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ORIGINAL ARTICLE

Outcomes of Using New Technologies in the Development of Recreational Sports: From Increasing Participation to Wealth Creation

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ABSTRACT

Background. Today, technology is becoming one of the most critical factors that have led to the internationalization of competition in the sports industry. Nowadays, the sports industry is increasingly in need of technology to facilitate proper performance. **Objectives.** The present study aimed to identify the outcomes of using new technologies in the development of recreational sports. **Methods.** Data were collected through semi-structured interviews using a qualitative approach. Data collection was carried out by interviewing 13 professionals with academic education in physical education and sports science in various fields, including technology, sports engineering, and national coaches. The participants were selected using purposeful sampling and snowball sampling techniques. The focus of the interviews was based on a summary of experts' work experience in the relevant field, necessities, challenges, opportunities, solutions, and finally, the outcomes of using new technologies in the development of recreational sports. **Results.** Data analysis was also carried out using thematic analysis (Braun and Clarke, 2006). The present study's findings showed that the outcomes of using new technologies in the development of recreational sports are divided into six groups 1. Increasing participation opportunities, 2. Increasing participation diversity, 3. Inclusion of a wide range of beneficiaries, 4. Formation of positive and modern ideas 5) Alignment with new and global trends, and 6. Wealth creation and economic prosperity. **Conclusion.** According to the results of the current study, the three themes of increasing participation opportunities, increasing participation diversity, and inclusion of a wide range of beneficiaries are among the significant outcomes that lead to the formation of the positive and new mental image about using technology in recreational sports. And further, it has led to alignment with modern and global trends. Both of these outcomes lead to wealth creation and economic prosperity in recreational sports.

KEYWORDS: *Increasing Participation, Wealth Creation, Economic Prosperity, New Technologies, Recreational Sports.*

INTRODUCTION

Today, technology becomes inevitably essential and ubiquitous in such a way we need it for the simplest daily tasks to the most complicated educational processes. We need to accept it and come to terms with it. This issue has been very challenging in various sports in recent years, and the development of technological innovations has occurred rapidly ([1]). We now live in a world where technology is becoming one of the most critical factors driving international competition in the sports industry. The sports industry in all its fields is increasingly in need of technology to facilitate its proper performance ([2]). Today, technological innovations seem to be on most sports

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organizations worldwide considering their performance impact. This indicates a change in technology use due to the increasing use and advances made in the technology field (3). Overall, technological advances are making fundamental changes in sports consumption (4). Sports and science have an idea, and that is to cross the boundaries created by humans always. This means that science and sports need exceptional and innovative technologies to improve society (5). Theories of traditional sports management and technology tend to be separate and unrelated. However, as the situation changes, we must move towards a direction where technology becomes an integral basis of any study on innovation in sports management (6). Therefore, further emphasis should be placed on the need for joint experimental and practical work of sports and technology in societies (7). Sport is a big business worldwide and technology is increasingly included in it (8).

Today, most parts of the sports industry are driven by the need for constant innovation. Pioneering sports organizations are deeply involved in innovative processes worldwide and are always trying to take advantage of new scientific advances; because it is essential to use technology in sport contexts. The context can be described as sports conditions, sports situations, or sports environments (9). Depending on the context, technology seeks several purposes. The study of technology in sports compared to other industrial environments has several benefits for researchers, physicians, sports officials, and policymakers (10). Bearing in mind that sport contexts vary depending on the type and location (sport or recreation). Concerning outdoor sports contexts, special conditions must be provided for recreational sports activities under any weather conditions and using sports technologies. Therefore, such a sports environment can be created anywhere using electronic sports operating systems or digital technologies (2). Sports activities have increasingly been affected by advances made in digital technology in recent years, including artificial intelligence, cloud computing, or the Internet of Things (11). Today, the spread of technology into sports has led to the creating of more digital jobs in the sports field based on technological equipment. The sports industry is one of the most innovative technology sectors because of technology in different ways and areas (12). The development of sports

technologies has become an integral part of the sports industry because of their importance and relationship with hygiene, health, education, sports, and even tourism. The nature of sports is such that it requires the use of technology in digital and even online form (10). Technology plays a vital role in the interaction between sports organizations with society and shows their commitment to the community (2).

In recent decades, people have experienced significant changes in their lifestyle globally. Among these, three changes have affected people's lives more significantly than other changes, including 1. More tendency to consume high-calorie foods and less desire to use consume locally-produced foods; 2. A change in physical activity due to advances in new technologies and the urbanization expansion, and 3. More tendency to use tobacco, alcohol, and other psychotropic drugs (13). Considering these changes, one of which is the development of new technologies worldwide, the United Nations has approved the plan, at the General Assembly of the 70th anniversary of its establishment, whereby all members of the United Nations are committed to investing in public health-related programs through various activities until 2030 (14). Recreational sports are one of these activities to promote public health (15). Today, technologies are used to perform better activities or exercises, which are becoming more complex. The use of these up-to-date technologies has had a significant impact on the performance of sports activities. It may be beyond this research's scope to describe all the technologies available for sports activities.

For this reason, attempts were made to divide them into five general groups to achieve a better understanding of them. These categories include 1. Active video games, 2. Tracking and pedometer technologies (wearable and mobile technologies), 3. 3. Internet of things (IoT)-based sports technologies, 4. Creative hardware equipment to encourage the public to do sports activities, and 5. They are creating change and diversity in sports activities using technology. Active video games are designed to promote whole-body movement on-screen while playing video games. Because of their simplicity compared to real games, dynamic video games are better able to provide a platform for developing sports skills (16). Active video games require players to be physically active while playing. Since regular physical activity is associated with a reduced risk of chronic diseases

among adolescents, young adults, and adults, active video games are new ways to ensure regular physical activity and improve the quality of life (17). Smart sports bracelets, pedometers, and smartwatches are among the most popular sports tools belonging to wearable technology. This tool allows users to measure daily exercise frequency and improve their performance to achieve their personal goals. Wearable sports technologies can measure and control some essential parameters and information, such as heart rate, step count, walking speed, and calories burned, etc. (18).

The Internet forms the basis of IoT, which is usually developed by people and objects. Although the Internet is in its late stage of development, IoT is still in its infancy (19). IoT has been classified as a subset of portable technologies according to some resources; however, considering its importance in the present research, it has been devoted to a separate section. IoT is a modern technology that allows interaction between different surrounding objects. Such interaction occurs with the help of chips and sensors embedded in various equipment. In this technology, objects collect information from the environment with the help of built-in sensors and "talk" to other objects with the help of the Internet (20). The objects that will be connected to the Internet in the future will be things that we may beyond our imagination today. Smart clothes, sneakers, trees, magazines, house walls, lights, etc., are objects present in the universal IoT network. Regarding innovative hardware equipment to encourage the public to do sports activities, it can be said that they are a group of innovative sports equipment designed and built using the science of sports engineering and then placed in public places to encourage people to do sports activities. The development of the field of sports engineering has also brought about change and diversity in the sports activities themselves using technology. Today, modern equipment is used in various sports, which provide a basis for improving the quality of training time of athletes in proportion to the movements of these sports (19).

In a similar study titled organizational innovation, new technologies, and performance, Azar & Ciabuschi (2017) concluded that new technologies enhance performance and development indirectly through the internationalization of activities and the marketing process (21). In a study titled data set

related to students' leisure time, Abbasi et al. (2018) showed a significant relationship between the useful form of spending leisure time and quality of healthy life (22). In his research titled leisure sports activities, creating targeted urban locations, and overweight and obesity in school children in China, Lin (2018) highlighted the importance of the prevalence of overweight and obesity among children and adolescents. This study showed that a variety of technologies provide a sedentary lifestyle for children and adolescents. Establishing sports facilities and equipment on the way to school plays a significant role in encouraging students to do sports activities (23). In a study titled leisure physical activity and its relationship with depressive symptoms among adults 35 years and older, Raatikainen et al. (2019) concluded that leisure physical activity levels and an active lifestyle reduce the risk of cardiovascular diseases and obesity and lead to a further reduction in the incidence of depression caused by these diseases. This study concluded that leisure physical activity reduces depression levels (24). Kim & Jae Ko (2019) concluded that virtual reality technology significantly enhances user experiences. Overall, they referred to the technology-led increase in positive consumer experiences as a fundamental concept for users' satisfaction with sports consumption (25). In a study on the duration of digital media use (mobile or computer) and spending their leisure time on virtual reality or using their leisure time offline, Shin & Gweon (2020) showed that virtual reality increases the speed of transition in children compared to passive leisure (26).

Sport and leisure are considered as cultural subsystems of society. Leisure sports are a type of recreational sport (27). Recreational sports are divided into five levels based on Mull's model (2005): Instructional sports, informal sports, Intramural sports, Extramural sports, and club sports (28). Considering the key role of recreational sports in promoting the health status of people, we should provide opportunities and environments in which citizens can engage in recreational sports and physical activity during their work and daily activities. Therefore, it deserves to provide opportunities, facilities, and equipment to citizens by using new technologies to spend some time in public or sports places while doing daily activities away from social and family issues and do recreational sports with great

interest and desire. The use of modern sports equipment and programs in parks, as well as public places, is one of the significant factors in the development of recreational sports and the existence of sufficient and useful information in the form of guide boards regarding the benefits of recreational sports and use of this equipment is necessary to encourage citizens to attend and use such equipment as much as possible. According to the preceding, the importance of recreational sports in the country, insufficient attention to factors such as new technologies, on the one hand, joining of the Sport for All Sports Federation of the Islamic Republic of Iran in 2018, and mission of the Association For International Sport for All to make the world a better place by using sports for all by 2030, the necessity of using technological active sports activities home quarantine due to the widespread of COVID-19, avoiding lagging behind and being aligned with the advances made in the field of global specialized recreational sports, and the creation of a new area of entrepreneurship and commercialization in the field of active recreational sports technologies, on the other hand, the present study examines the outcomes of using new technologies for the development of recreational sports.

MATERIALS AND METHODS

The aim of the present explanatory research, which was quantitative, was to expand the existing knowledge and understanding regarding the outcomes of using new technologies in the development of recreational sports. Descriptive analysis aims to clarify and analyze the concepts better to understand the phenomenon under study (29). In this research, Targeted Sampling Methods and snowball sampling techniques have been used for in-depth interviews. In this regard, attempts were made to use both academic education (faculty members) and people with managerial experience in sports organizations. Inclusion criteria included familiarity with new technologies, new sports technologies, sports management, individuals with books and scientific-research articles written in the field of recreational sports, individuals with teaching experience on recreational sports, individuals with work experience in recreational sports and new technologies, and specialists in the field of sports engineering, as well as national team coaches.

Qualitative data were analyzed using the thematic analysis method Braun and Clarke (2006)

(30). This method is used to identify, research, and report patterns (data themes). Data themes or designs can be identified as inductively. In the inductive method, known pieces are strongly related to the data itself. This thematic analysis method is somewhat similar to the grounded theory. In this method, the data coding process takes place without adapting it to a pre-prepared coding framework (thematic format). In the inductive method, thematic analysis is performed based on data. In the present study, the inductive approach and the six-step analysis process presented by Braun and Clarke (2006) were used. These six steps are Step 1: Familiarizing oneself with the data. This step is the basis of other measures of research. For the researcher to become familiar with the depth and content range of the data, he\she needs to immerse him/herself in them to some extent. Data immersion usually involves the repeated reading of the information playfully, searching for meanings and patterns.

Step 2: Generating initial codes. The second step begins when the researcher reads and becomes familiar with the data. This step involves creating the initial codes from the data; however, coded data differs from broader analysis units (themes). Step 3: Searching for pieces. This step begins when all the data has been coded and collected, and the researcher has a list of different codes that have been obtained during the research. At this step, the researcher begins the analysis and considers how other codes can be combined to create a set of primary and sub-themes. Step 4: reviewing the themes. The fourth step begins when the researcher starts a collection of articles and reviews them.

In this step, the judgment criterion is internal homogeneity and external contrast. The themes accepted in an article must be semantically homogeneous, while there should be apparent differences between different themes. At this step, the researcher must examine whether these themes form a comprehensive and coherent pattern. Step 5: Defining and naming the themes. The fifth step begins when there is a satisfactory map of the themes. At this step, the researcher redefines and revises the themes presented. He/she then analyze their data. At this step, the researcher should write a brief and specific analysis for each theme, which is related to the main research question. Step 6: Producing the report. Step 6 begins when the researcher has a set of well-established themes. This step includes the final analysis and reports

writing. The final report should provide a concise, logical, coherent, and non-repetitive story about the themes and data related to each theme (30).

To establish the research data's trustworthiness, the researcher maintained his prolonged engagement with the research setting and used the analysis of negative cases and the adequacy of data references. He also validated the categories and categorization process, utilizing the peer review method. In other words, in this research, to increase credibility, the researcher reviewed all the initial codes after each interview's coding and achieved the main themes. Also, the extracted regulations were reviewed and approved by experts familiar with the research topic. Besides, to increase dependability, the central and sub-themes obtained from 13 interviews were presented to three initial participants for review and approval, and their suggestions were applied. Finally, three experts were asked to provide their expert opinions on the embedded layers. Therefore, the authenticity of the research data was met using these measures.

RESULTS

Table 1 shows the demographic characteristics of the participants. According to the table above, the interviewees' average work experience in sports, coaching, technology, and sports engineering was equal to 19.92 years, showing their high expertise and eligibility as a research sample.

Table 1. Demographic Characteristics of the Interviewees

Row	Cod	Gender	Work Experience	Education	Occupation
1	A1	Male	29	Master of Physical Education	Coaching
2	A2	Male	17	Ph.D. in Biomedical Engineering	Technology Management
3	A3	Male	24	Master of Technology	University Lecturer
4	A4	Male	24	Ph.D. in Sport Physiology	Assistant Professor
5	A5	Female	17	Ph.D. in Information Technology	Information Technology Management
6	A6	Male	15	Master of Sport Physiology	University lecturer
7	A7	Male	18	Ph.D. in Sport Biomechanics	University Lecturer & Coaching Bodybuilding
8	A8	Female	15	Ph.D. in Sport Management	Assistant Professor
9	A9	Male	25	Ph.D. in Sport Management	Coaching
10	A10	Male	20	Master of Sports Engineering	Physical Education Teacher
11	A11	Female	19	Master of Sports Engineering	Coaching
12	A12	Female	17	Master of Sports Engineering	Coaching
13	A13	Male	19	Master of Sports Engineering	University lecturer
Average			19.92	-	-

Each interview was first transcribed from the audio recorded during the interview session and the focus group sessions and was completed using the notes taken during the interview sessions to carry out the thematic analysis and interview content analysis. After careful study of these texts, all independent ideas were first identified in concepts and initial codes for each interview. Table 2 provides an example of the initial regulations.

Table 3 shows the main categories and components obtained from qualitative data. It is noteworthy that both apparent and conceptual similarity of concepts were considered while categorizing these categories. Based on the Table below, 46 identified codes were classified into six sub-themes and 1 main theme, which are the outcomes of using new technologies in the development of recreational sports.

Finally, to achieve a better understanding of the research findings, the form of themes was drawn. In other words, the relationships between research themes and the priority and non-priority of variables were explained using the researcher's notes and re-reference to qualitative data (Figure 1).

As the above figure shows, the outcomes of using new technologies in the development of recreational sports consist of three parts. The first part discusses the need to increase participation in recreational sports, increase the diversity of participation in recreational sports, and include a wide range of beneficiaries in recreational sports. These three outcomes lead to positive and new mental images about recreational sports in society, which is the second part of this figure. The third part of this figure includes two other very important outcomes: alignment with international advances and economic development due to the development of recreational sports using new technologies. These

two outcomes include alignment with modern and global trends in recreational sports and wealth creation and economic prosperity in recreational sports. According to the results of this research, the point is that wealth creation can be directly affected by the formation of positive and new mental images and can be affected indirectly in moving in line with recent and global trends.

Table 2. Some Examples of Initial Codes Extracted from Interviews

Row	Corresponding Statements	Initial Codes
1	One of the essential outcomes of introducing technology in recreational sports is that it confronts us with a new form and type of recreational	Possibility to participate in recreational sports in any residential area
2	sports, a state we have not experienced before. I have seen several films introduced by my friends or the Internet and cyberspace that use these	Providing the possibility for sports in crowded urban places
3	technologies to encourage people to have recreational activities in different busy places in the city or any area where people live. Indeed, this event itself can be one of the outcomes of developing these technologies in Iran.	Make changes in the type and form of recreational sports
4	In my coaching field, I always try to find a solution to add variety to my	Help discover sport talent
5	training time and even the type of training. Now, I think that if our country reaches such a level of development to provide recreational activities in an active way using technology one day, I will be one of the	Structural assistance to the development of championship and professional sports
6	first people who will welcome it and use recreational activities to help develop skills in my athletes on a professional and championship level; Because I believe that technology has the potential to transform any form of sport into another way. Maybe, these recreational activities will lead to the discovery of new and hidden talents in my athletes.	Ability to convert known sports activities to recreational sports
7	Personally, I am opposed to the development of technology in its current form; because I believe that the development of technology and the ease of doing things with the least physical activity will endanger the health	Preventing the harmful effects of monotonous and apartment life around the world
8	status of society. However, if it is implemented in the community, I think not only the harmful effects of monotonous and apartment life will be reduced, but also the public health per capita of the society will increase, and the social budget will decrease. This measure is an essential step towards the development of the country's economic situation and budget.	Developing public health per capita and reducing healthcare costs
9	For us, recreational activities are done either in a fixed or moving state. Both of these activities are usually done during people's leisure time, and	Increasing attention to active recreational sports as a particular need
10	they bring fun and freshness. Now, in my opinion, if, like other developed countries, we introduce technology into this time of our leisure time, it	Introducing a new form of application of new technologies
11	will indicate an increase in attention to recreational sports as a particular need; by doing so, we show that were are looking to offer a new form of it so that we become able to use technology to implement them as well as other sports activities; though, in a new and modern way.	Helping to implement recreational sports systemically
12	Technology is a vast and vast world, and wherever it enters, it can affect it in different ways. In recreational sports, one of the outcomes of this entry	Providing multiple options for active recreational sports
13	is the provision of numerous recreational options for participating in recreation. For example, during self-quarantine due to the spread of the COVID-19 epidemic, these technologies, especially mobile phone applications, can provide them with the conditions for sports activities in a targeted manner and prevent people from going to sports clubs.	Providing the opportunity to participate in sports activities during the home quarantine

DISCUSSION

The present study aimed to investigate the outcomes of the development of recreational sports through new technologies. According to the current study results, the most crucial product in recreational sports development using the latest technologies is to increase opportunities for participation in recreational sports. One of the most critical outcomes discovered based on this research results is increasing attention to active recreational sports as a particular need. We can make it possible to participate in recreational sports in any residential area, which has been neglected so far, by introducing new technologies into active recreational sports.

Another outcome of the development of active recreational sports using new technologies is eliminating the restrictions caused by the lack of access to new sports activities for certain groups of society who cannot access modern equipment. Therefore, they can also benefit from these services like other people in the community.

Table 3. Sub-Themes and Main Themes Related to the Outcomes of Using New Technologies in the Development of Recreational Sports

Row	Primary Codes	Interview Code	Sub-Themes	The Main Theme
1	Possibility to participate in recreational sports in any residential area	A8	Increasing opportunities to participate in recreational sports	outcomes of using new technologies in the development of recreational sports
2	Providing the possibility for sports in crowded urban places	A8	Increasing opportunities to participate in recreational sports	outcomes of using new technologies in the development of recreational sports
3	Creating opportunities and time to participate in recreational sports	A2	Increasing opportunities to participate in recreational sports	outcomes of using new technologies in the development of recreational sports
4	Keeping people away from inactive recreational activities	A2	Increasing opportunities to participate in recreational sports	outcomes of using new technologies in the development of recreational sports
5	Increasing attention to active recreational sports as a particular need	A10	Growing opportunities to participate in recreational sports	outcomes of using new technologies in the development of recreational sports
6	Providing the opportunity to participate in sports activities during the home quarantine	A11	Increasing opportunities to participate in recreational sports	outcomes of using new technologies in the development of recreational sports
7	Providing various services to the citizen for performing sports activities	A8	Increasing opportunities to participate in recreational sports	outcomes of using new technologies in the development of recreational sports
8	Eliminating restrictions due to lack of access to new sports activities for certain groups in the society	A8	Increasing opportunities to participate in recreational sports	outcomes of using new technologies in the development of recreational sports
9	Introducing a new application for new technologies	A10	Increasing the diversity of participation in recreational sports	outcomes of using new technologies in the development of recreational sports
10	Making changes in the type and form of recreational sports	A8	Increasing the diversity of participation in recreational sports	outcomes of using new technologies in the development of recreational sports
11	Ability to convert known sports activities to recreational sports	A12	Increasing the diversity of participation in recreational sports	outcomes of using new technologies in the development of recreational sports
12	Providing multiple options for participating in active recreational sports	A11	Increasing the diversity of participation in recreational sports	outcomes of using new technologies in the development of recreational sports
13	Add variety to the sports activities of professional athletes	A1	Increasing the diversity of participation in recreational sports	outcomes of using new technologies in the development of recreational sports
14	Helping to perform recreational sports for a specific purpose	A10	Increasing the diversity of participation in recreational sports	outcomes of using new technologies in the development of recreational sports
15	Achieving more accurate results in professional sports	A1	Increasing the diversity of participation in recreational sports	outcomes of using new technologies in the development of recreational sports
16	Avoid wasting time through inactive recreational activities	A2	Increasing the diversity of participation in recreational sports	outcomes of using new technologies in the development of recreational sports
17	Participating in older adults who are not capable of strenuous exercise	A9	Involving a wide range of beneficiaries in recreational sports	outcomes of using new technologies in the development of recreational sports

18	Increasing encouragement of the younger generation to active recreational activities	A1	Involving a wide range of beneficiaries in recreational sports	outcomes of using new technologies in the development of recreational sports
19	Helping discover sports talent	A12	Involving a wide range of beneficiaries in recreational sports	outcomes of using new technologies in the development of recreational sports
20	Help employees to perform recreational activities in busy and sedentary jobs	A9	Involving a wide range of beneficiaries in recreational sports	outcomes of using new technologies in the development of recreational sports
21	Sport diversification at schools and universities	A1	Involving a wide range of beneficiaries in recreational sports	outcomes of using new technologies in the development of recreational sports
22	Helping homemakers perform sports activities	A9	Involving a wide range of beneficiaries in recreational sports	outcomes of using new technologies in the development of recreational sports
23	Helping people with physical and mobility problems by offering specialized exercise programs	A7	Involving a wide range of beneficiaries in recreational sports	outcomes of using new technologies in the development of recreational sports
24	Helping people who do not have access to sports technology	A7	Involving a wide range of beneficiaries in recreational sports	outcomes of using new technologies in the development of recreational sports
25	Getting closer to developed countries in terms of the type of participation in modern recreational sports	A13	Alignment with new and global trends in recreational sports	outcomes of using new technologies in the development of recreational sports
26	Participating in exhibitions held in other countries to introduce localized sports technologies	A7	Alignment with new and global trends in recreational sports	outcomes of using new technologies in the development of recreational sports
27	Alignment with other advanced countries in the field of Sports technology	A13	Alignment with new and global trends in recreational sports	outcomes of using new technologies in the development of recreational sports
28	Enabling participation in global digital sports competitions	A3	Alignment with new and global trends in recreational sports	outcomes of using new technologies in the development of recreational sports
29	Introducing a new form of development level	A13	Alignment with modern and global trends in recreational sports	outcomes of using new technologies in the development of recreational sports
30	Preventing the harmful effects of monotonous apartment life around the world	A2	Alignment with new and global trends in recreational sports	outcomes of using new technologies in the development of recreational sports
31	Introducing our specialists to countries without technological active recreational sports to train other countries	A4	Wealth creation and economic prosperity in recreational sports	outcomes of using new technologies in the development of recreational sports
32	Increasing public health per capita and reducing healthcare costs	A2	Wealth creation and economic prosperity in recreational sports	outcomes of using new technologies in the development of recreational sports
33	Signing international contracts with other countries of the world for the interaction of knowledge and expertise between the parties	A6	Wealth creation and economic prosperity in recreational sports	outcomes of using new technologies in the development of recreational sports
34	Avoid dependence on a particular industry and create a new branch for exports	A5	Wealth creation and economic prosperity in recreational sports	outcomes of using new technologies in the development of recreational sports
35	Allow students from other countries to apply for recreational sports technologies	A4	Wealth creation and economic prosperity in recreational sports	outcomes of using new technologies in the development of recreational sports

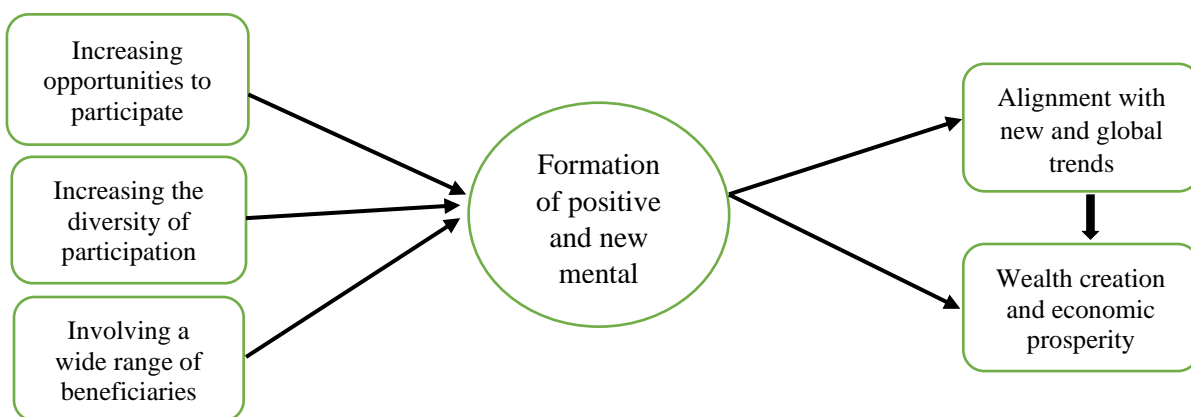| 36	Exporting indigenized sports technologies	A5	Wealth creation and economic prosperity in recreational sports	outcomes of using new technologies in the development of recreational sports
37	Holding international exhibitions to introduce the latest achievements in the country	A3	Wealth creation and economic prosperity in recreational sports	outcomes of using new technologies in the development of recreational sports
38	Holding international conferences to introduce our latest research and get acquainted with the newest research from other countries	A3	Wealth creation and economic prosperity in recreational sports	outcomes of using new technologies in the development of recreational sports
39	Providing structural assistance to the development of championship and professional sports	A12	Wealth creation and economic prosperity in recreational sports	outcomes of using new technologies in the development of recreational sports
40	Introducing a new form of entrepreneurship	A4	Wealth creation and economic prosperity in recreational sports	outcomes of using new technologies in the development of recreational sports
41	Changing the views of experts who oppose the development of technology and its entry into the lives of people	A5	Formation of the positive and new mental image about recreational sports in the society	outcomes of using new technologies in the development of recreational sports
42	Creating awareness in the society about the positive effects of technology	A5	Formation of the positive and new mental image about recreational sports in the society	outcomes of using new technologies in the development of recreational sports
43	Signing collaboration contracts between different sports federations to develop the use of technology in their disciplines	A6	Formation of the positive and new mental image about recreational sports in the society	outcomes of using new technologies in the development of recreational sports
44	Increasing motivation in sports innovators and domestic technology and domestic startups in general	A3	Formation of the positive and new mental image about recreational sports in the society	outcomes of using new technologies in the development of recreational sports
45	Changing the perceptions of people in society about technology development	A5	Formation of the positive and new mental image about recreational sports in the society	outcomes of using new technologies in the development of recreational sports
46	Creating a positive impression of the country among other countries in the world	A7	Formation of the positive and new mental image about recreational sports in the society	outcomes of using new technologies in the development of recreational sports

Figure 1. Outcomes of Using New Technologies in the Development of Recreational Sports

Another outcome identified in the present study, which is very important in the current era of the spread of COVID-19 virus and home quarantine, includes modern active recreational sports at home to prevent overweight during home quarantine or telework. To avoid fat as well as avoid inactivity during this period, one of essential modern equipment is mobile

applications to provide daily training programs or active video games as well as virtual reality; these mobile applications not only offer the possibility of vibrant and lively recreational activities at the family level but also reduce the need to go to sports clubs in this high-risk period and also prevent the spread and transmission of this dangerous virus among the people. As mentioned previously, people can be encouraged to engage in active recreational sports activities by using new sports technologies in crowded urban places. This part of the research is consistent with the study results by Line (2018) on creating targeted urban areas to encourage sports activities (23). Based on the results of the present research, one of the goals of creating targeted urban places for the development of recreational sports mentioned refer to the creation of new environments for citizens' sports activities, which, as Rattan (2020) pointed out, is possible by using new sports technologies (2). The creation of these unique environments itself is evidence of a change in how sports activities are carried out around the world as a result of the development of new sports technologies, which is consistent with the research by Szymanski et al. (2020) (4).

Another outcome is increasing diversity of participation in recreational sports. The most important theme related to this outcome is the pre-planned implementation of recreational sports using new technologies. Since introducing new technologies into recreational sports makes them more scientific and provides performance feedback for recreational sports performers, they can also help perform the same recreational sports with a unique and essential purpose. The next theme is to present a new application of new technologies that diversify and make a change in recreational sports and submit a new form of recreational sports more active and modernly. On the other hand, we see the advent of technological equipment in many professional sports to diversify training time today. This is a critical point because it shows that even experienced and championship sports coaches use recreational sports in their program to achieve the intended goals. As mentioned in one of the results of this part of the research, professional sports coaches can use technological recreational sports to diversify their training space and provide a basis for increasing their athletes' performance. This result is consistent with Shin and Gweon (2020) findings on the use of technology in sports to

enhance learning and skills (26). The purpose of introducing recreational activities in professional sports environments is to create various exercises and increase and facilitate the skill learning process by athletes. Reducing proper sports performance in using technology is a crucial outcome referred to by Rattan (2020) (2).

The next outcome identified is the inclusion of a wide range of recreational sports beneficiaries using new technologies. One of the identified themes is increasing the encouragement of the younger generation of society to active recreational activities. One of the positive points of this event is that the newer generation of humanity has firmly accepted technology. This issue can make people buy these technologies more efficiently. Most of these groups are school and university students. The school and university are a crowded urban place that can be very effective in creating a suitable culture. Another outcome of the development of technologically active recreational sports is that they also provide recreational sports for homemakers. Providing such technologies, especially daily exercise program apps on smartphones, can also encourage this group of people to engage in active recreational activities. Another outcome of these dynamic and modern recreational activities is the pre-planned implementation of operational recreational activities for employees involved in busy and sedentary jobs who do not have enough time for outdoor sports activities. Another important group that should be seriously taken into account is the elderly, people with physical and mobility problems, and the economically weaker groups in society. One of the essential outcomes of the development of recreational sports among the elderly and groups with physical and mobility problems is that they cannot do any kind of exercise due to physical issues. The use of this modern equipment can improve their physical and mental health. In this part of the research, it was also pointed out that it is possible to change the quality of life of some specific groups in the society through innovative and active recreational sports and make it possible for them to have a healthier life, which is consistent with the result of the research by Abbasi et al. (2018) (22). Furthermore, when the quality of life of citizens is promoted through the development of technological recreational sports, and they feel the tangible positive outcomes of this participation, this will increase their positive

experiences of this participation, which is also consistent with the results of the research by Kim & Jae Ko (2019) suggesting the use of user experiences when using active sports and recreational technologies (25). Increasing such satisfaction and thereby increasing participation rate leads to a physically, mentally, and even mentally healthier society, which is also consistent with the result of research by Raatikainen et al. (2019) suggesting a direct link between increased physical health and performing recreational sports using technology and thus reduction of disease (24). The results of the present study are also consistent with the results of the research by Shin and Gweon (2019), suggesting a direct relationship between enhanced learning and promoted mental health (26). These results show the importance of the development of active recreational sports in the present era from different perspectives, which is also consistent with the impact of the research by Zeimers et al. (2019) suggesting the importance of the development of recreational sports for researchers, physicians, sports officials, and policymakers (10).

According to the results of this study, the three mentioned outcomes lead to a new product: the formation of positive and new mental images about recreational sports in society. The development of active recreational sports through new technologies, considering the aforementioned positive effects, can create and increase public awareness of technology's positive impact and change people's perceptions of technology's overall development. The development of opinions, views, and positive perceptions, can lead to the development of complementary ideas and positive changes in the opinions of experts who, for similar reasons, have opposed the development of technology and its entry into people's lives. Another positive outcome is that technological active recreational sports and the generalization of its positive results to society, and even officials can encourage other sports federations to enter this field. They can also use sports experiences for all leagues and other responsible organizations in this program to present their specialized sports in a recreational way using innovative technologies, thereby providing a basis for introducing and expanding their sports disciplines and discovering talents in their sport. All these festive events lead to another positive outcome, increasing the motivation of

domestic sports and technology innovators and domestic startups in general. The arrival of these people means an increase in more modern creativity and innovation, which means developing more new sports technologies, encouraging more people in the community, and finally having a healthier community, physically, mentally, and socially. As noted by Kim & Jae Ko (2019), sports technology increases satisfaction and creates a positive mental image of sports activities and sports technologies. This study's results are consistent with the results of the present study suggesting that technology led to the creation of a positive perception regarding the development of recreational sports (25).

The next outcome regarding active recreational sports is development through new technologies in alignment with new and global recreational sports trends. Concerning this outcome, the most important themes identified include alignment with advances in sports technology in other developed countries and getting closer to developed countries regarding the type of participation in modern recreational sports. One of the reasons for the importance of introducing technology into recreational sports is that all countries of the world use mark to show their development level; so far, most of them have shown this development by using professional and championship sports. Therefore, to show the development level, it is necessary to seriously consider the introduction of new technologies in recreational sports so that we can enjoy the positive outcomes of it both domestically and internationally. The next theme is that paying attention to this goal can increase the motivation to participate in exhibitions held in other countries to introduce indigenized sports technologies, which can also lead to the formation of new ideas in innovators in this field due to familiarity with advances in other countries. As mentioned in this section, the use of technology helps align with international developments, which is consistent with the result of the study by Azar & Ciabuschi (2017) on using technology to internationalize activities (21). Rattan (2020) also referred to the need to move towards the internationalization of sports using technology (2). Similarly, Ferreira et al. (2020) also refer to this issue in their research titled the continuous crossing of current boundaries (5).

The last outcome identified in the present study is wealth creation and economic prosperity.

One of the most important themes identified in this field is a lively and new mental image. A step towards international developments will increase domestic experts' motivation in the area and lead to many innovative ideas over time. Therefore, each country can benefit from this development level at the international level by introducing its experts to countries lacking technologically active recreational sports for training purposes or exporting indigenized sports technologies, or building technologies in line with other developed or developing countries. The importance of paying attention to technologically active recreational sports and the importance of subsequent economic development can also lead to a modern field of income generation, which in turn eliminates dependence on a particular industry and creates a new branch of income generation.

On the other hand, this project's results can help the country achieve wealth and economic prosperity by allowing students from other countries to apply for the field of recreational sports technologies. Another outcome is the development of public health per capita and the reduction of healthcare costs. As mentioned, Raatikainen et al. (2019) concluded that leisure physical activity reduces the disease incidence rate. Their research results are consistent with this part of the research suggesting a link between the development of recreational sports with the promotion of health status and reduction of disease incidence rate (24). This section of the study indicates that the introduction of new technologies has increased sports' commercialization power. This is a significant conclusion that has been emphasized by Miragaia et al. (2017) in their research by stating that sport is a big business in the world, and today, technology is increasingly incorporated in it (8).

CONCLUSION

Considering library studies conducted during this research, it can be stated that increasing human interaction and computer technology equipment are currently facilitating new ways of using technology in sports environments, which means reducing physical progress through crossing the current boundaries of sports using technology. This research showed that technology would become a hot topic of study in sports, mainly recreational sports, shortly. Technology will cause structural changes in all fields of sports. Therefore, it is essential to seriously regard increasing the opportunities for participation in recreational sports, increasing the diversity of participation in recreational sports, alignment with new and global trends in recreational sports, wealth creation and economic prosperity in recreational sports, and formation of a positive and new mental image to recreational sports in the society as a significant outcome of the development of recreational sports using new technologies so that we also develop our recreational sports in line with the global advances made in sports, mainly recreational sports. According to the results of this research, to achieve such a goal, it is vital to pay attention to the outcomes and results obtained in other countries regarding the introduction of technology into recreational sports. Moreover, attempts should be made to move in line with innovative ideas in technology, especially sports technologies. According to the data obtained during data collection in this research, one of the most significant limitations that can challenge the implementation of such a project is the fear of change and acceptance of new ideas, weakness in designing plans aiming at developing recreational sports, lack of awareness of the importance of technology and innovation in active recreational sports, the widespread use of inactive computer games among the younger generation, the employment of more than a family member (parents), and devoting insufficient time for children to build a culture of active recreational activities among them, allocating inadequate funds to carry out this project or the weak role played the media in building a culture of these sports.

APPLICABLE REMARKS

- For this reason, to develop recreational sports through new technologies, the responsible organizations are recommended to increase their flexibility and accept new and innovative sports ideas by nurturing and employing specialized forces so that they can develop these sports by having a technological sports ecosystem for interaction between different institutions.
- Another solution is to increase the strength; sports technology should be accepted as a sub-discipline in universities so that we can nurture many experts in this field.

- Moreover, the discussion of the demographic needs and potential of society should be seriously considered in the marketing of these technologies to create a link between the developments of society and technology.

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