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Clinical Research

Investigation of Postural Habit, Postural Awareness and Physical Activity Levels of Physiotherapy Students

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Abstract

Purpose: *The purpose of this research is to investigate the postural habits, postural awareness and physical activity levels of physiotherapist candidates.*
Methods: *394 undergraduate students attending in the department of physiotherapy and rehabilitation included in study. Survey forms were sent to the volunteer students online via a social media platform. Sociodemographic information of the individuals was recorded in the data form created by the researchers. The Postural Habit and Awareness Scale (PHAS) was used to assess postural habits and awareness, and the International Physical Activity Questionnaire Short Form (IPAQ-SF) was used to assess physical activity levels.*
Results: *There were significant weak positive correlations between postural awareness and postural habits (r=0.124) and between postural habits and physical activity levels (r=0.145). There was a statistically significant difference between postural habits (p=0.006) and postural awareness (p=0.019) scores between grade levels. There was no difference between physical activity scores according to grade levels (p<0.05). In comparisons between genders, it was found that postural habit and physical activity scores of male students were statistically significantly higher than female students (p=0,000).*
Conclusion: *As postural awareness and physical activity levels of physiotherapist candidates attending undergraduate education increased, their postural habits also increased in a good direction, and the postural habits and physical activity levels of male students were better than female students. It is important for physiotherapist candidates to use correct posture and be physically active both for their own healthy lives and to be role models for individuals.*

Key words: *Postural habits, Postural awareness, Physiotherapy and rehabilitation, Student*

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Introduction

Posture is the alignment of body parts in different positions and the muscular balance that protects the supporting structures of the body against injury or deformity. Posture is controlled by the central nervous system (CNS), which involves muscle activation leading to postural adjustments. Postural regulations are the result of complex mechanisms controlled by multiple sensory inputs such as visual, vestibular and somatosensory inputs integrated into the CNS (1). Today, compared to the past, impairments in postural regularity have increased with the change in the activities and lifestyles of young people. Posture, which can also be defined as the position of the human body in space and the relationship between body parts, can be classified as good and bad. Good posture is a position with minimal stress on each joint. Otherwise, increased stress on the joints leads to misalignment between body parts and poor posture (2).

There are many factors affecting posture, such as physiological, emotional, physical or environmental factors. Daily habits are often performed in such a way that they fail to maintain optimal body position and lead to postural changes. Because postural habits are also an important factor affecting posture. Bad postural habits can cause changes in muscle tone and alignment of body segments, leading to body asymmetry. Therefore, it is important to have a good knowledge of ergonomics to prevent a musculoskeletal disorder caused by poor posture. Awareness of posture serves as a support in postural habits (3).

Postural awareness, which has recently gained popularity in health sciences, was defined by Cramer et al. as 'subjective conscious awareness of body posture based mainly on proprioceptive feedback from the body environment to the central nervous system' (4). Postural awareness is necessary to maintain healthy postural habits in daily life. Moreover, postural habit is influenced by the level of postural awareness. Therefore, assessments including these postural habits and awareness are needed for health sciences professionals to guide individuals on lifestyle changes and treatment options (3).

Physical activity has a wide range, including activities of daily living that require the movement of many muscles (such as housework, carrying loads) and many sporting activities. Physical activity involves the movement of many muscles. Physical activity is one of the important parameters for a healthy life and many studies on chronic diseases indicate that physical activity has a positive effect on general health level (5).

Physical inactivity is one of the most important public health problems of the 21st century worldwide (6). Factors such as the incorporation of technology into our daily lives, increased use of technological devices such as television and computers, and the use of motorized vehicles in transportation reduce physical activity and lead people to a more sedentary life. In addition, it is also stated that individuals today do not show sufficient interest in exercise, which is necessary to lead a healthy life. According to World Health Organization (WHO) data, 1 out of 4 adults in the world is not active enough, while more than 80% of the adolescent population has insufficient physical activity level (7). The university environment is an important opportunity to encourage students to engage in more physical activity. However, insufficient data on university students' exercise habits or perceptions of exercise habits constitute an obstacle to planning to increase physical activity (5). However, in the World Confederation of Physical Therapy (WCPT) report, physiotherapy professional organizations worldwide state that it is imperative to implement effective strategies for lifelong exercise and physical activity. It also states that physiotherapists who are trained in movement and exercise and are experts in risk factors, pathology and their effects on all systems are ideal health professionals to promote and guide physical activity and exercise (6).

Physiotherapy is one of the health professions that aims to make people's lives better and easier by promoting health and providing interventions that target diseases. Physiotherapy education in itself is a challenging and evolving process (8). Physiotherapists promote quality health in society. This profession requires physical fitness and a healthy neuromuscular system in physiotherapists. Caring for patients is not always carried out according to ergonomic laws. However, research shows that young people have poor perception of body position and movement. Even in groups such as physiotherapy students, who have an increased awareness of the importance of posture for health, the effort to maintain correct posture during daily activities is not always successful (9). While providing physiotherapy services, physiotherapists may exhibit abnormal postures that may adversely affect their own health (3). Considering this situation, it is important for physiotherapist candidates who receive training on posture in patients during their undergraduate education process to be aware of their proper posture and to make it a habit from their undergraduate education and to lead a physically active life in order to maintain a healthier professional life.

The purpose of this study was to investigate the postural habits, postural awareness and physical activity levels of physiotherapy students.

Methods

Approval for this study was obtained from Bolu Abant İzzet Baysal University Non-Interventional Clinical Research Ethics Committee (No: 2024/112). A total of 394 students from different grade levels continuing their undergraduate education in the Department of Physiotherapy and Rehabilitation were included in the study. Consent was obtained from each student that they volunteered to participate in the study. The announcement text about the study and questionnaire forms were made online. Survey forms were sent to the students who gave consent to participate in the study via social media platform. The inclusion criteria were being a student of physiotherapy and rehabilitation department and volunteering to participate in the study. Exclusion criteria were the presence of orthopedic and neurologic disease, having undergone any surgery affecting posture, being pregnant and refusing to participate in the study.

First sociodemographic information was recorded by researchers. Then postural habits and awareness were assessed with the Postural Habits and Awareness Scale (PHAS) and physical activity levels were evaluated with the International Physical Activity Questionnaire Short Form (IPAQ-SF).

Postural Habits and Awareness Scale (PHAS)

The PHAS is a valid and reliable scale developed to determine healthy adults' self-perceptions of their postural habits and awareness. It contains 19 items measured on a 5-point Likert scale. Each item is scored from 1=strongly disagree to 5=strongly agree. The maximum score for postural habits is 35 and the maximum score for postural awareness is 60. The maximum total score a participant can obtain on the scale is 95. A high score indicates good posture and awareness. Postural habits items include statements related to the posture that the individual prefers to use in activities such as sitting, standing, lying down, carrying things, shopping, which are frequently used in daily life activities, while postural awareness items include statements related to subjective conscious awareness of body posture. The scale was developed by Bayar et al. (2023) and is a valid and reliable scale (Cronbach α=0.73) (3).

International Physical Activity Questionnaire Short Form (IPAQ-SF)

IPAQ is a valid and reliable questionnaire used to assess the physical activity level of individuals. It is available in two versions as

long form (IPAQ-LF) and short form (IPAQ-SF). In our study, IPAQ-SF was used to assess the physical activity levels of the participants. IPAQ-SF records activity at four intensity levels (igorous intensity activity such as aerobics, moderate intensity activity such as leisure cycling, walking and sitting). The duration and day values obtained from the scale were determined for each item and multiplied by the MET value and added to the total physical activity time. MET values, sitting (1.5 MET), walking (3.3 MET), moderate physical activity (4.0 MET), vigorous physical activity (8.0 MET) was calculated. With the physical activity value obtained after the calculation, the person was classified according to physical activity level as inactive, minimally active and very active. The scale was adapted into Turkish by Sağlam et al. (2010) and a validity and reliability study was conducted (10).

Statistical Analysis

Sample size was calculated with the G*Power 3.1 power analysis program (11). According to the power analysis performed on our pilot data, the minimum sample size required for an effect size of 0.33 at 95% power and 5% error level was 105. The data were coded and evaluated in computer environment. Mean and standard deviation, percentage and frequency measurements were used in the evaluation of the data. Kolmogorov-Smirnov Test was used to evaluate whether the data conformed to normal distribution. According to the results of the normality test performed in the evaluation of the obtained data, t test was used to compare numerical data in two independent groups, one-way ANOVA test was used to compare data between more than two independent groups, and Pearson correlation test was used to determine the relationship between independent variables. Bonferroni correction was applied through post hoc analysis to determine the differences as a result of ANOVA test. Statistical significance level was accepted as $p<0.05$.

Results

The study included 394 students from four different grade levels with a mean age of 21.43±2.54 years. Participants, n=95 (24.1%), n=101 (25.6%), n=103 (26.1%) and n=95 (24.1%) were in the first, second, third and fourth grades, respectively (Table 1).

Participants, 42.6% were inactive and 55.3% were minimally active (Table 2). Most of the participants had taken a course on posture before (67.3%), had no habit of exercising or doing sports (73.4%), worked at a desk (92.4%) and did not take regular medication (85.3%).

Table 1. Sociodemographic characteristics of participants.

		Mean ± SD (n=394)
Age(year)		21.43 ± 2.54
Height(cm)		166,88 ± 8,53
Weight(kg)		64,23 ± 13,69
BMI (kg/cm^2)		22,95 ± 3,87
		n (%)
Gender	**Female**	313 (79,4)
	Male	81 (20,6)
Marital Status	**Married**	5 (1,3)
	Single	385 (98,0)
	Other	3 (0,8)
Grade	**1st grade**	95 (24,1)
	2nd grade	101 (25,6)
	3rd grade	103 (26,1)
	4th grade	95 (24,1)

BMI: Body Mass Index

Table 2. Participants' postural habit, postural awareness and physical activity scores.

		Mean ± SD (n=394)
Postural Habit		19,02 ± 4,29
Postural Awareness		39,57 ± 5,03
Physical Activity		1239,00 ± 1580,51
		n (%)
Physical activity status	**Inactive**	168 (42,6)
	Minimally active	218 (55,3)
	Very active	8 (2,0)

According to Table 3, statistically significant difference was found between the postural habit (p=0.006) and postural awareness (p=0.019) scores between the grade levels of the participants. The difference was found to be between the values of 2nd grade students and 3rd grade students for postural habit and between the values of 1st and 3rd grade students for postural awareness. There was no difference between physical activity scores according to grade levels (p<0.05). There was a statistically significant difference between the postural habit and physical activity scores between genders in favor of male participants (p=0.000) (Table 4).

Table 3. Comparison of postural habit, postural awareness and physical activity levels of participants according to grade level.

		Mean ± SD	*p*	Differences	
Postural Habit	**1st grade**	19,29 ± 3,95	**0,006***	1-2	1,000
				1-3	0,386
	2nd grade	20,11 ± 4,29		1-4	1,000
	3rd grade	18,17 ± 4,27		2-3	**0,007***
	4th grade	18,52 ± 4,42		2-4	0,054
				3-4	1,000
Postural Awareness	**1st grade**	38,34 ± 5,49	**0,019***	1-2	0,370
				1-3	**0,011***
	2nd grade	39,68 ± 5,46		1-4	0,537
	3rd grade	40,58 ± 4,38		2-3	1,000
	4th grade	39,57 ± 4,51		2-4	1,000
				3-4	0,947
Physical Activity	**1st grade**	1281,60 ± 1856,93	0,525	1-2	1,000
				1-3	1,000
	2nd grade	1014,74 ± 1148,58		1-4	1,000
	3rd grade	1326,58 ± 1855,10		2-3	0,954
	4th grade	1305,78 ± 1322,18		2-4	1,000
				3-4	1,000

*p<0.05, One Way Anova, B

Table 4. Comparison of postural habit, postural awareness and physical activity levels of participants according to gender.

		Mean ± SD	*p*
Postural Habit	**Female**	18,49± 4,14	**0,000***
	Male	21,09 ± 4,27	
Postural Awareness	**Female**	39,61 ± 4,93	0,706
	Male	39,38 ± 5,40	
Physical Activity	**Female**	991,14 ± 1064,06	**0,000***
	Male	2156,79 ± 2591,24	

*p<0.05, T Test

There were significant weak positive correlations between postural awareness and postural habits (r=0.124), and between postural habits and physical activity levels (r=0.145). In addition, there was a negative correlation between students' grade level and postural habits (r=-0,112) and a weak positive correlation between grade level and postural awareness (r=0,102) (Table 5).

Table 5. Relationship between participants' postural habit, postural awareness and physical activity levels

	Postural Habit	Postural Awareness	Physical Activity	Grade
Postural Habit	1	**0,124***	**0,145***	**-0,112***
Postural Awareness	**0,124***	1	0,052	**0,102***
Physical Activity	**0,145***	0,052	1	0,028
Grade	**-0,112***	**0,102***	0,028	1

*$p<0.05$, Pearson Correlation Analysis

Discussion

This study was conducted to examine the postural habits, postural awareness and physical activity levels of physiotherapist candidates. In study results, it was found that postural awareness increased with increasing grade level but postural habits decreased, there was a statistically significant difference between postural habits and postural awareness scores between grade levels, postural habits and physical activity scores of male students were statistically significantly higher than female students and most of the students were minimally active. It was determined that the postural habits of physiotherapist candidates with high postural awareness level were also good, and the postural habits of those with high physical activity level were also good.

The profession of a physiotherapist requires a well-functioning neuromuscular system and high physical fitness. Working with patients cannot always be done in accordance with the rules of work ergonomics. Failure to organize the patient's bed and working in an inappropriate position for a long time are the causes of many disorders that physiotherapists have to deal with during their daily work (12). Saba et al. (2012) stated that most of the physiotherapy students included in their study had knowledge about correct posture while sitting to study and using computers (13). Kousar et al. (2022) found that approximately 80% of physiotherapy students had knowledge about good posture. The study revealed that physiotherapy students have knowledge about good posture and have a positive attitude towards good posture, but they do not apply it well in their daily routines (2). Physiotherapy and rehabilitation undergraduate education in Turkey lasts 8 semesters. During this process, theoretical and practical courses related to posture are given to physiotherapist candidates, especially after the 1st grade level. However, considering that not only the patient but also the therapist should pay attention to posture and body ergonomics considering that this profession will be practiced for many years,

it is often stated in the in-class processes and practical trainings are given on this subject. In our study, it was found that as the grade level of physiotherapist candidates increased, their postural awareness increased but their postural habits decreased. However, it was observed that physiotherapist candidates with high postural awareness had good knowledge about posture but did not apply it in their habits. It was thought that the high level of knowledge may be related to the undergraduate education they received about posture.

The physiotherapist's lack of knowledge and experience in the ergonomics of his/her work and the load associated with this work can cause a number of negative changes in a young organism. The most common group of diseases are occupational musculoskeletal disorders (12, 14, 15). Musculoskeletal pain is highly prevalent among health sciences undergraduates and is significantly associated with sedentary postures and lack of participation in structured physical activity (15, 16). Holder et al (1999) reported that the most common negative situations encountered during a physiotherapist's work were inappropriate posture, lifting, patient handling and manual therapy during long working hours. In the study, they found that the group reporting the highest number of negative situations was young people aged 21-30 years (new physiotherapists and students) (18). In addition, differences between genders were examined in studies and it was reported that women differed from men in terms of postural habits and defined their sitting positions as leaning forward, with their trunks bent and crossed legs (9). It was reported that female students had lower physical activity levels and had more musculoskeletal pain (16, 19). In our study, postural habits and physical activity levels of male participants were found to be better than those of female participants in accordance with the literature.

WHO defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure. Physical activity refers to all movements performed during leisure time, while commuting, or as part of a person's work or home activities (20). The benefits of a physically active lifestyle on cardiorespiratory and muscle fitness, improvement of bone and cardiometabolic health, and weight status are well documented by WHO (7). In their cross-sectional study, Kgokong and Parker (2020) reported that physiotherapy undergraduate students did not perform sufficient physical activity and were not effective role models in individuals (21). Boguszewski et al. (2021) reported that more than half of

physiotherapy students did not participate in any physical activity outside the course curriculum activities (19). Khan and Sheth (2019) found that physiotherapy students engaged in low to moderate physical activity (22). In our study, most of the physiotherapy students were minimally active and the number of very active students was quite low. It is thought that it is important to increase the physical activity participation of physiotherapist candidates and physiotherapists in terms of being a role model for individuals, both for their own healthy lives and as a professional group that encourages physical activity.

Conclusion

It is important for physiotherapist candidates to have good postural habits and to be physically active both for their own healthy lives and as a professional group that encourages physical activity, to be a role model for individuals by performing recommended practices. As a result of the study, it was concluded that physiotherapist candidates with better postural awareness level gave more importance to their posture and paid attention to their posture in daily life. This study was conducted as a cross-sectional study and the limitation of our study is that the data were not collected from different provinces.

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