

THE PREVALENCE OF SPORTS RELATED KNEE JOINT INJURIES AMONG STUDENTS OF PHYSICAL EDUCATION

Dr. Soniha Aslam, Dr. Shahzaman Khan and Dr. Yasmeen Iqbal

Abstract:

Background: carrying out vigorous exercises facilitate physical education students and athletes to improve physical fitness components. However, overuse fatigue and lack of rest may result in sports-related injuries which lead to momentary or lasting damage.

Objectives: The objective of the present study was to observe the incidence of knee injuries resulting from sports activities among physical education students.

Methods: It was a descriptive (an observational study in relation to variables e.g. person place time) and retrospective study (looks backward and examines exposure to suspected risks or protection factors in relation to an outcome that established at the start of the study). All the students of BS-PEHSS first year now in the third year 2016-1018 were included in this study. Data were analyzed by using Excel and SPSS version 22 at a significant level of $P \leq 0.05$.

Results: The most frequent injuries were observed in the lower limbs 73.3% out of which knee joint (36.7%), ankle joint (28,7%). Among knee injuries, anterior cruciate ligament (ACL) injuries (36.3%) and menisci injuries (18.2%) were most prevalent. Other Ligaments (MCLand LCL),27.2%

Conclusions: The frequency of sports-related injuries in lower limbs was higher than the upper limbs. The most frequent was knee joint injuries. The prevalence of Ligament injury is more among the students of physical education. Regarding the ligament injuries, the most common occurrence was that of anterior cruciate ligament (ACL) injury. The majority of knee injuries in the present study were observed in the dominant (right) leg that can be prevented through suitable fitness training and thigh muscle strength of both quadriceps and hamstring muscles for balancing antagonists and agonists (synergist) muscles.

Keywords: Sports Injuries; Physical Education; Knee Joint; ligaments

Introduction

A significant purpose of regular exercise is to attain and retain components of physical fitness. For every sport, various levels of physical fitness are essential, which can only be accomplished with the help of regular and vigorous exercise. Strength fitness exercises improve muscle power and hence performance M.J. (2003), but in the bargain to all the advantages obtained for sports and physical education, sports injury frequently develops in association with it. Still, it should be taken into account that by and large benefits of exercise for every athlete are far higher than its disadvantages Pakravan M, Sah-ebalzamani M, (2010). Sports-related injuries have a major effect on the fitness of the athletes and physical education students such as fractures can interrupt an individual's activity for a few weeks to months Mashyekh M. R. (2003). Consequently, any sports injury taking place among students of physical education can result in their temporary or permanent tissue damage and missing of classes or even semester M. J. (2003). Recognizing, predicting and evaluating the injury

and its risk factors among athletes are crucial. Nowadays, recognition and identification of injury risk factors is an important component of prevention and management of sports injuries. Kellis E, Katis A. (2007).

The outcome of earlier researches demonstrates that the common reason of consultation in clinics during physical education courses or during training sessions was sports-related injuries and the most frequent were musculoskeletal problems Ghara-khanlou R, Daneshmandi H (2007). Najafi Mehri et, al., in a study observed that the major reason for physician consultation was sports injuries and the frequent and among them commonest was musculoskeletal injuries of lower limbs. Najafi Mehri S, Sadeghian M (2006), According to another study the most common sites of injuries resulted from physical training among military cadets were ankles and knees, respectively Heir T, Glomsaker P. (1996). Owing to the long or short healing time, the rehabilitation of sports injuries becomes essential. As a result method of rehabilitation and prevention be-

comes more crucial and are believed to be hot topics for research and probe by sports scientists and sports medicine specialists Jafari MKMH, Bizheh N. (2009). In a study carried out in the department of physical medicine at the US Army, showed that 120 patients hospitalized due to physical injuries and out of these 11 percent injuries were related to various sports or physical training. In another study also knee joint and ankle joint were the most common sites of injury. Kngarlu HMZS, Alizadeh K, (2006). Furthermore, the need for rest after an injury such as anterior cruciate Ligament injury healing time is approximately 4-11 months. Gharakhanlou R, Daneshmandi H (2007). In sports, commonly injured structures are ligaments and cartilages. Injuries due to trauma are largely associated with bones. The cause of knee injury during sports activity and training is mainly twisting and turning or rotational forces acting on knee joint; nevertheless, it can also appear due to hitting, falling on foot, inappropriate techniques (incorrect jumping), long-running and no warming up, weak thigh muscle, etc. Gharakhanlou R, Daneshmandi H (2007).

Knee injuries are one of the most frequent injuries that occur during sports activities. Of all sports injuries, Knee joint injury occurrence is 41% and 1/5th of them are the anterior cruciate ligament tears. Other injuries comprise of menisci tears, posterior cruciate ligament sprains. (Rensstrom P, Ljungqvist A, *et al.* 2008). Management of knee injuries depends on the severity of an injury and precise pathology. Although the intention of the coaches and trainers is the return of athlete back on the field as soon as possible, it is the responsibility of the team physician or sports medicine doctor and sports physiotherapist to take suitable assessment regarding the healing of an injury, fitness and return to sports to his previous performance. (Br J. Sports Med 2018).

Prevention of knee injuries is essential and can be accomplished by taking care of intrinsic and extrinsic factors such as appropriate sports related conditioning, warming up and cool down, appropriate sports equipment especially footwear, proper technique, strong quadriceps and hamstring muscles. Well-balanced nutrition and hydration and state of mind are also vital.

The other risk factors are gender, age, joint flexibility, lack of muscle strength, anatomical abnormalities, fitness level, fatigue, full recovery from previous injuries, recurrence of injury rehabilitation exercises. The training errors include improper intensity, duration, and frequency of training, playing surface, quality of equipment and playing different games of different biomechanics at the same time. Psychological issues are also more being acknowledged as an important factor in sports, injury prevention. (Alentorn-Geli E, Myer GD, *et al* 2009).

The important factors for a correct diagnosis of knee injury are history, clinical examination, and investigations are key. An important and quick investigation is MRI (magnetic resonance imaging) which will confirm the diagnosis. Common symptoms of knee injury are pain, swelling, and difficulty in joint movements such as flexion, extension, and rotation.

Management of knee injuries comprises of conservative treatment and surgery. Conservative

treatment can be done by RICE (rest, immobilization, compression bandage, and elevation) and analgesics. Rehabilitation sports Physiotherapy by applying thermal modalities, knee braces and sports taping can also help. (De Carlo M, Armstrong B 2010).

3. Methods

The current research is a descriptive and retrospective study. The study population is comprised of 63 students of physical education (54 male students and 9 female students). All the students of BSPEHSS first year now in the third year (2016-2018) were included in the study. The study duration is two years from January 2016 to January 2018. The data was gathered by interviewing, taking a medical history, medical examination and also by reviewing the medical records. The information and injury checklists were used to collect data in which, type of injury, site of injury and frequency of injury was also observed. The research data was collected and analyzed using Excel and SPSS version 22.

RESULTS:

Total students 63

No. of students reported injury 30

Table 1. Distribution of anatomical site based sports related Injuries among students of Physical Education.

Injury	Frequency	%
Knee	11	36.7
Thigh	1	3.3
Ankle	8	26.7
Leg	2	6.7
Waist and spine	1	3.3
Hand and arm	2	6.7
Shoulder and scapular	4	13.3
Head and face	1	3.3
Total	30	100

According to table 1, the most frequent injuries were observed in the lower limbs 73.3%. Out of which knee joint injuries were

(36.7%), ankle joint (26.7%). Among the rest of the injuries, shoulder injuries are most common that is 13.3%

Table 2. Sports-Related Region based Frequency of Injuries among Students of Physical Education

Injury	Frequency	%
Upper limbs	6	20
Waist, torso, head, and face	2	6.7
Lower limbs	22	73.3
Total	30	100

As shown in table 2 most frequently injured region is lower limb

(73.3%) followed by upper limb 29%

Table 3. Comparing the distribution of Sports-Related Injuries between the knee joint and the rest of the injury sites among Students of Physical Education

Injury	Frequency	%
Knees	11	36.7
Other	19	63.3
Total	30	100

Table 3: All sports-related injuries the frequency of knee joint injury is (36.7%)

Table 4. Distribution of Sports-Related gender-based knee Injuries among Students of Physical Education

Injury	Frequency	%
Female students	4	36.6
Male students	7	63.4
Total injuries	11	100

Table 4 demonstrate that Sports Related injuries are more common among male athletes 63.4% than female athletes (36.6%)

Table 5. The Frequency of sports event based Knee Injuries among Students of Physical Education

Injury	Frequency	%
Badminton	4	36.3
Cricket	3	27.3
gymnastics	1	9.1
Basketball	1	9.1
Volleyball	1	9.1
Tennis	1	9.1
Total	11	100

Table 5 Frequency of sports event based Knee Injuries among Students of Physical Education. Knee joint injury is most common among badminton players 36.3% followed by cricketers 27.3%

Table 6. The site-based Distribution of sports-related Knee Injuries

Injury Site	Frequency	%
ACL	4	36.3
Medial meniscus	2	18.2
MCL tear of the right knee	1	9.1
LCL tear of the right knee	1	9.1
LCL tear of the left knee	1	9.1
Dislocation patella	1	9.1
Fracture femur right knee	1	9.1
Total	11	100

Table-6: Site based distribution of sports-related Knee Injuries according to which most commonly injured site is ACL 36.7%, followed by medial meniscus 18.2%

Discussion

A study on the Britain soccer players observed that 77% occurred in the lower limbs, and the majority 54% in knee joints. Additionally, 13% were severe injuries, 28% moderate injuries and 59% were mild injuries. The present research also observed that the most common injury site among Physical education students was in lower limbs (73.3%), and among them knee, joint injuries were most frequent (36.7%). In the present study, the variations in the occurrence of injuries

and the literature can be accredited to dissimilarities in the nature of the activity of the study population. Though, the knee joint is the most frequently used joint, and is considered as the most central joint in terms of giving stability and balance, weight-bearing plus mobility and surrounded by several delicate anatomical structures consequently it may be subjected to injuries during vigorous sports activities because of inadequate protective equipment imbalanced musculature, that is hamstring and quadriceps muscles, in addition, the weak joint flexibility and bones can also contribute to risk of injury. Rahbar Kahkhzhaleh AR, Shojae Al-Din S. (2010).

Bollen demonstrated that knee injury association with ligaments is 40%, the patella is 24% whereas with meniscus 11%, and with other types is 25% and, the most common is anterior cruciate ligament (46%) among the ligament injuries; Bollen S. (2010). More emphasis on training and development for power and strength of the quadriceps muscles as compared to hamstring muscles increases the risk of injury. To prevent this risk attention should be based on the development of knee dynamics and balance control, and stress should be on strengthening the hamstring muscles also. Ahmad CS, Clark AM, (2000).

Among the frequent sports events, a high percentage of injuries was witnessed in football (33.5%); as the sudden acceleration and de-acceleration and twisting and turning cause the higher prevalence of injuries relating knee joint. Our study also observes the highest prevalence of knee injuries among badminton players requiring all these body movements. Jafari MKMH, Bizheh N. (2009).

Conclusion

Knee injury takes a huge toll among students of Physical education as observed in the current study. Prevention of injuries regarding knee joint is of supreme importance and epidemiologically more focused studies are required for making strategies to prevent sports injuries in both professional and amateur athletes. Knee injuries, are a potentially over whelming problem among athletes and inflict considerable time loss in an athlete's career and financial burdens. Injury prevention should be of high priority, given the findings of our study to reduce the incidence of knee injuries early accurate diagnosis, accurate counseling, surgical repair if necessary with appropriate rehabilitation and proper training are key. Moreover, the quality of sports venues, safety equipment, and other injury prevention measures include proper warm-up and fitness, according to demands of physical activity and sports events.

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