

# Self-Reported Musculoskeletal Problems after Playing Outdoor Games among School Going Adolescents in Ahmedabad: A Cross-Sectional Study

Rishita Patel<sup>1</sup>, Abhay Patel<sup>2</sup>, Megha Sheth<sup>3</sup>

<sup>1</sup> Undergraduate Student, SBB College of Physiotherapy, V.S. Hospital Campus, Ellisbridge, Ahmedabad – 380006

<sup>2</sup> Postgraduate Student, SBB College of Physiotherapy, V.S. Hospital Campus, Ellisbridge, Ahmedabad – 380006

<sup>3</sup> Lecturer, SBB College of Physiotherapy, V.S. Hospital Campus, Ellisbridge, Ahmedabad – 380006

Corresponding Author: Rishita Patel

DOI: <https://doi.org/10.52403/ijhsr.20250118>

## ABSTRACT

**Background:** Musculoskeletal problems like pain, fatigue and weakness are usually a cause of concern among adolescents after playing sports. Changes can occur in the physical health of children because of injury after playing games or sports. The aim of the study was to find self-reported musculoskeletal problems after playing sports among adolescents.

**Method:** A cross-sectional study was conducted on school going adolescents in the age group of 13-18 years. A self-administered questionnaire was generated to collect data, including questions related to sports, injury and musculoskeletal problems. Descriptive analysis was done.

**Result:** Total 469 students completed the study- 232 males and 237 females with mean age 15.01±1.22 years. All students were having 1 or more sports sessions in the school per week. 390 students (83.15%) were playing sports after their school hours. 366 students (78%) reported feeling tired after playing sports. 188 students (40%) reported having pain after playing sports of which 40 students had pain in shoulders and 30 students had pain in feet. 244 students (52%) had had some form of injury of which 113 (46%) reported injuries to their knees. Out of 227 girls, 128 (56.38%) had difficulty in playing sports during their periods.

**Conclusion:** Playing sports is common in schools across Ahmedabad and even after school hours. About 40% adolescents have had pain mostly in the shoulder or lower limbs at some time and 52% have had some kind of injury after playing sports or games.

**Keywords:** musculoskeletal problems, school going adolescents, sports

## INTRODUCTION

Non-specific symptoms of musculoskeletal pain are one of the common complaints which can begin in adolescence. They can have a sudden onset or can have long –

lasting symptoms after playing outdoor games. <sup>(1)</sup> Participation of school going adolescents in sports has increased tremendously in recent times. The participation in sports and related outdoor

gaming activities ensures a balanced development of students and good health. This increased sports involvement of adolescents from early age through years of growth raises concern about an undesired but inevitable consequence, sports related injuries and musculoskeletal pain which have increased significantly. <sup>(2)</sup>

A study conducted by Backous et al. showed that 14-17 years is a high-risk group for sports injury <sup>(3)</sup>, while de Loes et al. showed that age group of 15-19 years is the population most likely to experience sports injuries. <sup>(4)</sup> In adolescents, in India, little is known at present about prevalence of musculoskeletal problems after playing outdoor games. Most studies investigating the problem have addressed a specific condition or sport, rather than providing a comprehensive analysis of musculoskeletal problems. Studies on injuries among Indian school going adolescents are limited and shows higher incidence of injuries in adolescence. <sup>(5)</sup> However, these studies have summarized that sports playing students are the population most susceptible to sports related musculoskeletal problems, indicating

that it is a problem too important to overlook.

Identification of sport related injuries and non-specific symptoms of musculoskeletal pain in terms of prevalence and severity constitutes the first logical step to direct measures at prevention. Fatigue and body ache in particular body regions are considered as non – specific symptoms of musculoskeletal pain. Most data available in literature is from western developed countries which cannot be generalized to developing countries like India due to cultural and sports diversity. <sup>(6,7)</sup> Thus, this study aimed to find prevalence of self-reported musculoskeletal problems after playing outdoor games in school going adolescents of age group 13-18 years.

## MATERIALS & METHODS

A cross-sectional study was conducted based on filling self-administered questionnaire (Table 1) by school going adolescents aged 13-18 years, from English and Gujarati medium schools of Ahmedabad, Gujarat. Convenience sampling was used to collect data.

### Questionnaire for Data collection

- 1) Name:
- 2) Age: (in years)
- 3) Gender:
- 4) Height: (in centimeters)
- 5) Weight: (in kilograms)
- 6) Present school name:
- 7) Do you have sports session in the school?
  - a. Yes
  - b. No
- 8) How many sessions do you have in a week?
  - a. 1 per week
  - b. 2 per week
  - c. 3 per week
  - d. >3 per week
- 9) Do you enjoy them or not?
  - a. Yes
  - b. No
- 10) Are you interested in any sports?
  - a. Yes
  - b. No
- 11) Which sports are you interested in?
  - a. Cricket
  - b. Football
  - c. Volleyball
  - d. Others

12) Do you play games or sports outside of school hours? a. Yes b. No
13) If yes, then for how long do you play outside? a. <1 hour b. 1-2 hours c. 2-3 hours d. >3 hours
14) After playing sports of your interest do you feel tired? a. Yes b. No
15) If yes, then after how long of playing do you get tired? a. <1 hour b. 1-2 hours c. 2-3 hours d. >3 hours
16) After playing sports of your interest do you feel relaxed? a. Yes b. No
17) If yes, then after how long of playing do you get relaxed? a. <1 hour b. 1-2 hours c. 2-3 hours d. >3 hours
18) Do you experience any kind of pain after playing sports or game? a. Yes b. No
19) If yes, then which part of your body has pain? a. Thighs b. Calves c. Knees d. Feet e. Back f. Neck g. Shoulders h. Others
20) Do you experience any kind of injury after playing sports or game? a. Yes b. No
21) If yes, then which part of your body got injured? a. Thighs b. Calves c. Knees d. Feet e. Back f. Neck g. Shoulders h. Others
22) What is frequency of you getting injury after playing? a. Daily b. Once a week c. Rarely
23) At any time do you feel giving upon playing sports because of experiencing pain/injury? a. Yes b. No
24) Do you face difficulty in playing sports during periods? (For Girls Only) a. Yes b. No

**Table 1 – Questionnaire administered to the school for the survey**

Institutional permission was taken to conduct the study. The questionnaire was prepared by the authors in English, following a review of available articles. It consisted of questions on demographics, musculoskeletal problems and injuries after playing outdoor games. The questionnaire was circulated among five experts (two sports physiotherapists, two coaches and one sports school teacher). The questionnaire was modified according to suggestions given by them. (Table 1) It was then translated into Gujarati by a Gujarati teacher who was fluent in English language. The study was explained to the principal of various schools. Permission from principals of respective schools was taken. Children were explained the study. Assent was obtained from participants before administering the self-administered questionnaire which was distributed among students by authors during school hours. The students were instructed to fill the questionnaire in the presence of authors for

their ease in understanding. Students absent on that day and unwilling to participate were excluded.

### STATISTICAL ANALYSIS

The data collected from questionnaire was analysed using Microsoft Excel 2007, and descriptive statistics were done.

### RESULT

Total 469 students completed the study. There were 232 males (49.46%) and 237 females with mean age  $15.01 \pm 1.22$  years, mean height  $1.57 \pm 0.12$  m & mean weight  $48 \pm 10.80$  kg. 467 students were interested in playing sports. All students were having 1 or more than 1 sports session in school per week. 390 students (83.15%) were playing sports after their school hours.

Table 2 shows the number of adolescents with their interested sports and the number and percentage of adolescents feeling tired, pain and having post sports injuries.

Sports	Interested adolescents	Feeling fatigue after playing sports of their interest – n (%)	Having pain after playing sports of their interest – n (%)	Sports related injuries after playing sports of their interest –n (%)
Cricket	177	144 (81)	67 (38)	97 (55)
Football	79	61 (77)	43 (54)	32 (40)
Volleyball	69	49 (71)	19 (28)	34 (49)
Others	123	94 (76)	46 (37)	68 (55)
Multiple sports	19	18 (95)	13 (68)	13 (68)
<b>Total</b>	467	366 (78)	188 (40)	244 (52)

Table 2: Sports related problems in adolescents

Table 3 shows number of adolescents having pain in each body area.

Sports	Painful body area: n (%)									
	Thighs	Calves	Knees	Feet	Back	Neck	Shoulders	Others	Multiple	Total
Cricket	8 (12)	10(15)	5 (8)	15 (22)	5 (8)	3 (4)	14 (21)	5 (7)	2 (3)	67
Football	4(9)	5 (12)	7 (16)	6 (14)	8 (19)	-	6 (14)	3 (7)	4 (9)	43
Volleyball	3 (16)	1 (5)	1 (5)	2 (10)	2 (10)	1 (5)	7 (37)	2 (10)	-	19
Others	3 (6)	5 (11)	3 (6)	6 (13)	7 (15)	-	11 (24)	6 (13)	5 (11)	46
Multiple sports	-	-	1 (8)	1 (8)	2 (15)	-	2 (15)	4 (31)	3 (23)	13
<b>Total</b>	18 (9)	21(11)	17 (9)	30 (16)	24(13)	4 (2)	40 (21)	20 (10)	14 (7)	188

Table 3: Pain after playing sports in adolescents

Table 4 shows number of adolescents having injuries in each body area. 55 adolescents (29 Males, 26 Females) left playing sports due to pain or injury.

Sports	Injured body area: n(%)									
	Thighs	Calves	Knees	Feet	Back	Neck	Shoulders	Others	Multiple	Total
Cricket	3(3)	3(3)	44(45)	21(22)	4 (4)	1(1)	14 (14)	7 (8)	-	97
Football	-	1(3)	10 (31)	6 (19)	1 (3)	1 (3)	3 (9)	9 (28)	1 (3)	32
Volleyball	1 (3)	1 (3)	19 (56)	5 (15)	-	-	3 (9)	5 (15)	-	34
Others	-	5 (7)	36(53)	8 (12)	2 (3)	3 (4)	4 (6)	8 (12)	2 (3)	68
Multiple sports	-	1(8)	4 (31)	4 (31)	-	-	1 (8)	2 (16)	1 (8)	13
Total	4(2)	11(4)	113(46)	44(18)	7 (3)	5 (2)	25 (10)	31(13)	4 (2)	244

Table 4: Sports related injuries in adolescents

Out of 227 girls, 128 (56.38%) reported difficulty in playing sports during their periods.

## DISCUSSION

Many schools going adolescents complained of problems after playing sports in the present study. Non-specific symptoms of musculoskeletal pain can be described in varied ways. It can be described as the pain that affects musculoskeletal structures and gives common symptoms like body ache in a particular region or whole body pain and fatigue.<sup>(8)</sup> Sports related injuries can be described as kinds of injuries that most commonly occur during sports or outdoor game, but they are not limited to athletes.<sup>(9)</sup> This study shows percentage (prevalence) of self-reported non-specific musculoskeletal pain symptoms and sports related injuries among school going adolescents (13-18 age group) after playing sports. In this study, we found many adolescents were interested in sports, in which cricket, football and volleyball were highly popular. 78% adolescents feel fatigue after sports. Prevalence of fatigue is higher in students who are interested in multiple sports. It may be because of their increased time in outdoor gaming.

In the present study, 188 adolescents (40%) had pain after playing sports. Shoulder, feet and back were the most affected body areas seen. Other pain areas included calves, thighs, knees neck and other regions, in order of prevalence. Orawan Keeratisiroj et al found prevalence of self-reported

musculoskeletal pain symptoms in shoulder, feet, back and neck to be more prevalent in adolescent age group in both genders.<sup>(1)</sup>

The study also looked at anatomical regions where pain was present according to varied sports. Mohammad Rashaduzzaman M et al reported most upper limb musculoskeletal pain was at shoulder and the lower limb musculoskeletal pain at knee joint, ankle joint.<sup>(10)</sup> In our study similar results are found where in adolescents playing cricket reported most affected regions were feet and shoulders. Peterson et al reported that low back pain was the most common chronic complaint among youth football players.<sup>(11)</sup> Aoki H et al reported back/low back pain as the most frequent problem, followed by knee joint pain.<sup>(12)</sup> In our study, similar results are seen where back and knees were most affected body parts in adolescents playing football. Seminati E et al reported that shoulder pain is more prevalent in volleyball players due to overuse injuries during volleyball practice.<sup>(13)</sup> Similarly, we found shoulder affection most reported in adolescents playing volleyball.

Total 244 adolescents (52%) had injured themselves playing sports. Knees (46%) were found to be the commonly injured part. Like the present study, Dorje et al. who studied the sports injury pattern in school going children found the knee was most common anatomical site of injury and sprain was commonest type of injury.<sup>(5)</sup> In our study, we found 55 adolescents (29 males, 26 females) left playing sports due to injury. Injuries may occur due to high degree of

sudden turns and forceful jumping and lack of proper sports related training.

We found that 128 girls (56.38%) out of 227 girls had difficulty in playing during their periods. Further research regarding details of difficulty is required to identify factors affecting performance in girls.

Detail objective assessment of the complaints was not done in the present study as the study focused more on the report by the children. The intensity, duration and frequency of musculoskeletal pain were not taken. Further studies can be designed to combine subjective complaints of the children along with objective assessment. Based on these results, we can suggest further studies with proper training implemented in schools for outdoor games. Regular assessment should be done for musculoskeletal pain symptoms and injuries and proper treatment should be given to them to children reporting issues.

## CONCLUSION

The musculoskeletal pain symptoms and related injuries is prevalent in school going adolescents and should be recognized as a major health concern in this population. About 40% adolescents have had pain in shoulder or lower limbs at some time and 52% have had some kind of injury after playing sports or games. Injuries are most seen around the knee joint.

### Declaration by Authors

**Ethical Approval:** According to the ethical principles of the declaration of Helsinki.

**Acknowledgement:** None

**Source of Funding:** None

**Conflict of Interest:** The authors declare no conflict of interest.

## REFERENCES

1. Keeratisiroj O, Siritaratiwat W. Prevalence of self-reported musculoskeletal pain symptoms among school-age adolescents: age and sex differences. *Scandinavian Journal of Pain*. 2018 Apr 1;18(2):273-80.
2. Kamada M, Abe T, Kitayuguchi J, Imamura F, Lee IM, Kadowaki M, Sawada SS, Miyachi M, Matsui Y, Uchio Y. Dose-response relationship between sports activity and musculoskeletal pain in adolescents. *Pain*. 2016 Jun;157(6):1339.
3. Backous DD, Friedl KE, Smith NJ, Parr TJ, Carpine WD. Soccer injuries and their relation to physical maturity. *American Journal of Diseases of Children*. 1988 Aug 1;142(8):839-42.
4. De Loes M. Medical treatment and costs of sports-related injuries in a total population. *International journal of sports medicine*. 1990 Feb;11(01):66-72.
5. Dorje C, Gupta RK, Goyal S, Jindal N, Kumar V, Masih GD. Sports injury pattern in school going children in Union Territory of Chandigarh. *Journal of clinical orthopaedics and trauma*. 2014 Dec 1;5(4):227-32.
6. Sørensen L, Larsen SE, Röck ND. The epidemiology of sports injuries in schoolaged children. *Scandinavian journal of medicine & science in sports*. 1996 Oct;6(5):281-6.
7. Schmidt B, Höllwarth ME. Sports accidents in children and adolescents. *Zeitschrift für Kinderchirurgie: Organ der Deutschen, der Schweizerischen und der Österreichischen Gesellschaft für Kinderchirurgie= Surgery in Infancy and Childhood*. 1989 Dec 1;44(6):357-62.
8. Legault ÉP, Descarreaux M, Cantin V. Musculoskeletal symptoms in an adolescent athlete population: a comparative study. *BMC musculoskeletal disorders*. 2015 Dec;16(1):1-9.
9. Van Mechelen W, Hlobil H, Kemper HC. Incidence, severity, aetiology and prevention of sports injuries: a review of concepts. *Sports medicine*. 1992 Aug;14:82-99.
10. Mohammad Rashaduzzaman M, Mohammad Kamrujjaman M, Mohammad Ariful Islam MA, Sharmin Ahmed S, Salauddin Al Azad SA. An experimental analysis of different point specific musculoskeletal pain among selected adolescent-club cricketers in Dhaka city. *European Journal of Clinical and Experimental Medicine*. 2019(4).
11. Peterson L, Junge A, Chomiak J, Graf-Baumann T, Dvorak J. Incidence of football injuries and complaints in different age groups and skill-level groups. *The American journal of sports medicine*. 2000 Sep;28(5\_suppl):51-7.



12. Aoki H, Kohno T, Fujiya H, Kato H, Yatabe K, Morikawa T, Seki J. Incidence of injury among adolescent soccer players: a comparative study of artificial and natural grass turfs. *Clinical Journal of Sport Medicine*. 2010 Jan 1;20(1):1-7.
13. Seminati E, Minetti AE. Overuse in volleyball training/practice: A review on shoulder and spine-related injuries. *European journal of sport science*. 2013 Nov 1;13(6):732-43.

How to cite this article: Rishita Patel, Abhay Patel, Megha Sheth. Self-Reported musculoskeletal problems after playing outdoor games among school going adolescents in Ahmedabad: a cross-sectional study. *Int J Health Sci Res*. 2025; 15(1):136-142. DOI: <https://doi.org/10.52403/ijhsr.20250118>

\*\*\*\*\*