

# The Prevalence of Knee Pain Among College Students and Its Association with Their Level of Physical Activity

Mr. Rajadurai<sup>1</sup>, Dr. S. Senthil Kumar<sup>2</sup>

<sup>1</sup>Bachelor Of Physiotherapy, School of Physiotherapy; Dhanalakshmi Srinivasan University, Tiruchirappalli, Tamil Nadu, India.,

<sup>2</sup>Professor, School of Physiotherapy; Dhanalakshmi Srinivasan University, Tiruchirappalli, Tamil Nadu, India.

## ABSTRACT

**Background:** Knee pain is one of the most common musculoskeletal complaints among young adults and college students. Although obesity has traditionally been considered a major contributing factor, recent evidence suggests that physical activity levels, sports participation, repetitive knee loading, and improper exercise techniques play a more important role in the development of knee pain among younger populations (Smith et al., 2018; Neal et al., 2019).

**Aim:** To determine the prevalence of knee pain among college students and its association with physical activity levels.

**Methodology:** A cross-sectional observational study was conducted among 40 college students aged 19–22 years. Participants were selected using convenience sampling. Data were collected using a structured questionnaire containing demographic information and physical activity details. Knee pain severity was assessed using the Visual Analogue Scale (VAS), while physical activity levels were categorized into low, moderate, and high activity groups. Data were analysed using descriptive statistical methods and presented using tables and graphical representation.

**Results:** The study demonstrated a high prevalence of knee pain among physically active college students. Among the participants, 40% reported severe knee pain, 32.5% reported moderate pain, and 27.5% reported mild pain. Students involved in high levels of physical activity showed greater pain severity compared to students with low activity levels.

**Conclusion:** Knee pain is highly prevalent among college students and appears to be strongly associated with increased physical activity levels rather than obesity alone. Proper exercise techniques, warm-up routines, physiotherapy guidance, and injury prevention strategies are important for minimizing knee-related problems among young adults.

**Keywords:** Knee pain, College students, Physical activity, VAS scale, Musculoskeletal disorders, Physiotherapy.

## INTRODUCTION

Knee pain is a common musculoskeletal complaint affecting individuals of all age groups and is increasingly reported among young adults and college students (Rathleff et al., 2019). Traditionally, knee

pain was considered primarily associated with aging, obesity, and degenerative joint diseases. However, recent evidence suggests that physically active young individuals are also highly susceptible to developing knee pain due to repetitive stress, sports participation, overuse injuries, and biomechanical abnormalities (Crossley et al., 2016).

College students often engage in varying levels of physical activity, ranging from sedentary behaviour to high-intensity sports training and gym exercises. Repetitive loading of the knee joint during running, jumping, squatting, and sports participation may increase stress on the patellofemoral joint and surrounding soft tissues, resulting in pain and functional limitations (Powers, 2010).

Several researchers have reported that increased physical activity without appropriate conditioning, flexibility training, or proper exercise techniques may contribute to the development of knee pain among young adults (Neal et al., 2019). Inadequate warm-up exercises, poor biomechanics, muscle imbalance, and repetitive strain may further aggravate knee joint stress and lead to overuse injuries (Witvrouw et al., 2005).

Patellofemoral pain syndrome is considered one of the most common causes of anterior knee pain among physically active individuals and college athletes (Callaghan, 2004). Previous studies have also demonstrated that high-impact sports and prolonged physical activity are associated with increased prevalence of knee-related symptoms (van Middelkoop et al., 2008).

Understanding the relationship between physical activity levels and knee pain among college students is important for developing preventive strategies, promoting physiotherapy awareness, and reducing long-term musculoskeletal complications. Therefore, the present study aimed to determine the prevalence of knee pain among college students and its association with physical activity levels.

## **NEED FOR THE STUDY**

Knee pain among young adults is becoming increasingly common due to rising participation in sports, gym activities, and physically demanding lifestyles. Early identification of risk factors associated with knee pain is essential to prevent long-term musculoskeletal complications and improve quality of life. Understanding the relationship between physical activity levels and knee pain may help physiotherapists and healthcare professionals develop effective preventive and rehabilitation strategies for college students.

## **AIM**

To determine the prevalence of knee pain among college students and its association with physical activity levels.

## **OBJECTIVES**

### **Primary Objective**

- To identify the prevalence of knee pain among college students.

### **Secondary Objectives**

- To assess the level of physical activity among students.
- To analyse the association between physical activity levels and knee pain.
- To identify possible contributing factors such as sports participation and exercise habits.

## **HYPOTHESIS**

### **Null Hypothesis (H0)**

There is no significant association between physical activity levels and knee pain among college students.

### **Alternative Hypothesis (H1)**

There is a significant association between physical activity levels and knee pain among college students.

## **REVIEW OF LITERATURE**

Rathleff et al. (2019) reported that knee pain is highly prevalent among adolescents and young adults, particularly among physically active individuals.

Smith et al. (2018) identified physical activity, repetitive loading, and sports participation as important risk factors contributing to knee pain.

Crossley et al. (2016) emphasized that patellofemoral pain is commonly associated with excessive loading of the knee joint during sports and exercise activities.

Powers (2010) discussed the biomechanical mechanisms involved in anterior knee pain and highlighted the role of improper movement patterns.

Neal et al. (2019) reported that increased physical activity without proper conditioning may contribute to knee-related symptoms among young individuals.

Previous studies consistently indicate that physically active college students are at increased risk of developing knee pain due to repetitive stress and overuse injuries.

## **METHODOLOGY**

### **Study Design**

The present study was conducted as a cross-sectional observational study to determine the prevalence of knee pain among college students and its relationship with physical activity levels.

### **Study Setting**

The study was conducted within the physiotherapy department and college campus environment.

### **Study Duration**

The duration of the study was approximately 2–4 weeks.

### **Sample Size**

A total of 40 college students participated in the study.

### **Sampling Method**

Participants were selected using convenience sampling based on availability and willingness to participate.

### **Inclusion Criteria**

- Students aged between 19–22 years.
- Both male and female students.
- Students participating in any level of physical activity.
- Willingness to participate in the study.

### **Exclusion Criteria**

- Recent history of knee surgery.
- Acute traumatic knee injuries.
- Neurological disorders affecting lower limb function.
- Systemic inflammatory conditions such as rheumatoid arthritis.

### Ethical Consideration

Participants were informed regarding the purpose and procedure of the study before data collection. Informed consent was obtained from all participants, and confidentiality was maintained throughout the study.

### Outcome Measures

#### Visual Analogue Scale (VAS)

Pain severity was assessed using the Visual Analogue Scale, which is considered a reliable tool for measuring pain intensity (Fairbank et al., 1980).

#### Physical Activity Classification

Physical activity levels were classified into:

- Low activity
- Moderate activity
- High activity

based on exercise frequency and participation in sports or gym activities.

### Procedure

Participants were informed regarding the purpose of the study, and informed consent was obtained prior to data collection. Demographic information including age and activity level was collected using a structured questionnaire.

Participants reporting knee pain were assessed using the Visual Analogue Scale (VAS). Pain intensity was categorized into:

- Mild (1–3)
- Moderate (4–6)
- Severe (7–10)

Collected data were analysed using descriptive statistical methods and represented through tables and graphical illustrations.

## RESULTS

The present study demonstrated that knee pain was highly prevalent among college students, especially among participants involved in high levels of physical activity.

Among the 40 participants:

- 16 students (40%) reported severe knee pain.
- 13 students (32.5%) reported moderate knee pain.
- 11 students (27.5%) reported mild knee pain.

Students participating in sports, gym exercises, and high-impact physical activities demonstrated greater pain severity compared to students with lower physical activity levels.

The findings suggest that increased physical activity without proper conditioning, warm-up, flexibility training, or biomechanical awareness may contribute significantly to knee-related symptoms among college students.

**TABLES Table 1: Distribution Based on Physical Activity and Pain Severity**

Activity Level	Mild	Moderate	Severe	Total
High Activity	0	0	16	16

Activity Level	Mild	Moderate	Severe	Total
Moderate Activity	0	13	0	13
Low Activity	11	0	0	11
Total	11	13	16	40

**Table 2: Percentage Distribution of Pain Severity**

Pain Category	Number of Students	Percentage
Severe	16	40%
Moderate	13	32.5%
Mild	11	27.5%

**FIGURES**

**Figure 1: Age Distribution**

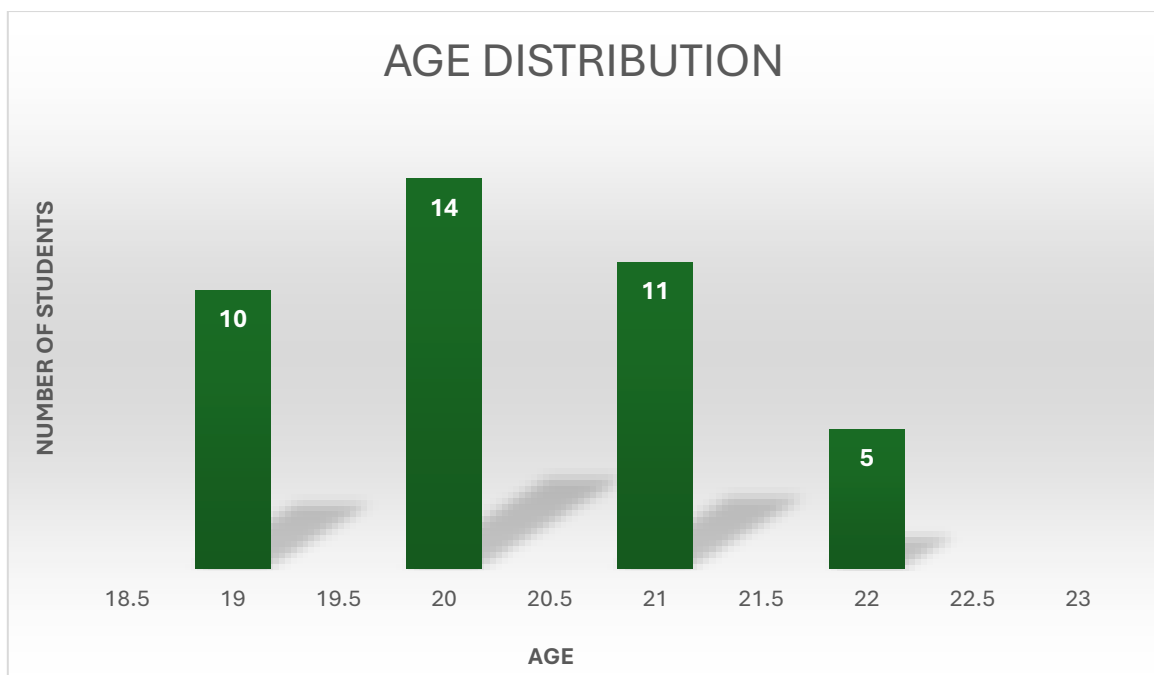
The majority of participants were distributed between 19 and 22 years of age, with maximum representation observed among students aged 20 years.

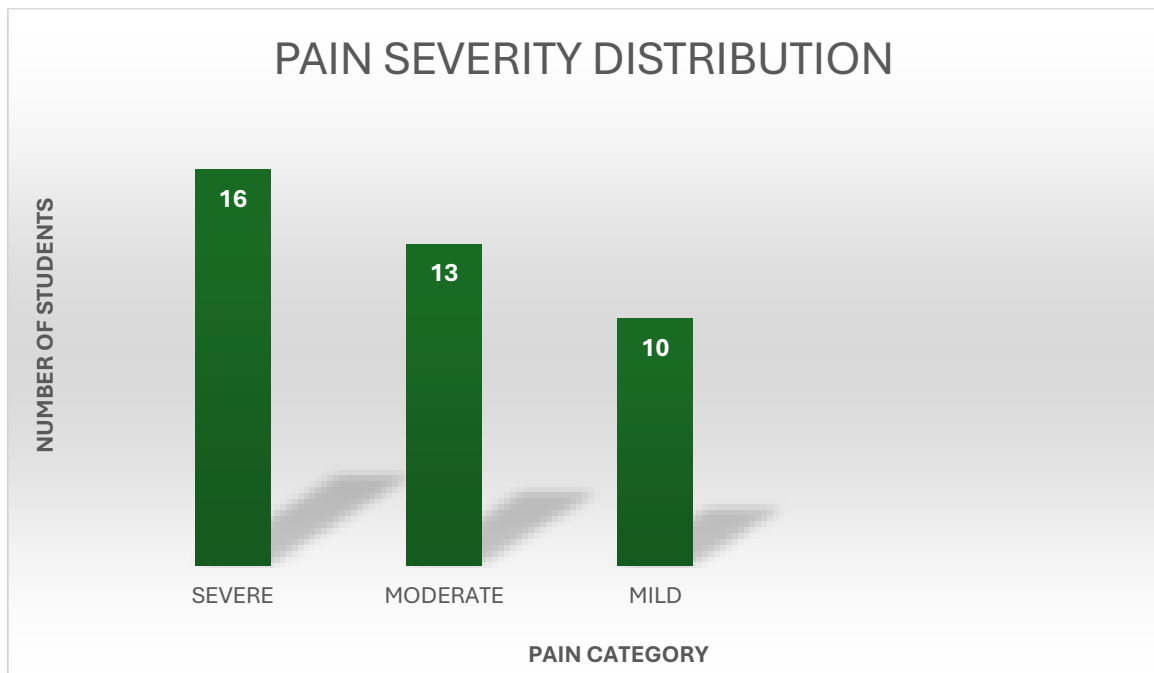
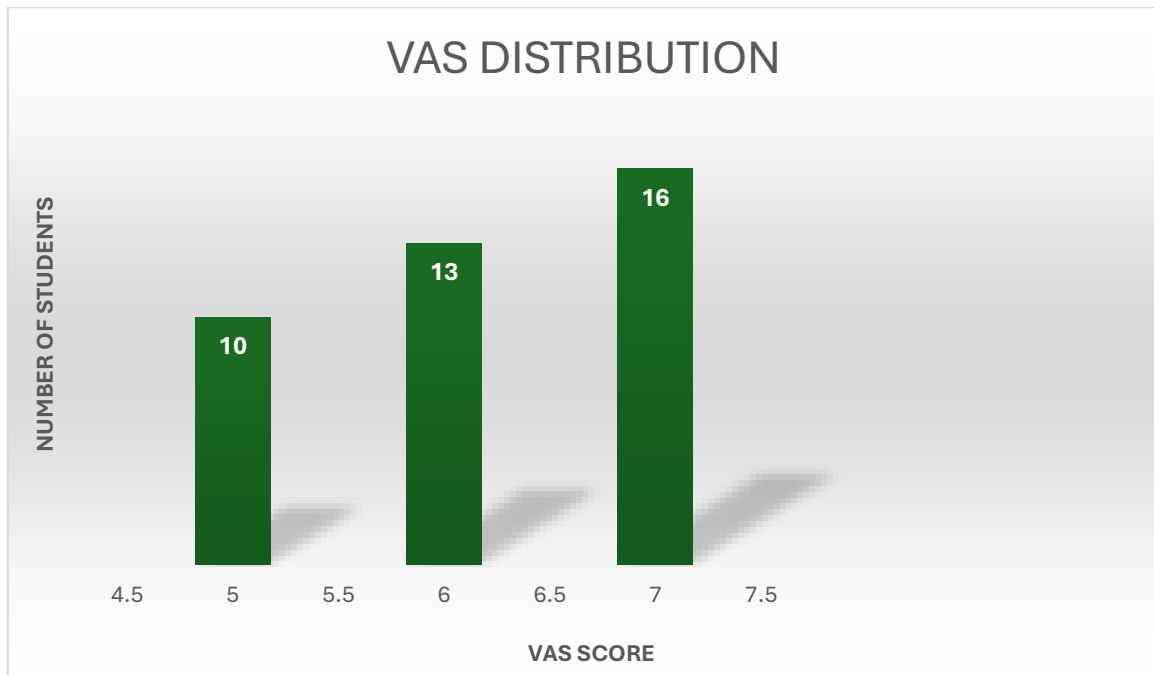
**Figure 2: VAS Distribution**

The VAS score distribution demonstrated higher pain scores among students involved in high levels of physical activity.

**Figure 3: Pain Severity Distribution**

The graphical representation indicated that severe knee pain was more prevalent among participants compared to moderate and mild pain categories.





## DISCUSSION

The present study investigated the prevalence of knee pain among college students and its association with physical activity levels. The findings demonstrated that knee pain was highly prevalent among physically active students, particularly those participating in sports and high-intensity exercise activities.

The results of the present study are consistent with previous literature indicating that knee pain among young adults is more strongly associated with repetitive physical activity than obesity alone (Neal et al., 2019). Students involved in high levels of physical activity demonstrated greater pain severity compared to students with lower activity levels.

The higher prevalence of knee pain among physically active students may be attributed to repetitive stress

on the knee joint, improper exercise techniques, inadequate warm-up practices, muscle imbalance, and overuse injuries (Powers, 2010). Activities such as running, jumping, squatting, and sports participation place repetitive mechanical loading on the patellofemoral joint and surrounding soft tissues, increasing the risk of pain and functional limitation.

Crossley et al. (2016) reported that patellofemoral pain syndrome is one of the most common causes of anterior knee pain among physically active individuals. Similarly, Witvrouw et al. (2005) emphasized that reduced flexibility and poor conditioning may contribute to overuse injuries involving the knee joint.

The findings of the present study also suggest that inadequate awareness regarding proper exercise techniques and injury prevention strategies may contribute to knee-related symptoms among college students. Physiotherapy-guided training programs, flexibility exercises, strengthening programs, and warm-up protocols may help reduce injury risk and improve musculoskeletal health.

One of the strengths of the present study was the inclusion of students with varying levels of physical activity, allowing better understanding of the relationship between activity level and pain severity. However, the study also had certain limitations including a relatively small sample size and short study duration.

Future research should include larger populations, objective activity assessment tools, biomechanical evaluation, and long-term follow-up to better understand risk factors associated with knee pain among young adults.

### **LIMITATIONS OF THE STUDY**

- Small sample size.
- Short study duration.
- Self-reported pain assessment.
- Lack of advanced biomechanical evaluation.
- Limited generalizability due to convenience sampling.

### **RECOMMENDATIONS**

- Conduct studies with larger sample sizes.
- Include biomechanical and functional assessment.
- Promote physiotherapy awareness among students.
- Encourage proper warm-up and conditioning programs.
- Develop injury prevention strategies for physically active individuals.

### **CONCLUSION**

The present study concludes that knee pain is highly prevalent among college students and appears to be strongly associated with increased physical activity levels.

Students involved in sports, gym activities, and repetitive physical exercises demonstrated greater pain severity compared to students with lower activity levels.

Proper exercise techniques, flexibility training, physiotherapy guidance, and preventive rehabilitation strategies are important for minimizing knee-related problems among young adults.

### **ACKNOWLEDGEMENT**

I sincerely thank my guide, faculty members, participants, and institution for their support and guidance

throughout the completion of this study.

## REFERENCES

1. Rathleff MS, et al. Knee pain in adolescents and young adults. *BMC Musculoskeletal Disorders*. 2019.
2. Smith BE, et al. Risk factors for knee pain. *British Journal of Sports Medicine*. 2018.
3. Crossley KM, et al. Patellofemoral pain consensus statement. *British Journal of Sports Medicine*. 2016.
4. Neal BS, et al. Physical activity and knee pain. *Sports Medicine*. 2019.
5. Powers CM. Biomechanics of knee pain. *Journal of Orthopaedic and Sports Physical Therapy*. 2010.
6. van Middelkoop M, et al. Exercise and knee pain among young adults. *British Journal of Sports Medicine*. 2008.
7. Witvrouw E, et al. Muscle flexibility and injury prevention. *American Journal of Sports Medicine*. 2005.
8. Callaghan MJ. Patellofemoral pain review. *Manual Therapy*. 2004.
9. Collins NJ, et al. Prevalence of knee pain among young adults. *Journal of Physiotherapy*. 2012.
10. Fairbank JC, et al. Visual analogue scale for pain measurement. *Spine*. 1980.
11. Boling M, et al. Gender differences in knee pain. *Clinical Journal of Sports Medicine*. 2009.
12. Dye SF. Knee joint stress theory. *Clinical Orthopaedics and Related Research*. 2005.
13. Hootman JM, et al. Physical activity and injury risk. *American Journal of Preventive Medicine*. 2003.
14. Thomeé R, et al. Activity-related knee pain in young adults. *Scandinavian Journal of Medicine and Science in Sports*. 1999.
15. Kujala UM, et al. Functional assessment of knee pain. *Scandinavian Journal of Medicine and Science in Sports*. 1993.