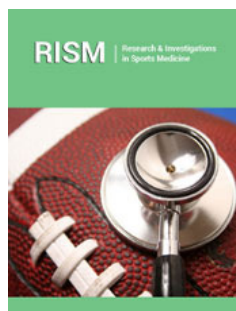


Prevention of Football-Specific Diseases Through the Implementation of Prophylaxis Program

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Abstract

Nowadays, football evolves from one season to another, the speed of the game increases, tactics change, and training methods are more and more innovative, helping today's footballer to be a complete athlete and more. This evolution of football is due to the interest and concern of players, coaches and specialists everywhere. The purpose of the research presented was to demonstrate the importance of prophylaxis programs in the prevention of traumatic conditions specific to the football player, especially at the junior level. By implementing prophylaxis programs, we can positively influence the prevention of trauma in juniors who play football.

The subjects on whom we applied the prophylaxis program that aimed at the early prevention of injuries specific to the game of football were children aged between 15 and 16 years, they were part of the junior group, specialized as a striker. The selection of the subjects was made on the basis of the information gathered following the observation of the subjects, following the choice of a corresponding group taking into account age, sex, the position they play, subjects with comparable, similar performances. The pre-testing was performed before starting the research on subjects of the same power level, this type of design is superior to others only when the number of subjects is small. The complex design of the experiment allows the evaluation of several possibilities that will be tested, so that later the subjects will be subjected to tests, before and after the experiment.

In order to prevent, we have compiled specific prophylaxis programs, applied individually depending on the degree of limitation, joint mobility and muscle strength and endurance. The procedures used in the program were introduced, depending on their importance, toning the muscles of the lower limbs, creating muscle balance, creating joint stability, increasing joint mobility, massage techniques, stretching, and the importance of pre-workout and pre-competition warm-up. Following the application of prophylaxis programs, a lower percentage of injuries were found due to the development of muscle mass, mobility and the creation of muscle balance.

Keywords: Prevention; Prophylaxis; Juniors; Football

Introduction

Football is the most popular sports game today, it is played by over 300 million people including men and women, and their number continues to grow exponentially from year to year. The action of the game is based on a complex of technical-tactical procedures, used to achieve the purpose of this game [1]. To ensure victory, players try to prevent and avoid the success of their opponents' actions, organizing each other's actions, according to the 3 fundamental phases of the game: attack, defense and recovery [2]. For an organized character, each member of the team has tasks in certain areas of the field, depending on the position they occupy in the field (area of action). The functions are established by the adopted game system [3]. Currently, it is not enough to be just talented, the methodology used, the dynamics of training cycles and the values of effort in stages, training at an attractive, mobilizing and

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dynamic level, make today's football an extremely complex sport in which the stronger physically, tactically and mentally, he can win [4]. The coaches, together with pedagogues, psychologists and Methodists, came to the conclusion that each component of the training is based on the specifics of the specific content [5].

A top player, who plays as a striker, in current football, must be the complete striker, to excel on the attack phase but to help his teammates on the defense phase as well [6]. The special emphasis is placed on the player who can easily adapt to solving the attack, construction, defense phase in particular, but especially the completion phase. The practice of sports, even at an early age, is constantly rising, and the numbers of those who love sports and want to achieve sports performances as competitive as possible internationally have increased greatly in the last decades of the recent century [7]. At the same time, the number of athletes injured during the training and preparation process, as well as during sports competitions, has also increased alarmingly.

Most specialists indicate a close interdependence between the number and type of sports injuries and the characteristics of each sport [8]. The type of effort, its biomechanical characteristics, the specifics of the discipline, the equipment and apparatus used, environmental and organizational conditions, are among the many causes that vary not only the percentage of sports injuries but also their type and location [9]. Football injuries fall into two categories [10].

- a) The category of internal (intrinsic) factors here includes the anatomical and biomechanical characteristics that the athlete has.
- b) The category of external (extrinsic) factors here includes environmental factors.

The first factor in the category of intrinsic factors we mention muscle imbalances. They occur when the footballer insists excessively on the development of certain muscle groups such as the anterior thigh muscles (quadriceps) and calf muscles, these overloads leading to ligament strains and ruptures (quadriceps tendon and Achilles tendon) [11]. When we talk about professional footballers, the specialists around the teams are careful not to neglect any muscle group, such as the back muscles but also the abductors and adductor muscles (femoral biceps and hamstrings, muscle groups that are less developed in the case of amateurs and juniors) this leads to the blurring of muscle imbalances [12].

Another factor is reduced mobility in the joints and muscles; good mobility denotes good physical performance, well-coordinated movements and a well-developed musculoskeletal system prepared for performance. In the case of poor development, mobility is considered a limiting factor, increasing energy consumption, easing fatigue, and later injuries [13]. A third intrinsic factor is the level of ligament laxity, there are no clear studies on this subject, but some consider ligament laxity a protective factor against possible injuries [14]. Having some laxity of the ligaments of a joint, an athlete is protected primarily by dislocations that involve ligament

detachments, ligament tears and the exit of bone from the joint cavity.

The last intrinsic factor are the dysfunctions of the kinetic chain, these are pipes of the dynamic and static alignment that are involved in the biomechanics of the practiced sport, these having to be corrected [15]. Turning to extrinsic factors, we mention training errors, weather conditions, the quality of the field on which the player trains or plays a match, inadequate equipment, improper nutrition and fatigue [16]. In most cases, training errors are due to those who train athletes, often focusing on the massive development to the detriment of antagonistic groups, so many of the injuries in football occur in the posterior muscles of the thigh, neglected, lacking tone and strength, the priority being the development of the quadriceps [17].

Other training errors are, for example, neglecting warm-up before training / competition, when the synapses have not become permeable, and the movement image is not coordinated and complex [18]. The administration of anabolic leads to a decrease in the elasticity of the muscles and tendons, eventually leading to ruptures. We also mention the injuries due to overload, especially during pre-competition periods, when the athlete uses sudden demands in performing high-impact exercises [19]. When we talk about climatic conditions, we refer to humidity and temperature; they influence the quality of training and competitions but also the appearance of injuries. Low temperature and high humidity reduce muscle elasticity, especially in association. Increasing the temperature reduces the viscosity of collagen and atmospheric pressure influences tissue oxygenation [20].

In football, the quality of the field is very important, here we refer to the hardness of the field or elasticity, the continuous changes of the running surface can lead to traumas, it is not only about the impact that the change has but also about the feedback that it has. it has a surface on the joints and muscles [21]. In this case the body needs a period of accommodation with the surface to control the changes and loads of the joints that may occur. Here we refer to the transition from a natural grass field, to one on synthetic grass, the grass being much more suitable for playing football. Appropriate football equipment, approved by FIFA, contains football boots, defenders, shorts and a shirt, the defenders having an important role in avoiding or improving the intensity of injuries that can occur in the tibia. At the same time, the non-adaptation of the boots to the climatic and terrain conditions can lead to overload traumas. The adaptation of the equipment must be done in the case of training, not adapting to the training ground can have the same consequences [22].

Nutrition is very important in the life of a footballer, being even a basic element in sports training; each footballer is assigned a directed nutritional protocol that must be followed, not only to ensure energy intake, but also to prevent disorders. Stress fractures and even muscle cramps can form due to inadequate nutrition [23]. Sports practitioners must have a different extra-sports life from non-practitioners, rest being an important factor when it comes

to trauma and micro-trauma, they must respect the hours of sleep and rest, whether they are in a centralized environment (camp), whether I'm home [24]. To prevent any of these injuries, football teams also have sports psychologists, psychologists who help and teach the athlete to focus on training and sports life, to relax and eliminate stress [25].

Methods and Procedure

The purpose of the research presented was to demonstrate the importance of kinetic programs that help the occurrence of traumatic conditions specific to the football player, especially at the junior level. The objectives we have set ourselves are to reduce the frequency of traumatic injuries that occur in the sports life of a football player. We will determine the most effective means of primary prophylaxis for the prevention of trauma. Determining the interest those coaches and those responsible have applied in the sports training of young people. We are organizing kinetic programs that will take into account the growth and toning of muscles, the development of mobility and joint stability.

In establishing the hypotheses of our study, we focused on the following ideas:

- a) If the applied kinetic programs had a system of methods and means well appreciated so that the incidence of traumas to decrease in a large number.
- b) If the kinetic programs were well perceived and implemented by the research subjects and adapted to the sports branch of which the subjects are part.
- c) If the whole program also approached innovative means that brought a plus in the prevention of injuries specific to the game of football.

Research and establishment of the main specific injuries in the game of football, the cause of these injuries, assessment of the severity of each injury, injuries that have as first symptom pain and then other symptoms such as functional impotence, swelling, etc. Creating physiotherapy programs according to the severity of the trauma produced. Implementing kinetic programs and determining the rate of predisposition to specific traumas, after their application. The subjects on whom we applied the prophylaxis program aimed at the early prevention of injuries specific to the game of football were children aged between 15 and 16 years, they were part of the junior group of a football team. Their traumatic history was not rich enough in contusions, ankle sprains but also muscle strains, especially on the posterior and anterior muscles of the thigh. The place of the study was the gym also provided by this stadium, the subjects of the study having a special training protocol that consisted of the prophylactic program developed for prevention [26].

Results

Based on the research done and based on the observation, we developed a primary prophylaxis program, to reduce the

number of muscle injuries or injuries to the joints (ankle, knee). Therapeutic programs were established and required the adoption of a therapeutic attitude that takes into account the objectives of the program. The procedures used in the program were introduced, depending on their importance, toning the muscles of the lower limbs, creating muscle balance, creating joint stability, increasing joint mobility, massage techniques, stretching, and the importance of pre-workout and pre-competition warm-up. Following the application of kinetic programs, a lower percentage of injuries were found due to the development of muscle mass, mobility and the creation of muscle balance.

The research subjects stated that following the application of the programs, their general condition increased, the effort capacity is better, the muscle mass developed, not having the problems before, the joint mobility was also increasing due to the toned muscles that can withstand stronger shocks. In conclusion, following the programs, the subjects felt the difference they needed in order not to have interrupted their path to performance, having constant training and matches, without having to sit on the bench and lose the training gained, following any type of trauma.

In the following graphs we notice a lot of increase in the time of continuous training, without being stopped by a certain condition, regardless of its severity. The incidence of injuries that can stop sports activity, before and after the kinetic program (Figure 1). The following graphs contain the dynamics of values obtained from the analysis of the perimeters of the lower limb, before and after the application of the prophylaxis program (Figures 2 & 3). Athletes who were included in the injury prevention program, which was associated with specific procedures and techniques of prevention and development, following the analysis of the average perimeters of the lower limb, we could say that the implementation of segmental muscle toning programs and secondary prophylaxis, may have favorable results, a fact confirmed by the results of specific investigations which are as follows

- a) There was an increase in sportsmanship, due to the increase in the number of matches played.
- b) Increased muscle mass in the thighs, from 42cm to 45cm which indicates an evolution in muscle tone.
- c) The increase of the muscular mass at the level of the calves, from 37cm to 39cm, indicating here also the evolution from the level of the muscular tone.
- d) With the increase of the muscular mass of the thighs, the increased stability at the level of the knee joint is observed.
- e) The stability of the ankle joint increased due to the increase in muscle tone that the subject had.
- f) Increased muscle mobility.
- g) Increasing effort capacity.
- h) Decreased specific injuries.

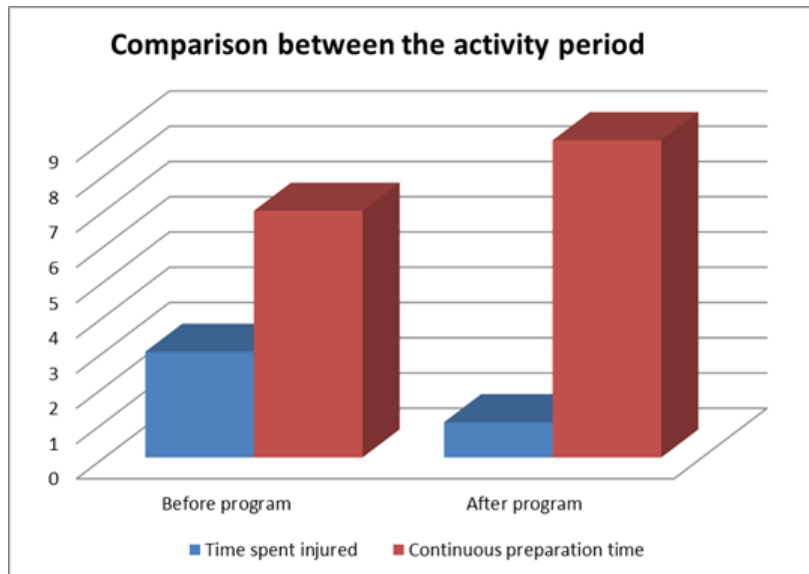


Figure 1: Comparison between the activity period before the application of the programs and after.

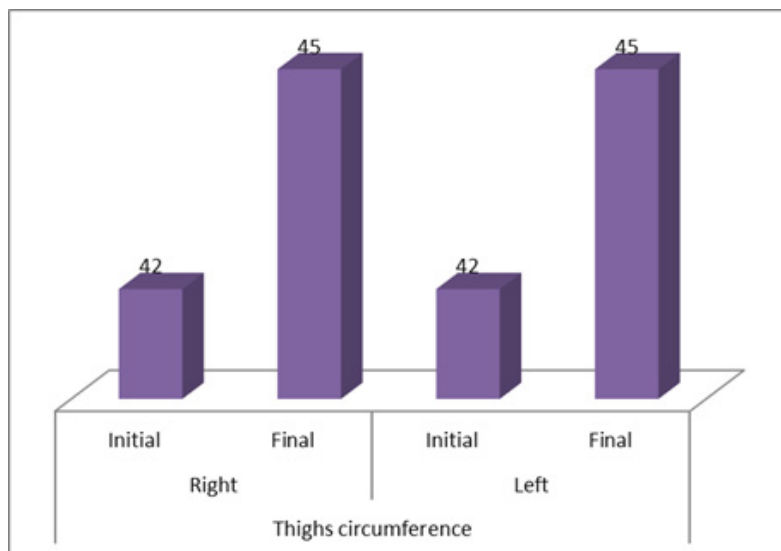


Figure 2: The evolution of the thigh perimeter comparatively before and after the application of the program

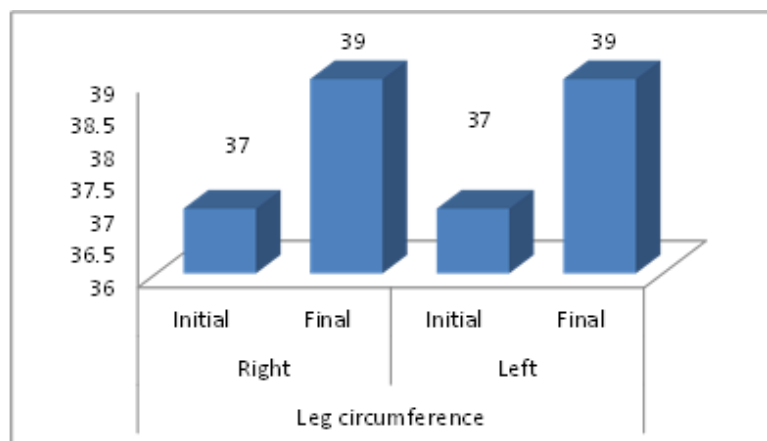


Figure 3: The evolution of the leg perimeter comparatively before and after the application of the program.

Discussion

During the research we considered the achievement of objectives and the review of hypotheses. We can thus establish conclusions with the possibility of generalization when we talk about the elaboration of the program and the kinetic exercises used.

The conduct of the research is in close accordance with the working hypotheses:

- a) The exercise program designed to prevent specific injuries, which consisted mainly of toning the lower limbs, which stabilizes the knee and ankle, thus avoiding more serious injuries that can result in sequels.
- b) The most efficient exercise structures were selected, through selection, we built the prevention program, the exercises were chosen based on the particularities of the sport practiced by the subjects.
- c) Also, the designed program helped the development of joint mobility and muscle elasticity, but also the development of exercise capacity, which can prevent the appearance of overload.
- d) Also, following the program, the coach and the subjects understood the importance of training to tone the muscles, to tone all the groups, whether they are deficient or not, and to create a muscular balance between the front and the back.
- e) We can highlight the results, the effectiveness of the program but also the degree of involvement that the research subjects had.
- f) Following the graphical presentation of the dynamics of evolution in the subjects, we will observe at the end of the program the constant evolution during the period in which we applied the program, at the end of the program all athletes being 100% ready for the competition period.

Conclusion

Gymnastics, stretching, mobilizations, controlled recovery of the body after effort play an extremely important role in the prevention or aggravation of injuries. Kinetic treatment expresses the therapeutic means by which the recovery, the recovery of the affected anatomical formations can be accelerated. Complex overload in performance athletes can materialize in some cases through localized forms at different levels of the musculoskeletal system.

Also, an insufficient degree of training, overworked early training, poor muscle-joint mobility to which can be added external factors, such as weather conditions, rough terrain, etc., are the risk factor for trauma. Therefore, gymnastics, stretching, mobilizations, controlled recovery of the body after exertion play an extremely important role in preventing trauma, and the kinetic treatment expresses the therapeutic means by which the recovery, the recovery of the affected anatomical formations can be accelerated.

References

1. Cloke DJ, Ansell P, Avery P, Deehan D (2011) Ankle injuries in football academies: a three-centre prospective study. *Br J Sports Med* 45(9): 702-708.
2. Gabbett TJ, Mulvey MJ (2008) Time-motion analysis of smallsided training games and competition in elite women soccer players. *J Strength Cond Res* 22(2): 543-552.
3. Ekstrand J, Hägglund M, Kristenson K, Magnusson H, Walden M (2013) Fewer ligament injuries but no preventive effect on muscle injuries and severe injuries: an 11-year follow-up of the UEFA Champions League injury study. *Br J Sports Med* 47(12): 732-737.
4. Fuller C W, Ekstrand J, Junge A, Andersen T E, Bahr R, et al. (2006) Consensus statement on injury definitions and data collection procedures in studies of football (soccer) injuries. *Br J Sports Med* 16(2):97-106.
5. Ekstrand J (2008) Epidemiology of Football Injuries. *Sci Sports* 23(2): 73-77.
6. Donaldson A, Callaghan A, Bizzini M, Jowett A, Keyzer P, et al. (2018) Awareness and use of the 11+ injury prevention program among coaches of adolescent female football teams. *Int J Sports Sci Coach* 13(6): 929-938.
7. Ekstrand J, Hägglund M, Walden M (2011) Epidemiology of muscle injuries in professional football (soccer). *Am J Sports Med* 39(6): 1226-1232.
8. Deehan DJ, Bell K, McCaskie AW (2007) Adolescent musculoskeletal injuries in a football academy. *J Bone Joint Surg Br* 89(1): 5-8.
9. Ekstrand J, Hägglund M, Walden M (2011) Injury incidence and injury patterns in professional football-the UEFA injury study. *Br J Sports Med* 45(7): 553-558.
10. Nassif G P, Brito J, Figueiredo P, Gabbett T J (2019) Injury prevention training in football: let's bring it to the real world. *British Journal of Sports Medicine* 53(21).
11. Thorborg K, Krommes K K, Esteve E, Clausen M B, Bartels E M, et al. (2017) Effect of specific exercise-based football injury prevention programmes on the overall injury rate in football: a systematic review and meta-analysis of the FIFA 11 and 11+ programmes. *Br J Sports Med* 51(7):562-571.
12. Gall F L, Carling C, Reilly T (2007) Biological maturity and injury in elite youth football. *Scand J Med Sci Sports*; 17(5): 564-572.
13. Lovell R, Whalan M, Marshall PWM, Sampson J A, Siegler J C, et al (2018) Scheduling of eccentric lower limb injury prevention exercises during the soccer micro-cycle: Which day of the week?. *Scand J Med Sci Sports* 28(10): 2216-2225.
14. MacKay M, Scanlan A, Olsen L, Clark M, et al. (2004) Looking for the evidence: a systematic review of prevention strategies addressing sport and recreational injury among children and youth. *J Sci Med Sport* 7(1): 58-73.
15. Roe M, Malone S, Blake C, Collins K, Gissane C, et al. (2017) A six stage operational framework for individualising injury risk management in sport. *Inj Epidemiol* 4(1): 26.
16. Larruskain J, Lekue J A, Diaz N, Odriozola A, Gil S M (2018) A comparison of injuries in elite male and female football players: a five-season prospective study. *Scand J Med Sci Sports* 28(1):237-245.
17. Peterson L, Junge A, Chomiak J, Graf-Baumann T, Dvorak J (2000) Incidence of football injuries and complaints in different age groups and skill-level groups. *Am J Sports Med* 28(5): 51-57.
18. Small K, McNaughton L, Greig M, Lovell R (2009) Effect of timing of eccentric hamstring strengthening exercises during soccer training:

- implications for muscle fatigability. *J Strength Cond Res* 23(4): 1077-1083.
19. Malina RM (2010) Maturity status and injury risk in youth soccer players. *Clin J Sports Med* 20(2): 132.
20. McCall A, Carling C, Nedelec M, Davison N, Gall F L, et al. (2014) Risk factors, testing and preventative strategies for non-contact injuries in professional football: current perceptions and practices of 44 teams from various premier leagues. *Br J Sports Med* 48(18): 1352-1357.
21. Junge A, Dvorak J (2013) Injury surveillance in the world football tournaments 1998-2012. *Br J Sports Med*. 47(12): 782-788.
22. McCall A, Dupont G, Ekstrand J (2016) Injury prevention strategies, coach compliance and player adherence of 33 of the UEFA Elite Club Injury Study teams: a survey of teams' head medical officers. *Br J Sports Med* 50(12): 725-730.
23. Price RJ, Hawkins RD, Hulse MA, Hodson A (2004) The Football Association medical research programme: an audit of injuries in academy youth football. *Br J Sports Med* 38(4): 466-471.
24. Purdam C, Drew M, Blanch P (2015) Prescription of training load in relation to loading and unloading phases of training. Australian Institute of Sport.
25. Bahr R, Clarsen B, Derman W, Dvorak J, Emery C A, et al. (2020) International Olympic Committee consensus statement: Methods for recording and reporting of epidemiological data on injury and illness in sports (Including the STROBE extension for sports injury and illness surveillance (STROBE-SIIS)). *Orthop J Sport Med* 8(2): 2325967120902908.
26. Szumilas M (2010) Explaining odds ratios. *J Can Acad Child Adolesc Psychiatry* 19(3): 227-229.