

## Original Research Article

# Knowledge of WHO physical activity guidelines and associated behavioural factors in physiotherapy students

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## ABSTRACT

**Background:** As frontline advocates for health and exercise, physiotherapists play a vital role in promoting physical activity (PA). Despite this responsibility, a persistent "knowledge-practice gap" is observed among physiotherapy students, who often report insufficient activity levels despite their training. This discrepancy highlights the need to formally evaluate their baseline understanding of PA principles to better address these shortcomings

**Methods:** A descriptive cross-sectional survey was conducted among 170 undergraduate and postgraduate physiotherapy students in Pune, India. Data were collected using a validated, self-administered questionnaire, which showed excellent internal consistency (Cronbach's alpha=0.9654\$).

**Results:** The mean knowledge score of the WHO guidelines was moderate at 2.4, standard deviation was 1.5 (Median: 2, IQR: 1-4). Key barriers reported were 'lack of time' (60%) and 'heavy academic workload' (55.3%). Primary facilitators included 'knowledge about the benefits of PA' (86.5%) and 'nutrition' (86.5%).

**Conclusions:** A significant knowledge-practice gap exists among future physiotherapists, with the academic environment being the main obstacle to PA engagement. Curricular reform and institutional support are recommended to better integrate WHO guidelines and foster effective role models.

**Keywords:** Barriers, Health education, Physical activity, Physiotherapy students, WHO guidelines

## INTRODUCTION

PA is fundamentally defined as any bodily movement produced by the contraction of skeletal muscles that results in a substantial increase over resting energy expenditure. Regular PA is globally recognized as a critical health measure and the WHO Guidelines on Physical Activity and Sedentary Behaviour provide evidence-based recommendations for promoting PA across populations.<sup>1</sup> Despite the proven benefits, physical inactivity remains a serious public health concern, contributing significantly to non-communicable diseases (NCDs). In the Indian context, NCDs constitute a major

burden, with cardiovascular disorders alone accounting for 32% of all deaths. Given their specialized role in movement and exercise prescription, physiotherapists are positioned as essential advocates for physical activity and vital catalysts for behavioral change.<sup>2</sup> Providing effective clinical counselling depends heavily on a precise understanding of WHO recommendations; yet, a growing body of research both locally and globally points to a notable lack of familiarity with these standards among both students and practicing clinicians.<sup>3</sup> Ultimately, this deficit in knowledge undermines the delivery of evidence-based advice and professional exercise prescription. Furthermore, research indicates that knowledge alone does not sufficiently translate into

personal practice, creating a significant "knowing-doing gap" in the profession. Studies among student populations consistently report low engagement in physical activity. Identification of the common behavioural barriers and facilitators that influence PA engagement, such as academic pressures, lack of time, peer motivation and awareness of health benefits, is crucial for developing effective interventions.<sup>4</sup> Given that physiotherapists are often more effective as role models when they actively participate in the behaviour they promote, addressing these personal challenges is crucial for developing competent future practitioners. Despite the clear need for evidence-based reform, there is a lack of comprehensive data simultaneously assessing the foundational PA knowledge (using WHO guidelines) and the specific associated behavioural factors (barriers and facilitators) within the physiotherapy student population in the Indian context. Consequently, this research set out to evaluate how well physiotherapy students understand the WHO physical activity recommendations. Beyond testing their knowledge, the study also explores the underlying factors both supportive and restrictive that impact their ability to incorporate consistent physical activity into their own lives.

## METHODS

### *Study design and participants*

In 2025, we conducted a four-week descriptive cross-sectional survey in Pune, recruiting 170 willing physiotherapy students at both the undergraduate and postgraduate levels (BPT and MPT). Students who had undergone any specific training related to WHO physical activity guidelines were excluded, both male and female Physiotherapy students, 3rd,4th year BPT, interns, postgraduate physiotherapy students were included.

### *Instrumentation*

The data for this research were gathered using a specialized, self-administered survey instrument that was validated to align with the study's core objectives. The tool was organized into three distinct parts: the first addressed participant demographics and current activity habits, while the second utilized a Likert scale to evaluate 13 items related to the drivers and obstacles of physical exercise. The final segment consisted of seven items designed to measure comprehension of the 2020 WHO Physical Activity Guidelines. Most of the instrument utilized a multiple-choice format, with the exception of open-ended fields for the participants' names and ages

### *Validity and reliability*

The instrument demonstrated acceptable content validity, with an overall Scale-Level Content Validity Index (S-CVI/Ave) of 0.859. To further refine the tool, five items flagged for low scores were modified based on qualitative expert feedback. Additionally, the questionnaire exhibited

excellent internal consistency, as evidenced by a Cronbach's Alpha of 0.9654. These results confirm that the instrument is both valid and reliable for use in this study.

### *Ethical considerations*

The study protocol was reviewed and approved by the Institutional Ethics Committee (IEC) of P.E.S. Modern College of Physiotherapy, Pune, India

### *Data analysis*

Data collection was conducted via Google Forms, with subsequent descriptive analysis performed on the gathered responses. To visually illustrate the distribution of the data, Microsoft Excel 2019 was utilized to generate graphical representations, including pie charts and bar graphs.

## RESULTS

### *Demographic characteristics*

The study comprised 170 physiotherapy students, representing a diverse mix of academic levels and backgrounds. Undergraduates made up the larger portion of the sample at 58.8%, while postgraduates accounted for the remaining 41.2%. In terms of gender distribution, the cohort was predominantly female (71.8%), with males representing 28.2% of the participants. Regarding living arrangements, the vast majority of students are local residents (73.5%), whereas approximately one-fourth live in hostels or paying guest (PG) accommodations. The participants' ages were concentrated within the standard university bracket, maintaining an average age of 21.4 years. The breakdown of daily physical activity levels among these respondents is illustrated in Figure 1.

### *Perceived barriers to physical activity*

According to the survey results, a substantial portion of the student body encounters notable obstacles when trying to stay physically active. The most prevalent challenges reported were time constraints (60.0%) and the pressure of a demanding academic schedule (55.3%). Additionally, many participants identified personal motivation (40.0%) and physical exhaustion (35.3%) as significant deterrents. A comprehensive overview of these and other perceived barriers is presented in Figure 2.

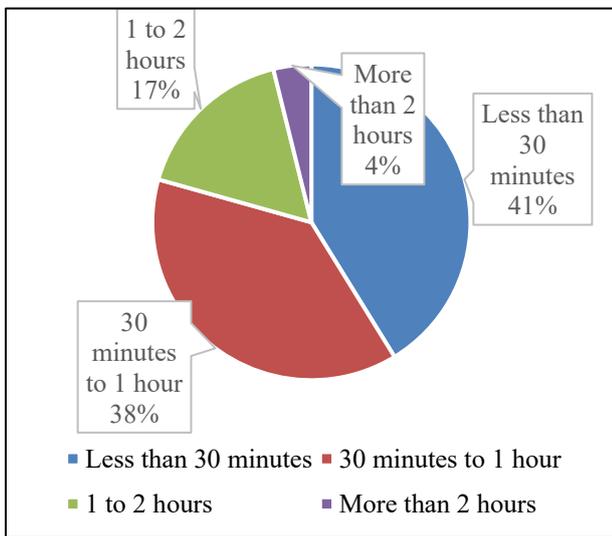
### *Perceived facilitators to physical activity*

When examining what encourages students to stay active, the most influential drivers identified were an awareness of the health benefits (86.5%) and the maintenance of healthy dietary habits (86.5%). Beyond these internal factors, social and environmental support played a major role; specifically, 70.0% of respondents highlighted motivation from peers, while 50.0% emphasized the

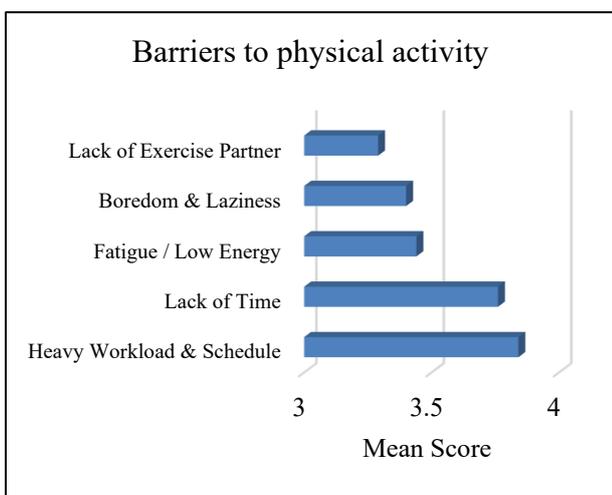
importance of having ready access to fitness facilities and equipment. A complete summary of these facilitating factors can be found in Figure 3.

**Knowledge of WHO physical activity guideline**

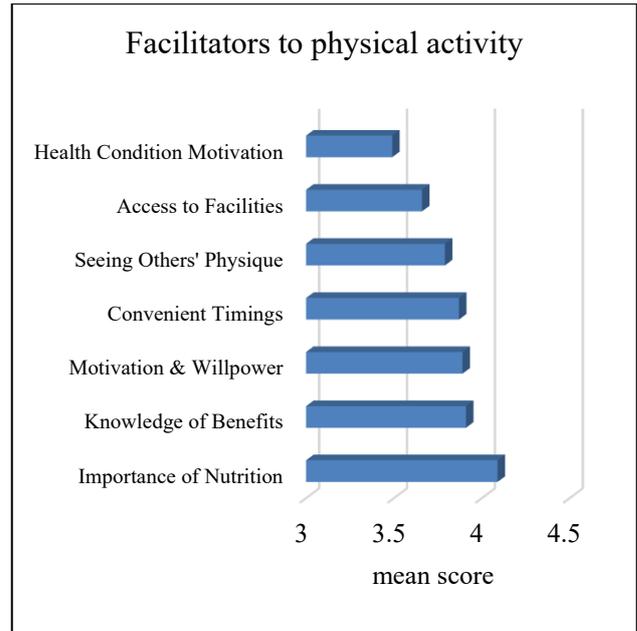
The study participants demonstrated a moderate level of awareness regarding the WHO Physical Activity guidelines. On a five-point scale, the average knowledge score was  $2.4 \pm 1.5$ , with a median value of 2 (Interquartile Range: 1–4). The specific breakdown of correct answers for each of the five assessment questions is detailed in Figure 4. Analysis of individual items showed that students were most knowledgeable about the vigorous-intensity activity requirements for adults, which yielded the highest accuracy rate at 54.1%. Conversely, the area where students struggled most was the recommended activity levels for children and adolescents, where only 44.1% provided a correct response.



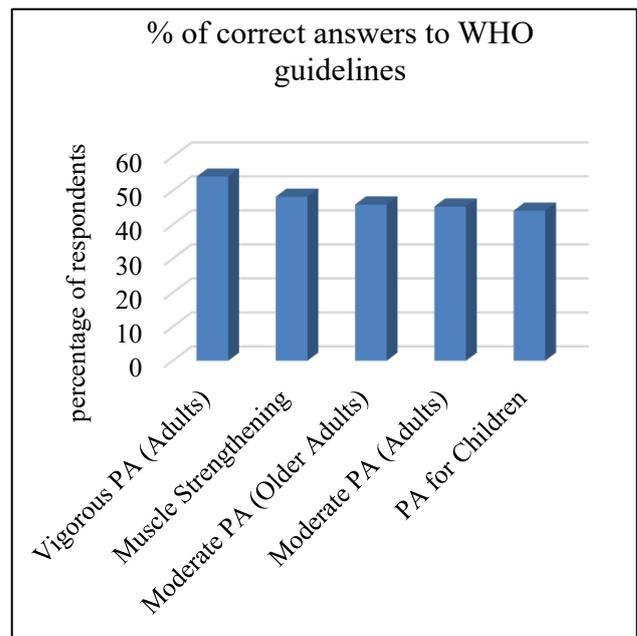
**Figure 1: Daily physical activity levels among respondents.**



**Figure 2: Perceived barriers to physical activity according to mean scores.**



**Figure 3: Perceived facilitators to physical activity according to mean scores.**



**Figure 4: Percentage of correct answers given by respondents to WHO guidelines questions .**

**DISCUSSION**

Following the development of the research instrument, its reliability and validity were rigorously tested and confirmed. Once the questionnaire was finalized, it was distributed to participants via Google Forms for data collection. The gathered responses were then meticulously processed to evaluate and interpret the participants' knowledge scores. The present study found that the main barriers to physical activity among physiotherapy students were lack of time, heavy

academic workload and fatigue, while the strongest facilitators included knowledge of benefits, motivation and access to facilities. These results indicate a clear disconnect: while students possess a strong understanding of the importance of physical activity, the realities of their academic demands and lifestyle constraints act as significant barriers to regular participation.

Essentially, high awareness alone is insufficient to overcome the practical pressures of their university environment. Similar results were observed by Kogokong et al who reported that academic demands and time constraints are the most common barriers among physiotherapy students.<sup>5</sup> Likewise, Chandra et al emphasized that even when awareness exists, an enabling environment is essential to convert knowledge into consistent practice.<sup>6</sup> Motivation and awareness of health benefits acted as major facilitators in the study, which aligns with findings by Mbabazi et al who noted that self-motivation and understanding of health benefits encourage regular activity.<sup>7</sup>

Academic workload as a barrier is consistent across global studies. Kogokong et al and Silva et al both found that academic stress and lack of time were leading obstacles to student physical activity.<sup>5,8</sup> Similarly, Tully observed high stress and mental fatigue among healthcare students, which directly reduced physical engagement.<sup>9</sup> The “knowing–doing gap” seen in our results where students understand the benefits of activity but fail to act has also been reported in previous literature. Lowe et al, highlighted that despite being health professionals in training, physiotherapy students often neglect their own well-being.<sup>10</sup> This pattern reflects how professional knowledge does not always translate into personal practice.

Access to exercise spaces was another strong facilitator in our study, confirming earlier evidence by Chandra et al and Ogunkola et al who emphasized the need for institutional infrastructure and time flexibility.<sup>6,11</sup> A recent review by Brown et al also supported that environmental and scheduling support directly increase participation rates among university students.<sup>12</sup> The positive influence of environmental factors, such as access to parks or exercise facilities, supports prior work by Smetaniuk et al who reported that convenient locations and peer influence enhance activity levels among physiotherapy students.<sup>13</sup> The participants showed moderate knowledge of WHO physical activity guidelines (mean score 2.4/5), with better understanding of adult recommendations and weaker knowledge for children and adolescents. This pattern was also noted by Ghosh et al who reported insufficient familiarity with WHO guidelines among practicing physiotherapists in India.<sup>14</sup> Mok et al observed similar gaps in knowledge and self-confidence among physiotherapy students internationally.<sup>15</sup> Globally, WHO reports continue to highlight limited awareness of its physical activity guidelines among both healthcare providers and the

public. The WHO % of young adults meet recommended activity levels.<sup>16</sup> Similarly, Yona et al found that many physiotherapists and health professionals were unaware of guideline specifics, reflecting a widespread problem rather than a local issue.<sup>3</sup> The current study’s findings align with previous research showing that knowledge alone is insufficient unless supported by structured teaching and practical training. Kimmich et al and López-Valenciano et al demonstrated that awareness, motivation and accessibility must all interact for consistent behavioural change.<sup>17,18</sup> Thus, physiotherapy education must emphasize not only what the guidelines are, but also how to apply and model them in practice.

### **Limitations**

The interpretation of these findings must be considered in light of certain limitations. Firstly, the study employed a cross-sectional design, which captures data at a single point in time and therefore precludes the ability to establish causal relationships between knowledge, barriers and PA engagement. Furthermore, because the study utilized a self-reported questionnaire, the results may be influenced by social desirability bias. This suggests that some participants might have overrepresented their level of understanding or their consistency in following physical activity guidelines to appear more favourable. Consequently, the data should be interpreted with an awareness of this potential for self-reporting inaccuracy.

Furthermore, the single-institution sample gathered from physiotherapy students in Pune limits the generalizability of these results to the broader population of physiotherapy students across diverse geographical and institutional settings in India. Future research employing longitudinal designs and objective measures of physical activity, such as accelerometers, is recommended to further delineate the causal pathway and measure the impact of interventions.

### **CONCLUSION**

The research concluded that students possess a moderate but inconsistent knowledge of the guidelines, with a significant gap concerning recommendations for children. The primary barriers to their own physical activity were found to be academic pressures such as lack of time and a heavy workload, while the strongest motivator was their knowledge of health benefits.

The central takeaway is the existence of a significant “knowing–doing gap,” where the demanding academic environment that imparts health knowledge also acts as the main obstacle to practicing healthy behaviours. Therefore, this study’s findings call for a review of the undergraduate physiotherapy curriculum to better integrate WHO guidelines and for educational institutions to foster a more supportive environment that enables students to be physically active.

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