Economic constraints	
Weak overall economic conditions	Economic constraints	
Economic sanctions limiting access to technologies	Economic constraints	
Large proportion of the population within low-income groups	Economic constraints	
High inflation reducing purchasing power	Economic constraints	
Political barriers to importing modern technologies	Domestic and international politics	Political Conditions
Weak political relations with technologically advanced countries	Domestic and international politics	
Influence of political leaders on public attitudes toward technology	Domestic and international politics	
Political interference by non-specialists in Sport for All	Domestic and international politics	
Political influence on media narratives regarding technology	Domestic and international politics	
Influence of celebrities on public attitudes toward technology	Domestic and international politics	
Role of media in promoting sport technologies	Media	Socio-Cultural Conditions
Media as a platform for educating the public about sport technologies	Media	
Media as an essential component of digital sport ecosystems	Media	
Consideration of religious beliefs in technology adoption	Religious and cultural beliefs	
Influence of social culture on technology selection and acceptance	Religious and cultural beliefs	

Within the grounded theory framework, strategies refer to the purposeful actions, decisions, and interactions adopted by stakeholders in response to the identified causal, contextual, and intervening conditions. These strategic actions are intended to facilitate the effective implementation of modern technologies and ultimately promote the development of Sport for All.

The findings revealed five major categories of strategies: educational strategies, managerial strategies, cultural strategies, research strategies, and financial strategies. Together, these strategies constitute the operational foundation for developing technology-driven Sport for All programs in Iraq. The corresponding concepts and open codes are presented in Table 5.

**Table 5**

*Strategies for Developing Sport for All Through Modern Technologies in Iraq*

Open Codes	Concepts	Category
Increasing public awareness of health-oriented sport technologies	Education for practitioners	Educational Strategies
Deploying qualified coaches and consultants in public sport facilities	Education for practitioners	
Public education on the use of modern sport technologies	Education for society	
Disseminating technological knowledge among users	Education for society	
Establishing specialized online educational platforms	Education for society	
Educating policymakers in sport technology	Education for practitioners	
Establishing university programs in sport technology development	Education for practitioners	
Training coaches in the application of emerging sport technologies	Education for practitioners	
Developing supportive legislation for sport technology	Structural development	Managerial Strategies
Establishing a Sport for All technology ecosystem	Structural development	
Creating specialized sport technology departments	Structural development	
Implementing governance monitoring and evaluation systems	Structural development	
Establishing a sport technology standardization authority	Structural development	
Forming specialized committees for Sport for All development	Interactive governance	
Developing an independent cross-sector monitoring system	Interactive governance	
Strengthening coordination among Sport for All organizations	Interactive governance	
Promoting collaboration between sport and technology organizations	Interactive governance	
Encouraging inter-ministerial cooperation	Interactive governance	
Increasing municipal participation in public sport facilities	Interactive governance	
Promoting organizational dialogue among relevant institutions	Interactive governance	
Utilizing social networking platforms to strengthen stakeholder connections	Interactive governance	
Learning from successful and unsuccessful international experiences	Capacity building	
Strengthening commitment among national sport and cultural authorities	Capacity building	
Enhancing the role of national media and supreme councils	Capacity building	
Engaging technology specialists in Sport for All programs	Professionalization	
Designing comprehensive sport technology software	Professionalization	
Translating research findings into practical implementation	Professionalization	
Maximizing the utilization of existing digital platforms	Capacity building	
Promoting physical activity monitoring applications	Professionalization	
Utilizing domestic technological capabilities	Capacity building	
Adapting sport technologies to provincial climatic conditions	Localization	
Utilizing diverse virtual communication platforms	Localization	
Addressing the needs of different age groups	Localization	
Considering regional psychological and cultural differences	Localization	
Facilitating family participation in Sport for All	Family-centered approach	
Creating family accounts within digital platforms	Family-centered approach	
Developing technology-based group competitions	Family-centered approach	
Expanding opportunities for physical activity in high-traffic public areas	Program planning	
Increasing policymakers' attention to sport technology	Policy reform	
Reducing restrictions on internet accessibility	Policy reform	
Strengthening managerial support for sport technology	Policy reform	
Adopting a comprehensive yet detailed policy perspective	Policy reform	
Balancing hardware and software development	Policy reform	
Promoting realistic expectations regarding technology	Policy reform	
Conducting pilot implementation before large-scale deployment	Program planning	
Promoting physical activity in recreational centers	Program planning	
Reengineering technology-based Sport for All services	Program planning	
Designing digital platforms connecting people with sport opportunities	Program planning	
Improving public access to sport technologies	Program planning	
Establishing short-term and long-term strategic objectives	Program planning	
Organizing sport and technology festivals	Program planning	
Establishing a National Sport Technology Day	Program planning	
Designing physical activity programs for sport fans	Program planning	

Assessing current and desired conditions of technology-driven sport	Program planning	
Establishing specialized sport technology accelerators	Technology accelerators	
Using accelerators to strengthen social interaction	Technology accelerators	
Integrating society, technology, sport, and the marketplace	Technology accelerators	
Utilizing media to promote sport technologies	Acceptance of Sport for All	Cultural Strategies
Employing technology as a catalyst for physical activity	Acceptance of Sport for All	
Stimulating public demand for sport technologies	Technology acceptance	
Promoting sport applications through media channels	Technology acceptance	
Improving public attitudes toward physical activity	Acceptance of Sport for All	
Promoting a positive culture of technology-driven Sport for All	Acceptance of Sport for All	
Assessing community needs for Sport for All	Needs assessment	Research Strategies
Identifying citizens' sport and technology preferences	Needs assessment	
Assessing community demand for emerging sport technologies	Needs assessment	
Utilizing high-quality research in policymaking	Research development	
Integrating research on technology and Sport for All	Research development	
Examining internet usage patterns among citizens	Research development	
Conducting foresight studies on sport technology	Research development	
Supporting investors in sport technologies	Private-sector support	Financial Strategies
Supporting sport technology-based companies	Private-sector support	
Aligning Sport for All budgets with participation demand	Financial support	
Government financial support for technology investors	Financial support	
Introducing sport organizations to financial institutions	Financial support	

Within the grounded theory framework, consequences represent the ultimate outcomes that emerge from the interactions and processes identified throughout the theoretical model. They reflect the broader impacts of the strategies adopted in response to the causal, contextual, and intervening conditions.

In the present study, the consequences of integrating modern technologies into the development of Sport for All in Iraq were classified into five overarching dimensions: sport development, knowledge development, economic development, health development, and international development. These dimensions encompass the principal

outcomes expected from the effective implementation of technology-driven Sport for All initiatives and illustrate the multidimensional contribution of modern technologies to sustainable sport development.

The categories, together with their associated concepts and open codes, are presented in Table 6. Finally, based on the findings obtained through the grounded theory analysis and the integration of the identified categories and concepts, the final conceptual model for the development of Sport for All through modern technologies in Iraq was developed and is presented in Figure 1.

**Table 6**

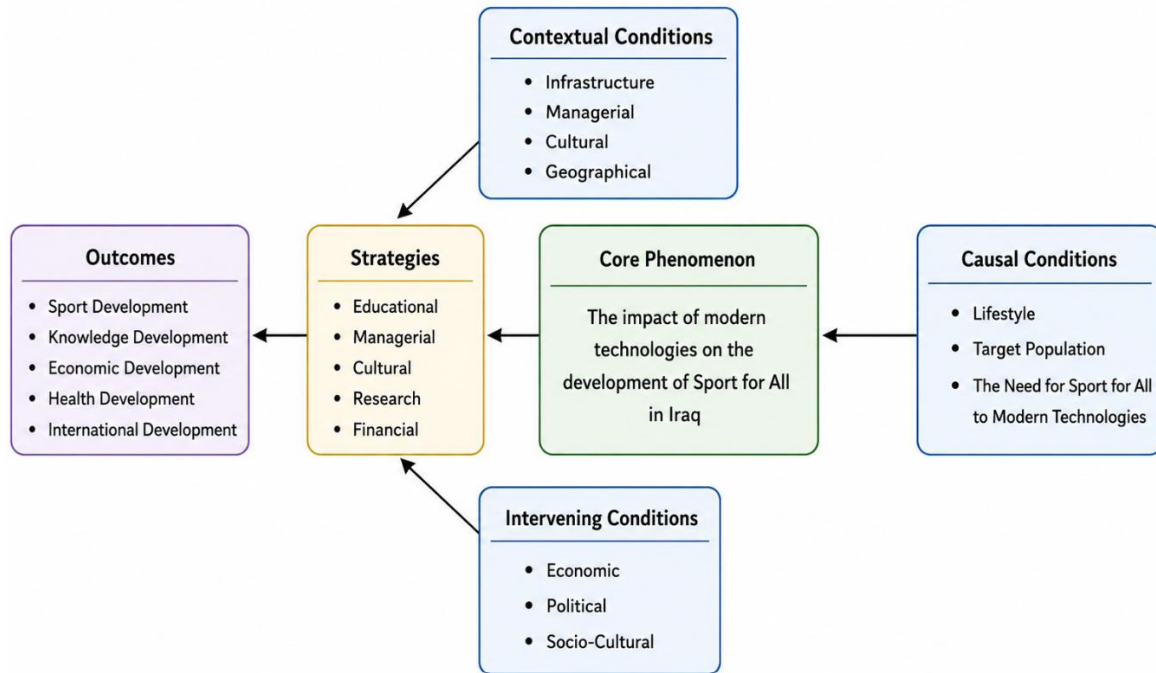
*Consequences of Developing Sport for All Through Modern Technologies in Iraq*

Open Codes	Concepts	Category
Improving public attitudes toward Sport for All	Attitude change	Sport Development
Increasing the attractiveness of Sport for All through modern technologies	Attitude change	Sport Development
Improving managers' perceptions of Sport for All	Attitude change	Sport Development
Increasing motivation for physical activity	Expansion of physical activity	Sport Development
Increasing public participation in Sport for All	Expansion of physical activity	Sport Development
Diversifying patterns of sport participation	Expansion of physical activity	Sport Development
Facilitating participation in community sport activities	Expansion of physical activity	Sport Development
Promoting widespread physical activity across society	Expansion of physical activity	Sport Development
Improving identification of sport facilities through technology	Development of sport facilities	Sport Development
Facilitating access and transportation to sport	Development of sport facilities	Sport Development

facilities		
Expanding the quantity and quality of public sport facilities	Development of sport facilities	Sport Development
Improving equipment and infrastructure in Sport for All facilities	Development of sport facilities	Sport Development
Enhancing technology-related sport skills	Community knowledge	Knowledge Development
Increasing technology-based health literacy	Community knowledge	Knowledge Development
Improving community sport information systems	Community knowledge	Knowledge Development
Enhancing coaches' professional learning	Community knowledge	Knowledge Development
Collecting physiological data for individualized exercise planning	Managerial knowledge	Knowledge Development
Strengthening evidence-based policymaking for sport managers	Managerial knowledge	Knowledge Development
Real-time monitoring and evaluation of development programs	Managerial knowledge	Knowledge Development
Improving information management and financial decision support	Managerial knowledge	Knowledge Development
Creating new technology-driven jobs in Sport for All	Employment generation	Economic Development
Expanding companies producing sport technologies	Employment generation	Economic Development
Supporting the growth of sport technology startups	Employment generation	Economic Development
Expanding technology-based sport service companies	Employment generation	Economic Development
Strengthening the financial foundations of sport enterprises	Financial development	Economic Development
Improving household economic conditions	Financial development	Economic Development
Strengthening the national economy	Financial development	Economic Development
Increasing investment in Sport for All	Financial development	Economic Development
Improving community health	Health improvement	Health Development
Improving physical health	Health improvement	Health Development
Improving mental health	Health improvement	Health Development
Building a healthier society with lower disease prevalence	Health improvement	Health Development
Reducing household healthcare expenditures	Cost reduction	Health Development
Reducing social costs associated with crime and social problems	Cost reduction	Health Development
Expanding international technology-based sport activities	Internationalization of Sport for All	International Development
Promoting indigenous community sports globally	Internationalization of Sport for All	International Development
Learning from international Sport for All models	Internationalization of Sport for All	International Development
Eliminating geographical barriers to sport knowledge transfer	International technology adoption	International Development
Facilitating the adoption of global sport technologies	International technology adoption	International Development
Expanding the use of advanced technologies within the national sport community	International technology adoption	International Development
Integrating modern technologies into everyday life	International technology adoption	International Development

**Figure 1**

*A Paradigmatic Model for the Development of Sport for All Through Modern Technologies in Iraq Based on Strauss and Corbin's Grounded Theory Framework*



**4. Discussion and Conclusion**

The present study aimed to design a model for the development of Sport for All through modern technologies in Iraq. The findings showed that the causal conditions influencing the role of modern technologies in the development of Sport for All include lifestyle, target population, and the need of Sport for All for modern technologies. These findings are consistent with the results reported by Woods et al. (2023), Gholami Torkeshlouyeh et al. (2023), Amini Komijani et al. (2022), Lotfi et al. (2022), and Babazadeh and Najafzadeh (2021) (Amini Komijani et al., 2022; Babazadeh & Najafzadeh, 2021; Gholami et al., 2017; Lotfi et al., 2023; Woods et al., 2023).

Woods et al. (2023) emphasized the decisive role of technologies in transforming athletes' lifestyles (Woods et al., 2023). Gholami Torkeshlouyeh et al. (2023) also referred to the current and potential future transformations created by technology in Sport for All, particularly in responding to communication needs (Gholami et al., 2017). Similarly, Amini Komijani et al. (2022) highlighted the necessity of incorporating modern technologies into the strategic outlook of national sport development (Amini Komijani et al., 2022). Lotfi et al. (2022) and Babazadeh

and Najafzadeh (2021) also identified quality of life as one of the causal factors affecting the development of Sport for All (Babazadeh & Najafzadeh, 2021; Lotfi et al., 2023).

These findings may be explained by the low level of physical activity participation, the prevalence of sedentary lifestyles, and the growing dependence on technologies that reduce movement. Together, these factors highlight the need to reconsider behavioral patterns within society. Such change can be achieved only through the systematic development of Sport for All and the purposeful use of modern technologies at the community level. Given the dynamic nature of contemporary society and the diverse needs of different social groups, the use of modern technological tools in Sport for All should be regarded as a fundamental and unavoidable necessity, since traditional approaches alone are no longer sufficient to respond to these needs.

The findings also indicated that the contextual conditions affecting the role of modern technologies in the development of Sport for All in Iraq include infrastructural, managerial, cultural, and geographical factors. These results are consistent with the findings of Ramón and Rojas Torrijos (2022), Torabi and Mohammadi (2023), Fozounkiah et al. (2021), Moshtaghi et al. (2021), and

Gholami et al. (2017) (Fozonkhah et al., 2021; Gholami Torkesaluye et al., 2023; Moshtaghi et al., 2021; Ramon & Rojas-Torrijos, 2022; Torabi & Mohammadi, 2023).

Ramón and Rojas Torrijos (2022) identified cultural factors as key components in the acceptance and application of modern sport technologies (Ramon & Rojas-Torrijos, 2022). Torabi and Mohammadi (2023) introduced technology as one of the organizational factors influencing the public culture of Sport for All (Torabi & Mohammadi, 2023). Fozounkhah et al. (2021) also emphasized the role of structural, infrastructural, communication, cultural, and managerial factors in the development of Sport for All (Fozonkhah et al., 2021). Likewise, Moshtaghi et al. (2021) highlighted the importance of managerial and infrastructural factors in the role of mass media in developing Sport for All (Moshtaghi et al., 2021), while Gholami et al. (2017) showed that the effective use of technology in sport requires the improvement of relevant equipment and facilities (Gholami et al., 2017).

Overall, it can be concluded that technological infrastructure, together with appropriate sport facilities and equipment, plays a facilitating role in the use of modern technologies for developing Sport for All in Iraq. Conversely, the weakness or absence of such infrastructure may constitute a major barrier. In addition, an inefficient management structure for Sport for All and insufficient support from managers and policymakers may weaken both the development of Sport for All and the effective adoption of modern technologies. By contrast, the cultural diversity and flexibility of society, along with Iraq's climatic diversity, provide a suitable capacity for accepting and adapting different forms of modern technologies in the development of Sport for All.

Another finding of the study showed that the intervening conditions affecting the role of modern technologies in the development of Sport for All include economic, political, and socio-cultural factors. This finding is consistent with the studies of Chadwick (2022), Gholami Torkeshlouyeh et al. (2023), and Fozounkhah et al. (2021) (Chadwick, 2022; Fozonkhah et al., 2021; Gholami et al., 2017).

Chadwick (2022) considered economic factors to be among the influential components in the introduction of technology into Sport for All (Chadwick, 2022). Gholami Torkeshlouyeh et al. (2023) referred to the political challenges and considerations associated with the future of technology in Sport for All (Gholami et al., 2017), while Fozounkhah et al. (2021) identified financial and economic

factors as strategic weaknesses in the development of Sport for All (Fakhrzadeh et al., 2016).

This finding may be explained by the fact that the high costs of technological equipment and infrastructure, together with economic and political constraints, inflation, and economic deprivation, represent major barriers to the effective use of modern technologies in the development of Sport for All in Iraq. These conditions may disrupt or slow down the process of adopting and implementing such technologies in a systematic and sustainable manner.

Another part of the findings indicated that the strategies related to the use of modern technologies in the development of Sport for All include educational, managerial, cultural, research-based, and financial strategies. These results are consistent with the findings of Mamo et al. (2022), Chadwick et al. (2022), Fesanghari et al. (2022), Rahbari et al. (2021), Moshtaghi et al. (2021), and Irajpour et al. (2016) (Chadwick, 2022; Fesanghari et al., 2022; Irajpour et al., 2016; Mamo et al., 2022; Moshtaghi et al., 2021; Rahbari et al., 2021).

Chadwick et al. (2022) considered financial strategies and support for investors to be essential requirements for the development of Sport for All (Chadwick, 2022). Mamo et al. (2022) reported that managerial reforms based on modern technologies can contribute effectively to the development of Sport for All (Mamo et al., 2022). Fesanghari et al. (2022) categorized strategies for improving the use of modern technologies in recreational sport into several dimensions, including co-creation, technology ecosystem design, innovation development, technology piloting, marketing, commercialization, and stimulation of technology-based demand (Fesanghari et al., 2022).

Similarly, Rahbari et al. (2021) identified financial support, the use of specialized human resources, and interaction with the media as effective strategies for developing Sport for All (Rahbari et al., 2021). Moshtaghi et al. (2021) also emphasized the role of culture-building, institutional interaction, financial support, and media engagement (Moshtaghi et al., 2021). Irajpour et al. (2016) reported that educational strategies, information dissemination, culture-building, and strengthening social participation are effective in the cultural development of Sport for All (Irajpour et al., 2016).

These findings suggest that targeted public education on the use of technologies applied in Sport for All, together with the training of sport managers and policymakers in how to utilize such technologies, can play a key role in

developing technology-driven Sport for All in Iraq. Moreover, reforming the organizational structure of relevant institutions, strengthening interaction between organizations and society, promoting technological specialization, using domestic capacities, adapting programs to different social groups, and facilitating family participation can reduce a considerable part of the existing challenges. Alongside these measures, social culture-building, the development of problem-oriented research, and financial support from both the government and the private sector are essential requirements for this process.

The final findings showed that the consequences of using modern technologies in the development of Sport for All include sport development, knowledge development, economic development, health development, and international development. These findings are consistent with the results reported by Gholami Torkeshlouyeh et al. (2023), Garamvölgyi et al. (2022), Frevel et al. (2022), Farahani and Seyed Javadin (2022), Fesanghari et al. (2022), Rahbari et al. (2021), and Moshtaghi et al. (2021) (Farahani & Seyedjavadin, 2022; Fesanghari et al., 2022; Frevel et al., 2022; Garamvölgyi et al., 2022; Gholami et al., 2017; Moshtaghi et al., 2021; Rahbari et al., 2021).

Gholami Torkeshlouyeh et al. (2023) identified sport development and economic development as key outcomes of expanding Sport for All (Gholami et al., 2017). Garamvölgyi et al. (2022) showed that the development of Sport for All can contribute to socioeconomic growth and the enhancement of international diplomacy (Garamvölgyi et al., 2022). Frevel et al. (2022) also predicted that, by 2030, technology would have a considerable impact on athletes, consumers, and sport managers (Frevel et al., 2022). Farahani and Seyed Javadin (2022) referred to the improvement of sport service performance as a result of technology adoption (Farahani & Seyedjavadin, 2022), while Fesanghari et al. (2022) reported sport, economic, and health-related development as outcomes of using modern technologies in recreational sport (Fesanghari et al., 2022).

Furthermore, Rahbari et al. (2021) highlighted the mutual benefits of supporting Sport for All for both sport federations and sponsoring companies (Rahbari et al., 2021). Moshtaghi et al. (2021) also regarded knowledge production, increased participation, and improved social interactions as important outcomes of technological development in sport (Moshtaghi et al., 2021).

Accordingly, the use of modern technologies in the development of Sport for All in Iraq can lead to changes in

social attitudes, increased attractiveness of Sport for All, higher public participation, improved access to sport facilities, enhanced technological knowledge and skills, the creation of new jobs, economic development, improved public health, and reduced healthcare costs. In addition, drawing on successful international experiences and advanced global technologies can significantly improve the quality of Sport for All programs.

Overall, the findings indicate that although several economic, political, and structural barriers exist in the path of using modern technologies for the development of Sport for All, Iraq also possesses considerable capacities and opportunities to overcome these obstacles. Therefore, it is recommended that technological education for both society and managers, organizational reform, strengthened institutional and social interaction, specialization, culture-building, and financial support from the government and private sector be pursued simultaneously. The coherent implementation of these strategies can provide a foundation for the sustainable development of Sport for All in Iraq across sport, knowledge, economic, health, and international dimensions.

#### Authors' Contributions

J.J.J.A. contributed to conceptualization, data collection, formal analysis, and writing the original draft. N.A.K. contributed to supervision, methodology, validation, and writing-review and editing. A.N.B. contributed to methodology, validation, and critical revision of the manuscript. M.M. contributed to supervision, project administration, and final manuscript approval. All authors read and approved the final version of the manuscript.

#### Declaration

Artificial intelligence (AI)-assisted tools were used to improve the linguistic quality, readability, and grammatical accuracy of the manuscript. The authors retained full responsibility for the study design, data collection, data analysis, interpretation of the findings, and final content. All AI-assisted outputs were reviewed, verified, and edited by the authors before submission. No AI tool was used as an author of the manuscript.

#### Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

## Acknowledgments

We would like to express our gratitude to all individuals helped us to do the project.

## Declaration of Interest

The authors report no conflict of interest.

## Funding

According to the authors, this article has no financial support.

## Ethics Considerations

This study was conducted in accordance with the ethical principles for research involving human participants. Informed consent was obtained from all participants prior to the interviews. Participation was voluntary, and confidentiality and anonymity were maintained throughout the study.

## References

- Amini Komijani, H. R., Farahani, A., Goodarzi, M., & Ghorbani, L. (2022). Policy of the tourism industry in the development documents of the Islamic Republic of Iran with emphasis on sports tourism. *Applied Research in Sport Management*, 11(2), 1-10. <https://doi.org/10.30473/arsm.2022.8534>
- Babazadeh, N., & Najafzadeh, M. R. (2021). The relationship between values and lifestyle with women's sports participation. *Sociology of Lifestyle Management*, 7(17), 70-91. <https://dor.isc.ac/dor/20.1001.1.24237558.1399.5.1.4.0>
- Chadwick, S. (2022). From utilitarianism and neoclassical sport management to a new geopolitical economy of sport. *European Sport Management Quarterly*, 22(5), 685-704. <https://doi.org/10.1080/16184742.2022.2032251>
- Fakhrzadeh, H., Djalalinia, S., Mirarefin, M., Arefirad, T., Asayesh, H., Safiri, S., Samavat, T., Mansourian, M., & Qorbani, M. (2016). Prevalence of physical inactivity in Iran: A systematic review. *Journal of Cardiovascular and Thoracic Research*, 8(3), 92-97. <https://doi.org/10.15171/jcvtr.2016.20>
- Farahani, Z., & Seyedjavadin, S. R. (2022). The impact of using electronic marketing on the performance of sports businesses: Case study of Revolution Sports Complex. *Applied Research in Sport Management*, 11(2), 50-58. <https://doi.org/10.30473/arsm.2022.61397.3590>
- Fesanghari, J., Norouzi Seyed Hossini, R., Saffari, M., & Kouzechian, H. (2022). Strategies for using new technologies to develop recreational sports: From pilot to commercialization. *Sport Management Journal*, 14(1), 332-351. <https://doi.org/10.22059/jsm.2021.311581.2591>
- Forberger, S., Bammann, K., Bauer, J., Boll, S., Bolte, G., Brand, T., Hein, A., Koppelin, F., Lippke, S., Meyer, J., Pischke, C. R., Voelcker-Rehage, C., & Zeeb, H. (2017). How to tackle key challenges in the promotion of physical activity among older adults (65+): The AEQUIPA network approach. *International Journal of Environmental Research and Public Health*, 14(4), Article 379. <https://doi.org/10.3390/ijerph14040379>
- Fozonkhah, P., Shahbazi, M., & Monazami, A. (2021). Identifying strategic disadvantages of developing sport for all: Experts' points of view. *Applied Research in Sport Management*, 10(2), 101-110. <https://doi.org/10.30473/arsm.2021.8237>
- Frevel, N., Beiderbeck, D., & Schmidt, S. L. (2022). The impact of technology on sports: A prospective study. *Technological Forecasting and Social Change*, 182, Article 121838. <https://doi.org/10.1016/j.techfore.2022.121838>
- Garamvölgyi, B., Bardocz-Bencsik, M., & Dóczi, T. (2022). Mapping the role of grassroots sport in public diplomacy. *Sport in Society*, 25(5), 889-907. <https://doi.org/10.1080/17430437.2020.1807955>
- Gholami, A., Zare, A., Ghalavand, A., & Shirali, R. (2017). The study of factors affecting the formation of small and medium-sized institutions in the Iranian sport industry. *Applied Research in Sport Management*, 6(2), 57-66. <https://dor.isc.ac/dor/20.1001.1.23455551.1396.6.2.5.9>
- Gholami Torkesaluye, S., Zareian, H., Abdollahi, M. H., & Abolhoseini, A. (2023). Identifying the key drivers of the development of sport for all with a structural analysis approach. *Sport Management Studies*, 15(81), 285-308. <https://doi.org/10.22089/smrj.2023.13710.3767>
- Gil-Espinosa, F. J., Nielsen-Rodríguez, A., Romance, R., & BURGUEÑO, R. (2022). Smartphone applications for physical activity promotion from physical education. *Education and Information Technologies*, 27(8), 11759-11779. <https://doi.org/10.1007/s10639-022-11108-2>
- Glebova, E., Gerke, A., & Book, R. (2023). The transformational role of technology in sports events. *Sports management in an uncertain environment*,
- Irajpour, A., Mojarrad, N., & Dabbagh Rezaieh, F. (2016). Investigating the role of mass media in the cultural development of Iran's amateur and professional sports. *Sport Management and Development*, 5(2), 36-52. [https://journals.guilan.ac.ir/article\\_2133.html](https://journals.guilan.ac.ir/article_2133.html)
- Keshkar, S., & Mohammadi, Z. (2022). Marketing strategies for reaching Iranian older adults: A social network based on physical activity promotion. *Sport marketing in a global environment: Strategic perspectives*,
- Lotfi, K., Farzan, F., Khodadadi, M., & Razavi, S. M. H. (2023). Designing a model of recreational sports in the family with a grounded theory approach. *Sport Management Studies*, 15(79), 83-104. <https://doi.org/10.22089/smrj.2021.10406.3393>
- Lubysheva, L. I., & Pashchenko, L. G. (2022). Modern social contradictions of mass sport. *Theory and Practice of Physical Culture*, 9, 3-6. <https://tpfk.ru/index.php/TPPC/article/view/378>
- Mamo, Y., Su, Y., & Andrew, D. P. S. (2022). The transformative impact of big data applications in sport marketing: Current and future directions. *International Journal of Sports Marketing and Sponsorship*, 23(3), 594-611. <https://doi.org/10.1108/IJSMS-03-2021-0073>
- Matolić, T., Jurakić, D., Podnar, H., Radman, I., & Pedišić, Ž. (2023). Promotion of health-enhancing physical activity in the sport sector: A study among representatives of 536 sports organisations from 36 European countries. *BMC Public Health*, 23, Article 750. <https://doi.org/10.1186/s12889-023-15589-9>
- Mohebi, F., Mohajer, B., Yoosefi, M., Sheidaei, A., Zokaei, H., Damerchilu, B., Rezaei, N., Shafiee, G., Gohari, K., Rezaei, N., Mansourian, M., Larijani, B., & Farzadfar, F. (2019). Physical activity profile of the Iranian population: STEPS

- survey, 2016. *BMC Public Health*, 19, Article 1266. <https://doi.org/10.1186/s12889-019-7592-5>
- Moshtaghi, M., Ghasemi, H., & Rasekh, N. (2021). Designing the role of mass media in the development of public sports of the country and its strategies. *Sport Management Studies*, 13(66), 363-392. <https://doi.org/10.22089/smrj.2020.8214.2813>
- Patel, D., Shah, D., & Shah, M. (2020). The intertwine of brain and body: A quantitative analysis on how big data influences the system of sports. *Annals of Data Science*, 7(1), 1-16. <https://doi.org/10.1007/s40745-019-00239-y>
- Rahbari, S., Khodayari, A., Honari, H., & Amirtash, A. M. (2021). Codification of effective strategies and consequences of sport for all sponsorship in Iran. *Strategic Studies on Youth and Sports*, 20(51), 113-134. <https://sid.ir/paper/412786/fa>
- Ramon, X., & Rojas-Torrijos, J. L. (2022). Public service media, sports and cultural citizenship in the age of social media: An analysis of BBC Sport agenda diversity on Twitter. *International Review for the Sociology of Sport*, 57(6), 918-939. <https://doi.org/10.1177/10126902211043995>
- Rodriguez-Salvador, M., & Castillo-Valdez, P. F. (2021). Integrating science and technology metrics into a competitive technology intelligence methodology. *Journal of Intelligence Studies in Business*, 11(1), 69-77. <https://doi.org/10.37380/jisib.v1i1.696>
- Shilbury, D., O'Boyle, I., & Ferkins, L. (2016). Towards a research agenda in collaborative sport governance. *Sport Management Review*, 19(5), 479-491. <https://doi.org/10.1016/j.smr.2016.04.004>
- Torabi, F., & Mohammadi, M. (2023). Institutionalizing the effective factors of the general culture of public sports in society: Case study of Tehran province. *Applied Research in Sport Management*, 12(2), 15-30. <https://doi.org/10.30473/arsm.2023.65980.3719>
- Woods, J., Hartwell, M., Oldham, L., & House-Niamke, S. (2023). Centering the self, doing the sport, and being the brand: The self-branding of lifestyle athletes on Instagram. *International Journal of Sport Communication*, 16(2), 159-167. <https://doi.org/10.1123/ijsc.2022-0168>
- Yuldashev, M. (2021). Innovative aspects for healthy lifestyle formation and development of sports. *Current Research Journal of Pedagogics*, 2(5), 102-107. <https://doi.org/10.37547/pedagogics-crjp-02-05-18>