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Prevalence and Pattern of Sports Injuries among the University Students of Physical Education, Southern India

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ABSTRACT

Background: *Sports is a common recreational activity. Besides keeping the physical and mental well being, participation in sports has many advantages like decreasing obesity, cardiovascular disease, hypertension and diabetes mellitus. However, injury risk is considered as an adverse outcome, particularly among physical education trainee students. They have increased chance of getting injuries as their curriculum requires intense training on the techniques and the skills.*

Objective: *To assess the prevalence and pattern of sports injuries among physical education students of Annamalai University, Tamil nadu, India.*

Methodology: *Cross sectional study was conducted among the physical education teacher education (PETE) students by using pretested questionnaire. Participants were undergraduate and postgraduate students of the university. Data were analyzed using statistical package for social sciences (SPSS) version 17.*

Results: *Out of 200 students assessed, 96 had got injured in the preceding six months with the prevalence rate of 48%. Among the injuries, lower limb (60.3%) was the commonest region affected. Among the 13 type of sports, volley ball (21.7%) and kabadi (21.7%) were the commonest games in which injury occurred. Majority of the injury type observed was contusion (21.1%) followed by ankle sprain (20.5%), strain (14.9%) and ligament tear (14.3%).*

Conclusion: *This study shows that almost half of the students of physical education had injury in the preceding 6 months which may affect their training and curriculum participation. There is a need for proper preventive measures to be undertaken to keep the injury risk low among these students.*

Keywords: *PETE students, sports, injury, knee and ankle.*

INTRODUCTION

Sports are one of the commonest recreational activities existing among people for a long time. Although it is an entertainment and has a cultural element, participation in sports have many advantages like decreasing the risk of obesity, cardiovascular disease, hypertension, diabetes mellitus and improving physical fitness. However, sports participation has a risk of injury among players in the professional level to the beginners in sports.

Socio-cultural aspects and health benefits of the sports are known for a long time, but only very little attention is given to the sports related injury.

Sports injuries are not due to a single factor but variety of factors may interact in causing the injury. The intrinsic or extrinsic factors and the previous injury contribute up to 50-70% sports injuries, particularly knee and ankle injuries which are common in female, increasing the risk of osteoarthritis in later life [(1)]. Sports injuries can also result from acute trauma or repetitive stress associated with athletic activities and in many cases injuries are due to overuse of a part of the body when participating in certain sports activities [(2)]. Incidence and distribution of sports related injuries vary based on sport affiliation, participation level, player position and gender [(3)].

Although everyone who participates in sports has the risk of injury, physical education students have higher risk of getting injury because, the university physical education program requires intense training on the techniques and skills. This can expose the physical education teacher education (PETE) students to the increased load on different body parts, making them vulnerable for getting injuries. Recurrence is also more common among the PETE students because of the continuous participation and intense training. Sports injuries, particularly among amateurs account for high rate of morbidity and cost. So, it is important to promote all the preventive measures among young people, stressing on proper technique and creating awareness about the use of protective equipments to decrease the occurrence of sports injuries. It is also important to identify the contributing factors for injury in order to reduce sports injuries.

Sports injuries are a burden for both individual and society. Depending on the nature and severity of the sports injuries, individual lose their working time and quality of life. Permanent damage causing disability and economic burden are all undesired adverse effects of sports injury. Therefore this study was designed with the objective of assessing the prevalence and pattern of sports injuries for the preceding 6 months among PETE students of the University in Tamil Nadu.

MATRIALS AND METHODS

Cross sectional study was conducted among the college students between the age group 18-30 years from the department of Physical Education, Annamalai University, Chidambaram.

Study was done between November 2015 and August 2016. The second and third year students of physical education trainees were included in the study. Those who were not willing to participate and students not available at the time of administ-ering the questionnaire were excluded from the study. Students in the first year were also excluded as they had joined the college only a month prior to this study.

According to a pilot study conducted the prevalence of sport injuries was 30%. This prevalence was used in calculating sample size of 167. However, sample size was taken as 200 assuming 20% of the non response.

For the purpose of the study a structured questionnaire was developed. Questionnaire had 2 parts, socio-demographic data and injury details. First part of the questionnaire, was self administered and had details like age, height, weight, course name and year, whether they were injured or not during the preceding 6 months. This was done in 5-7 minutes and researcher was there to see that each and every question was answered. The second part of the questionnaire was about injury details and interviewer administered this to all the participants who had an injury. This contains type of injury, during which sport the injury occurred, and the nature of injury. Data were analyzed by using statistical package for social scinces (SPSS) version 17.

Ethical Issue: Ethical clearance was obtained from the Institutional ethical committee. Permission to carry out the study was sought from the Director of physical education in the University and an informed consent was taken from each participant prior to the study.

Operational definition: Injury is any tissue damage even minor bruises that occurred as a result of training, practice or while playing related to the physical education curriculum. The injury

may or may not require medical attention and it may or may not affect academic commitment in any form or any length of time.

RESULTS

Table 1: Demographic characteristics of the study population (n=200)

	Variable	No	%
Age	18-20	71	35.50
	21-23	78	39
	24-26	38	19
	27-29	13	6.50
Sex	Male	141	70.50
	Female	59	29.50
Course	BPED	79	39.50
	MPED	19	9.50
	BPE	102	51
Year	Second year	134	67.0
	Third year	66	33.0

Table 1 show that total number of students in the study was 200. Mean age for the study participants was 21.89 years, standard deviation 2.57. Among the study population 70.5% of them were males and 29.5% were females. Majority of them 51.0% were doing BPE course and 67% of them were pursuing second year of their course.

Table 2: Distribution of study participants according to their height and weight (n=200)

Variable	Measurements	Male		Female	
		No	%	No	%
Height (in cms)	<140	1	0.7	1	1.7
	141-155	5	3.5	23	39
	156-170	61	43.3	30	50.8
	171-185	70	49.7	5	8.5
	>185	4	2.8	0	0
Weight (in kgs)	36-50	14	9.9	41	69.5
	51-65	82	58.2	17	28.8
	66-80	38	26.9	1	1.7
	81-95	6	4.3	0	0
	>95	1	0.7	0	0
	Total	141	100	59	100

Mean height for males was 170.45, standard deviation 8.14 and mean height for females was 157.85, standard deviation 7.95. Mean weight for males 63.08, standard deviation 9.84, mean weight for females 48.66 and standard deviation 6.23.

Table 3: Distribution of study participants according to their body mass index

Variable	Measurement	No	%
BMI (kg/m^2)	<18	36	18
	18-24.9	140	70
	25-30	24	12
	>30	0	0
	Total	200	100

Table 3 shows 70 % of the study participants, had normal BMI (18-24.9 $kg/m^{2)}$ and 18% of their BMI was low and 12% of them were overweight

Table 4: Distribution of participants according to the occurrence of sports injuries

Injured body Part	No of injuries	%
Upper limb	61	37.9
Lower limb	97	60.3
Trunk & back	3	1.8
Face& head	0	0%
Total	161	100%

Table 4 shows the prevalence of sports injury was 48%. Among the 200 study population 96 students got injured during the past 6 months

Table 5: Distribution of injuries according to the sports involved in sports injuries (No of total injuries occurred in the past 6 months=161)

Sports	No of injuries	%
Foot ball	23	14.3
Volley ball	35	21.7
Athletic	9	5.6
Kabadi	35	21.7
Tennis	3	1.9
Basket ball	17	10.6
Khokho	11	6.8
Badminton	6	3.7
Cricket	11	6.8
Karate	1	0.6
Weight lifting	2	1.2
Hockey	5	3.1
Gymnastics	3	1.9
Total	161	100

Among the total 161 injuries occurred during the preceding 6 months, majority 21.7% of the

injuries occurred in volley ball and 21.7% of injuries occurred in kabadi. Next common sport injuries occurred was football (14.3%). Karate was the game in which least number injuries (0.6%) occurred.

Table 6: Distribution of injuries according to body region affected

Variable	No	%
Injured	96	48.0
Non injured	104	52.0
Total	200	100

Table 6 shows majority of the injuries occurred in the lower limb (60.3%), followed by upper limb with 37.9% of the injuries.

Table7: Distribution of injuries according to the types of injury

Injury types	No	%
Fracture	5	3.1
Dislocation	13	8.1
Ligament tear	23	14.3
Laceration	4	2.5
Abrasion	7	4.3
Contusion	34	21.1
Concussion	0	0
Strain	24	14.9
Ankle sprain	33	20.5
Tennis elbow	0	0
Runner's knee	6	3.7
Shoulder impingement	12	7.5
Total	161	100

Table 7 shows that the commonest injury was contusion 21.1% followed by ankle sprain 20.5%, strain 14.9% and ligament tear 14.3%. Tennis elbow and concussion occurrence were nil.

RESULTS

Study participants comprised of males (141, 70.5%) and females (59, 29.5%) totally 200. Mean age was 21.89 years with the standard deviation 2.57. Majority (134, 67%) were pursuing their 2nd year of their course. Mean height for males was 170.45, standard deviation 8.14 and for females mean height were 157.85, standard deviation 7.95. Mean weight for males was 63.08, standard deviation 9.84 and for females it was 48.66, standard deviation 6.23. Regarding their body mass index, (140, 70%) were having normal (18-24.9 kg/m^2) BMI.

Prevalence and pattern of sports injuries

The study accounts for the overall prevalence of sports injuries in the past 6 months as 48% (96 injured among 200 students). Total of 161 injuries occurred in the preceding 6 months. Regarding the nature of injuries, 55.3% of the injuries were new injuries and 44.7% of them were recurrent injuries.

Injury occurrence was highest among players of volley ball (21.7%) and kabadi (21.7%) and it was least in karate (0.6%). Other sports in which injury acquired were foot ball 14.3%, basket ball 10.6%, khokho and cricket 6.8% each, athletic 5.6%, badminton 3.7%, hockey 3.1%, tennis 1.9%, gymnastics 1.9% and weight lifting 1.2%.

This study shows that lower limb was the most commonly affected body region 60.3% followed by the upper limb 37.9% , trunk and back 1.8% and no injury occurred on face and head.

According to the type of injury, most common injury was contusion 21.1% followed by ankle sprain 20.5%. Other injuries were strain 14.9% and ligament tear 14.3%, dislocation 8.1%, shoulder impingement 7.5%, abrasion 4.3%, runner's knee 3.7% fracture 3.1, laceration 2.5% Concussion and tennis elbow occurrence were nil.

DISCUSSION

The University PETE students have a rigorous training in various sports during their course making them more susceptible to sports injuries . Total of 200 PETE students were included in this study and majority of them were in the age group of 21-23 years, 70.5% of them were males and 29.5% of them were females. This was in concordance with other studies [4,5] in which male participation was higher than female participation.

This study result shows that overall 161 injuries occurred and 48% of the students got injured in the preceding 6 months . Similar results had been obtained about the prevalence of injuries by Bruno

Berbertrosa et al [6] among collegiate athletes which was 49.9% and another study done by Stevenson et al [7]. But the result was inconsistent with study done by Ying zhao et al [8] among college students in Wuhan city in which prevalence was low (15.59%). The difference might be due to the injury definition in this study and the injuries were more inclusive and irrespective of medical attention and time loss. Similar prevalence was present in the study done by Swarup Mukherjee [9] among PETE students, which suggests that the University PETE students are at higher risk of getting sports injuries compared to general active sports population.

The lower limb was the most commonly affected body part accounting 60.3% of the injuries in this study. This was in concordance with the previous studies done among PETE students [9,10,11,12] suggesting that the lower limb has increased risk of getting injuries among the PETE students. Similar findings were seen in studies [13,14] where lower extremities were the most affected part. This might be explained by the high intensity intermittent and impact loading nature of sports like hockey, basket ball, and foot ball in the curriculum. It seems that the reasons of low frequency of injuries in head and neck may be due to increased range of motion of upper limb and lower limb compared to low amplitude movements in the head and neck regions in many sports.

In this study Contusion (21.1%) was the commonest type of injury sustained during the physical education curriculum followed by ankle sprain 20.5%, strain 14.9%, ligament tear14.3%. Similar findings obtained by Jui Ray et al [10] among physical education college students, the commonest injuries were contusion 41%, sprains 22%. However, Swarup Mukerjee et al, in his study has noted 31%% sprain was the commonest type of injury, followed by contusion 20%, muscle strain 14%. [9]. This findings were on the contrary to the studies [8,15] done among in which skin damage 38.95 % and ligament sprain 43% were the commonest injuries.

Among the 13 types of sports activities in our study, the commonest sports involved in sports injuries were volley ball 21.7% and kabadi 21.7% These findings were in contrary to the study done at [16] in which foot ball, field hockey were the commonest sports involved with sports injuries occurred in lower limb done by Varun Kumar et al shows in which basket ball and cricket were the common sports involved with sports injuries. More injuries occurred in volley ball in this study. This may be due to inadequate practice and incorrect technical movements whereas in kabadi collision injuries were more common.

CONCLUSION

Prevalence of sports injuries in physical education students in our study was found to be 48%. The results showed that the PETE students were at a high risk of sports injuries. There was a total of 161 injuries for the past 6 months in which lower limb was the overall most commonly affected body part and the upper limb accounted for a significant number of curriculum related injuries.

Contusion was the commonest injury type, but ankle sprain and ligament tear were also common injuries that increases the risk of recurrent injuries among the PETE students. The volleyball and kabadi were the commonest sports in which injuries were more.

LIMITATIONS

The generalization of the study result is limited by the characteristic of the sample which was recruited from the single college. Recall bias is inevitable for minor sports injuries because the study was done retrospectively. The limitations and reliability of retrospective sports injury studies need to be taken into account in drawing conclusions from the survey.

RECOMMENDATIONS

Knowledge about sports injuries is useful to identify the proper training programs to prevent injuries. Physical exercise and sports activities must be appropriate for the physical characteris-

tics of the students. Physical education teachers should continuously be aware of the potential dangers for sports injuries and about the practical measures to reduce risk of injuries.

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