

# Association Between Physical Activity and the Incidence of Knee Osteoarthritis Among Elderly Individuals- a Cross Sectional Study

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## ABSTRACT

**Background:** Physical activity has been linked to a number of health benefits, including a decreased chance of developing long-term conditions like diabetes, heart disease, and obesity. However, there has been some concern that some exercise types, particularly those that involve high impact or repetitive movements, may increase the risk of knee osteoarthritis (OA) in older people.

**Methodology:** This study was conducted using a cross-sectional design to explore the connection between physical activity and knee osteoarthritis in elderly individuals. The participants were carefully chosen from community centers, senior centers, and healthcare facilities, and all were 65 years old or above. We made sure to use reliable methods such as the SF 36 Questionnaire and KOOS for Osteoarthritis to assess their physical activity levels.

**Results:** This study involved 152 patients with knee osteoarthritis, with 39.5% being males and 60.5% females. The mean age was 70±3 years. The severity of knee problems was extreme in 24.3%, moderate in 49.3%, and no knee problems in 26.3%. Health status was poor in 28.9%, moderate in 46.7%, and good in 24.3%. There is a statistically significant association between health status and osteoarthritis as shown by the chi-square test with a p-value of 0.00, which is less than 0.05.

**Practical Implication:** The results of this study have significant ramifications for public health initiatives that support weight control and physical activity promotion as ways to shield the elderly population from knee osteoarthritis.

**Conclusion:** The study concludes that regular physical activity and maintaining a healthy weight can decrease the risk of knee osteoarthritis among elderly individuals. The implications of these findings suggest that public health policies should focus on promoting physical activity and weight management in preventing knee osteoarthritis in the elderly population.

**Keywords:** physical activity, knee osteoarthritis, elderly individuals, incidence, association, prevention strategies.

## INTRODUCTION

Knee osteoarthritis (OA), a musculoskeletal condition that can result in intense pain, functional challenges, and a poorer quality of life, is frequently experienced by elderly persons. It places a pressure on medical systems all around the world and significantly increases the chance of impairment.<sup>1, 2</sup> Physical activity is crucial in determining the development of knee OA despite the fact that age, inheritance, and obesity have all been identified as risk factors for the condition. Exercise is a well-known lifestyle factor that can be changed and has an impact on both musculoskeletal health and overall wellness. Numerous benefits, including improved cardiovascular fitness, weight control, and joint health, have been linked to regular physical activity.<sup>3, 4</sup> Understanding the link between physical activity and the prevalence of knee OA is necessary for the creation of prevention strategies and interventions to minimise the burden of this condition among older persons. Regarding this association as well as the proper levels and types of physical activity, additional research is still needed. Despite growing interest in establishing a link between physical activity and knee osteoarthritis, <sup>5, 6, and 8</sup>, the literature currently in existence offers contradictory results. Numerous studies suggest that regular exercise may lower the chance of developing knee OA by improving joint stability, muscle strength, and cartilage health.<sup>7, 8</sup> On the other hand, conflicting data point to the possibility that some physical activity, such running or jumping, with significant joint loading or repetitive impact, may possibly enhance the risk of developing knee OA. The occurrence of knee OA in the senior population must be decreased or prevented by identifying risk factors that can be altered. Physical exercise is a potential modifiable factor that could alter the incidence and course of knee OA in older individuals. Numerous health benefits, including improved cardiovascular fitness, muscle strength, and joint flexibility, have been associated with regular physical activity.<sup>11, 5</sup> Exercise is important for maintaining a

healthy weight, which is important because obesity has been associated with an increased risk of developing knee OA.<sup>12</sup> There is a complex and nuanced relationship between exercise and knee OA. Previous research has produced conflicting findings or suggested additional categories for which the link may be different.<sup>13, 14</sup> Some studies suggest that exercise can help delay the onset of knee OA. The types, amounts, regularities, and intensities of physical activity, together with personality characteristics and joint biomechanics, could all have an impact on the connections that have been found<sup>15, 16</sup>. Few research have specifically examined the elderly, who are more prone to develop knee OA due to aging-related changes in joint structures and higher sensitivity to degenerative processes, even though prior studies have examined the relationship between exercise and knee OA.<sup>17, 18</sup> The research topic aims to understand the connection between physical activity and knee osteoarthritis in elderly individuals. Physical activity has been suggested as a potential protective factor against knee osteoarthritis, but more exploration is needed to better understand this association. A cross-sectional study would be helpful to investigate this relationship and could contribute to developing prevention strategies for knee osteoarthritis in elderly individuals by promoting physical activity as a non-pharmacological intervention. The research topic is significant for promoting healthy aging and improving joint health and mobility among elderly individuals.

**Objective:** The objective of this research topic is to investigate the relationship between physical activity and the incidence of knee osteoarthritis among elderly individuals.

## METHODOLOGY

The study's method of examining the relationship between physical activity and the prevalence of knee osteoarthritis in seniors used a cross-sectional design. From community centres, senior centres, and medical facilities, a particular study cohort of seniors 65 and

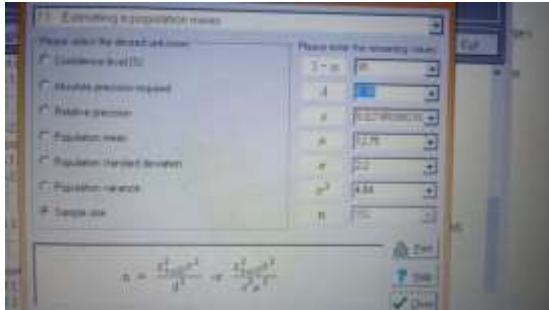
older was chosen. A validated questionnaire, such as the SF 36 Questionnaire and Knee Injury and Osteoarthritis Outcome Score (KOOS) for Osteoarthritis, will be used to measure physical activity levels.

**Study Design:** Cross-Sectional Study

**Duration:** The study completed within the timeframe of 6 months following the approval of the synopsis.

**Setting:** Data was collected from community centers, senior centers, and healthcare facilities.

**Sample Size:** 152



**Sample Technique:** Non-Probability, Convenient sampling was used to collect data.

**Inclusion Criteria:**

- Elderly individuals aged 65 years or older
- Individuals diagnosed with knee osteoarthritis
- Individuals who can perform physical activity independently
- Cross-sectional study design
- Studies published in English language.<sup>23,24</sup>

**Exclusion Criteria:**

- Individuals with other types of arthritis such as rheumatoid arthritis or gout.
- Individuals with any other musculoskeletal disorders affecting the lower limbs apart from the knee joint.
- Individuals with cognitive impairments that hinder participation in the study.
- Studies that do not investigate the association between physical activity and the incidence of knee osteoarthritis among elderly individuals.<sup>23,24</sup>

**Data Analysis:** After receiving written consent, participants' responses to the SF 36 Questionnaire for Physical Activity and the KOOS for Osteoarthritis were recorded. Additionally, basic demographic data was gathered. Quantitative data was assessed using mean and standard deviation, whilst qualitative data was displayed as bar charts based on frequency and proportion. A histogram and a Pi Chart were used to display the data.

**RESULTS**

In a study involving 152 patients with knee osteoarthritis, men made up 39.5% of participants while women made up 60.5%. The average age of all the patients was 70 + 3 years, with a minimum age of 65 and a maximum age of 80. In 26.3% of cases, there were no knee issues; in 24.3% of cases, there were serious knee issues; and in 49.3% of cases, there were moderate knee issues. Overall, 28.9% of respondents said they were in bad health, followed by 46.7% who said they were in intermediate health and

24.3% who said they were in good health. Now let's look at how osteoarthritis and health are related. Twenty of the ill people had minor knee issues, and twenty had major knee issues. 10 patients with intermediate health had serious knee problems, 45 had mild problems, and 16 had no knee problems at all. The last group of healthy individuals consisted of 24 individuals with no knee issues, 10 individuals with minor knee issues, and 3 individuals with severe knee issues. Based on the chi-square test's p-value of 0.00, which is less than 0.05, it is possible to conclude that there is a statistically significant link between health status and osteoarthritis.

Table 1: Descriptive statistics of Gender

	Frequency	Percent %
Male	60	39.5
Female	92	60.5
Total	152	100.0

**Description:** out of total 152, there were 60(39.5%) were males and 92(60.5%) were females having knee osteoarthritis.

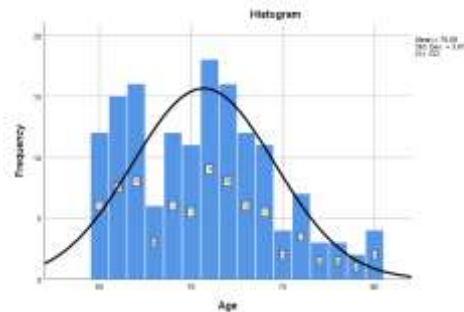


Figure 1: Graphical representation of Age

**Description:** Describes that mean of age from 152 patients was 70±3 (Years). The minimum age was 65 and max was 80 years old having osteoarthritis.

Table 2: Descriptive statistics of Osteoarthritis

	Frequency	Percent %
Extreme knee problems	37	24.3
Moderate knee Problem	75	49.3
No knee Problem (Pain)	40	26.3
Total	152	100.0

**Description:** out of total 152 patients, there were 37(24.3%) patients having Extreme knee problems, there were 75(49.3%) patients having Moderate knee Problem, there were 40(26.3%) patients having No knee Problem.

Table 3: Descriptive statistics of Physical Functioning

	Frequency	Percent %
Poor Health	44	28.9
Moderate Health	71	46.7
Good Health	37	24.3
Total	152	100.0

**Description:** out of total 152 patients, there were 44(28.9%) patients having poor Health, there were 71(46.7%) patients having Moderate Health, and there were 37 (24.3%) patients having good Health.

Table 4: Descriptive statistics of Osteoarthritis and Physical functioning Cross-tabulation

	Poor Health	Moderate Health	Good Health	Total	Pearson Chi-Square 0.00
Extreme knee problems	24	10	3	37	
Moderate knee Problem	20	45	10	75	
No knee Problem	0	16	24	40	
Total	44	71	37	152	

**Description:** out of total 152 patients, there were 24 patients with poor health having extreme knee problems, there were 20 patients with poor health having moderate knee problems, there were 10

patients with moderate health having extreme knee problems, there were 45 patients with moderate health having moderate knee problems, there were 16 patients with moderate health having no

knee problems, there were 3 patients with good health having extreme knee problems, there were 10 patients with good health having moderate knee problems, there were 24 patients with good health having extreme knee problems. P=0.00. P<0.05

Hence, we can say that there is association Physical Functioning and Osteoarthritis

## DISCUSSION

60 (39.5%) males and 92 (60.5%) females had knee osteoarthritis. A 2018 study published in the Journal of Geriatric Physical Therapy found that older people who regularly exercise have a lower risk of getting knee OA in later life. According to a study that followed 1,194 people for four years<sup>19</sup>, those who performed at least 150 minutes of moderate-intensity physical activity each week had a significantly lower risk of OA progression than those who were less active. There were 75 patients (49.3%) with moderate knee problems, 40 (26.3%) with severe knee problems, and 37 (24.3%) with none at all. The association between knee joint loads and physical activity levels in older people with knee OA was the focus of another 2019 study that was published in the Journal of Ageing and Physical Activity. In the study, higher levels of physical activity were connected to reduced knee joint stresses, which may potentially reduce the chance of developing knee OA or slow its progression<sup>20</sup>. 37 patients (24.3%) were in good health, 44 patients (28.9%) were in bad health, and 71 patients (46.7%) were in moderate health. A systematic study and meta-analysis published in the journal Osteoarthritis and Cartilage in 2017 found no link between the prevalence of knee OA in older people and physical activity. The evaluation looked at data from 16 studies and concluded that further research is needed to fully understand the relationship between physical activity and knee OA risk<sup>21</sup>. A total of 45 patients with moderate health had moderate knee problems, 10 patients with moderate health had moderate knee problems, 10 patients with moderate health had moderate knee problems, 10 patients with moderate health had no knee problems, 3 patients with good health had extreme knee problems, and 10 patients with good health had moderate knee problems. Ten patients with moderate health had extreme knee problems. There were 24 patients with serious knee issues who were in poor health. P=0.00. P<0.05. As a result, we could assert that there is a relationship. Osteoarthritis and Functional Ability Even while multiple studies have suggested that regular exercise may reduce the risk of knee OA in older people, further research is still needed to substantiate this claim. Elderly persons should exercise frequently, but they should also consult with their healthcare professional to ensure that the exercises they are performing are safe and appropriate for their unique needs and restrictions<sup>22</sup>. Medical resources, diagnosis, and treatment must improve in developing countries. There are limited resources: access to medical and health resources; knowledge about disease; awareness, trainings, and awareness about health. Health literacy is mandatory for any disease and facilitates the patients access to resources, databases, and trainings about the disease.<sup>25-31</sup>

## CONCLUSION

The study's findings show that regular physical activity and maintaining a healthy weight can lower the likelihood that elderly people would develop knee osteoarthritis. The results of this study have significant ramifications for public health initiatives that support weight control and physical activity promotion as ways to shield the elderly population from knee osteoarthritis.

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