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Update in Futsal Injuries

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Abstract

Introduction: In most sports and after a longer break than usual, there is an increase in muscle injuries after returning to training. In the context of a second lockdown in Portugal, the authors intended to determine which type of injuries were most frequently associated with the practice of futsal and what are the possible recommendations to reduce them.

Methods: Pubmed research on pre-season physical preparation and injuries in futsal, limited to the last 5 years with the keywords futsal, pre-season and injuries. Our research resulted in 24 articles, after eliminating duplicates and reading the abstracts, 9 articles were included according to their relevance to this topic.

Results: Most injuries occur in the pre-season and after the Christmas break. Most are muscle tears in the lower limbs and joint and ligament injuries in the ankle and knee caused by a non-contact mechanism. Injuries affect players differently according to their position on the field and have a great impact on the sporting season as they limit the number of players available for competition while they are recovering.

FIFA 11+ injury prevention program and its implementation, 2 times a week for 20 weeks, is associated with fewer injuries. Futsal FastStart is another promising program to reduce injuries.

Conclusions: Futsal is associated with a high number of injuries after breaks. Carrying out a program to prevent injuries seems to be associated with an effective reduction of the injuries themselves and their impact on the sports season, so its implementation is suggested in all futsal teams.

Keywords: Futsal; Pre-season; Injuries; Sport; Musculoskeletal

Abbreviations

FIFA: Fédération Internationale de Football Association

Introduction

Futsal is played around the world with over one million registered players. It is a demanding sport played on a reduced size field (40×20 m). The games are divided into two parts of 20 minutes, with a 10 minute break between each part, with stops along those 20 minutes whenever there are dead balls and substitutions [1,2]. Each game is played by two teams of 5 players: 1 goalkeeper, 1 defender, 2 wings and 1 pivot. The goalkeeper is the most defensive player on the field, coordinates the team's actions, acting as a lineman at certain times. Defender's main functions are to organize plays, cover, and fundamentally disarm opponents' actions, always in sync with the goalkeeper and the wingers. Wingers are responsible for the balance between defense and attack, advancing and retreating on the sides of the field. The pivot is the most advanced player and usually plays with his back to the opponent's goalkeeper to assist the oncoming wingers' passes or spin over his own defender to score by himself [2]. The match has peaks of intensity because of the various moments of interruption, and players perform a large number of moves, on various planes, with abrupt acceleration and deceleration moments, rapid changes in direction, attacks and kicks. All of this places Futsal as a sport with a high incidence of injuries compared to other team sports, namely football. Literature shows us that breaks along the seasons are the most critical period for the occurrence of injuries [1,2].

Considering the current moment of Pandemic by SARS-CoV-2, with countries needing to institute lockdowns and the interruption of sport seasons, it is expected that we will find a greater number of injuries after returning to training and competition. For this reason, we consider it pertinent to carry out a research in order to determine which injuries are most frequently associated with futsal and how they can be prevented or avoided in order to give recommendations that can be applied transversally to futsal teams.

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Methods

We conducted a Pubmed research limited to the last 5 years on futsal injuries and physical preparation during the pre-season of futsal athletes.

A total of 24 articles were found and after removing the duplicates and reading the abstracts, we selected 9 articles according to their relevance to the subject in study. We have included articles on male and female futsal athletes from amateur and professional teams.

Results

Epidemiology

The incidence of injuries appears to be higher in female teams compared to male teams, rates of 3.1 per 1000 h/exposure and 1.8 per 1000 h/exposure, respectively, when there are differences in terms of competitive level of male and female teams. When comparing teams of different genders at the same competitive level, there seems to be no significant difference in the incidence of injuries [1,3].

Lesions occur more frequently in the pre-season and after the winter/Christmas break. They are more frequent in the second half of training and games (64.4%) [2,4,5].

The incidence of injuries is the same during training and games. However, it appears that in international tournaments there are more injuries, perhaps because it is a short period with several games and less recovery time between them [2,6].

Injuries are more frequent in futsal when compared to football, due to the inner characteristics of futsal, a faster and more intense sport, played on a smaller field (greater risk of contact with another player) and by the type of surface on which it is played [3].

Characteristics of the lesion

Player's position: According to their position on the field, players have different incidences of injuries, defenders have a higher number of injuries per 1000 h/exposure than other players. In ascending order of injury incidence per 1000 h/exposure are the wingers, goalkeepers and pivots [1].

Injury mechanism: The incidence of trauma injuries is higher than overuse injuries, 4.5/1000 h vs 2.25/1000 h. Most injuries occur due to non-contact mechanism (93%) and only a much smaller number due to contact situations (7%) [1,2].

Contact injuries are more frequent at the end of the sports season and occur more frequently during competitive games [2].

Injury location: The lower limbs, especially the dominant limb, are the most affected location, followed by the upper limbs and trunk [2,7].

In females, the thigh is the most affected local followed, in decreasing order of incidence, by the ankle, knee, hip, groin and leg [1]. The ankle is the most affected local in males followed, in decreasing order of incidence, by the hip, knee, thigh, leg, foot, head/neck, shoulder/collarbone, lumbar/pelvis/sacrum [6].

Injury type: Muscle and/or tendon injuries are the ones that most affect players, followed by joint/ligament injuries and, less frequently, stress fractures and bruises [1,2].

The hamstrings are the most affected muscle group, followed by the quadriceps. Ankle sprains are the most frequent joint/ligament injury followed by anterior cruciate ligament rupture, although

they are less frequent than the muscle/tendon injuries previously described [1,2].

Injury severity: The severity of the injury is related to the number of days that the player has to suspend sports practice until he has fully integrated a training session. Injuries are considered minimal if the athlete has to be away from training and competition for 1 to 3 days, mild if 4 to 7 days, moderate if 8 to 28 days, severe if more than 28 days and lastly injuries that cause termination of the athlete's career [1].

In females, moderate injuries are the most frequent, followed by minor, mild and severe [1,7]. Pivots and defenders have more severe injuries when compared to goalkeepers and wingers. Despite the different incidences, muscle/tendon and ligamentous/articular injuries have the same degree of severity. Knee injuries are those that result in the greatest number of days off for the athlete followed by ankle, quadriceps, hamstring, hip/groin, leg injuries [1]. Minimal injuries are the most frequent in males followed by mild, moderate and severe [6]. These differences between genders can be explained by the differences in the competitive level of the athletes in the different articles. Lopes-Segovia *et al.*, characterized the injuries of a professional male team while Ruiz-Pérez *et al.*, described the injuries of a semi-professional women's team.

Injury recurrence: New injuries are more frequent than recurrent injuries. When recurrent 20% appear within the first 2 months (early recurrence), 60% between 2 and 12 months (late recurrence) and the remaining 20% after 12 months (delayed recurrence). The quadriceps and hamstring strains are the most recurrent. Recurrent injuries appear to be less severe than new injuries [1].

Injury prevention: In the last decade, FIFA 11+, an injury prevention program that does not require equipment to be applied, has emerged as an effective strategy to reduce the incidence of injuries. Lopes M *et al.*, demonstrated that the implementation of the FIFA 11+ program twice a week for 20 weeks in an amateur male futsal team resulted in a reduction in the total number of injuries, acute injuries, lower limb injuries and injuries during training. The main elements of FIFA 11+ are considered essential requirements for injury prevention, core strength, neuromuscular control and balance, eccentric hamstring training, plyometrics and agility. However, the mechanisms that result in this protective effect of the injury prevention program are not fully understood [8].

Studies show that for an injury prevention program to be effective, adherence to it must be guaranteed. FIFA 11+, as it is dedicated to football and programmed to be applied on a football field, does not include in its program specific activities for futsal, limiting the compliance [9].

Tomsovsky L *et al.*, created a program called FutsalFastStart from FIFA 11+ and tested its effectiveness in a futsal competition for 20 weeks. Players only had one game per week and had no training between games. The program was carried out once a week, before the time of competition, with duration of 5 minutes. The structure consisted of an initial jogging/running and dynamic stretching, followed by a stability, balance and change of direction exercises. With the program, it was not possible to verify a reduction in the total number of injuries, however, there was a reduction in the number of contact injuries, in the intervention group, and a reduction in the number of total and lower limb injuries in teams with greater degree of adherence to the program [9].

Conclusions

Due to its characteristics, futsal is a sport with a high number of associated injuries, namely, traumatic injuries of the lower limbs, due to a non-contact mechanism. These entail a huge burden for the teams due to the time off players are subjected to until full recovery.

Injury prevention programs are shown to be effective in reducing injuries if adherence is guaranteed. The Futsal FastStart program looks promising since, unlike FIFA 11+, it considers the specifics of futsal. However, more studies are needed to ensure its effectiveness. Regardless of the program, all teams must institute an injury prevention program.

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