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Research methods and information technology applications in movement science and sport psychology

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Abstract
The primary purpose of this research study is to describe the methods and information technology applications in movement science and sports psychology. This research study depends upon theoretical form, and secondary data in this research paper describe the application of information technology in sport psychology and movement of sciences. For data determination, used EVIEWS software and some general tests included descriptive statistics, correlation coefficient, unit root test analysis, an examination of equality, and histogram & state related to the variables. The research study also defined the application of each variable. The overall result found positive methods and information technology applications in movement science and sports psychology.
Keywords: Information Technological Applications (ITA), Movement Science (M.S.), Sport Psychology (S.P.)

Introduction

The vast field of Science and technology has its application in different areas of life. The use of Science and technology in sports holds great significance in developing the sports field. The use of modern technology has dramatically revolutionized all the marks of the world. Technology has not modernized many sports but has opened new opportunities for players of different sports. Players of various sports can use modern forms of technology to polish their abilities and improve their skills (Price et al., 2022). Multiple sports are globally famous. These sports include basketball, Tennis, football, bat ball, etc. The advancement of all these sports in the 21st century is only because of the use of technology in these sports.

Various applications of the technology are used to improve the sports industry. The first application of technology used in sports is video training in sports. In video training, athletes learn different game tricks using virtual reality technology. This technology-based program is so advanced that it helps players understand various sports' tactics (Thomas et al., 2022). The other errors of sports players can be eradicated by coaches using the video training system. For example, coaches replay athletes' videos, tell them about their flaws, and teach them various techniques to improve their skills. Therefore, a video training technology system is the most appropriate way to improve players' performance. Different research methodologies have shown that the information provided by video training systems is qualitative (Bradley et al., 2022). This qualitative information is beneficial in predicting players' overall performance in various sports. One more advantage of a video training system is that it helps to compare athletes' performances. When the performances of different athletes are compared, it becomes easy for the coach to train the athlete who lacks the game's essential skills. In addition, video technology training teaches less experienced players to boost their skills (Liu et al., 2022). One drawback of the video training system is that it is a manually slow system, so more advanced technology-based sensors are used to compensate for this system. These sensors use various modern systems like the EVA (expert vision analysis) system that helps in providing thorough information on player movement during a particular sport (Talha et al., 2022).

The second application of the technology-based system includes the three-dimensional virtual environment. The three-dimensional virtual imaging system is a technology-based system that produces 3D images of the player's movement. These 3d images help determine the player's posture during the sport. Coaches use this technology-based system to teach players the correct posture while playing a particular sport. The 3D imaging system is the most advanced technology that provides the most realistic image of the studied object (Yang, 2022). Using the 3D imaging technology, coaches guide the players about the various directional changes and orientations of sports athletes.3D imaging technology helps the player better understand the coach's vision. Researchers have shown that the use of 3D imaging improves the learning behavior of athletes in various sports. So the research methodology used in 3D imaging technology provides information about the learning behavior of athletes (Chen, 2021).

The drone is the third application of the technology-based system used in the sports field. The drone is made on a technology-based approach that captures all the minor details of the whole sports event. For example, many coaches use a drone to capture images of their athletes. At the same time, they play to find out their athletes' exact position and movement and then use the images to teach their players about the right moves during a particular game in sports (Sandars et al., 2022). The whole working of the drone is technology-based, and the information the drone provides about the player helps monitor the player's

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activity in the sport.in soccer training sports, the use of drones is widespread. In soccer and many others, sports technology-based drones are used widely (Liu, 2021).

Various research methods have also been used in studying sports psychology. The first methodology is experimental.in 3D imaging technology, the practical approach is used that tells whether the technology improves players' learning behavior and decision-making abilities. The second research methodology used in sports is the qualitative research method that tells about the procedure of practical sports training (Sohail et al., 2022). The third method use to improve sport psychology is the quantitative method. The quantitative research methodology discusses the cause and effect of sports activities and provides all the data regarding the relationship between causes and effects. Primary and secondary research methods are also used to improve sports activities. All these research methodologies used to enhance sports are based on modern technology (Abrahamson & Mechsner, 2022). The use of modern technology in the working mechanism of these research methods make them significant in improving sport psychology.

Time is saved, information is provided, and it is then transferred through information technology. As one develops their skills, they expand their perspectives and sharpen their creative faculties. Information technology helps people become more capable of studying on their own. When gathering information, the person feels at comfortable because it is a nice, ordered, and non-random strategy. Due to the abundance of information, the person creates a strategy for resolving issues that cannot be handled in the conventional manner. Computers employed in information technology help people see the world because they provide them access to a variety of data and visual elements that they may interpret with their senses. Through an Internet connection, information technology enables a person to share whatever information they choose at any time.

The use of information technology-based methods in the improvement of various sports not only advances the sports field but also helps to polish the skills of athletes of different sports. The use of information technology-based systems in the sports industry makes the sports field the top and the most advanced globally. All the broadcasting of sports shows worldwide is due to the use of information technology-based systems in the sports field (Darpatova-Hruzewicz, 2022). Sports is regarded as one of the essential fields worldwide. The popularity of sports is because a large number of people love to play various kinds of sports. Also, a large population of the world watches multiple sports on their television screens and mobile phones with the help of technology (Bird, 2020). Without technology, no one can experience various sports shows at home. Technology is the only means that help people to connect to the world. Many sports stakeholders and other sports authorities worldwide are trying to modernize their present sports industry using the most advanced technologies in their sports fields.

IT is composed of a variety of physical equipment components, including operating systems, applications, virtualization tools, hardware, and virtualization software. Mobile phones, computers, and other user hardware and software. Information technology may also refer to procedures and rules that control how data is used and stored (Wang, 2021). Databases, transaction systems including real-time order entry, e-mail servers, web servers, CRM, and ERP systems are examples of business applications. These programs carry out the instructions written to process, combine, redistribute, or maybe affect other data for commercial objectives. Business applications are managed by computer servers, which communicate via one or more networks with clients and other servers. Information in any form, including file data, multimedia data, online data, cellphone data, and data from sensors or future designs, can be saved as data using any sort of technology. Variable RAM, non-volatile tape, hard disks, and disk drives are further forms of storage. IT architecture has developed to incorporate internet technologies and virtualization, where decreased physical resources are assembled in many ways to satisfy application needs.

Research objectives

The research articles contain information about the most advanced theology-based application in sports psychology. Also, various research methods have been discussed in the research paper to understand sport psychology better.

Purpose of research study

The primary purpose of the research study is

- Measure the application of information technology in movement science and sports psychology.
- Describe the theory-based research related to the information technology applications related to sport psychology.

This research study is divided into five chapters: the first portion represents all introductions related to the Research methods and information technology applications in movement science and sports psychology. These research studies clearly defined the research objective, questions, and aim of this research study. The second portion describes the research literature review with independent and dependent variables. This section describes the hypothesis related to the variables, the third section presents the methodology, and the fourth section describes the results and descriptions. Finally, the last section summarizes the overall research study and provides some recommendations about the research.

Literature Review

Information technology and sports psychology

As the world is rapidly growing, there seems to be an essential need to improve technologies to achieve desired results. In almost every developing sector, information technology has its vast applications. It has significantly developed emerging sectors, including sports, physical education, agriculture, banking, and industries (Friesen, 2021). The researcher highlighted the research methods and various information technology applications in sports sciences (Liu et al., 2022). It was claimed that information technology in sports psychology or the sports sector had evolved field research and biomechanical analysis, improved coaching and learning, and advanced research methods. It is explored that information technology has a significant but positive influence on sports psychology (Price et al., 2022). It can help improve athletes' attitudes, emotions, motivation, and performance, enhancing the effectiveness of sport psychology (Watson II & Coker-Cranney, 2018).

Furthermore, the researcher explains that information technology has various applications in sports and physical education, including the promotion of sports games on the internet, improving the performance of athletes, increase interest, as well as it also provides a large amount of data related to essential tips and tricks of the play on the internet (Bradley et al., 2022). Apart from this, the researcher highlighted the factors on which sport psychology have a significant influence, including physical activities, athletes' performance, exercise, motivation, and attitudes. It was studied that information technology has tremendous contributions to improving all these factors. It was claimed that information technology also has a significant role in sports games. It assists in preventing mistakes in the administration and organization of fun and sport all over the world (Finlay et al., 2022).

Furthermore, the Author described that the use of information technology in sports has been growing. Every possible event includes statistics and analytics, and information technology in sports now becomes crucial for documenting, evaluating, and improving athletic performance. Sport psychology involves participating in this digital revolution, and researchers have also identified some practical technology-based applications in the sport or sports psychology (Murphy et al., 2022). At the same time, many scholars claim that computers or information technology have various applications in sports sciences in multiple ways. These utilizations have increased recently, including scoring methods and computerized tests for evaluation. A coach continuously keeps an eye on the athletes' performance, attitudes, behaviors, motivations, and emotions by utilizing the applications of I.T. (Schack et al., 2020). Apart from this, if any inadequacies have been identified, information technology helps us to manage these inadequacies. With the help of information technology, it also becomes possible to keep a player's records for future planning (Comani et al., 2021). The choice of athletes for various games and sports seems essential because multiple regressions offer numerous benefits. Therefore, computers and information technology have become necessary for analyzing and storing information and data (Hou, 2021).

Information technology and movement sciences

Like sports psychology, information technology also has an increasing role in developing movement sciences (Halynska & Bingxu, 2022). The researcher highlighted information technology's role in movement sciences (Bjornsen, 2020). It was claimed that technology has been increasing its significance in physical activities or movement sciences (Papaioannou, n.d.). Many web-based types of equipment have been now available to monitor the movement of human beings, including smart wrist watches have various applications of information technology to monitor the activities of the movement of human beings (Gill et al., 2021). Apart from this, especially mobile apps have been developed with the help of information technology which assists in promoting movement sciences (Knowles et al., 2014). Therefore, many fitness and health care centers have been implementing the applications of I.T. to serve customers (Otte et al., 2020). The researcher conducted detailed research on the methods and applications of information technology in the field of movement sciences (Sohail et al., 2022). It was claimed that information technology has a positive influence on the promotion of movement sciences (Faghy et al., 2021). Many scholars studied that movement sciences have become a critical researched topic. In this context, information technology has a significant role in improving the sports person's performance and enhancing motivational factors (Potteiger, 2021).

Furthermore, the Author described the various benefits of information technology in movement sciences, including watching and storing videos, data storage, sports media, and sports training (Ryba et al., 2021). Many scholars examined that by using the applications of I.T., coaches can also attach sensors and other devices to a player. At the same time, they are training, which enables the computer to track their progress (Nuzzo, 2020). Apart from this, I.T. has a significant role in managing movement sciences. Nowadays, with the rapid emergence of various applications of I.T., I.T. can be employed as a sort of power to steer sporting events in the desired direction (Sohail et al., 2021). Therefore, the database seems to be the ideal tool for managing sports or activities of movement sciences. Moreover, health details, performance, medical conditions, history, achievement, and weakness of movement sciences can also be determined effectively with the help of I.T. (Hagan Jnr et al., 2018).

Movement sciences and sports psychology

The researcher highlighted the significant problem in

the movement sciences was identifying the "motor" behavior, a mix of social-affective- cognitive-motor activity (Yang, 2022). Recently, it has become ever clearer how movement, emotion, cognition, and the cultural and social environment in which performance occurs are interconnected (Leis et al., 2021). Various research studies have investigated the positive linkages between cognitive, affective, social, and motor behavioral components (Halynska & Bingxu, 2022). The movements of humans undoubtedly influence emotions, and many authors believe that body language not only reflects feelings but also actively fuels them. "The free expression via outward indicators of an emotion amplifies it. In addition, our feelings become softened by suppressing all visible indicators to the possible extent.

Similarly, it has been established that motivation facilitates movement performance as well as also modifies motor learning. So, it was investigated that both the movement sciences and sports psychology have direct associations. Athletes' attitudes, motivations, performance, and emotions can be recognized and improved in sports psychology. Similarly, movement sciences also relate all of these factors and have significant positive influences on improving all these factors, which in turn also enhance the performance of athletes.

Hypothesis Development

H1= There are positively associated with information technology application in the movement of science and sports psychology.

H2= There is a significant relationship between information technology and the movement of science and sports psychology.

H3= There is a direct link between information technology and the movement of science and sports psychology.

H4= There are negatively associated the information Technology in sport psychology and movements of sciences.

Research Methodology

This study measures the Research methods and information technology applications in movement science and sports psychology. This research study based on quantitative data depends on a secondary form for collecting the data from different websites, including Google scholars, I.T. websites, etc. this research depends on available theoretical research related to the informational, technological applications, movements of science and sports psychology.

Research tools and techniques

This research is based on the theoretical study to determine the used Eviews software and run results related to information technology, movement science, and sports psychology in the sports industries. Furthermore, the descriptive statistic, correlation coefficient, and equality test analysis also develop different graphical studies related to the variables.

Variables

Table-1

Sr. No	Variables	Notations
1	Independent variable	IV
2	Information Technological Application	ITA
3	Dependent Variables	DV
4	Movement Science	MS
5	Sport Psychology	SP

Applications of Information Technology

A technical effort to address administrative issues is information technology. I.T. has gained popularity in the business and computing worlds. Nowadays, every business has an information technology department that helps with a range of technical issues. For example, people in business seek to perform more work in a short time, and this is only possible if the company has highly developed information technology. I.T. benefits an organization by enabling communication, electronic storage, and the security of important information.

- New requirements in the highly competitive corporate environment, on the one hand, and significant changes like computers, on the other, are what drive I.T. development (Hackfort et al., 2019).
- Information technology frameworks appear like a variety of mechanically advanced devices that assist in delivering essential data to administrators, peoples then use this data to make crucial decisions about the responsibilities of their firm.
- I.T. has to deal with P.C. software, which is required in almost every workplace.

The majority of the time, businesses see the IT department's main responsibility as application development to support their core business needs. With the correct applications, a business may be more innovative, successful, productive, and outperforming its competition. An information technology department with developers, researchers, interface designers, system administrator, analysts, and other specialists is needed to do the work required to create the applications that may set a corporation from its competitors. This makes the I.T. division urgent in moving a business forward from different perspectives.

Application information technology in movement science

An interdisciplinary approach to studying human movement combines and integrates elements from the social, natural, and health sciences about physical

exercise. Anatomy, physiology, biomechanics, motor control, psychology, and epidemiology are fundamental disciplines that are evaluated in connection to performance capacity and training (Fry & Moore, 2019). The focus is on people and groups with various skills, ages, and fitness levels. Based on both ideas and empirical study findings, knowledge concerning both individual and communal abilities is presented.

Learn everything there is to know about how the human body moves. With a degree in movement science, you'll understand kinesiology comprehensively via experiences in the classroom, lab, and clinical settings. Human movement science studies how individuals move in various situations and the elements that affect how physical activity is analyzed, enhanced, and recovered. The emphasis is on problems arising from engaging in physical exercise in daily life, including concerns linked to work and spare time, as well as recreational and professional sports.

Application of Information Technology in sport psychology

Athletes' input during practice and competition may now be supplemented and improved to recent advancements in information technology. Furthermore, because of the tremendous influence that contemporary technology has had on the sport, many players and coaches increasingly value the knowledge that comes from technological advancements. This can be connected to the mechanical control theory idea of feedback (Liu et al., 2022). According to such engineering concepts, systems were created to maintain homeostasis around a reference value, allowing a primary actuator to function. Vision is a crucial input channel for targeting sports that need precision and accuracy, like Olympic shooting. As a result, various technologies have been created to enhance skill acquisition and performance in multiple sports. There are several examples when advanced technology is paired with augmented visual input. Performers can adjust for deviations from the center of a target while aiming within microscopic error margins and at great distances, information technology, which is typically employed in industry to identify misplacements. The training process is some effective in this example because of visual input and computer-generated audio feedback (Bird, 2020).

Technology has been modified to get the necessary information for sports that don't require spatial precision but demand understand on the spot. For example, sprinters must be aware of their response times in relation to the start gun, as well as their immediate and mean running speeds and the horizontal pressures present at the beginning of a race. Coaches work hard to raise athletes' performance levels. Their primary responsibility is to provide a practicing atmosphere that encourages objectivity and learning for the player. Although not always necessary, integrating information technology into the environment that supports athletic performance looks to be a step in the right direction. The potential of learning improves when the athlete can mentally contrast the desired ideal performance with the actual movement output. This evaluation has concentrated on using information technology to give athletes and coaches comprehensive, impartial data concerning sporting performance. The effects of simple external feedback and accompanying technologies, ranging from simple visual movies to sophisticated simulators, and its significance and must be considered in the regular practice schedule for general purposes of learning.

Econometric Model

The model describes the equations related to information technology, movement of Science, and sports psychology. This equation presents the model between dependent and independent variables.

$$SP = \propto + IT\beta 1 + MS\beta 2 + \varepsilon \quad (1)$$

WHERE:

SP= sport psychology
IT= Information Technology
MS= Movement Science

Results and descriptions

Descriptive statistical analysis

Table-2

	Information Technology	Movement Science	Sport psychology
Mean	5617.767	5.98	8.721
Median	2778.023	6.53	8.320
Maximum	54632.14	8.38	12.963
Minimum	992.9434	2.48	-0.910
Std. Dev.	11685.31	1.74	2.9716
Skewness	3.9636	-0.820	-1.4559
Kurtosis	17.157	2.724	6.686
Jarque-Bera	219.4092	2.307	18.391
Probability	0.000000	0.3154	0.0001
Sum	112355.3	1.20	174.43
Sum Sq. Dev.	2.59	5.75	167.782
Observations	20	20	20

The above result represents that descriptive statistical analysis of each variable included I.T., movement sciences, and sports psychology for measuring the methods and information technology applications in movement science and sports psychology. The result shows that the mean values of each variable are 5617.767, 5.98, and 8.721. The median rate for information technology is 2778.023,

the median rate of movement science is 6.53, and the rate of sport psychology is 8.320, respectively. The skewness rate of information technology is 3.9636, its movement science rate -0.820, and sports psychology rate -1.4559, respectively, showing positive and negative relations. The probability rate of information technology is 0.000, which means that the 100% significant value the sport psychology also offers a 100% considerable level with each other. According to the result the sum of square deviation rate of information technology is 2.59 rate of movement science is 5.75 and rate of sport psychology is 167.782 shows that positive and significant. The jarque-bera value of each variable are 219.4092 its rate of movement science is 2.307 and rate of sport psychology is 18.391 respectively. According to the result its kurtosis values are 17.157 rate of information technology its value of movement sciences is 2.307 and the rate of sport psychology is 6.686 shows that positive implicated.

Correlation coefficient

Table-3

	IT	MS	SP
Information Technology	1	0.068851	-0.234841
Movement Science	0.068851	1	0.4231098
Sport Psychology	-0.234841	0.4231098	1

The above result describes the correlation coefficient information technology shows 6% significant and positive relationships with each other. Information technology offers a negative reference to sport psychology; its rate level is -0.23 but is positively related to movement science. The sport psychology shows that 0.423 means 42% positively relation with movement science also that its insignificant.

Unit root Test

Table-4

Null Hypothesis: I.T. has a unit root

Exogenous: Constant

Leg Length: 3 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.800407	0.09992
Test critical values:	1% level	-3.959148	
	5% level	-3.081002	
	10% level	-2.681330	

*MacKinnon (1996) one-sided p-values.

Probabilities and critical values calculated for 20 observations

This result describes the unit root test analysis and represents the dicey fuller test statistic rates. The result shows the T statistic value and probability value of each criterion. For example, the overall T statistic value is 1.800407 its probability value is 0.09 means that 9% significant level. The 1% criteria show a -3.95 rate of t statistic, the rate of 5% level is -3.08, and the 10% level offers a -2.68 value of t statistic.

Table-5

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(I.T.)

Method: Least Squares

Sample (adjusted): 2004, 2018

Included observations: 15 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
I.T. (-1)	7.226337	4.013723	1.800407	0.1020
D(IT(-1))	-8.324184	4.098471	-2.031046	0.0697
D(IT(-2))	39.96247	40.67821	0.982405	0.3491
D(IT(-3))	-70.07298	41.36092	-1.694183	0.1211
C	-9658.572	11165.09	-0.865069	0.4073
R-squared	0.762840	Mean dependent var		234.7891
Adjusted R-squared	0.667975	S.D. dependent var		18861.14
S.E. of regression	10868.09	Akaike info criterion		21.68625
Sum squared resid	1.18	Schwarz criterion		21.92227
Log-likelihood	-157.6469	Hannan-Quinn criteria.		21.68374
F-statistic	8.041387	Durbin-Watson stat		1.957433
Prob(F-statistic)	0.003612			

The above result describes the augmented dickey fuller test equation that presents the coefficient value, standard error, t statistic values, and probability rate of each factor. According to the result, the probability values are 0.102, 0.06, 0.34, 0.12. These all show that 10%, 6%, 34%, and 12% have significant levels with each other for measuring the methods and information

technology applications in movement science and sports psychology. The overall R square value is 0.76, which shows 76% of research is reliable for analysis; its adjusted R square value is 66%, its F statistic rate is 8.04, and the probability value is 0.003, which means a 100% significant level with each other. according to the result the values of standard error are 4.013, 4.09, 40.67, 41.36 this value represent the deviation rate of standard all of them are present positive rates of each factors. The coefficient values of each factors are 7.226, -8.32, 39.96, -70.07 these are all present coefficient relation with all matrix some present positive and some negative. The mean dependent var value is 234.7891 its standard deviation dependent variance rate is 18861.14 also that log-likelihood value is -157.6469 respectively. according to the result its sum squared rate is 1.18 shows positive values.

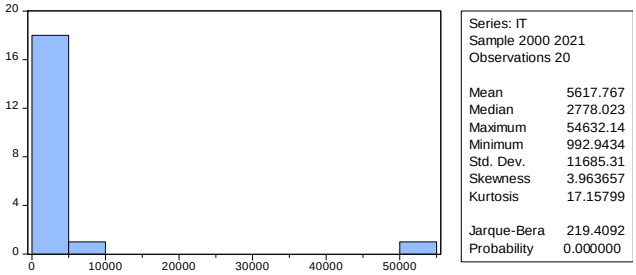
Table-6

Test for Equality of Means of I.T.
They are categorized by values of I.T. and M.S., and S.P.
Sample (adjusted): 2000, 2020
Included observations: 20 after adjustments

Method	df	Value	Probability
ANOVA F-test	(8, 11)	261.0193	0.0000
Analysis of Variance			
Source of Variation	df	Sum of Sq.	Mean Sq.
Between	8	2.5809	3.2308
Within	11	13595102	1235918.
Total	19	2.5909	1.3708

The above result represents the test of equality result shows the sum of fair value and mean square values between and within the variation. According to the development, its total ethical values are 2.5809 and 13595102. Respectively the mean square value is 3.23 and 12359, respectively. Therefore, the total square value is 2.5909, and the mean square value is 1.3708 showing positive and significant methods and information technology applications in movement science and sports psychology. The total equality test analysis shows that F-test value its overall value is 261.019 and overall probability values is 0.000 shows that 100% significant level.

Histogram and state



The above graph describes each information technology series's histogram and state values. According to the result, its mean value is 5617.767 the overall probability value is 0.0000, which means that they are 100% significant level with each other. The standard deviation rate is 11685.31, and its kurtosis value is 17.157. also, that result presents the marque-bear weight of 219.40 respectively; the bar line shows the effects of methods and information technology applications in movement science and sports psychology.

Conclusion

In conclusion, it is studied that over time, the world has been snowballing, due to which there seems to be an essential need to improve and implement various applications of information technology in every developing sector to meet the requirements of the emerging world. In this research study, we examined the multiple research methods and applications of information technology in the movement sciences and its influences on sports psychology. It is reviewed that information technology has various applications in almost every field, especially the sports sector. For this purpose, the research data has been collected from different sports or gaming organizations and through questionnaire method and qualitative as well as qualitative research was examined. Information technology is directly related to the development of sport psychology and movement sciences. There are many applications of information technology in the sports sector, including V.R., in which athletes are trained using virtual reality technology through video training. It is explored that players are trained about various gaming tricks and techniques through video training employing virtual reality technology, which helps them perform well during play. This technologically advanced program facilitates the participants in comprehending the strategies used in different sports. Trainers can correct the various mistakes made by athletes by employing a video training system.

Moreover, it is examined that information technology helps improve athletes' performance by enhancing athletes' motivations, emotions, attitudes, behaviors, and sports psychology. The most cutting-edge technology that offers the most accurate representation of the thing under examination is the system of 3D imaging technology. Teachers train players on the different directional movements and alignments in sports by using 3D image technology. The use of 3D imaging technology helps players to understand the trainer's intent in a practical way. Furthermore, Athletic potential has significantly expanded due to the various applications of information technology. The sports psychology and movement sciences can be promoted effectively by live-tracking performances, stimulating communication, optimizing athletic movements, and virtually reducing injuries. In addition, we concluded that information technology has a significant positive

impact on the movement sciences, which is also directly associated with sport psychology. Sport is the most critical emerging sector all over the world. It has a direct association with the economic growth of the country. Therefore, many under-developing countries have been focusing on developing sports sectors in their countries to generate revenue and promote the country's economy. In this research paper, we also studied the various research methods to investigate the influence of multiple information technology applications on sports psychology and movement sciences. It is also highlighted that qualitative, quantitative, and 3D image training methods hold great significance among essential research methods.

References

Abrahamson, D., & Mechsner, F. (2022). Toward Synergizing Educational Research and Movement Sciences: a Dialogue on Learning as Developing Perception for Action. *Educational Psychology Review*, 1-30. https://doi.org/https://doi.org/10.1007/s10648-022-09668-3

Bird, J. M. (2020). The use of virtual reality head-mounted displays within applied sport psychology. *Journal of Sport Psychology in Action*, *11*(2), 115-128. https://doi.org/https://doi.org/10.1080/21520704.2018.1563573

Bjornsen, E. (2020). *Visualizing Interdisciplinary Collaborations within Exercise Science: A Pilot Study* [Master of Science in Kinesiology Thesis, University of Arkansas]. https://www.proquest.com/openview/dd2c275beed60716e283b136cc1b1695

Bradley, E. J., Board, L., Archer, D., & Morgans, M. (2022). Presenting the case for implementing entrustable professional activities (EPA) in Sport and Exercise Sciences teaching: Application and alignment to develop student competencies. *Journal of Hospitality, Leisure, Sport & Tourism Education*, *31*, 100376. https://doi.org/https://doi.org/10.1016/j.jhlste.2022.100376

Chen, F. (2021). Financial Entrepreneurship early warning model of enterprise human capital based on data analysis. *Journal of Commercial Biotechnology, 26*(3). https://doi.org/10.5912/jcb1059

Comani, S., Bertollo, M., & Haueisen, J. (2021). Dry Electroencephalography for Brain Monitoring in Sports and Movement Science. *Frontiers in Neuroscience*, *15*. https://doi.org/https://doi.org/10.3389%2Ffnins.2021.809227

Darpatova-Hruzewicz, D. (2022). Reflexive confessions of a female sport psychologist: from REBT to existential counselling with a transnational footballer. *Qualitative Research in Sport, Exercise and Health*, *14*(2), 306-325. https://doi.org/https://doi.org/10.1080/2159676X.2021.1885481

Faghy, M. A., Arena, R., Stoner, L., Haraf, R. H., Josephson, R., Hills, A. P., Dixit, S., Popovic, D., Smith, A., & Myers, J. (2021). The need for exercise sciences and an integrated response to COVID-19: A position statement from the international HL-PIVOT network. *Progress in cardiovascular diseases*, *67*, 2-10. https://doi.org/https://doi.org/10.1016/j.pcad.2021.01.004

Finlay, M. J., Tinnion, D. J., & Simpson, T. (2022). A virtual versus blended learning approach to higher education during the COVID-19 pandemic: The experiences of a sport and exercise science student cohort. *Journal of Hospitality, Leisure, Sport & Tourism Education*, *30*, 100363. https://doi.org/https://doi.org/10.1016/j.jhlste.2021.100363

Friesen, A. P. (2021). A survey of applied impact of literature in sport psychology. *The Sport Psychologist*, *35*(3), 250-258. https://doi.org/https://doi.org/10.1123/tsp.2020-0182

Fry, M. D., & Moore, E. W. G. (2019). Motivation in sport: Theory and application. In M. H. Anshel, T. A. Petrie, & J. A. Steinfeldt (Eds.), *APA handbook of sport and exercise psychology, Vol. 1. Sport psychology* (pp. 273-299). American Psychological Association. https://doi.org/https://doi.org/10.1037/0000123-015

Gill, D. L., Reifsteck, E. J., & Madrigal, L. (2021). From sport psychology to sport and exercise psychology: A 40-year update. *Kinesiology Review*, *10*(3), 301-307. https://doi.org/https://doi.org/10.1123/kr.2021-0020s

Hackfort, D., Schinke, R. J., & Strauss, B. (2019). *Dictionary of sport psychology: sport, exercise, and performing arts*. Academic Press.

Hagan Jnr, J. E., Schack, T., & Koester, D. (2018). Passion play: Embracing new scientific perspectives for improved sport psychology consulting. https://doi.org/http://hdl.handle.net/123456789/7743

Halynska, A. V., & Bingxu, Z. (2022). The characteristics of chinese sports psychology of mangement and its application in training and competition. *Economy and Management*, 14-19. https://doi.org/https://doi.org/10.32703/2664-2964-2022-51-14-19

Hou, S. (2021). Research on the Application of Data Mining Technology in the Analysis of College Students' Sports Psychology. *Mobile Information Systems*, *2021*. https://doi.org/https://doi.org/10.1155/2021/6529174

Knowles, Z., Gilbourne, D., Cropley, B., & Dugdill, L. (2014). *Reflective Practice in the Sport and Exercise Sciences*. Routledge. https://api.taylorfrancis.com/content/books/mono/download?identifierName=doi&identifierValue=10.4324/9780203066546&type=googlepdf

Leis, O., Raue, C., Dreiskämper, D., & Lautenbach, F. (2021). To be or not to be (e) sports? That is not the question! Why and how sport and exercise psychology could research esports. *German Journal of Exercise and Sport Research*, *51*(2), 241-247. https://doi.org/https://doi.org/10.1007/s12662-021-00715-9

Liu, Y. (2021). Intelligent Selection Method of Sustainable Transportation Mode based on Advanced Big Data Analysis using the concept of biotechnology. *Journal of Commercial Biotechnology*, *26*(3), 72-80. https://doi.org/10.5912/jcb1072

Liu, Y., Li, S., Guo, J., Chai, G., & Cao, C. (2022). The Application of Virtual Reality Technology in Sports Psychology: Theory, Practice, and Prospect. *Computational Intelligence and Neuroscience*, *2022*. https://doi.org/https://doi.org/10.1155/2022/5941395

Murphy, J., Mesquida, C., Caldwell, A. R., Earp, B. D., & Warne, J. P. (2022). Proposal of a Selection Protocol for Replication of Studies in Sports and Exercise Science. *Sports Medicine*, 1-11. https://doi.org/https://doi.org/10.1007/s40279-022-01749-1

Nuzzo, J. L. (2020). Growth of exercise science in the United States since 2002: A secondary data analysis. *Quest*, *72*(3), 358-372. https://doi.org/https://doi.org/10.1080/00336297.2020.1736106

Otte, F. W., Davids, K., Millar, S.-K., & Klatt, S. (2020). When and how to provide feedback and instructions to athletes?—How sport psychology and pedagogy insights can improve coaching interventions to enhance self-regulation in training. *Frontiers in Psychology*, *11*, 1444. https://doi.org/https://doi.org/10.3389/fpsyg.2020.01444

Papaioannou, A. (n.d.). Msc "psychology of physical education and sport" information about the module. 1-5. http://postgrad.pe.uth.gr/pse/images/outlines/2018-2019/

Potteiger, J. (2021). *ACSM's Introduction to exercise science*. Lippincott Williams & Wilkins. https://www.acsm.org/education-resources/books/introduction-exercise-science

Price, D., Wagstaff, C. R., & Thelwell, R. C. (2022). Opportunities and considerations of new media and technology in sport psychology service delivery. *Journal of Sport Psychology in Action*, *13*(1), 4-15. https://doi.org/https://doi.org/10.1080/21520704.2020.1846648

Ryba, T., Stambulova, N., Wrisberg, C., Vanek, M., & Cratty, B. (2021). Practising Sport Psychology. In *Understanding Sport Psychology*. SAGE Publications Ltd. https://us.sagepub.com/en-us/nam/understanding-sport-psychology/book275024

Sandars, J., Jenkins, L., Church, H., Patel, R., Rumbold, J., Maden, M., Patel, M., Henshaw, K., & Brown, J. (2022). Applying sport psychology in health professions education: A systematic review of performance mental skills training. *Medical teacher*, *44*(1), 71-78. https://doi.org/https://doi.org/10.1080/0142159X.2021.1966403

Schack, T., Hagan Jr, J. E., & Essig, K. (2020). New technologies in sport psychology practice. In *The routledge international encyclopedia of sport and exercise psychology* (pp. 458-471). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315187228-31

Sohail, M., Talha, M., & Ali, M. (2022). The impact of human-computer interaction on innovations and sports psychology. *Revista de Psicología del Deporte (Journal of Sport Psychology)*, *31*(1), 158-166.

Sohail, M., Talha, M., Ikram, P., & Tariq, U. (2021). Application of Data Mining Technology is exploring the relationship between cultural sports psychology and intersecting identities. *Revista de Psicología del Deporte (Journal of Sport Psychology)*, *30*(4), 11-19.

Talha, M., Wang, F., Maia, D., & Marra, G. (2022). Impact of information technology on accounting and finance in the digital health sector. *Journal of Commercial Biotechnology*, *27*(2). https://doi.org/10.5912/jcb1299

Thomas, J. R., Martin, P., Etnier, J., & Silverman, S. J. (2022). *Research methods in physical activity*. Human kinetics. https://www.cabdirect.org/cabdirect/abstract/19911896233

Wang, D. (2021). Research on audit quality control of the machinery manufacturing industry based on Bio-Technology and Data Mining. *Journal of Commercial Biotechnology*, *26*(3). https://doi.org/10.5912/jcb1061

Watson II, J. C., & Coker-Cranney, A. M. (2018). Introduction to the Special Issue: Using technology in applied sport psychology. *Journal of Sport Psychology in Action*, *9*(4), 213-215. https://doi.org/https://doi.org/10.1080/21520704.2018.1552446

Yang, H. (2022). Application of Multilayer Neural Network in Sports Psychology. *Scientific Programming*, *2022*. https://doi.org/https://doi.org/10.1155/2022/3692428