Writers Crew International Research Journal

ISSN: 3048-5541Online

WRITERS CREW INTERNATIONAL RESEARCH

JOURNAL

PHYSIOTHERAPY- SPORTS INJURY PREVENTION STRATEGIES: ANALYZING THE EFFECTIVENESS OF SPECIFIC WARM-UP ROUTINES AND CONDITIONING PROGRAMS

Dr.Anurag pandey (PT)

Physiotherapist

Dr.Vimals physiotherapy & sports injury clinic, New Delhi, India

ISSN: 3048-5541Online

ABSTRACT

The present study concentrates on representing the importance of a number of strategies for the reduction of the possibilities related to sports-based wounds. “Warming-up” and “conditioning programs” are two of the most essential ways which should be considered by players in the field of increasing their energy and power during games. In this study, “interpretivism research philosophy”, and “inductive research approach” are followed in order to develop a detailed understanding of the study. Here, secondary data is gathered by the researcher from authentic websites, and journals published from 2020. A thematic interpretation of certain themes related to the topic provides an explicit notion of the present context.

The examination of data is based on the secondary data and the secondary data has the dynamic information about the prevention of the injuries and the importance of the prevention of the injuries. The sportsmen’s career and other factors such as diet and fitness have been discussed. In the strategy part various trainings and fitness planning have been explained for the study. the present analysis of the data has revealed that lack of fitness is the main reason for the injuries and the warm up routines and conditioning programs have its importance to mould the fitness of a player. Players should drink adequate water to stay hydrated, and these individuals should take proper rest to avoid tiredness during sports activities.

ISSN: 3048-5541Online

Table of Contents

ISSN: 3048-5541Online

ISSN: 3048-5541Online

List of Figures

ISSN: 3048-5541Online

CHAPTER 1: INTRODUCTION

1.1 Background

Strategies related to the prevention of sports injury signify particular actions by which injury-related risks of players can be lessened during sports. One of the most important strategies is following particular warm-up routines which aid in reducing chances of injuries. Blood flow and heart rate are accelerated by warming up that subsequently delivers oxygen into the muscle[1]. In case muscles get warmed up, the possibility of injury decreases at the time of straining the muscle at the time of exercise. “Conditioning program” is another way of diminishing sports-based risks through enhancing the flexibility levels, and giving strength to muscles[2]. The increasing rate of sports injuries has escalated sports injury-related incidents more. Therefore, a requirement for the market of sports medicine has also increased. A study shows that most of the cricket and football players suffer from ankle and knee injuries whereas other players get affected by “anterior cruciate ligament” (ACL) injuries[3]. The below graph also shows a continuous escalation of the “sports medicine market” in consecutive years. The present study reflects the necessity of undertaking certain strategies to reduce sports injuries. In this case, the necessity of conditioning programs and warm-up routines are given special attention regarding the precaution taken for stopping sports-related injuries.

[1]Bahenský, Petr, Marko, D.*et al.*“Warm-up breathing exercises accelerate VO^ sub 2^ kinetics and reduce subjective strain during incremental cycling exercise in adolescents”. *Journal of Physical Education and Sport*, *20*(6), 3361-3367.(2020).

[2]Latella, Christopher and Haff, G.G. “Global challenges of being a strength athlete during a pandemic: impacts and sports-specific training considerations and recommendations”. *Sports*, *8*(7),100.(2020).

[3]Patni, Himanshu 2023, Increasing Incidence of Sports Injuries is driving the Growth of the Sports Medicine Market in India!*available at:* https://univdatos.com/tag/india-sports-medicine-market/ (last visited on October 19, 2024)

ISSN: 3048-5541Online

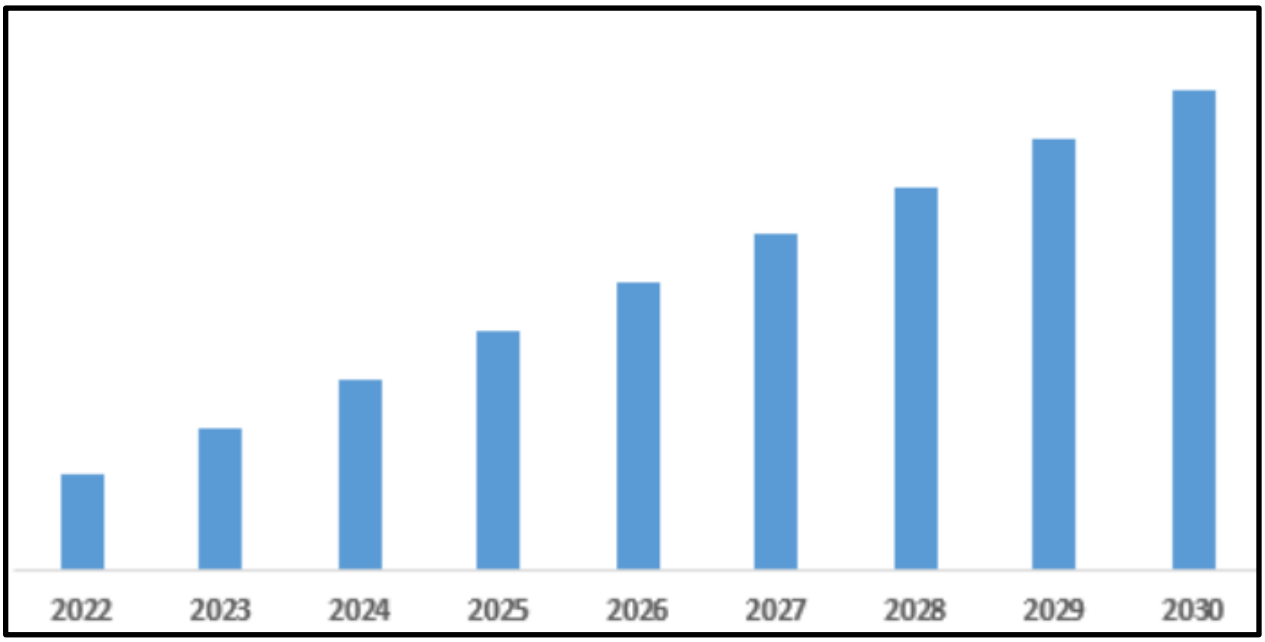

Figure 1.1: Persistent escalation of the "sports medicine market" in sequential years[4]

1.2 Aim and objectives

The present study aims to elaborate on the importance of various strategies in reducing sports injuries, and depict the role of conditioning programs and warm-up routines in preventing these injuries.

Objectives

- To discuss the importance of preventing injuries caused by the involvement in sports activities
- To evaluate several strategies playing an important role in reducing the chances of wounds caused by sports
- To investigate the fruitfulness of "conditioning programs" and "warm-up routines" to prevent the sports-oriented injuries

1.3 Research question

- What is the importance of stopping wounds caused by the engagement in sports-related activities?

[4]Ibid

ISSN: 3048-5541Online

- What are various strategies having an important part in reducing the chances of injuries caused by sports?
- What is the fruitfulness of "conditioning programs" and "warm-up routines" for preventing sports-based injuries?

1.4 Scope of the study

The main scope of the study is that it focuses on highlighting the role of following certain strategies for the prevention of injuries led by sports activities. This study also stresses upon the value of "conditioning programs" such as cross-training, "interval training", and "strength training" in lessening the risks related to sports wounds. Additionally, the necessity of warming-up muscles to avoid the wound is discussed in this study.

ISSN: 3048-5541Online

CHAPTER 2: LITERATURE REVIEW

2.1 An idea about different sports injuries

Players are mentally and physically affected by injuries caused by sports as many players' careers are dependent upon sports. In case a player plays with wounds, there is a high chance of resulting in other injuries as well[5]. Thus, these injuries compel players to take a break from sports activities. Different types of "sports injuries" include dislocations, fractures and knee injuries[6]. Despite these, concussions, jumper's knee, and Lumbar strain are also considered as sports-based injuries. "Sports practice is inevitably linked with the appearance of injuries"[7]. Hence, many players become already mentally prepared that these people may become affected by injuries during certain sports activities.

Dislocated knees and shoulders are common wounds faced by players while these people play basketball and football. These games also cause fractures of legs, wrist and collar bone [8]. Sometimes players also suffer from brain injuries which give rise to dizziness and headache within individuals. Injuries in muscles and tendons are caused by "Lumbar strain"[9]. Many players become depressed while they suffer from these injuries. Thus, proper strategies need to be followed by players in order to prevent these types of wounds in future.

[5]López-Valenciano, Alejandro, Ruiz-Pérez, I. *et al.* "Epidemiology of injuries in professional football: a systematic review and meta-analysis". *British journal of sports medicine*, *54*(12), 711-718.(2020).

[6]Mühlenfeld, Nils, Berthold, D.P. *et al.* "Epidemiology of complete knee dislocations: an updated classification system". *Archives of orthopaedic and trauma surgery*, 1-8.(2021).

[7]Prieto-González, Pablo, Martínez-Castillo, J. L. *et al.* "Epidemiology of sports-related injuries and associated risk factors in adolescent athletes: an injury surveillance". *International journal of environmental research and public health*, *18*(9), 4857. (2021).

[8]Peña, Javier, Gil-Puga, B. *et al*. "Epidemiology and Risk Factors in Young Female Athletes: Basketball, Football, and Volleyball". *Apunts. Educació Física i Esports*, (152), 1-12.(2023).

[9]Zhu, Jiaju, Ma, G. *et al.* "Research on simulation and prediction of spinal sports injury based on finite element analysis". *J. Nat. Sci. Biol. Med*, *14*(2), 165.(2023).

ISSN: 3048-5541Online

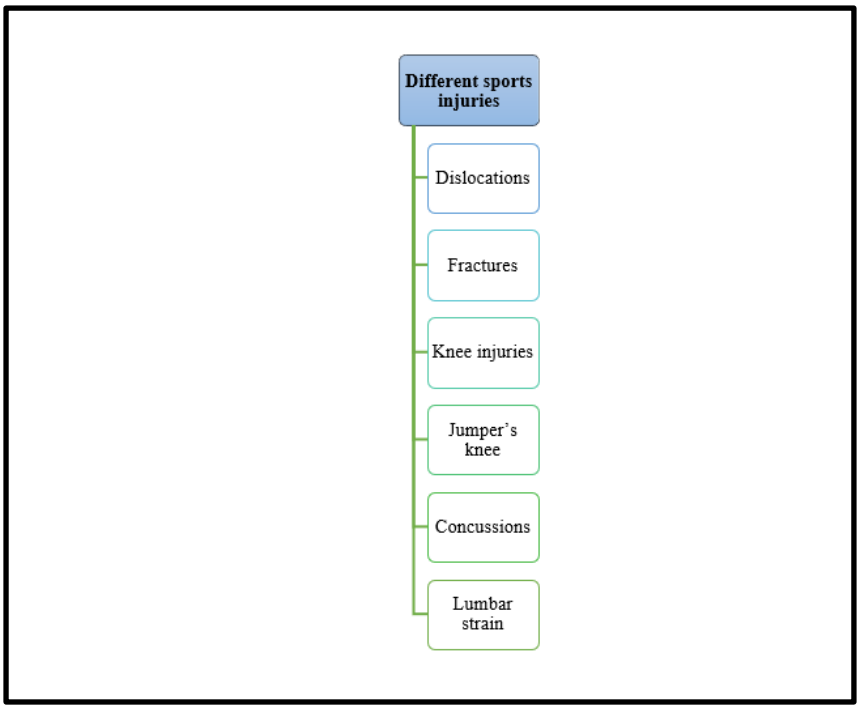

Figure 2.1: Different sports injuries

(Source: Self-developed)

2.2 A conception about the role of warm-up

Warm-up defines the preparation of the body by involving in different physical activities including certain exercises by which the demand of the body increases. Many benefits such as improving the mental condition, enhancing "neuromuscular activation", and escalating temperature of the body are associated with this "low-level physical activity"[10]. Individuals go through certain movements of the body at the time of practicing warming-up. As a result, the temperature of the body of these people increases, and this aspect makes the players prepared for sports activities. "Neuromuscular activation" plays an indispensable role in helping players be ready for sports-related activities[11]. In this case, "warming-up" consists of a great necessity in stimulating this activation.

2.3 Identifying different conditioning programs and their effectiveness

[10]Grandinetti, Roberto, Mussi, N. *et al.* "Exercise-Induced Bronchoconstriction in Children: State of the Art from Diagnosis to Treatment". *Journal of Clinical Medicine*, *13*(15), 4558.(2024).

[11]Hammami, Raouf, Negra, Y. *et al.* "Preseason Integrative Neuromuscular Training Improves Selected Measures of Physical Fitness in Highly Trained, Youth, Male Soccer Players". *The Journal of Strength & Conditioning Research*, *37*(6), e384-e390.(2023).

ISSN: 3048-5541Online

Particular training provided for the readiness of the body for sports activities is referred to as "conditioning programs". "Plyometric training", "circuit training", "strength training", and "interval training" are included in different "conditioning programs"[12]. "Plyometric training" also called "jump training" increases the stamina of players. On the other hand, muscular strength is enhanced by "circuit training" that includes "high-intensity aerobics"[13]. Players get the opportunity to intensify their performance levels through undertaking "strength training". This kind of training also lessens the possibility of wounds at the time of playing outdoor games. The psychological and physical power of players are enhanced by "strength training". Coordinating power between muscles and brain is ameliorated by this training.

"Interval training" defines the repetition of exercise that can take time. "Interval training" can be divided into two parts such as "long interval training", and "short interval training"[14]. The first type of training occurs when the player exercises for a long time period, and takes rest for a lesser time-period. On the other hand, in "short interval training" the player exercises for a short period, and takes an interval for a lengthy period. However, this training process develops muscle endurance that subsequently helps players prevent wounds.

2.4 Theoretical background

Trajectory theory

The above-mentioned theory highlights that air resistance and gravity have an effect on specific paths taken by several objects in motion. Players need to have an explicit notion about different

[12]Weldon, Anthony, Duncan, M.J. *et al.* "Contemporary practices of strength and conditioning coaches in professional cricket". *International Journal of Sports Science & Coaching*, *16*(3), 585-600.(2021).

[13]Mcweeny, David K., Boule, N.G. *et al.* "Effect of high intensity functional training and traditional resistance training on aerobic, anaerobic, and musculoskeletal fitness improvement". *Journal of Physical Education and Sport*, *20*(4), 1791-1802.(2020).

[14]Casado, Arturo, Hanley, B. *et al.* "World-class long-distance running performances are best predicted by volume of easy runs and deliberate practice of short-interval and tempo runs". *The Journal of Strength & Conditioning Research*, *35*(9), 2525-2531.(2021).

ISSN: 3048-5541Online

trajectories in the field throwing certain objects needed for the sports[15]. In badminton, these paths need to be noticed by players to avoid any kind of injuries. Trajectories related to physical activity enhance the enthusiasm of players, and these individuals can comprehend which particular path can be better for the movement of objects. An idea about this aspect makes players cautious, and consequently, severe injuries can be stopped by these people.

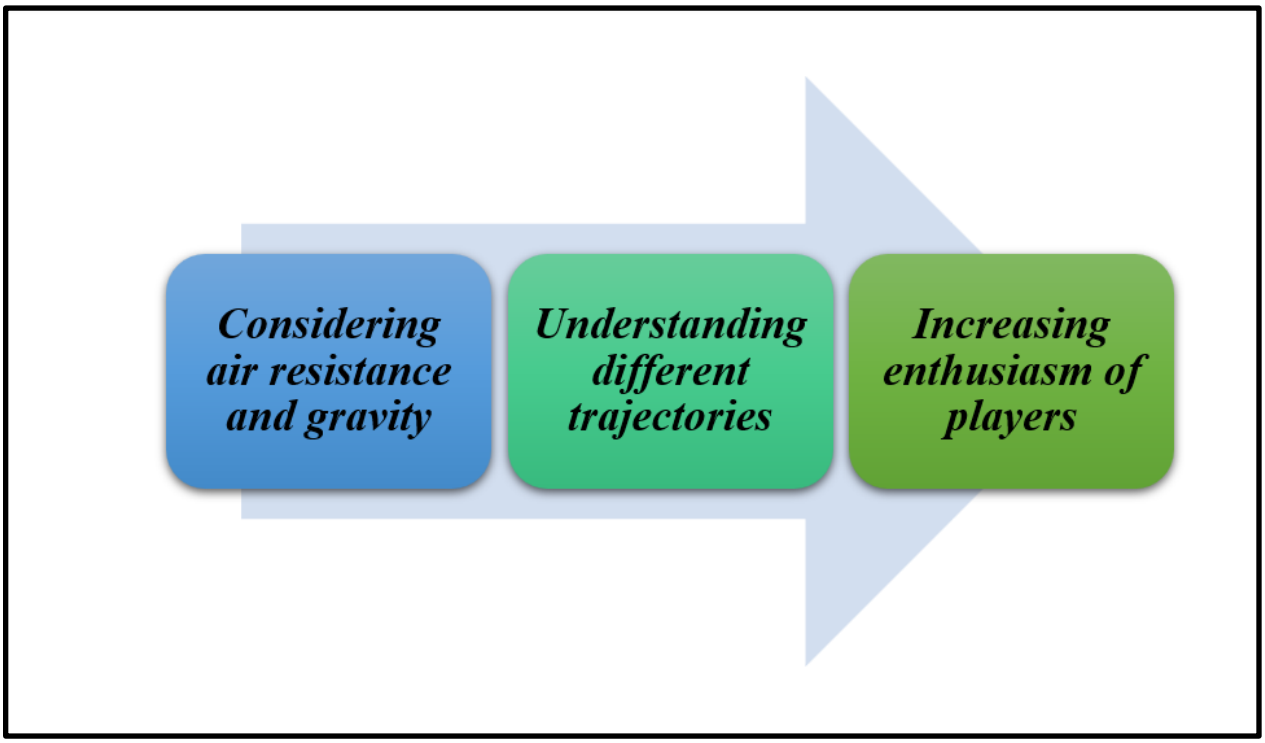

Figure 2.4.1: Trajectory theory

(Source: Self-developed)

Movement pattern theory

Coordination of muscle shrinking during the movement is denoted by "movement pattern theory". Appropriate utilisation of the following pattern can aid players in the field of avoiding risks and injuries caused by sports[16]. An example of this kind of pattern can be discussed; coordination can be found between arms and legs during a "standing vertical jump". In this movement the

[15]Sullivan, Mark O., Woods, C.T. *et al.* "Towards a contemporary player learning in development framework for sports practitioners". *International Journal of Sports Science & Coaching*, *16*(5), pp.1214-1222.(2021).

[16]Di Paolo, Stefano, Zaffagnini, S. *et al.* "Poor motor coordination elicits altered lower limb biomechanics in young football (soccer) players: implications for injury prevention through wearable sensors". *Sensors*, *21*(13), 4371.(2021).

ISSN: 3048-5541Online

integration of motor activities is required for the reduction of wound-related chances. Following thorough instructions of trainers and proper practice comprises a huge importance in diminishing the injuries caused by sports.

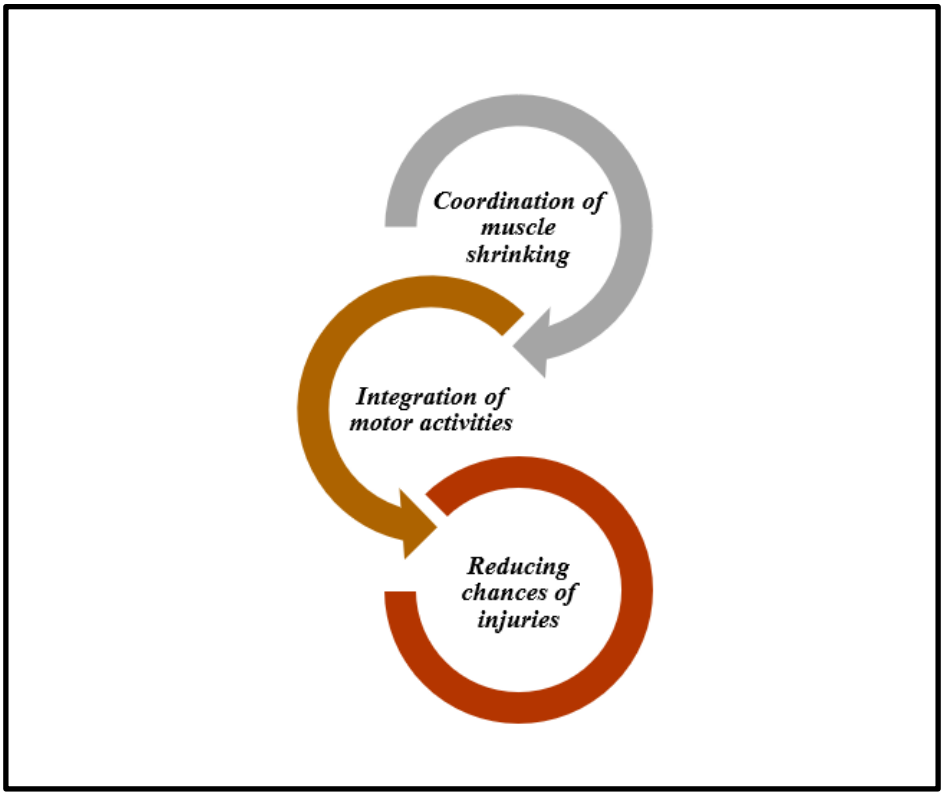

Figure 2.4.2: Movement pattern theory

(Source: Self-developed)

2.5 Outline of the literature

ISSN: 3048-5541Online

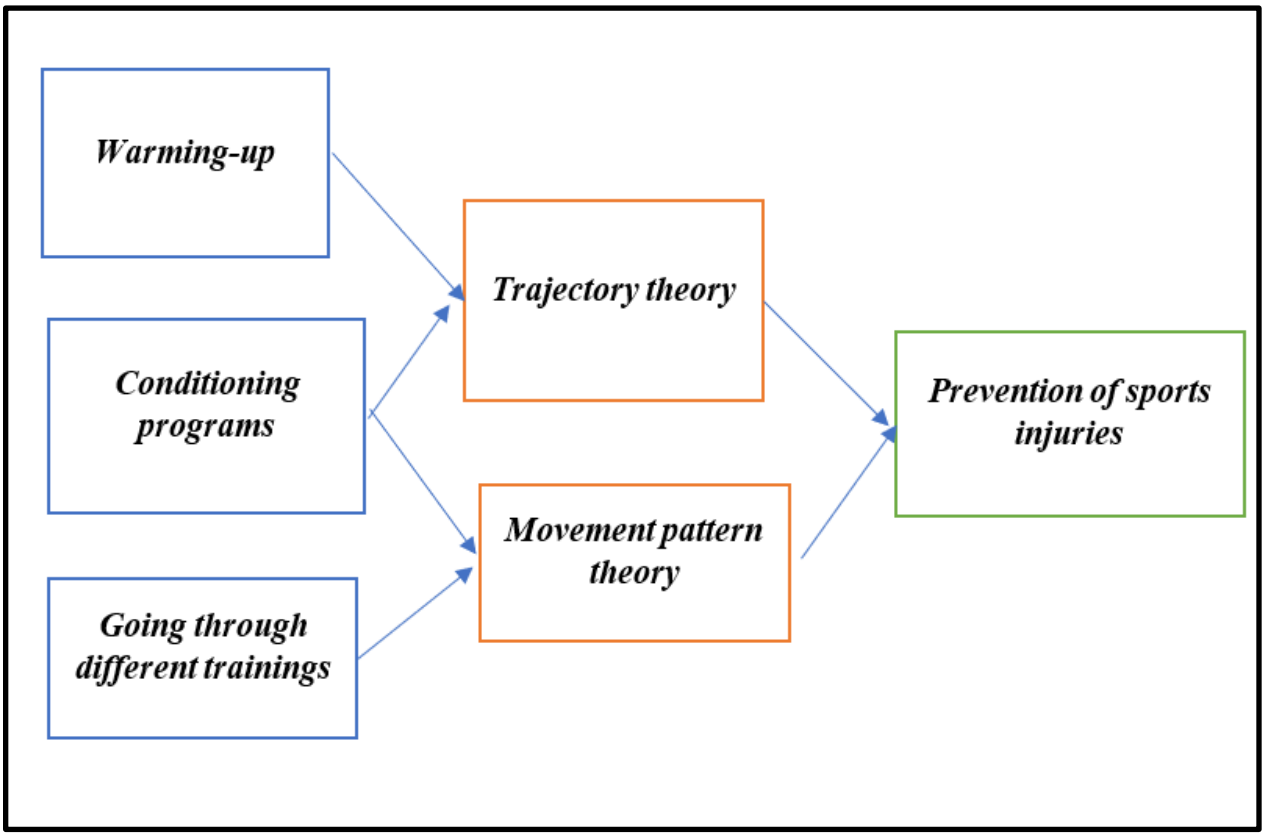

Figure 2.5: Outline of the literature

(Source: Self-developed)

ISSN: 3048-5541Online

CHAPTER 3: METHODOLOGY

3.1 Research philosophy

Different principles and presumptions determining the conduction of a study is referred to as "research philosophy". There are different types of "research philosophy" such as "interpretivism", "positivism", "realism", and "pragmatism". In the present case, "interpretivism research philosophy" is chosen as the qualitative method is followed here. Researchers are helped by "interpretivism philosophy" in the field of comprehending the context of a research[17]. The particular strategies helping in preventing sports wounds can easily be understood by the researcher with the aid of this philosophy. Despite this, the present philosophy provides the researcher with an opportunity to interpret information based on the consideration of different opinions of authors regarding the importance of prioritising certain strategies to avoid sports injuries.

3.2 Research approach

Particular stages associated with evaluating and collecting information are denoted by "research approach". It consists of three types such as "abductive", "inductive" and "deductive approach". In the present study, "inductive approach" is more suitable in comparison with other approaches as here the conclusion regarding the effectiveness of particular strategies for stopping sports-oriented wounds can be drawn with the aid of this approach. Observing the gathered information is facilitated by an "inductive approach"[18]. The researcher is capable of interpreting information by not only considering the gathered information but also concentrating on existing theories with the help of this approach.

3.3 Data collection

Specific method through which the information, facts, and data regarding a particular topic is gathered is signified as data collection. Two kinds of data are secondary and primary information.

[17]Ikram, Maryam and Kenayathulla, H.B. "Out of touch: comparing and contrasting positivism and interpretivism in social science". *Asian Journal of Research in Education and Social Sciences*, *4*(2), 39-49.(2022).

[18]Hoiruddin, Mohammad and Ulfa, S.M. "Inductive Approach Used in Teaching Speaking Skill: A Content Analysis". *Linguista: Jurnal Ilmiah Bahasa, Sastra, dan Pembelajarannya*, *4*(2), 105-113.(2020).

ISSN: 3048-5541Online

Interviews and surveys are the common sources of primary information[19]. Secondary information is generally gathered from reports and records of organisations, scholarly articles, websites, and magazines. In the present study, data related to different strategies reducing chances of sports injuries are gathered from scholarly articles, and websites published from the year 2020.

3.4 Data analysis

"Data analysis" indicates particular methods followed for the interpretation and evaluation of gathered information. As in the present research secondary data is gathered through following a qualitative method, thematic analysis is followed in this case. Identification of certain themes associated with a topic can be done based on "thematic analysis" [20]. This interpretation method helps the researcher in interpreting already existing information related to various strategies including conditioning programs, and warming-up techniques in the case of diminishing the possibilities of sports-centred injuries. Here, the themes are developed and assessed on the basis of the objectives of the study to get a clear understanding of the topic. The thematic interpretation of information also provides an idea about the importance of following appropriate strategies for preventing the wounds caused by sports.

3.5 Ethical constellation

Integrity of study outcomes is enhanced by prioritising ethical practices in a study. Maintaining the authenticity of data is one of the ethical practices that should be considered by researchers. In this research, all authentic information and data are gathered by the researchers from recent sources. Any kind of old and unauthentic sources are excluded in this study.

[19]Mazhar, Syeda Ayeman, Anjum, R. *et al.* "Methods of data collection: A fundamental tool of research". *Journal of Integrated Community Health (ISSN 2319-9113)*, *10*(1), 6-10.(2021).

[20]Christou, Prokopis A. "How to use thematic analysis in qualitative research". *Journal of Qualitative Research in Tourism*, *3*(2), 79-95.(2022).

ISSN: 3048-5541Online

CHAPTER 4: FINDINGS AND DISCUSSIONS

4.1 Systematic analysis table

Sl no	"Author and year"	"Title"	"Aim"	"Method used"	"Main findings"
1.	Huseyin Huserv Turnagöl, Koşar, Ş. *Et al.* (2021)	"Nutritional considerations for injury prevention and recovery in combat sports"	The aim of the research is to identify the nutritional planning for combat sports	Secondary qualitative method has been used	The study has the potential to identify the actual diet planning for the sportsmen for the combat games
2.	Latifah Almansour, Mohammad, W. S. *et al.* (2024)	"Unveiling the Knee Injury Landscape"	The aim of the study is to identify the knee injury rated for the players	Primary qualitative method has been used	The research has provided the statistics for the knee injuries of the football players
3.	Emma. R. Russell, Mackay, D. F. *et* al. (2021)	"Association of field position and career length with risk of neurodegenerative disease	The study aims to identify the field positions for the players for the neuro injuries.	Secondary qualitative method has used	The findings from the journal are the critical field positions and the related neuro

		in male former professional soccer players"			problems among the players

Table 4.1: Systematic table

4.2 Findings

4.2.1 Importance of preventing injuries in the sports activities

Injuries are the common factors for the sports men and it is also required to prevent fatal injuries for the sportsmen. Especially in the physical contact sports can be the reason for the injuries and wounds for the sports person [21]. It is known that the sports persons have their long career in sports and many of them represent the country in international sports. Considering the performance parameter, the sport person has to be more cautious and strategic while performing the body contact games. Especially the ligament injuries for the football players can decrease their career. Simultaneously the international players after the fatal injury may not perform well in the international matches.

[21]Huseyin Huserv Turnagöl, Koşar, Ş.*et al.* "Nutritional considerations for injury prevention and recovery in combat sports". *Nutrients*, *14*(1), 53. (2021).

ISSN: 3048-5541Online

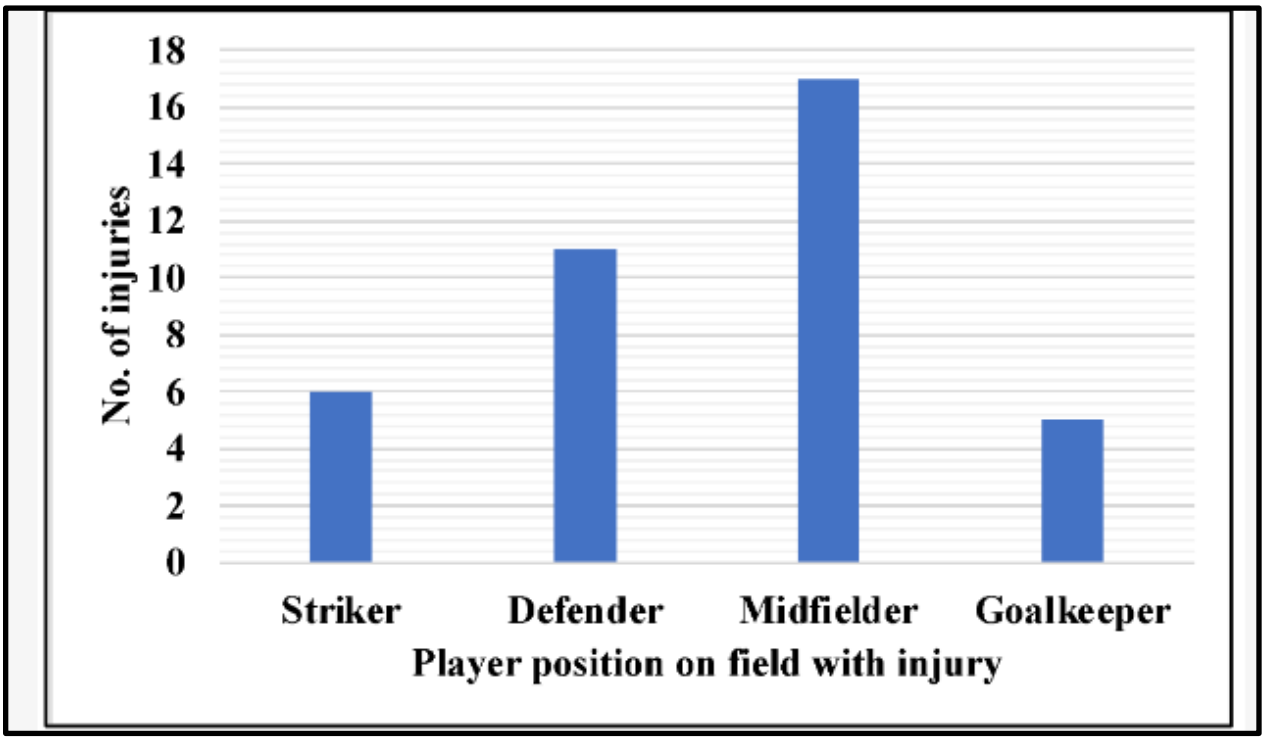

Figure 4.2.1: Player position and Injury rate for Footballers

(Source: [22])

The statistics is the latest picture of the injury rate of the footballers and according to the picture the defenders and midfielders are suffering more injuries in the sports. The two positions are important for the game and fatal injuries can limit the life of a player [23]. The importance of preventing injuries is to increase the player's life.

4.2.2 various strategies are there to prevent wounds caused by sports

Wounds caused by the matches and practices can make the players injured fatally and there are various strategies that can be applied to prevent the injuries. The first and foremost strategy should

[22]Latifah Almansour, Mohammad, W. S. *et al.* "Unveiling the Knee Injury Landscape: A Comprehensive Study of Youth Male Football Players in the Central Region of Saudi Arabia". *Applied Sciences*, *14*(9), 3895. (2024)

[23]Emma. R. Russell, Mackay, D. F. *et* al. "Association of field position and career length with risk of neurodegenerative disease in male former professional soccer players". *JAMA neurology*, *78*(9), 1057-1063. (2021).

ISSN: 3048-5541Online

come from the players to use proper guards and accessories [24]. The management of the teams, especially the international management, are planning for the fitness training and cardio vascular exercises for the players. Team management has the consideration that the players can be injured by lack of fitness in a match. In this condition the management are using diet plans and strength exercises for the players [25].

[24]Brian Reid, Schreiber, K. *et al.* "Reaction time assessment for coaching defensive players in NCAA division 1 American football": A comprehensive literature review. *International Journal of Industrial Ergonomics*, *77*, 102942. (2020).

[25]Hubert Dobrowolski, Karczemna, A. *et al.* "Nutrition for female soccer players—recommendations". *Medicina*, *56*(1), 28. (2020).

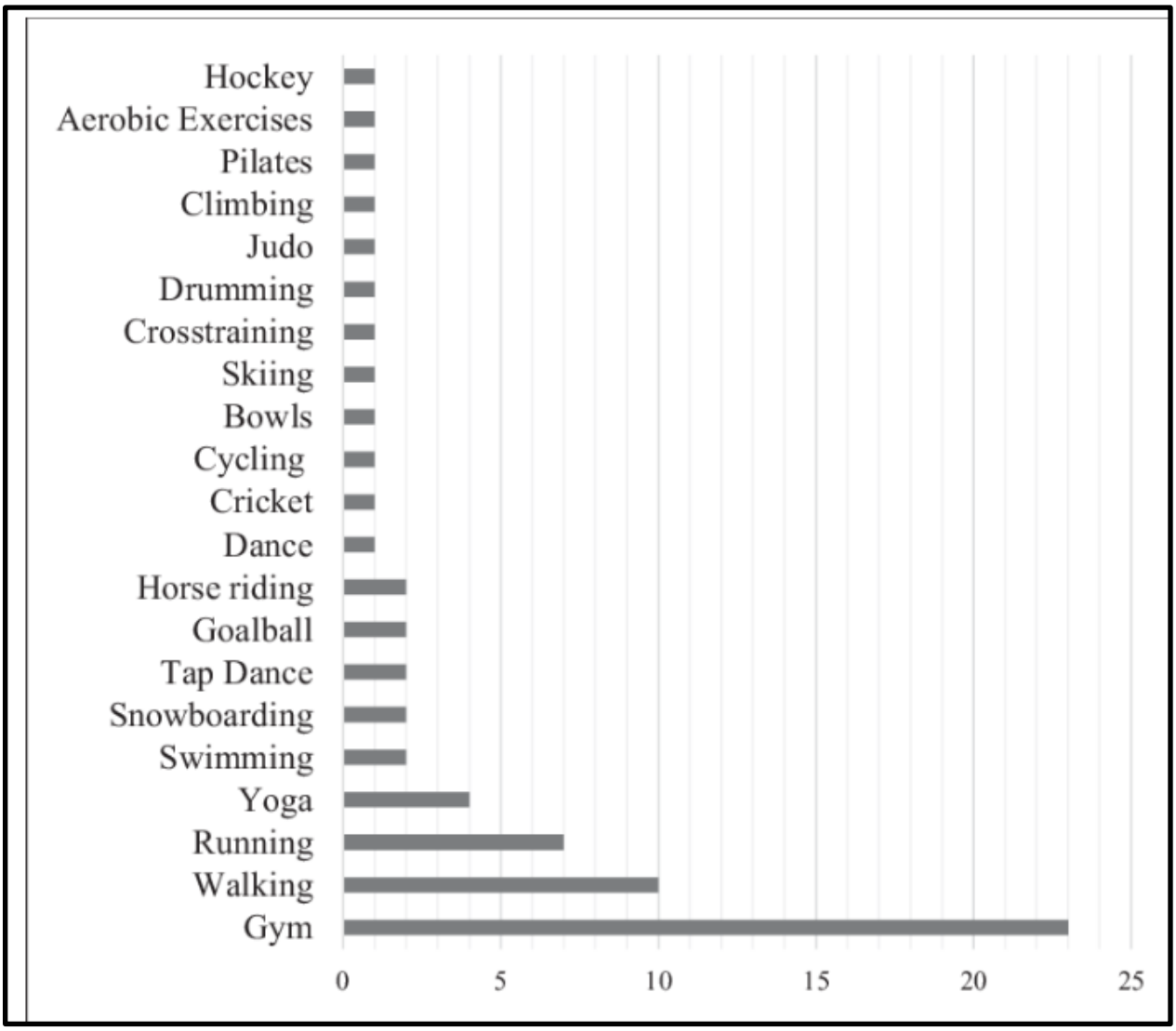

Figure 4.2.2 Exercise planning chart for the players

(Source: [26])

The statistics that have been presented have a clear picture about the exercise planning for the players. As per the picture the need of the gym is more than any training and the team management has the guidelines to do the exercise in the gym for the required fitness to prevent the injuries.

4.2.3 Impact of "warm up Routines" and "Conditioning programs" preventing the sports-oriented injuries

[26]Mike Richardson, Petrini, K. *et al.* "Access to exercise for people with visual impairments during the Coronavirus-19 pandemic". *British Journal of Visual Impairment*, *41*(2), 448-463. (2023).

ISSN: 3048-5541Online

"Warmup routines" and the "conditioning programs" are always required and that helps to prevent the injuries caused by the sports. "Warm up routines" can increase fitness and it gradually increases the heart rate of the players [27]. This is important to maintain the cardiac health for the players and the players should maintain the routines for the warmup. A regularity in warm up can reduce the muscle strain and a suitable warmup can recover the muscle injuries as well. For the conditioning program the plyometric training, circuit training, interval training are planned [28]. On the other hand, sprinting, swimming and sometimes weight training can be part of the conditioning programs for the players to prevent injuries.

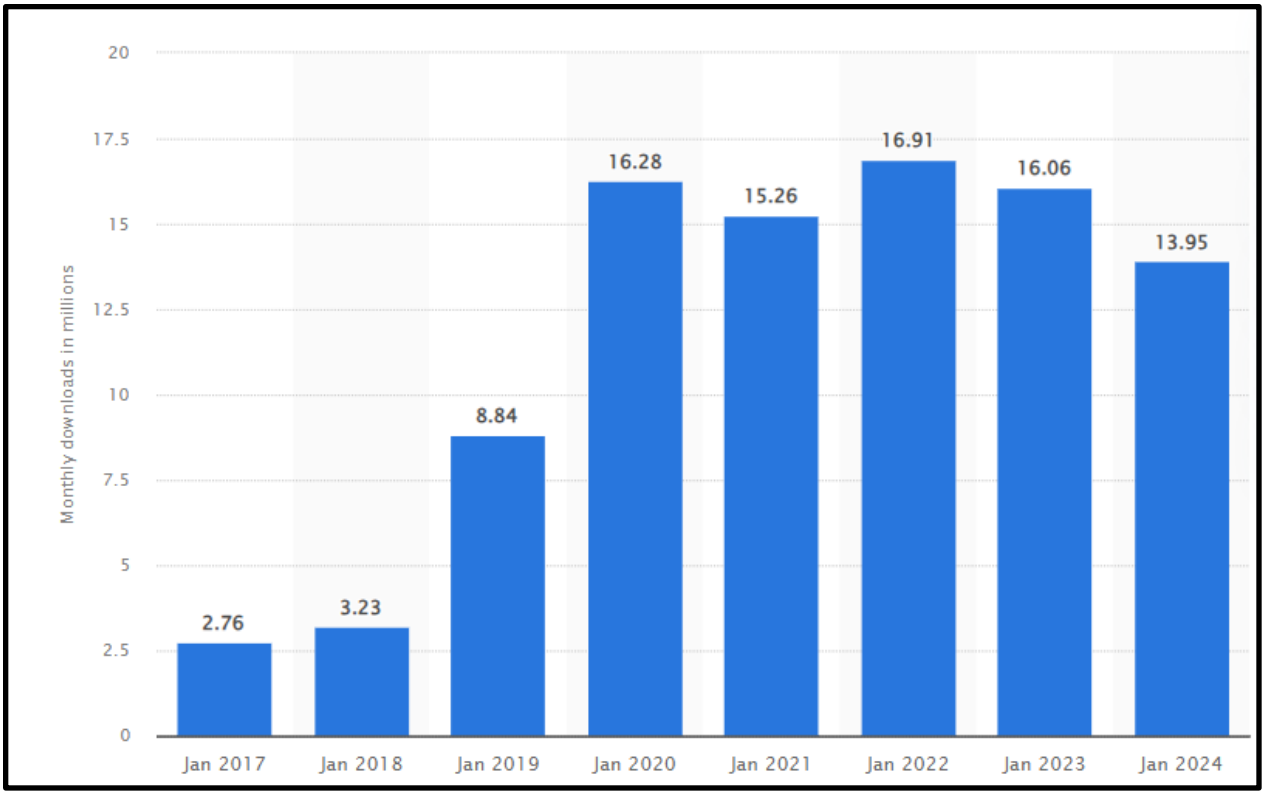

Figure 4.2.3 Worldwide fitness and workout application download rate

[27]Ryo Tsurubami, Oba, K. *et al.* "Warm-up intensity and time course effects on jump performance". *Journal of sports science & medicine*, *19*(4), 714. (2020).

[28]A. J. Holmes, Stratton, M. T. *et al.* "Effects of plyometric-and cycle-based high-intensity interval training on body composition, aerobic capacity, and muscle function in young females: a field-based group fitness assessment". *Applied Physiology, Nutrition, and Metabolism*, *48*(12), 932-945. (2023).

ISSN: 3048-5541Online

(Source: [29])

The statistics have revealed that the players are trying to get more fitness through the workout and according to the statistics the rate of downloading mobile applications for work out is increasing. In the present year there are 13.95 million players who have downloaded workout applications to condition themselves for a long-playing career.

4.3 Discussions

Secondary data has been collected for the study and the secondary data from the authentic sources have provided dynamic information about the context. The importance of preventing injuries has been discussed at the first point of the thematic analysis and it has been discussed that injuries can decrease a player's life. A sportsman who is playing for the country needs to prevent injuries for having a long sports career. For example, the body contact game football and related statistics have been presented. The statistics have the potential to inform the injury rate in the game. The strategies are also discussed in the examination of data and from the previous research it has been confirmed that the safety from the pliers can reduce the chance of an injury. On the other hand, the fitness planning from the management and various exercises can increase the fitness to reduce the injuries. It has been discussed that the lack of fitness is the main reason for the wounds and injuries.

The management of the team have planned the “conditioning programs” and “warm up routines” for the players. Swimming, sprinting, strength training and many others have been planned for the sportsmen. On the same note, diet planning is also a part of the conditioning program. Warm ups and various training programs are helping the sportsmen to gain fitness, an activity in the body that is providing muscle activity and can recover from the injuries as well. According to the evaluation of the data the ligament injury is one of the most critical injuries that can make a player invalid for future. The gain of fitness and activity in the body has the important role to make the prevention of these types of injuries for sportsmen.

[29]Laura Ceci, 2024, Growth of leading fitness and workout mobile apps downloads in January available at: https://www.statista.com/statistics/1239806/growth-top-fitness-mobile-apps-downloads/ [last visited on October 19, 2024]

ISSN: 3048-5541Online

CHAPTER 5: CONCLUSION AND LIMITATIONS

5.1 Conclusion

This study can be concluded with shedding light on the necessity of considering various strategies for restricting several injuries at the time of sports. Though several strategies are evaluated in this study, two particular ways such as “conditioning programs”, and “warming-up” procedures should be paid with special attention by players in order to stop injuries. “Warming-up” can aid players in increasing the temperature of the body which subsequently helps them in staying energetic and active during sports. In addition, different training like “interval training”, “circuit training” and “strength training” should be provided with importance for knowing the right techniques of avoiding wounds.

5.2 Limitation

Different research limitations create a bar in the path of completing s study. In the present case, insufficient time is one of the limitations that creates an obstacle for the researcher in the field of gathering more facts, and information related to the study. On the other hand, less budget is another limitation; in case more budget could be obtained, then the study could be conducted based on more sources.

5.3 Recommendation

Strategies for restricting the chances of “sports injuries” have been discussed in this study; however, despite these strategies, some more ways can be recommended which can have significance in reducing the wounds caused by sports activities. ***Staying hydrated*** is immensely essential for players; hence, these people should intake sufficient amounts of water to avoid dehydration[30]. Despite this, ***proper rest*** and ***sufficient sleep*** are needed by players to eradicate tiredness. Individuals involved in sports activities have to go through many physical exercises which can cause fatigueness in their bodies[31]. Therefore, proper sleep should be prioritised by players in the field of avoiding any kind of injury caused by tiredness during sports. Every game

[30]Pérez-Castillo, Íñigo M., Williams, J.A. *et al.* “Compositional aspects of beverages designed to promote hydration before, during, and after exercise: Concepts revisited”. *Nutrients*, *16*(1), 17.(2023).

[31]Spreafico, Filippo, Barretta, F. *et al.* “Positive impact of organized physical exercise on quality of life and fatigue in children and adolescents with cancer”. *Frontiers in Pediatrics*, *9*, 627876.(2021).

ISSN: 3048-5541Online

has different techniques; thus, players need to ***concentrate on specific techniques*** to prevent injuries.

REFERENCES

Bahenský, Petr, Marko, D. *et al.* "Warm-up breathing exercises accelerate VO^ sub 2^ kinetics and reduce subjective strain during incremental cycling exercise in adolescents". *Journal of Physical Education and Sport*, *20*(6), 3361-3367.(2020).

Latella, Christopher and Haff, G.G. "Global challenges of being a strength athlete during a pandemic: impacts and sports-specific training considerations and recommendations". *Sports*, *8*(7),100.(2020).

Patni, Himanshu 2023, Increasing Incidence of Sports Injuries is driving the Growth of the Sports Medicine Market in India!*available at:* https://univdatos.com/tag/india-sports-medicine-market/ (last visited on October 19, 2024)

López-Valenciano, Alejandro, Ruiz-Pérez, I. *et al.* "Epidemiology of injuries in professional football: a systematic review and meta-analysis". *British journal of sports medicine*, *54*(12), 711-718.(2020).

Mühlenfeld, Nils, Berthold, D.P. *et al.* "Epidemiology of complete knee dislocations: an updated classification system". *Archives of orthopaedic and trauma surgery*, 1-8.(2021).

Prieto-González, Pablo, Martínez-Castillo, J. L. *et al.* "Epidemiology of sports-related injuries and associated risk factors in adolescent athletes: an injury surveillance". *International journal of environmental research and public health*, *18*(9), 4857. (2021).

Peña, Javier, Gil-Puga, B. *et al*. "Epidemiology and Risk Factors in Young Female Athletes: Basketball, Football, and Volleyball". *Apunts. Educació Física i Esports*, (152), 1-12.(2023).

Zhu, Jiaju, Ma, G. *et al.* "Research on simulation and prediction of spinal sports injury based on finite element analysis". *J. Nat. Sci. Biol. Med*, *14*(2), 165.(2023).

Grandinetti, Roberto, Mussi, N. *et al.* "Exercise-Induced Bronchoconstriction in Children: State of the Art from Diagnosis to Treatment". *Journal of Clinical Medicine*, *13*(15), 4558.(2024).

Hammami, Raouf, Negra, Y. *et al.* "Preseason Integrative Neuromuscular Training Improves Selected Measures of Physical Fitness in Highly Trained, Youth, Male Soccer Players". *The Journal of Strength & Conditioning Research*, *37*(6), e384-e390.(2023).

Weldon, Anthony, Duncan, M.J. *et al.* "Contemporary practices of strength and conditioning coaches in professional cricket". *International Journal of Sports Science & Coaching*, *16*(3), 585-600.(2021).

Mcweeny, David K., Boule, N.G. *et al.* "Effect of high intensity functional training and traditional resistance training on aerobic, anaerobic, and musculoskeletal fitness improvement". *Journal of Physical Education and Sport*, *20*(4), 1791-1802.(2020).

Casado, Arturo, Hanley, B. *et al.* "World-class long-distance running performances are best predicted by volume of easy runs and deliberate practice of short-interval and tempo runs". *The Journal of Strength & Conditioning Research*, *35*(9), 2525-2531.(2021).

Sullivan, Mark O., Woods, C.T. *et al.* "Towards a contemporary player learning in development framework for sports practitioners". *International Journal of Sports Science & Coaching*, *16*(5), pp.1214-1222.(2021).

Di Paolo, Stefano, Zaffagnini, S. *et al.* "Poor motor coordination elicits altered lower limb biomechanics in young football (soccer) players: implications for injury prevention through wearable sensors". *Sensors*, *21*(13), 4371.(2021).

Ikram, Maryam and Kenayathulla, H.B. "Out of touch: comparing and contrasting positivism and interpretivism in social science". *Asian Journal of Research in Education and Social Sciences*, *4*(2), 39-49.(2022).

Hoiruddin, Mohammad and Ulfa, S.M. "Inductive Approach Used in Teaching Speaking Skill: A Content Analysis". *Linguista: Jurnal Ilmiah Bahasa, Sastra, dan Pembelajarannya*, *4*(2), 105-113.(2020).

Mazhar, Syeda Ayeman, Anjum, R. *et al.* "Methods of data collection: A fundamental tool of research". *Journal of Integrated Community Health (ISSN 2319-9113)*, *10*(1), 6-10.(2021).

Christou, Prokopis A. "How to use thematic analysis in qualitative research". *Journal of Qualitative Research in Tourism*, *3*(2), 79-95.(2022).

Huseyin Huserv Turnagöl, Koşar, Ş. *Et al.* "Nutritional considerations for injury prevention and recovery in combat sports". *Nutrients*, *14*(1), 53. (2021).

Latifah Almansour, Mohammad, W. S. *et al.* "Unveiling the Knee Injury Landscape: A Comprehensive Study of Youth Male Football Players in the Central Region of Saudi Arabia". *Applied Sciences*, *14*(9), 3895. (2024)

Emma. R. Russell, Mackay, D. F. *et* al. "Association of field position and career length with risk of neurodegenerative disease in male former professional soccer players". *JAMA neurology*, *78*(9), 1057-1063. (2021).

Brian Reid, Schreiber, K. *et al.* "Reaction time assessment for coaching defensive players in NCAA division 1 American football": A comprehensive literature review. *International Journal of Industrial Ergonomics*, *77*, 102942. (2020).

Hubert Dobrowolski, Karczemna, A. *et al.* "Nutrition for female soccer players—recommendations". *Medicina*, *56*(1), 28. (2020).

Mike Richardson, Petrini, K. *et al.* "Access to exercise for people with visual impairments during the Coronavirus-19 pandemic". *British Journal of Visual Impairment*, *41*(2), 448-463. (2023).

Ryo Tsurubami, Oba, K. *et al.* "Warm-up intensity and time course effects on jump performance". *Journal of sports science & medicine*, *19*(4), 714. (2020).

A. J. Holmes, Stratton, M. T. *et al.* "Effects of plyometric-and cycle-based high-intensity interval training on body composition, aerobic capacity, and muscle function in young females: a field-based group fitness assessment". *Applied Physiology, Nutrition, and Metabolism*, *48*(12), 932-945. (2023).

Laura Ceci, 2024, Growth of leading fitness and workout mobile apps downloads in January available at: https://www.statista.com/statistics/1239806/growth-top-fitness-mobile-apps-downloads/ [last visited on October 19, 2024]

Pérez-Castillo, Íñigo M., Williams, J.A. *et al.* "Compositional aspects of beverages designed to promote hydration before, during, and after exercise: Concepts revisited". *Nutrients*, *16*(1), 17.(2023).

Spreafico, Filippo, Barretta, F. *et al.* "Positive impact of organized physical exercise on quality of life and fatigue in children and adolescents with cancer". *Frontiers in Pediatrics*, *9*, 627876.(2021).