International Journal of Sociologies and Anthropologies Science Reviews
Volume 5 Issue 4: July-August 2025: ISSN 2985-2730
Website: https://so07.tci-thaijo.org/index.php/IJSASR/index

Development Guideline to Prevent Injury for Youth Football Players

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Received 04/12/2024 Revised 20/12/2024 Accepted 20/01/2025

Abstract

Background and Aim: According to a recent survey, it is not uncommon for teenage football players to suffer injuries during training and matches. The proportion of sports injuries in youth campus football players was as high as 70.58%, and the highest at 86.78%. The injury sites were mainly in the ankle and knee, 34.13% and 33.33%, respectively, accounting for one-third or more of all injuries. This research aims to develop guidelines to prevent injury for youth football players.

Materials and Methods: This study is a mixed-method study. The study uses a combination of surveys and expert interviews to analyze injury data from 400 youth football players aged 14-16, examining factors such as player position, training duration, and injury frequency. The participants, including 5 experts, were selected to check the quality of the questionnaire (IOC). 7 expert interviews about the way to construct the guidelines for the prevention of injury for youth football players, and 10 experts were invited to verify the science and rationality of the research.

Results: Based on the information provided in the interview and questionnaire results, the researcher designed a POLC model (Planning, Organizing, Leading, Controlling) to prevent injuries in youth football players. Including 16 guidelines on the planning component, 16 guidelines on the organizing component, 16 guidelines on the leading component, and 16 guidelines on the controlling component.

Conclusion: Overall, the consistently high ratings across most of the controlling dimensions reflect a well-structured approach to managing injury prevention, with a few areas highlighted for potential enhancement to further solidify the effectiveness of these strategies. The low variability in responses also underscores a consensus on the robustness of the current measures, aligning closely with best practices in sports injury prevention.

Keywords: Football; Youth Football Player; Injury Prevention; Guideline

Introduction

Football is a highly confrontational sport in which two teams attack and defend by controlling the ball with their feet. It is also characterized by changeable tactics and many participants and is known as "the world's No.1 sport" (Wan, 2017). Important instructions were given, and a series of measures were introduced aimed at promoting football on campus and allowing more teenagers to participate in this sport (State Council Teleconference, 2014). The conference also said that football will be included in the school's physical education curriculum, teaching system, and will serve as a compulsory course for all students, providing more opportunities for students to learn football. This fully shows that China has attached high importance to youth football. As football enters schools and more and more teenagers participate in more and more matches, sports injuries follow. It is quite sure that youth are the future of China's football. Sports culture is an important part of our spiritual life (Gao, 2022). Therefore, we must promote the scale growth of youth football talents (General Office of the State Council, 2015).

According to a recent survey, it is not uncommon for teenage football players to suffer injuries during training and matches. The proportion of sports injuries in youth campus football players was as high as 70.58%, and the highest at 86.78%. The injury sites were mainly in the ankle and knee, 34.13% and 33.33%, respectively, accounting for one-third or more of all injuries. Therefore, to achieve the healthy development of their body and mind, football players need to improve their security awareness of injury prevention.

The campus is not only full of vitality but also full of a sports atmosphere, which is the cradle of youth football (Li, 2021). Campus football is an important part of the development of sports in China, and also an effective way to cultivate young people's bodies and improve their teamwork ability (Zhang, 2024). Taking interest as the starting point, the campus football activities not only satisfy the children who like to play football, enrich the campus cultural life of the students, but also enhance the students' physique, and contribute to the reserve of our national football team members. However, at the same time as campus football, sports injuries also occur, which, to a large extent, will lead to the

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reduction of sports mood and the decline of sports quality in teenagers, which is extremely unfavorable to the growth of teenagers during adolescence.

This article mainly takes Xi'an middle schools as an example, tries to find the common sports injury parts and types, analyzes the causes of these sports injuries through interviews and questionnaire methods, and puts forward countermeasures for youth football players to prevent sports injuries. Through the analysis of these data, we can better understand the characteristics and patterns of injury in young football players and take effective preventive measures to reduce their injury risk. The final goal is to contribute to the physical and mental health of youth football players and the development of youth football.

Objectives

1. To study the current situation of preventing injury for youth football players.
2. To draft the guidelines to prevent injury for youth football players.
3. To confirm the guidelines to prevent injury for youth football players.

Literature Review

1. Sports injury characteristics in youth football

1.1 Characteristics of sports injuries in teenagers of different ages

Football is a high-intensity sport that captures the hearts of millions worldwide, with over 400 million people actively engaging in it each year. Among these enthusiasts, a majority are youth under the age of 18, showcasing their passion and dedication to the sport. However, this fierce competitiveness and physical nature of football also mean that the risk of injury, particularly lower limb injuries, is significantly higher compared to other contact sports (Pluim et al, 2006).

Data from the National Consumer Electronics Safety Commission Injury Monitoring System paints a concerning picture, revealing that more than 80% of football-related injuries occur in individuals under the age of 24, with the highest incidence observed in 14-year-olds. These vulnerabilities are not limited to any specific level of play; primary school athletes often sustain injuries to their limbs or joints, ranging from elbow sprains to bruises on their legs, hands, or arms.

As athletes progress to junior middle school, the occurrence of injuries among male football players becomes more sporadic, often happening during gameplay. While the severity of these injuries is mostly mild, they predominantly affect the lower limbs, mostly manifesting as abrasions.

Moving into high school, the stakes get even higher, and consequently, so do the risks. High school football players often report injuries to their ankles, knees, thigh muscle groups, and waist. Evidently, from primary school through high school, lower limb injuries dominate the list of football-related injuries, with bruising and contusion being the most prevalent types (Sheehan, 2012). Alarmingly, the incidence of sports injuries among athletes under 18 years old is almost on par with that of adult athletes, indicating a pressing need for increased awareness and preventive measures. This underscores the importance of safety protocols, proper training, and adequate gear to protect our young athletes as they pursue their passion for the sport.

1.2 Sports injury characteristics of teenagers of different genders

Indeed, there are significant differences in the injury characteristics and incidence rates between men and women in football. From the perspective of injury characteristics, teenage male players are more likely to suffer ankle injuries, which may be related to their frequent use of ankle joints during sprints and intense confrontations. Relatively speaking, female athletes are more prone to knee injuries, which may be related to the greater load on their knees during rapid directional changes and sudden stops.

However, surprisingly, the ankle injury rate among young female football players is as high as 42%, which is consistent with previous research findings. These studies include Larruskain's research on the differences in injury rates between male and female football players, as well as Le Gall et al.'s research on the ankle injury rate among young female football players (Soligard et al, 2008). These studies suggest that ankle injuries are a non-negligible issue in football, both among adult males and young females.

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In summary, Football is a high-intensity sport popular among youth, but its physical demands significantly increase the risk of injuries, particularly to the lower limbs. Research highlights that over 80% of football-related injuries occur in individuals under 24, with 14-year-olds being most affected. Primary school players often experience mild limb or joint injuries, such as sprains and bruises, while middle school injuries, though sporadic, mainly involve abrasions to the lower limbs. In high school, the risks escalate, with injuries commonly affecting the ankles, knees, thighs, and waist, predominantly as bruises or contusions. Gender differences also play a role; male players are more prone to ankle injuries due to intense physical activity, while female players face a higher incidence of knee injuries, possibly linked to directional changes and sudden stops. Notably, young female athletes report an ankle injury rate of 42%, emphasizing the need for targeted prevention strategies across age groups and genders.

2. Principles of injury prevention in youth football sports

Football, regardless of its level, poses a significant risk of injury, with some being severe enough to potentially end a player's career. However, it's encouraging to note that many of these injuries can be prevented if principles of injury prevention and physical recovery are followed, including the more severe ones.

2.1 Principles of Injury Prevention

The research on injury prevention and physical recovery in youth football sports holds a crucial role in ensuring the health and safety of young athletes, as well as in promoting scientific principles of injury prevention and physical recovery in youth football sports. A growing number of sports associations have come to appreciate the significance of injury prevention and physical recovery among young football players, leading them to develop safety measures and plans to minimize the risk of football injuries. Studies have shown that nearly half of non-contact football sports injuries can be avoided through proactive prevention and physical recovery measures.

Most of the existing research on the prevention and physical recovery principles of football injuries follows the four-step approach outlined by Mechelen et al.: determining the degree of injury, analyzing the cause and mechanism of the injury, implementing preventive measures, and evaluating the effectiveness of these prevention and physical recovery measures. Nevertheless, in youth football sports, particularly among those under the age of 14 years, there is still a lack of research on the prevention and physical recovery of injuries. It can be inferred from existing studies that different age groups require distinct approaches for sports injury prevention and physical recovery. Injuries in youth football players share similarities with adult athletes, making similar preventive measures beneficial for adolescents. Most studies have shown that injury prevention and physical recovery programs are effective in reducing sports-related injuries.

By expanding our understanding of youth football injury prevention and physical recovery, we can take proactive measures to ensure the safety of our young athletes and reduce the potential for sports-related harm. Of course, when performing exercise recovery, it is best to consult a doctor or professional rehabilitation coach to get more specific advice and guidance.

2.2 Mechanistic characterization of sports injuries in youth football

Some studies have emphasized the critical significance of comprehending the mechanisms and characteristics of sports injury occurrence, particularly in adolescents. The ability to effectively mitigate the incidence of such injuries at their source is paramount. The initial response, post-injury, from athletes, instructors, and medical staff can be a defining factor in an athlete's recovery trajectory and their longevity in the sport. This underscores the importance of familiarity with injury mechanisms and causes among all personnel involved.

Sports injury mechanisms, injury etiology, and prompt, appropriate treatments must be given equal importance. A holistic understanding ensures a well-rounded approach to injury prevention, management, and rehabilitation. Instructors have a pivotal role to play. Their understanding of injury mechanisms extends beyond the technicalities of ankle and knee injuries; they must also be versed in training principles that can actively reduce an athlete's injury risk.

For instance, the enhancement of an athlete's local muscle anaerobic exercise capacity can significantly lower their susceptibility to sports injuries. This can be achieved through targeted exercises that boost muscular endurance and power, enabling athletes to withstand the rigors of their chosen sport.

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Moreover, neuromuscular and proprioception training have been identified as key factors in reducing the incidence of anterior cruciate ligament injuries. These types of training focus on improving an athlete's balance, agility, and body control, which not only minimizes the risk of injury but also enhances their overall athletic performance.

Instructors must also be aware of the importance of periodization in training, ensuring that athletes are not overtrained or exposed to excessive loads that could lead to fatigue-related injuries. Adequate rest and recovery periods, as well as injury prevention programs, must be integrated into training regimens. Furthermore, they should be conversant with the latest research and technology in sports science and injury prevention to continually update and refine their training methods.

Additionally, there is a need for effective communication channels between athletes, instructors, and medical staff. This ensures that any discomfort or pain experienced by athletes is immediately addressed, and appropriate action is taken to prevent further aggravation or development of an injury. A culture of openness and transparency regarding injury-related concerns can significantly contribute to injury prevention and management.

In conclusion, a multi-faceted approach that combines an understanding of injury mechanisms, targeted training principles, periodization, and effective communication is vital in minimizing sports injuries among adolescents. The onus is on instructors, athletes, and support staff to work collaboratively toward creating a safe and enabling environment that promotes athletic excellence without compromising the well-being of athletes.

3. Related research

According to Boston's Children's Hospital, Common lower-body football injuries include ankle sprain, broken ankle, dislocated kneecap, anterior cruciate ligament (ACL) injury, torn meniscus, and patellar instability. Common upper-body football injuries include shoulder dislocation, shoulder labral tear, AC joint injuries, rotator cuff tendinitis, burners or stingers, hand and finger injuries, fractures, concussions, and other head and neck injuries.

The prevention of sports injuries in football is a current international research hotspot. Against the background of the rapid development of campus football, it is particularly important and urgent to promote scientific and effective injury prevention programs. Future longitudinal outcome studies of sports injuries in youth football players should be strengthened to determine which injuries extend into adulthood and have effects, which requires a well-established sports injury data monitoring system.

Sun (2014) analyzes the current situation and causes of adolescent sports injuries and proposes preventive measures such as strengthening protective education and scientific training. Long (2022) discusses the characteristics of adolescent sports injuries, such as types and locations of injuries, and proposes corresponding protective strategies, such as rational scheduling of training and attention to nutrition.

Zhuang (2022) introduces the types and prevention methods of common sports injuries in adolescents and explores rehabilitation training after injuries. Zhang (2021) analyzes the risk factors that lead to adolescent sports injuries, such as physical fitness and mental state, and proposes targeted protective countermeasures. Cao (2023) discusses the characteristics of adolescent sports injuries, such as types and locations of injuries, and proposes corresponding protective strategies, such as rational scheduling of training and attention to nutrition.

Bahr Roald (2005) discusses injury prevention in football. It points out that the risk of injuries in football is high, especially in areas such as the knee, thigh, groin, and ankles. However, many of these injuries can be prevented, including severe ones. The article also introduces some methods for preventing injuries, including warm-up exercises, strength training, and specific training for certain areas. Additionally, the article discusses the impact of sleep, nutrition, supplements, shoes, and shin guards on injury prevention.

Summary

Extensive and comprehensive studies on football sports injuries have been conducted by scholars both domestically and internationally. Although these studies are not specifically written for teenagers, they still provide us with very valuable guidance. First aid is crucial for managing acute illnesses or injuries until professional medical help is available. It involves simple, essential techniques that can be performed by anyone, aimed at preserving life, alleviating suffering, preventing further harm, and

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promoting recovery. Challenges in first aid include a lack of universal knowledge and misapplication of techniques, underscoring the need for updated training and clear, evidence-based instructions in first aid manuals.

Based on these studies on the definition, characteristics, reasons, and prevention principles of youth football injuries, we have a strong foundation for the coming research. All the scholars mentioned above should be thanked and it's quite sure that better and better training will be conducted for the youth football players. Overall, effective first aid requires broad knowledge, proper equipment, and ongoing education to ensure it is performed correctly and efficiently.

Conceptual Framework

The research title "Development Guideline to Prevention Injury for Youth Football Players" was designed as follows.

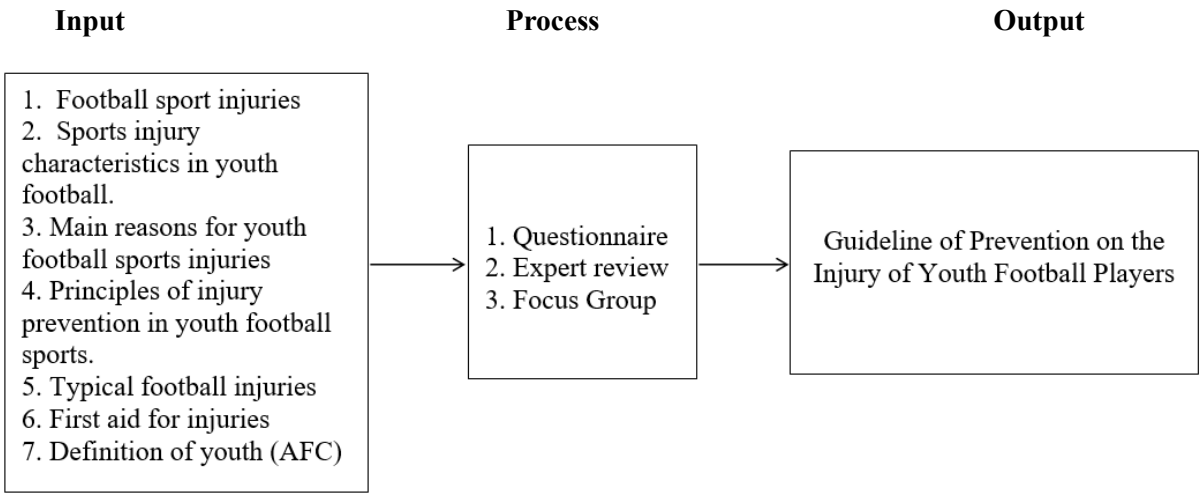

Figure 1 Conceptual Framework

Methodology

Population and sample

The study focuses on male youth football players aged 14-16, registered with the Xi'an Football Association in Shaanxi Province, China. This age group is targeted because it represents a key stage for development and risk of injury in sports. Xi'an has a robust school sports system with 349 junior high schools and 276 high schools; 62 of these schools have dedicated football teams. The study samples 400 players from the registered pool of 4,800 in the specified age group using a random sampling method. This approach aims to ensure the data collected through structured questionnaires is representative and comprehensive, capturing detailed information on sports-related injuries among other data points. The findings are intended to enhance injury prevention and safety protocols.

Research participants

1. 5 experts were selected to check the quality of the questionnaire (IOC)
2. 7 expert interviews about the way to construct the guidelines to prevent injury for youth football players.
3. 10 experts were invited to verify the science and rationality of the research. The experts were divided into 4 groups.

Name of the groups	Number of experts
Coach	2
Doctor	4
Sports scientist	2

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Name of the groups	Number of experts
Leader of the school football team manager	2

Research instrument

1. Questionnaire for survey.
2. Interview form.
3. Evaluation form for the focus group method.

Data Analysis

1. Questionnaire analysis examines the mean values, standard deviation, and percentage.
2. Content analysis for an interview and focus group method.

Research process

Step 1: Study the problems of injury prevention for youth football players.

Literature Review: By consulting relevant literature and data, insights can be gained into the main causes of injuries, preventive measures, and the effectiveness of existing strategies for youth football players.

Defining Research Scope: In-depth studies can be considered for specific aspects of youth football player injuries, such as muscle pulls, sprains, fractures, etc. Additionally, factors such as age, gender, training level, and game environment that influence injuries in youth football players must also be taken into account.

Conducting Research: Carry out actual data collection and analysis according to the predesigned research methods. This can involve gathering data through questionnaire surveys, field observations, and expert consultations with youth football players. The collected data then needs to be organized, analyzed, and interpreted to uncover patterns and characteristics of injuries among youth football players.

Step 2: Construct the guideline for the prevention of injury for youth football players

Data collection: Collect data on injuries among adolescent football players, including injury types, frequency, severity, and occurrence context.

Data analysis: Analyze the collected data, understand the main types and causes of injuries in young football players, and identify the types and situations of injuries with the highest risk.

Identify key factors: Through data analysis, identify the key factors that cause injuries in young football players, such as training intensity, frequency of competition, protective measures, and athletes' physical fitness.

Develop prevention strategies: Based on the above analysis, develop specific prevention strategies and physical recovery for the identified key factors. For example, if data analysis shows a high risk of muscle strain, prevention strategies may include increasing muscle stretching training and optimizing recovery time for training.

Step 3: Confirm the guidelines for the prevention of injury for youth football players

To confirm the injury prevention approach in football players, using focus group discussion was conducted with 10 experts.

Results

1. The problems of injury prevention for youth football players' positions and levels

The literature underscores that while youth football provides significant physical and psychosocial benefits, it also poses substantial risks for a variety of injuries. By implementing comprehensive injury prevention programs and ensuring adherence to safety protocols, the risks associated with youth football can be significantly mitigated. Ongoing research and adaptation of injury prevention strategies based on emerging evidence are crucial for further enhancing the safety and well-being of young athletes in this sport.

Youth football is a physically demanding sport that exposes players to a variety of risks. This literature review focuses on the specific types of injuries commonly sustained by youth football players, drawing from a range of studies to provide a comprehensive overview of the prevalence, causes, and preventive strategies for these injuries.

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1.1 Types of Injuries in Youth Football

Musculoskeletal Injuries. The anterior cruciate ligament (ACL) and medial collateral ligament (MCL) are frequently injured. ACL injuries are particularly severe, often occurring through non-contact mechanisms like pivoting or awkward landings. Neuromuscular training can reduce ACL injury rates significantly. Common in contact sports, meniscal injuries can occur concurrently with ligament injuries, especially the ACL. These are often the result of forceful twisting or direct contact impacts.

Fractures. Common in younger athletes due to the vulnerability of growth plates. These injuries require immediate attention to prevent long-term complications. Often result from direct impacts or falls on an outstretched hand. Recovery can vary significantly depending on the severity of the fracture.

Soft Tissue Injuries. Hamstring and groin strains are prevalent due to the explosive running and kicking actions in football. Ankle sprains are also common and can lead to chronic issues if not properly managed. Direct blows often cause muscle contusions, which can lead to significant swelling and pain, affecting performance and mobility.

Epidemiology of Injuries. The overall injury rate in youth football is approximately 2.5 injuries per 1000 athlete exposures, with a higher incidence during games compared to practices. The risk increases with age, as older players experience more competitive play and physical maturity, leading to higher impact forces during collisions and falls.

1.2 Factors Influencing Injury Rates

Physical contact is a significant contributor to injuries in soccer. Over two-thirds of injuries occurred due to player collisions, tackles, or other forms of contact. This high rate highlights the physical nature of the sport and the close interactions between players during aggressive play. Conversely, non-contact injuries, which account for a considerable proportion of incidents, often arise during running, cutting, or landing activities. These injuries are frequently related to poor neuromuscular control, which can lead to improper movement patterns and thus increased susceptibility to injuries such as ligament tears or muscle strains. Improved training in movement biomechanics could reduce these types of injuries.

The environment plays a crucial role in injury rates. Indoor soccer, for instance, tends to have higher injury rates compared to outdoor soccer. The reasons for this include harder playing surfaces and smaller playing areas, which may increase the likelihood of collisions and falls. Additionally, the type of turf used in outdoor settings can also affect injury rates. Artificial turf has been associated with a different pattern of injuries compared to natural grass, with a tendency to cause more abrasion injuries and different stress on joints and ligaments due to the surface's varying hardness and traction properties.

2. Questionnaire Analysis Results

In this step, the researcher distributed a questionnaire to 400 youth football players aged between 14 and 16 years to investigate the frequency and severity of injuries during a football season. The study population comprised 354 boys and 46 girls from 23 schools and 43 teams, with 247 usable responses.

Table 1 Current situation problem of young football players' injuries

The current problem of young football players' injuries	Opinion average			Rank
	$\bar{x}$	S.D.	Level	
1. Rigorous training in proper techniques, particularly in tackling and blocking, to ensure athletes use their bodies correctly	4.84	0.74	most	1
2. Strength and conditioning programs must be developed to enhance physical fitness, reduce susceptibility to injuries.	4.74	0.38	most	2
3. Emphasizing the importance of rest and recovery, including adequate sleep and appropriate management of training loads.	4.65	0.65	most	3
4. Education on concussion management is crucial for players, coaches, and parents to recognize and properly handle concussions.	4.62	0.51	most	4

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The current problem of young football players' injuries	Opinion average			Rank
	x̄	S.D.	Level	
5. Preseason health screenings and ongoing monitoring should be conducted to identify any pre-existing conditions that could increase injury risk.	4.53	0.89	most	5
6. Enforcing rule changes that promote safety and educating players on proper nutrition and hydration are also key components of an effective injury prevention strategy	4.51	0.22	most	6
Total	**4.64**	**0.56**	**most**	**-**

From Table 1, at the forefront of these strategies is rigorous training in proper techniques, especially in tackling and blocking, to ensure athletes use their bodies correctly. This approach scored the highest with an opinion average of 4.84 and a standard deviation of 0.74, suggesting a broad agreement on its essential role in preventing injuries. Following closely, the development of strength and conditioning programs to enhance physical fitness and reduce susceptibility to injuries also received substantial support, marked by an average opinion of 4.74 and a very low standard deviation of 0.38. This highlights a uniform agreement among the team members about the importance of physical conditioning.

Lastly, enforcing rule changes that promote safety and educating players on proper nutrition and hydration were also seen as key elements of an effective injury prevention strategy, garnering an average opinion of 4.51. Despite being the lowest ranked, it underscores a comprehensive approach to health that extends beyond the playing field.

Overall, with an average total score of 4.64 and a moderate standard deviation across all strategies, the survey indicates a robust endorsement by the team members for a comprehensive and preventative approach to safeguarding the health and safety of young football players. This shows a proactive stance towards cultivating a safe sporting environment that can foster both the athletic and personal development of young players.

3. Results of the Injury Prevention Guidelines Development for young football players

The application of the POLC model in youth football injury prevention is a testament to the importance of a structured and collaborative approach to managing sports safety. By integrating the expertise of coaches, doctors, and sports scientists, the model not only enhances the effectiveness of injury prevention strategies but also fosters a culture of safety and health within sports teams.

POLC Model

Based on the information provided in the interview results, I designed a POLC model (Planning, Organizing, Leading, Controlling) to prevent injuries in youth football players.

No.	Planning
1	Planning to develop football prevention in the form of models, such as online, in schools, in companies, etc.
2	Public relations planning for developing football prevention in the form of a development strategies management model.
3	A good teacher can co-teach an unskilled teacher while a good teacher is at university, but a good teacher is not at a university.
4	Planning for the selection of instructors according to the curriculum
5	Planning the management model program
6	Planning a model build
7	The developing management planning for competition
8	Planning for Information on developing platforms

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No.	Planning
9	Planning to organize football prevention equipment
10	Planning the football prevents scoring.
11	Planning to improve the curriculum to suit the current era
12	Football sports planning in the model
13	Admissions to university must be between the ages of 18 and 21
14	Owners must have a plan for selecting owners as specified by the curriculum.
15	Football sport instructor development plan
16	Planning football prevents lessons without streaming.

Planning. Objective Setting: Establish clear goals to reduce the incidence and severity of injuries among youth football players. Program Development: Develop comprehensive training programs that include strength and conditioning, proper technique training, and education on injury prevention. Resource Allocation: allocate resources for hiring qualified trainers, purchasing protective equipment, and conducting educational workshops for players, coaches, and parents.

No.	Organizing
1	Organizing to develop football prevention in the form of models, such as online, in schools, in companies, etc.
2	Arranging places for the football class and football management strategies, such as equipment and coaches
3	Organizing football prevents management and development assistants from controlling the model.
4	Organizing football coaches in the form of a model
5	Organizing football involves staff in the form of a model.
6	Football prevents the development assessment model.
7	Organizing football involves a curriculum in the form of a model.
8	Organizing a place for football prevents the development of management strategies, studied in the form of a model.
9	Organizing football prevents the development of management equipment in the form of a model.
10	Arranging the necessary equipment for developing football prevention in the form of a platform, such as video cameras, microphones, audio systems, lighting systems, etc.
11	Organizing football prevents the development of instruction to complete the curriculum within one semester.
12	Organizing a football prevention development strategies model as a platform to teach football prevention to owners in Xi'an City.
13	Organizing equipment for developing football prevention requires a modern system.

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No.	Organizing
14	The football court and club place must have elements that are always evolving and up-to-date.
15	The selection of owners to learn football prevents development in the form of a platform.
16	Organizing costumes for football prevents the development of strategies and management models.

Organizing. Structure: define roles and responsibilities for implementing the injury prevention program, including trainers, coaches, medical staff, and administrative personnel. Coordination: create a schedule for training sessions, educational workshops, and regular equipment inspections. Partnerships: collaborate with medical professionals, sports scientists, and equipment manufacturers to ensure the latest techniques and technologies are used.

No.	Leading
1	Membership Engagement Programs Strategies
2	Junior Development Initiatives Strategies
3	Facility Upgrades Strategies
4	Community Outreach Strategies
5	Social Media Presence Strategies
6	Event Hosting Strategies
7	Professional Coaching Strategies
8	Member Referral Program Strategies
9	Inclusive Programs Strategies
10	Strategic Partnerships Strategies
11	Online Booking System Strategies
12	Member Feedback System Strategies
13	Football Clinics and Camps Strategies
14	Health and Wellness Programs Strategies
15	Sponsorship Opportunities Strategies
16	Strategic Marketing Campaign Strategies

Leading. Communication: Foster open communication channels among players, coaches, parents, and staff to share information about injury prevention and management. Motivation: encourage and motivate players to adhere to training programs and safe playing practices. Recognize and reward teams or players who demonstrate a commitment to safety. Training: Provide ongoing training for coaches and officials on safe coaching practices and injury recognition.

No.	Controlling
1	Conduct member surveys to gauge satisfaction with engagement initiatives.
2	Monitor the retention rate of junior members over time.
3	Evaluate member feedback on the upgraded facilities.
4	Measure the number of new members recruited through community outreach.

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Volume 5 Issue 4: July-August 2025: ISSN 2985-2730
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No.	Controlling
5	Track the growth of the club's social media following.
6	Evaluate the success of events through attendance numbers.
7	Assess the improvement in players' skills through regular evaluations.
8	Track the number of new members acquired through referrals.
9	Evaluate the diversity of participants in inclusive programs.
10	Assess the success of joint events or promotions with partners.
11	Track the adoption rate of the online booking system.
12	Analyze trends in member feedback to identify areas for improvement.
13	Evaluate the enrollment rates in clinics and camps.
14	Track member participation in health and wellness initiatives.
15	Measure the financial impact of sponsorships on club initiatives.
16	Track the success of marketing campaigns in attracting new members.

Controlling. Monitoring and Evaluation: regularly assess the effectiveness of the injury prevention programs through player health statistics, injury reports, and feedback from stakeholders. Quality Control: ensure that all equipment is regularly inspected and maintained to meet safety standards. Adjustments: Make necessary adjustments to the programs based on evaluation results and emerging research in sports medicine.

By implementing this POLC model, youth football organizations can systematically address the various factors contributing to injuries, creating a safer environment for young athletes.

4. The result confirms the guidelines to prevent injury for youth football players.

Injury prevention in youth sports, particularly football, is a multidisciplinary endeavor that involves careful planning, organization, leadership, and control. The POLC model provides a systematic approach to integrate these elements effectively. This analysis evaluates the application of the POLC model from the perspectives of a coach, doctor, and sports scientist, highlighting how each role contributes to the overarching goal of reducing injuries.

Planning. The coaching experts agree with Planning because they think clear objectives allow for targeted interventions, which can be more effectively managed and measured, and the Planning part includes various training modules such as strength, conditioning, and proper techniques to ensure a holistic approach to injury prevention. From a medical perspective, planning involves setting up protocols for pre-season health screenings and establishing baseline health data for each player. This allows for personalized injury risk assessments and targeted intervention strategies. Effective resource allocation ensures that all necessary tools and personnel are available, maximizing the potential for injury prevention. Sports scientists contribute by planning research initiatives to study injury mechanisms in youth football and by integrating data analytics to track the effectiveness of different training regimens and equipment in real-time. One sports scientist pointed out that comprehensive planning requires significant time to set detailed goals and develop extensive programs, which can delay immediate actions. At the same time, overly detailed plans may lack flexibility, making it difficult to adapt to unexpected challenges or opportunities that arise during the season.

Overall, the planning strategies for injury prevention seem to be well-defined and effectively communicated within the team, with strong strategic actions in place for implementation throughout the season. The consistency in the median scores and the low range indicate a uniform perception among the respondents about the effectiveness of these strategies, albeit with minor suggestions for further enhancement in certain areas, like resources and education.

Organizing. An effective organization requires the coach to structure training schedules that allow for adequate rest and recovery, thereby reducing overuse injuries. Coaches must also coordinate with medical and scientific staff to ensure that all team members adhere to the injury prevention protocols. One coach thought clarity in roles ensures that everyone involved knows their tasks, reducing confusion and overlapping efforts. Another coach pointed out that setting up an organized structure can be complex and difficult to manage, especially for teams with limited administrative support, and the effectiveness of the organizing component heavily relies on the cooperation and punctuality of all

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stakeholders, which can sometimes be out of the program's control. Doctors organize a network of healthcare provisions that includes not only immediate medical response but also long-term rehabilitation programs. They ensure that medical staff are available during games and practices and that they have clear protocols for dealing with injuries on the field. Organization by sports scientists involves setting up systems for continuous monitoring of players' physical responses to training loads using wearable technology, thus enabling real-time adjustments to training programs. Sports scientists all agreed that organizing schedules and responsibilities helps in synchronizing efforts across various aspects of training and education, leading to more effective implementation, and collaboration with experts and industry leaders can bring in advanced knowledge and technology, enhancing the injury prevention program's effectiveness. However, one sports scientist said the effectiveness of the organizing component heavily relies on the cooperation and punctuality of all stakeholders, which can sometimes be out of the program's control.

Overall, the data from this organizing round indicates a well-structured and effectively managed injury prevention setup, with strong agreement among experts on most aspects. The uniform interquartile range of 1.00 across all items shows that opinions do not vary widely, which points to a consensus on the effectiveness of the organizational strategies in place, albeit with some suggestions for improving communication and practical integration during sessions.

Leading. Leadership in this context is about building a team culture where safety is prioritized. Coaches must lead by example, promoting a safety-first mindset and encouraging players to communicate openly about any health issues or concerns they might have. Medical leadership involves advocating for preventive measures, such as mandatory protective gear and adherence to playing rules that protect young athletes. Coaches thought the success of the leading aspect can vary significantly depending on the leadership qualities of those in charge. Inconsistent leadership can undermine the program's objectives. Coaches were also worried that different individuals may respond differently to various leadership styles, potentially leading to conflicts or disengagement. Doctors must also lead educational efforts to inform players, parents, and coaches about the signs and symptoms of common sports injuries. Several doctors said that open channels of communication ensure that vital information about injury prevention is disseminated promptly and efficiently. They also agreed that by fostering a culture of safety and recognition, players and staff are more likely to commit to the program and adhere to protocols. At the same time, doctors value that ongoing training for coaches and staff helps maintain high standards of practice and up-to-date knowledge on injury prevention. Sports scientists lead by disseminating new research findings to all stakeholders and by training the coaching staff on the latest sports science techniques that can prevent injuries. Their leadership ensures that the team stays at the forefront of scientific advancements in sports medicine.

The uniform interquartile range of 1.00 across all items indicates low variability in responses, suggesting that there is general agreement among experts regarding the ratings. This uniformity in the range supports the notion that the assessments reflect a consistent opinion on the effectiveness of the leadership's role in injury prevention.

Controlling. The control aspect involves the coach regularly reviewing injury data and player feedback to refine training practices. This might include adjusting workout intensities or modifying strategies that seem to correlate with higher injury rates. Regular inspections and maintenance of equipment ensure that safety standards are consistently met.

One coach brought up that monitoring and evaluations allow for the program to be refined and adapted based on actual performance and feedback. Another coach thought systematic tracking of progress and issues fosters a sense of responsibility among stakeholders. Control for doctors means continuously evaluating the health outcomes of players and the effectiveness of treatment protocols. This includes regular follow-ups with injured players and adjustments to rehabilitation programs based on recovery progress. However, several doctors said monitoring and controlling mechanisms can be resource-heavy, requiring additional personnel and tools for data collection and analysis. In addition, over-reliance on established controls might lead to complacency, reducing the urgency for ongoing improvement and adaptation. For sports scientists, controlling entails rigorous data analysis to assess the effectiveness of implemented training programs and safety equipment. This data drives the continual refinement of practices to optimize safety and performance. One sports scientist pointed out that collecting and analyzing large volumes of data can sometimes lead to information overload, making it challenging to discern actionable insights.

Overall, the consistently high ratings across most of the controlling dimensions reflect a well-structured approach to managing injury prevention, with a few areas highlighted for potential enhancement to further solidify the effectiveness of these strategies. The low variability in responses

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also underscores a consensus on the robustness of the current measures, aligning closely with best practices in sports injury prevention.

Figure 2 Guideline to prevent injury for youth football players

Discussion

The study corroborates prior findings that the lower extremities, particularly the ankle and knee, are the most frequently injured body parts in youth football. This aligns with Sheehan (2012), who noted that injuries to the knee and ankle dominate among youth and adult players alike. Furthermore, this study identified midfielders and forwards as the most injury-prone positions, consistent with Junge et al.'s (2013) findings, which emphasized the link between player positions and injury risks.

The results emphasize that unscientific training practices, overtraining, and inadequate recovery are major contributors to youth sports injuries, aligning with Sun's (2020) conclusions. The study found that training sessions with excessive intensity and insufficient rest periods often lead to overuse injuries, particularly among players training more than five hours weekly. This supports the findings by Pluim et al (2006), who stressed the role of training loads in injury development.

In summary, this study aligns with and extends existing research on youth football injuries, reaffirming the prevalence of lower limb injuries, the importance of training practices, and the efficacy

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of structured prevention programs. By emphasizing tailored strategies for injury-prone positions and integrating environmental factors, the study offers a nuanced perspective on injury prevention. However, addressing the identified gaps, particularly gender-specific differences and long-term outcomes, will be crucial for advancing the safety and well-being of young football players.

Recommendation

Practices Recommendation

1. Planning is a fundamental aspect of personal, organizational, and project management. It is crucial for achieving efficiency, effectiveness, and success in various endeavors, whether in business, education, personal development, or any other area of life.
2. Organizing speciously asks for continuous improvement, ensuring that the football team remains responsive to changing needs, stays competitive, and provides an evolving and high-quality experience.
3. Leading asks for effective injury prevention strategies that can provide a competitive advantage. It allows organizations or individuals to differentiate themselves and stay ahead in dynamic and competitive environments.
4. In terms of measurement and evaluation, a variety of evaluation forms must be developed to facilitate the development of injury prevention strategies to protect young football players.

Recommendations for further research

1. To conduct further research on this subject, it is necessary to find more experts who specialize in middle school football teams.
2. Bringing information to the university to do it in the future is to inform the importance and necessity of the university for building potential.

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