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Physical activity levels among physiotherapy academicians

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Abstract
Background: Physical activity is essential for maintaining good health, preventing chronic diseases, and improving overall well-being. However, due to increasing occupational demands and sedentary work patterns, many professionals fail to achieve recommended levels of physical activity. Physiotherapy academicians, despite having knowledge regarding exercise and health promotion, often spend prolonged hours in teaching, computer work, research, and administrative activities, which may contribute to physical inactivity and sedentary behaviour.
Aim: To find out the percentage of sedentary lifestyle among physiotherapy professors.
Objective: To determine the prevalence of sedentary lifestyle among physiotherapy professors using the International Physical Activity Questionnaire (IPAQ).
Methodology: An observational study was conducted among physiotherapy professors across Maharashtra over a duration of 6 months. A total of 65 participants fulfilling the inclusion and exclusion criteria were included using convenient sampling. Demographic data were collected, and physical activity levels were assessed using the International Physical Activity Questionnaire (IPAQ). Data were analyzed using descriptive statistics in SPSS version 20 and presented as frequencies, percentages, and diagrams.
Results: Among the 65 participants, 72.3% were female and 27.7% were male. The findings showed that 55.4% (n=36) of participants were physically inactive, whereas only 44.6% (n=29) were physically active. The mean duration of sitting time was 243.97 minutes per day, indicating a relatively sedentary lifestyle among participants. Participants performed vigorous activity for a mean of 2.27 days per week and moderate activity for 2.63 days per week. The Chi-square test demonstrated a statistically significant association between the studied variables ($\chi^2 = 7.28$, $p = 0.0069$).
Conclusion: The study concluded that a considerable proportion of physiotherapy academicians demonstrated low levels of physical activity and a sedentary lifestyle. Prolonged sitting and reduced physical activity may increase the risk of musculoskeletal disorders and other lifestyle-related health problems among academicians. The findings highlight the need for workplace health promotion strategies, ergonomic interventions, and regular physical activity programs for physiotherapy educators.

Keywords: Physical activity, sedentary lifestyle, physiotherapy academicians, IPAQ, occupational health, physical

Introduction

Physical activity is essential for maintaining good health and overall well-being. Regular participation in physical activity helps in the prevention and management of several chronic diseases such as cardiovascular diseases, diabetes mellitus, obesity, hypertension, osteoporosis, and musculoskeletal disorders [1]. According to the World Health Organization, adults should engage in at least 150–300 minutes of moderate-intensity aerobic physical activity or 75–150 minutes of vigorous-intensity physical activity per week to maintain optimal health [3]. Regular physical activity also improves muscular strength, flexibility, balance, mental health, sleep quality, and quality of life [3]. Despite increasing awareness regarding the benefits of physical activity, adherence to regular exercise remains inadequate among many individuals due to changing lifestyles and occupational demands [4].

Over the past few decades, rapid modernization, urbanization, and technological advancement have significantly reduced the level of physical activity in daily life [5]. Activities that previously required substantial physical effort, such as walking, cycling, manual household work, farming, and outdoor recreational activities, have gradually been replaced by mechanized transportation, automation, prolonged computer use, and screen-based entertainment [6]. The widespread use of smartphones, laptops, elevators, and motor vehicles has contributed to a sedentary lifestyle among people of all age groups [7]. Furthermore, lack of awareness regarding exercise guidelines, inadequate recreational facilities, absence of parks and playgrounds, increasing academic and work pressure, traffic congestion, environmental pollution, and limited leisure time further reduce opportunities for regular physical activity [8].

Physical inactivity has become a major public health concern globally. According to the World Health Organization (2013), physical inactivity is the fourth leading risk factor for global mortality and contributes to approximately 6% of deaths worldwide [9]. Sedentary behavior has been strongly associated with increased risk of non-communicable diseases such as coronary artery disease, stroke, type 2 diabetes mellitus, obesity, breast cancer, colon cancer, and depression [10]. In addition, reduced physical activity negatively affects musculoskeletal health, leading to poor flexibility, reduced muscle strength, postural abnormalities, joint stiffness, fatigue, and chronic pain

conditions [11]. Long durations of sitting and reduced movement also impair circulation and metabolic functioning, increasing overall health risks [12].

Among various occupational groups, teaching professionals are particularly vulnerable to sedentary lifestyles and work-related musculoskeletal problems [13]. Teaching is often perceived as a relatively low-physical-demand profession; however, educators are exposed to multiple occupational stressors that may adversely affect their physical and psychological health. Teachers are required to spend prolonged periods standing during lectures, sitting while preparing academic material, using computers for online teaching and documentation, evaluating examination papers, conducting research activities, attending meetings, and performing administrative responsibilities [14]. These repetitive and sustained occupational activities contribute to physical strain, fatigue, and postural stress [15].

In recent years, the workload of educators has increased considerably due to technological integration in education, online teaching methods, academic competition, and research expectations [16]. Apart from classroom teaching, faculty members are expected to participate in curriculum planning, student mentoring, professional development programs, conferences, publications, and institutional activities. Such professional demands often leave limited time for self-care and exercise participation [17]. Consequently, many educators fail to achieve recommended physical activity levels, thereby increasing their susceptibility to lifestyle-related disorders and musculoskeletal dysfunctions [18].

Several studies have reported a high prevalence of work-related musculoskeletal disorders among teachers [19]. Commonly affected regions include the neck, shoulders, upper back, lower back, wrists, and lower limbs [20]. Prolonged static postures, repetitive movements, awkward positioning, and inadequate ergonomic practices are major contributing factors [21]. Female teachers are often reported to experience greater musculoskeletal discomfort and mental stress due to additional household and caregiving responsibilities [22]. Advancing age, increased years of teaching experience, obesity, lack of exercise, poor workstation ergonomics, and psychological stress further increase the risk of occupational health problems among educators [23].

Regular physical activity has been identified as an effective strategy for preventing and managing occupational stress and musculoskeletal disorders [24]. Exercise improves cardiovascular endurance, muscular strength, flexibility, posture, balance, and mental well-being [1]. Participation in physical activity also enhances work efficiency, reduces fatigue, improves concentration, and promotes better stress management [5]. Furthermore, physically active individuals demonstrate better recovery from work-related strain and are less likely to develop chronic pain conditions [6]. Understanding the barriers and facilitators affecting participation in physical activity among educators is therefore important for developing workplace health promotion strategies [7].

Physiotherapy educators represent a unique subgroup within the teaching profession [8]. As healthcare professionals, physiotherapy educators possess extensive knowledge regarding exercise therapy, ergonomics, posture correction, rehabilitation, and health promotion [9]. They are expected to educate students and society regarding the importance of healthy lifestyles and physical activity [10]. Physiotherapy educators also serve as role models for physiotherapy students and future healthcare professionals [11]. However, despite their professional knowledge, physiotherapy educators are not immune to sedentary behavior and occupational stress [12]. Busy academic schedules, prolonged teaching hours, clinical supervision, research commitments, preparation of lectures, documentation work, and administrative duties often limit their participation in regular physical activity [13].

One of the major occupational factors influencing physical activity and musculoskeletal health is posture [14]. Posture refers to the alignment and positioning of body segments in relation to one another during sitting, standing, and movement [15]. Proper posture ensures efficient biomechanics, balanced muscle activity, optimal joint alignment, and reduced stress on supporting structures [16]. Good posture contributes to better energy efficiency, reduced fatigue, improved breathing mechanics, and prevention of musculoskeletal strain [17]. Conversely, poor posture increases mechanical stress on muscles, ligaments, tendons, and intervertebral discs, thereby predisposing individuals to pain and dysfunction [18].

Posture can broadly be classified into static posture and dynamic posture [19]. Static posture involves maintaining a fixed position such as sitting or standing for prolonged durations with minimal movement [20]. Sustained static postures are commonly observed during computer work, classroom teaching, online meetings, documentation, and academic preparation [21]. Prolonged static positioning can reduce blood circulation, increase muscle fatigue, produce joint stiffness, and lead to muscular imbalance [22]. On the other hand, dynamic posture refers to maintaining body alignment during movement and functional activities such as walking, bending, lifting, and changing positions [23]. Dynamic movements help improve circulation, activate muscles, and reduce prolonged stress on specific body parts [24].

Physiotherapy educators frequently adopt awkward and sustained postures during occupational activities [1]. Prolonged sitting while using computers, forward head posture during laptop or mobile phone use, slouched sitting, repetitive bending during demonstrations, and prolonged standing during lectures can contribute to postural deviations and musculoskeletal discomfort [2]. Poor ergonomic arrangements, inappropriate chair or desk height, inadequate lumbar support, and improper screen positioning further aggravate postural stress [3]. Common postural abnormalities observed among educators include forward head posture, rounded shoulders, increased thoracic kyphosis, exaggerated lumbar lordosis, and pelvic imbalance [4].

Poor posture has been strongly associated with neck pain, shoulder pain, upper back discomfort, low back pain, muscle tightness, headaches, and fatigue [5]. Chronic pain and discomfort may gradually reduce an individual's willingness and ability to participate in physical activity [6]. Reduced physical activity further worsens muscular weakness, flexibility deficits, postural imbalance, and sedentary behavior, creating a vicious cycle of inactivity and musculoskeletal dysfunction [7]. In addition to physical health problems, prolonged pain and occupational stress

may also negatively influence mental health, job satisfaction, work productivity, and quality of life [8].

Several ergonomic and preventive strategies have been recommended to minimize occupational postural stress among educators [9]. These include

maintaining proper sitting posture, using ergonomically designed furniture, taking regular movement breaks, performing stretching exercises, engaging in strengthening programs, and incorporating physical activity into daily routines [10]. Workplace wellness programs and awareness regarding posture correction may further help reduce musculoskeletal disorders and improve occupational health among teaching professionals [11].

Despite the important role of physiotherapy educators in promoting health and exercise, limited literature is available regarding the relationship between posture and physical activity levels among this population [12]. Assessing posture and physical activity among physiotherapy educators may provide valuable information regarding occupational risk factors, sedentary behavior, and musculoskeletal health [13]. Understanding this relationship may help in designing ergonomic interventions, workplace exercise programs, posture correction strategies, and health promotion initiatives aimed at improving the physical well-being, professional efficiency, and quality of life of physiotherapy educators [14].

Therefore, the present study aims to assess physical activity levels and posture among physiotherapy educators and to determine the relationship between posture and physical activity [15]. The findings of this study may contribute to better understanding of occupational health issues among physiotherapy educators and may help develop preventive strategies for maintaining optimal musculoskeletal health and active lifestyles within the academic profession [16].

Methods

Ethical Statement

The study received approval from the Institutional Ethics Committee. It was conducted following the ethical guidelines of the Declaration of Helsinki (updated 2013) for medical research involving human subjects, as well as the 2017 National Ethical Guidelines for Biomedical and Health Research involving Human Participants from the Indian Council of Medical Research.

Design

A total of 59 sample were selected on the basis of inclusion criteria who were physiotherapy academicians. Subject were assessed for physical activity levels using international physical activity questionnaire. The result of test was collected and analysed to find out prevalence of physical activity levels among physiotherapy academicians.

Participants

Total 59 participants were chosen on the basis of inclusion criteria of the study. The inclusion criteria of study included physiotherapy academicians having physical activity levels. The analysis of study was done by using MS excels sheet. Person Correlation was used to find prevalence of prevalence of physical activity levels among physiotherapy academicians. Using international physical activity questionnaire.

Outcome measure

International physical activity questionnaire

The International Physical Activity Questionnaires (IPAQ) comprises a set of 4 questionnaires. Long (5 activity domains asked independently) and short (4 generic items) versions for use by either telephone or self-administered methods are available. The purpose of the questionnaires is to provide common instruments that can be used to obtain internationally comparable data on health–related physical activity.

Scale is used in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask about the time spent being physically active in the last 7 days. And then subject need to answer each question even if they do not consider themselves to be an active person.

They need to think about the activities they do at work, as part of their house and yard work, to get from place to place, and in their spare time for recreation, exercise or sport. Think about all the vigorous activities that they did in the last 7 days. Vigorous physical activities refer to activities that take hard physical effort and make hem breathe much harder than normal. They need to Think only about those physical activities that you did for at least 10 minutes at a time. [25]

1. Inactive

- No active is reported
- Some activity is reported but not enough to meet categories 2 or 3.

2. Minimally Active

- Any one of the following 3 Criteria
- 3 or more days of vigorous activity at least 20 minutes per days or
- 5 or more days of moderate –intensity activity or walking of at least 30 minutes per day Or
- 5 or more days of any combination of walking, moderate –intensity or vigorous intensity activities achieving a minimum of at least 600 MET – min/week.

3. Hepa Active

Any one of the following 2 criteria

Vigorous –intensity activity on at least 3 days and accumulating at least 1500 MET –minutes/week or 7 Or more days of any combination of walking, moderate – intensity or vigorous intensity activities achieving a minimum of at least 3000 MET – minutes /week

Frequencies of Gender			
Gender	**Counts**	**% of Total**	**Cumulative %**
Female	47	72.3%	72.3%
Male	18	27.7%	100.0%

Procedure

Ethical clearance approval will be obtained from institutional ethical committee. Total 84 subject will be screened as per inclusion and exclusion criteria. subject will be informed consent form in language understood by participants. Written consent will be obtained and explained to the subject. At the starting of the study demographic data will be collected. International physical activity questionnaire. The international physical activity Questionnaires (IPAQ) comprises a set of 4 questionnaires.

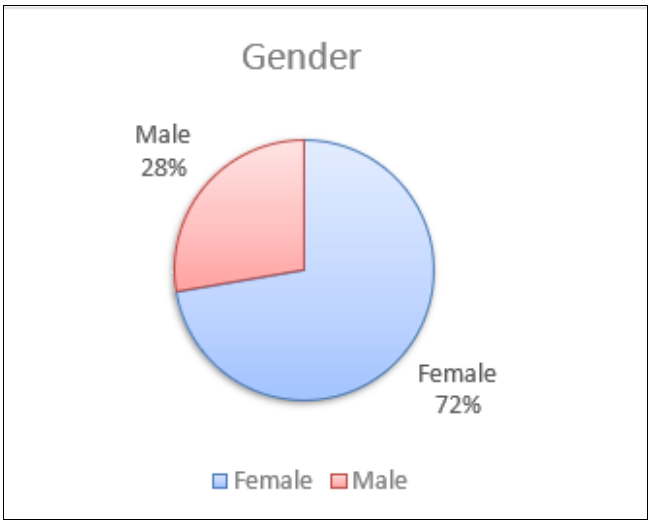
Long (5 activity domains asked independently) and short (4 generic items) versions for use by either telephone or self-administered methods are available. the purpose of the questionnaires is to provide common instruments that can be used to obtain internationally comparable data on health-related physical activity. The questions will be asked about the time spent being They need to think about the activities they do at work, as part of their house and yard work, to get from place to place, and in their spare time for recreation, exercise or sport. Think about all the vigorous activities that they did in the last 7 days. Vigorous physical activities refer to activities that take hard physical effort and make hem breathe much harder than normal. They need to Think only about those physical activities that you did for at least 10 minutes at a. Data will be collected. statistical analysis will be done by using descriptive analysis and result will be obtained

Data Analysis

- The data obtained was entered in a Microsoft Excel sheet, and statistical analyses was performed using a statistical package for the (SPSS) (Version 20). Results was presented as, counts and percentages, and diagrams.

Result

Table 1: Depicts frequency and percentage of frequency distribution of gender.

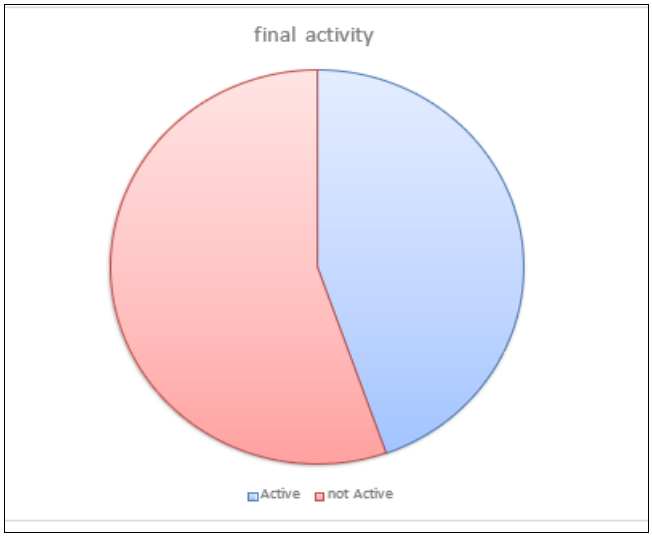


Interpretation

Graph 1 It shows that percentage distribution with gender group, 73.3%were female and 27.7%were males

Table 2: It shows that active and inactive in physical activity in Academician in percentage.

Activity Status	Percentage (%)	Frequency (n)
Not Active	55.4%	36
Active	44.6%	29
Total	100%	65



Descriptives							
	N	Missing	Mean	Median	SD	Minimum	Maximum
last week vigorus	64	1	2.27	2	2.18	0	7
Usual time vigours	56	9	38.75	30	33.05	0	120
last week moderate	63	2	2.63	2	2.26	0	7
Usual time moderate	58	7	33.31	30	30.93	0	120
last week least10 walk	64	1	5.08	6	2.16	0	7
Time of walk	60	5	41.55	30	36.71	0	200
Last week sitting	57	8	4.64	5	3.09	0	12
sitting in min/day	65	0	243.97	240	196.35	0	720

χ^2 Tests			
	Value	df	P
χ^2	7.28	1	0.006986
χ^2 continuity correction	6.98	1	0.008249
Likelihood ratio	7.26	1	0.007065
Fisher's exact test			0.007409
N	1558		

Table 3 shows the descriptive statistics that participants performed vigorous activity for a mean of 2.27 days per week and moderate activity for 2.63 days per week, walked for at least 10 minutes on average 5.08 days per week with a mean walking time of 41.55 minutes, while the average sitting time was

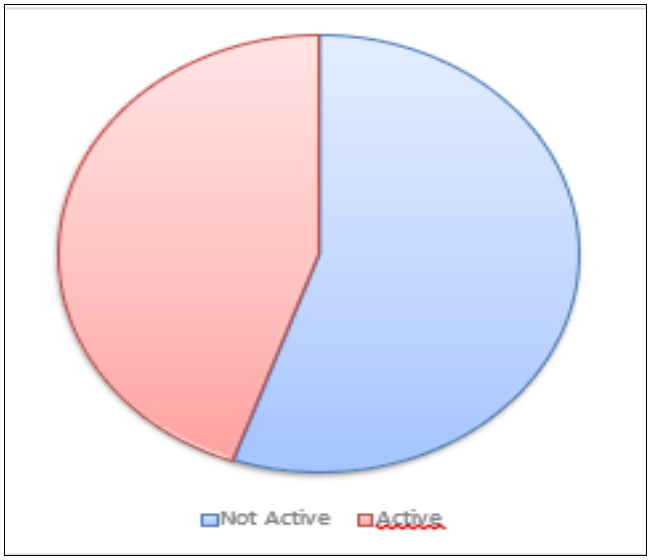
243.97 minutes per day, indicating relatively higher sedentary behavior among participants.

The Chi-square test showed a statistically significant association between the variables (χ^2 = 7.28, df = 1, p = 0.0069), with similar significant results in the continuity correction (χ^2 = 6.98, p = 0.0082), likelihood ratio (χ^2 =

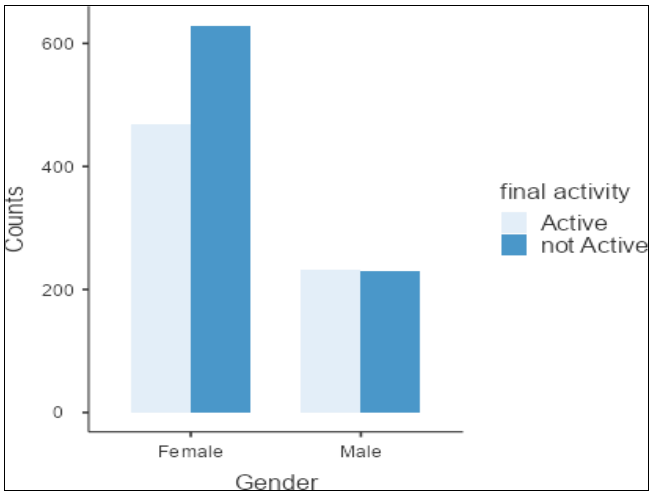
7.26, p = 0.0071), and Fisher's exact test (p = 0.0074), based on a total weighted sample size of N = 1558.

Comparative Measures			
		95% Confidence Intervals	
	Value	Lower	Upper
Log odds ratio	-0.300	-0.518	-0.0817
Odds ratio	0.741	0.596	0.922
Relative risk	0.851[a]	0.760	0.954
[a] Rows compared			

The comparative measures show that the log odds ratio was −0.300 (95% CI:
−0.518 to −0.0817), the odds ratio was 0.741 (95% CI: 0.596 to 0.922), and
the relative risk was 0.851 (95% CI: 0.760 to 0.954), indicating a difference in activity levels between the compared groups.



The graph shows active based 3 days minimum criteria



Discussion

In this study, a total of 65 participants were included, and the median age of the participants was 21 years. Among them, 72.3% were female and 27.7% were male. This gender distribution is comparable to findings from several previous studies conducted among physiotherapy and medical academicians in countries such as Spain, Sri Lanka, Poland, United Kingdom, Latvia, and Australia. [26] In these studies, female participants were also found to be higher in number compared to male participants. [27] This may be because health science and physiotherapy professions often have a larger proportion of female students and academicians. [28] Previous studies have further reported that academicians and healthcare professionals frequently demonstrate low to moderate levels of physical activity despite having good knowledge regarding exercise, health promotion, and healthy lifestyle behaviors. [29] This reflects a gap between knowledge and actual practice of physical activity in daily life. [30]

In the present study, the results showed that a considerable number of participants did not meet the minimum recommended level of physical activity. According to the study findings, 36 participants (55.4%) were classified as physically inactive, whereas only 29 participants (44.6%) were considered physically active according to the established activity criteria.

[31] These findings suggest that physical inactivity is common even among physiotherapy academicians, who are expected to possess awareness regarding the importance of maintaining an active lifestyle. [32] Long working hours, academic workload, sedentary teaching methods, administrative responsibilities, and lack of time for exercise may contribute to reduced participation in physical activity among academicians. [33]

The prevalence of physical inactivity found in the present study was higher than the results reported by Naim *et al.* among medical and non-medical students in Malaysia (51%), Banday *et al.* among practicing healthcare professionals (20.88%), Wattanapisit *et al.* among medical students in Southern Thailand (49.5%), and Alzamil *et al.* among female college students in Saudi Arabia (50%). [39] However, the prevalence observed in the current study was lower compared to the findings reported by Marques-Sule *et al.* among healthcare professionals, where physical inactivity was reported to be as high as 96%. [40] Such differences in prevalence rates may be due to variations in sample size, occupational demands, cultural differences, assessment methods, and demographic characteristics of the study populations. [41]

The prevalence of physical activity and inactivity may vary from one study to another due to several influencing factors, including the study design, method of assessment, occupational background of participants, and demographic characteristics such as age, gender, and lifestyle habits. [42] In both developed and developing countries, physical inactivity has emerged as a growing public health concern. [43] Marques-Sule *et al.* reported that many healthcare professionals remained physically active during workplace activities and leisure time. [44] Similarly, Al-Zalabani *et al.* in Saudi Arabia reported that 18.3% of participants engaged in work-related physical activity.

[45] On the other hand, a recent systematic review revealed that the prevalence of physical inactivity among young Saudis was as high as 71%, highlighting the seriousness of sedentary behavior among younger populations. [46] Lack of physical activity has been strongly associated with obesity, hypertension, hyperlipidemia, glucose intolerance, cardiovascular diseases, and diabetes mellitus. [47] In populations undergoing socioeconomic transition, obesity

and metabolic disorders are often among the earliest health consequences of sedentary lifestyles, while long-term complications such as coronary artery disease, renal disorders, and diabetes-related complications appear later. [48] Although healthcare professionals possess adequate knowledge regarding preventive healthcare and healthy behaviors, many studies have concluded that they are still physically inactive when compared with the general expectations from healthcare providers. [49]

Despite the valuable findings obtained from the present study, certain limitations should be acknowledged. [50] First, the study adopted a cross-sectional design, which measures the prevalence of physical activity only at a single point in time. [51] Because of this design, it is not possible to establish a direct cause-and-effect relationship between physical activity levels and associated variables. [52] Longitudinal studies would be required to determine changes in physical activity over time and identify causal relationships more accurately. [53] Second, the data collection was based on self-reported questionnaires using the International Physical Activity Questionnaire (IPAQ), which may lead to recall bias and reporting bias. [54]

Participants may not accurately remember the duration or intensity of physical activities performed, resulting in under-reporting or over-reporting of their actual activity levels. Third, the study was conducted in only one institution, limiting the generalizability of the findings to physiotherapy academicians from other institutions, universities, or regions. The relatively smaller sample size may also reduce the external validity of the study findings.

For future research, it would be beneficial to conduct larger multicenter studies involving physiotherapy academicians from different universities and institutions to obtain more representative and generalized findings. Future studies should also investigate the major barriers that prevent academicians from engaging in regular physical activity, including lack of time, academic workload, occupational stress, fatigue, limited access to exercise facilities, and reduced motivation. Identifying these barriers would help in designing targeted interventions and institutional wellness programs aimed at improving physical activity participation among academicians. In addition, future researchers may explore the relationship between physical activity levels and factors such as posture, musculoskeletal pain, mental health, sleep quality, obesity, and quality of life among physiotherapy academicians. Such studies may contribute toward the development of workplace health promotion strategies and encourage healthier lifestyle behaviors within academic environments.

Conclusion

- In conclusion, this study showed that many physiotherapy academicians have low physical activity levels. Out of 65 participants, only 29 (44.6%) were active, while 36 (55.4%) were not active. This means that more than half of the academicians were not doing enough physical activity.
- The results also showed that many participants spent more time sitting than doing physical activity, which shows a more sedentary lifestyle.

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