

The relationship between physical activity and efficacy levels of university students

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Abstract

Background and Study Aim Physical activity encompasses a range of behaviors across different domains. A critical aspect is the correlation between the frequency of physical activity and perceived competence in these activities. This study aims to explore the relationship between the levels of physical activity and the self-assessed proficiency in physical activities among university students who opt for health-related elective courses.

Material and Methods This study involved 88 university students enrolled in health-related elective courses, including Spinal Health (SH), Posture Disorder (PD), and Physical Activity in Health Promotion (PAHP). Data collection was conducted using the International Physical Activity Questionnaire-Short Form (IPAQ-SF) and the Physical Activity Efficacy Scale (PAES) surveys. For data analysis, one-way analysis of variance (ANOVA) and the Tukey test, a Post-hoc multiple comparison method, were employed.

Results The study revealed a weak negative correlation between IPAQ-SF and PAES scores. This indicates that as self-confidence and sense of competence increased, the level of physical activity decreased ($p < 0.05$). Participants in the PAHP course exhibited higher levels of physical activity, as reflected in their PAES scores, compared to those enrolled in the SH course ($p < 0.05$). Despite having a lower average income, students in the PAHP course demonstrated higher physical activity levels than those in other courses.

Conclusions The study demonstrated that as levels of physical activity efficacy increase, actual physical activity levels decrease, and vice versa. Furthermore, students enrolled in PAHP courses exhibited improved physical activity scores compared to those in other courses. It was also concluded that the income level of students does not significantly impact their level of physical activity.

Keywords: physical activity level, elective courses, university students, physical efficacy, healthy lifestyle

Introduction

A healthy lifestyle must include physical activity, especially for university students [1]. There is substantial data supporting the numerous physical, psychological, aesthetic, and social advantages of frequent engagement in physical activities [2]. A number of illnesses and ailments, such as coronary artery disease, heart disease, stroke, diabetes, high blood pressure, colon cancer, breast cancer, and overweight and obesity are all made less likely by regular physical activity [3]. Numerous research in the area have documented a tendency toward less physical activity among adults, adolescents, and children in various civilizations [4]. The level of physical activity among university students was found to be relatively low during the pandemic, and this process also had a detrimental impact on the students' quality of life [5]. Walking, moderate, vigorous, and overall physical activity levels have decreased among university students from many nations who have been quarantined due to the

COVID-19 epidemic [6]. In this context, the study of Kljajević [7] and colleagues showed that physical activity has a positive effect on the development and maintenance of physical fitness and activity after COVID-19. Additionally, Bevans et al. [8] study also noted that identifying the structure and process determinants of activity levels will support the allocation of resources and promote instructional practices that best support increasing student activity levels at the most cost-effective manner possible.

One of the most popular teaching methods in health sciences related school is the lecture course, which has the benefit of allowing for the dissemination of knowledge to a large number of students and has the potential to be effective in conveying factual information [9]. Whether or not it is successful, lecturing is still the most popular teaching style since it is affordable and useful, especially when there are many students and few resources. Physical education provides cognitive content and instruction designed to develop motor skills, knowledge, and behaviors for physical activity and physical fitness [10]. Supporting schools to establish

physical education can provide students with the ability and confidence to be physically active for a lifetime [11]. Health-related elective courses have been added to the university curriculum to increase students' health-related knowledge and awareness levels. However, the fact that studies investigating the physical activity levels of university students do not take physical activity adequacy into account leads to an inability to understand how physically competent the participants consider themselves. Physical activity competence is questioned about how confident a person is in participating in various physical activities. The phrase "Self-Confidence" expresses your belief that you can complete something successfully [12]. The purpose of this study is to examine the relationship between physical activity levels and physical activity efficacy of university students who choose health-related elective courses. For this purpose, we hypothesized that students who choose health-related elective courses are different in terms of their physical competence.

Materials and Methods

Participants

A total of 88 university students who chose courses from different 2-year departments (Banking Services, Business Administration, Office Management, Coaching, Orthopedic Prosthesis Orthosis) at Ahi Evran University were included voluntarily in the study.

Research Design

Relational screening model was used in this study, which examined the relationship between physical activity level and efficacy of university students.

Data Collection Tools

The data of the research were obtained face to face with the "Personal Information Form", "International Physical Activity Questionnaire-Short Form" and "Physical Activity Adequacy Scale".

Personal Information Form: A form prepared by the researchers was used to determine the demographic characteristics of the students participating in the research. The personal information form includes questions such as age, gender, students' departments and income status.

International Physical Activity Questionnaire (IPAQ): This study was based on the short form of the International Physical Activity Questionnaire (IPAQ), which was developed by Craig et al. [13] and adapted into Turkish by Öztürk et al. [14] and used to determine the physical activity levels of the participants. The scale consists of 7 questions and covers inquiries about activities performed in the past seven days. The scale, which can be self-administered by the participants, provides

information about the time spent on walking, moderate-intensity, and vigorous activities, as well as the time spent sitting. The calculation of scores in the scale utilized the sum of the Metabolic Equivalent of Task (MET) values assigned to the activities. The MET values assigned for the activities were determined as follows: 1.5 for sitting, 3.3 for walking, 4.0 for moderate-intensity physical activity, and 8.0 for vigorous physical activity. The participants' physical activity levels were classified as physically inactive (sedentary) (<600 MET-min/week), physically active at a low level (minimally active) (600-3000 MET-min/week), and physically active at a sufficient level (highly active) (>3000 MET-min/week) [14].

The Physical Activity Efficacy Scale (PAES) was created by Campbell et al. [15] in 2016 and later validated by Saygın et al. [12]. This scale comprises five dimensions and 26 items, categorized as follows: at school (6 items), in transportation (3 items), at home (5 items), leisure and recreation (6 items), and in school excursions and transportation (6 items). The first part of the scale gathers demographic information, while the second part assesses the respondents' confidence in participating in physical activities across these five areas. A 10-point Likert-type scale is used for the items, ranging from 0 ('I do not trust at all') to 100 ('I completely trust'). The total average score, indicating the level of physical activity proficiency, is calculated from the item responses within each domain, with possible scores ranging from 0 to 100. Higher scores indicate greater physical activity proficiency.

Ethical Approval

Voluntary consent form was signed by the students to be included in the study and to use their data. The study was approved by the Ethics Committee of the Non-invasive Clinical Trials of Haliç University (Decision number: 2023-03/60). Additionally, study number (NCT05711251) were obtained from clinicaltrials.gov.

Statistical Analysis

The data obtained from the study were analyzed using SPSS 26.0 program. Percentage and frequency descriptive statistics methods were used to determine the distribution of participants' socio-demographic information such as age and gender. Skewness and kurtosis values were examined by applying the Kolmogorov Smirnov test to determine whether the data showed normal distribution. It was observed that the distribution of the data was in accordance with the normal distribution. Paired Sample t test was applied for intra-group comparisons of variables. Homogeneity of variances was evaluated with the Levene test. The relationship between more than two groups was determined by one-way analysis of variance (ANOVA). Tukey test, one of the multiple comparison (Post-hoc) tests,

was used to determine between which groups the significant difference determined as a result of the Anova test occurred. The significance level was determined as $p < 0.05$.

Results

In the analyzes conducted before the elective courses, it was found that there was no difference between the physical activity levels of the students. In addition, because the groups that chose the course had similar characteristics, their physical activity scores showed a normal distribution. Demographics of participants appear in Table 1.

While 84.4% of the students in the PAHP course stated that they did not have any chronic disease, this rate was 92.9% in the SH course and 100% in the PD course. When looking at the IPAQ-SF scores, 50% of the students who chose the PAHP and PD courses were inactive (< 600 MET- min/week), while this rate was found to be 75% in the SH course. The rates of students who stated that they were very active (> 3000 MET- min/week) were 31.3% in the PAHP course, 17.9% in the PD course, and 28.6% in the SH course. PAES test results were 71.02 ± 15.72 in PHAP, 48.05 ± 14.55 in SH and 57.86 ± 16.29 in PD. According to the Anova test results of physical activity scores in the groups receiving PAHP, SH and

PD, a statistically significant difference was found in the IPAQ-SF and PAES ($p < 0.05$) (Table 2).

According to the Post-hoc test results of the participants' scores from the PAES, a significant difference was found between those who received SH and PAHP. According to this difference, participants from PAHP showed a higher level of physical activity as a result of the PAES compared to participants who from SH (Table 3).

When the correlation analysis between IPAQ-SF and PAES scores is made, it is seen that there is a weak negative correlation between the two scores, and as the feeling of self-confidence and competence increases, the level of physical activity decreases ($p = -0.016$) (Table 4).

Discussion

Findings show that elective courses affect university students at various rates. It will be easier to understand this situation if we consider that SH and PD courses provide students with various health-related information, independent of physical activity. The results also show improvement in physical activity scores of students who choose the health-related elective courses. As expected, training in physical activity and exercise prescription is crucial to promoting the adoption of this strategy

Table 1. Participant characteristics

Spinal Health (n:28, 60.7% female)		
Demographics	Min-Max	X±Std.
Age (years)	19-26	20.96±1.89
BMI (kg/m ²)	18-26.8	21.7±2.6
Income Status (TL)	800-15.000	2.455±2.797
Posture Disorder (n:28, 64.3% female)		
Age (years)	19-30	21.21±2.09
BMI (kg/m ²)	16-28	22.3±2.6
Income Status (TL)	200-5.000	1.542±1.147
Physical Activity in Health Promotion (n:32, 62.5% female)		
Age (years)	19-23	20.53±1.01
BMI (kg/m ²)	17.1-31.2	22±2.9
Income Status (TL)	500-6.600	1.378±1.106

Table 2. Anova test results according to the scores of participants taking different courses from different physical activity scales

Variables		df	F	p
IPAQ-SF	Intergroup	2	0.051	.950
	In-group	85		
	Total	87		
PAES	Intergroup	2	16.535	.000
	In-group	85		
	Total	87		

Table 3. Post hoc test results according to the scores of participants taking different courses from different physical activity scales

Assessment Variables	Elective Courses		Mean Change (I-II)	p
IPAQ-SF	PAHP	SH	.018	.994
		PD	.054	.946
	SH	PAHP	-.018	.994
		PD	.036	.977
	PD	PAHP	-.054	.946
		SH	-.036	.977
PAES	PAHP	SH	22.975	.000
		PD	13.161	.004
	SH	PAHP	-22.975	.000
		PD	-9.814	.053
	PD	PAHP	-13.161	.004
		SH	9.814	.053

Table 4. Correlation analysis

Assessment Variables	Analysis	PAES	IPAQ-SF
PAES	Pearson Correlation	1	-.016
	Sig. (2-tailed)		.880
	n	88	88
IPAQ-SF	Pearson Correlation	-.016	1
	Sig. (2-tailed)	.880	
	n	88	88

for preventing and treating noncommunicable chronic illnesses, which account for 36 million deaths worldwide annually. [16]

The universities closure and cancellation of face-to-face physical activity classes due to the COVID-19 pandemic decreased overall PA, sport/fitness PA level and academic performance in PE in all participants. [17] Offering courses in health, wellness, and health-related physical activity as required or elective courses for graduation colleges is a means through which to develop health and physical literacy in students resulting in a positive influence on public health. [18] From this perspective, the importance of added elective courses in terms of increasing the physical activity levels and efficacy of university students and raising their awareness is obvious. Organizing the content of one of these courses within the scope of physical activity is very important in raising students' awareness compared to other courses. However, a recent study points to the need for a review of education policies to allow the adoption of more flexible curricula and promote the inclusion of physical activity in the classroom. [19] In addition to a more flexible curriculum, adding these elective courses to the curriculum with similar content and in accordance with the standards will also raise awareness in the society.

Another important issue is that the contents of physical activity courses vary from university to university and the students taking the course have different levels of physical activity. The study conducted by Verma et al. [4] showed that physical education and other aspects of health are inadequately and heterogeneously represented in university curricula. Despite this heterogeneity, the addition of health-related elective courses to the curriculum, especially the course added to improve physical activity, raised students' awareness and efficacy. According to our study, the fact that the inactivity rate reaches up to 75% indicates the need not only for adding courses to the curriculum, but also for the university administration to actively create environments where physical activity can be increased. In a meta-analysis study conducted by Keating et al. [20] in 2005, they stated that almost 50% of university students were inactive. Garcia et al. [21] examined the physical activity level of 900 college students studying at Columbian University and found that 68.90% of the students were low-active or inactive. As stated by İlaslan et al. [22], increasing the students' knowledge level regarding the acquisition of habits in physical activity, structuring the physical spaces and encouraging students to engage in activity provides positive gains.

Also, Ryan et al. [23] suggests that strengthening young persons' belief in their ability to find and create environments that support physical activity might promote increases in their physical activity. Contrary to the study, in our study, it was observed that the physical activity levels of students with high levels of physical competence were lower. It is thought that this is related to the person's belief that he can do something more than he actually can do it.

The limitations of this study are that due to the cold weather in the fall semester, students' physical activities decreased as they preferred public transportation instead of walking, and the accuracy of the answers given to the surveys was

not monitored with a concrete method such as pedometer application.

Conclusions

According to the results of the research, it was determined that the physical activity levels of university students were insufficient. In order to raise young people's awareness on this issue, access to physical activity opportunities should be increased, especially on university campuses located in small residential areas, as well as courses on the negative effects of physical inactivity in education curricula. More comprehensive studies on physical activity training are needed to reduce the negative effects of inactivity and determine effective strategies.

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