

The Relationship Between Physical Activity and Mental Health Among University Students in Vietnam

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ABSTRACT:

Purpose: To describe the current status of physical activity of university students in Hanoi Vietnam and to analyze the relationship with mental health in the learning process.

Methods: A cross-sectional descriptive study of 350 students from 3 universities in Hanoi using the IPAQ-SF toolkit. Physical activity classification and assessment is based on IPAQ-SF and according to WHO recommended levels.

Results: Among the study subjects, 39 students (12.8%) had a high level of physical activity, 118 students had a moderate level (38.6%), and 149 students had a low level of activity (48.7%). The percentage of students who achieve physical activity according to the WHO recommendation is only 35.3%. There was a statistically significant association between the Youth Union and 4 characteristics of gender, school year, BMI and major.

Conclusion: The level of student contract at 3 universities in Hanoi is still quite low. The university may consider measures to enhance extracurricular activities combined with the Student Council, such as sports clubs, to improve and enhance the mental health of students.

Keywords: Physical activity, fitness, students, mental health, university, Vietnam

1. Introduction

Physical health plays a fundamental role in ensuring the quality of life and the ability to study and work effectively of each individual, especially for students – a group of young people who are in the stage of comprehensive formation and development of physical, mental and social skills. In the current context, when the knowledge economy is growing more and more, the requirement for high-quality human resources is not only set in the professional aspect but also emphasizes the overall health, pressure tolerance and mental endurance of workers. Therefore, enhancing and maintaining the physical health of students – the workforce of the future – needs to be seen as an important strategy in higher education. (Luchene et al., n.d.; Practitioners & 2015, n.d.)

In Vietnam, in recent years, along with the development of the higher education system, universities have begun to pay more attention to organizing physical training programs as part of comprehensive education activities. These programs range from compulsory fitness classes in the training program, to sports clubs, extracurricular activities, intra-league competitions, and other voluntary training models. These programs are not only aimed at improving students' physical fitness but also aiming to develop teamwork skills, build a healthy lifestyle and reduce risky behaviors such as smoking, substance use or a sedentary lifestyle. However, the reality shows that the level of participation and actual effectiveness of physical exercise programs in universities still have many inadequacies, still underestimating the importance of physical activity, even considering it as a secondary subject, which has no direct impact on academic results. In addition, the lack of synchronization in program design, limited facilities, lack of professional human resources, along with study pressure and dense schedules are also the reasons why physical activities have not been implemented effectively in many higher education institutions. Meanwhile, many international studies have demonstrated a positive relationship between participating in regular physical activities and improving physical

and mental health among students. Specifically, practicing sports helps improve cardiovascular function, respiratory system, strengthen immunity, and reduce the risk of chronic diseases such as obesity, diabetes, and high blood pressure – problems that are increasingly rejuvenating in Vietnam. In addition, physical activity also contributes to reducing the level of anxiety and depression and increasing confidence and interest in learning. Thus, if implemented effectively, physical training programs in universities not only help students improve their physical fitness but also contribute to the comprehensive development of people. (Behrens et al., n.d.) (N. Huu et al., 2022) (Magoc et al., n.d.)

In the context of globalization and integration, Vietnamese students are facing many challenges in terms of academic pressure, career competition and habitat change. In particular, post-COVID-19 clearly shows the physical and mental decline of students due to long periods of online learning, decreased mobility, and increased psychological stress. Therefore, it is more urgent than ever to evaluate and improve the effectiveness of physical training programs at universities, not only to recover from the pandemic but also to build a sustainable foundation for human development. However, currently in Vietnam, the number of in-depth studies on the effectiveness of physical training programs in the context of universities is still quite limited. Most of the reports only describe activities or survey student needs without going into an empirical assessment of the impact of these programs on students' physical health, biomedical indicators, lifestyle and mental health. In addition, there have not been many comparative studies between physical activity organizational models at different universities to draw lessons learned and effective models. This requires systematic research works, with clear quantitative and qualitative databases to serve as a basis for developing and adjusting policies in physical education at the university level. (Pinto et al., 1995) (Tam et al., n.d.) (del & 2023, n.d.) (Plotnikoff et al., 2015)

Stemming from the above reasons, the study "The effectiveness of physical training programs at universities on Vietnamese students" was conducted with the main objective of evaluating the actual impact of physical training programs currently implemented at some universities in Vietnam on the physical and psychological health of students member. The study will focus on analyzing the level of participation, the degree of change in physical indicators (such as BMI, frequency of physical activity, endurance, muscle strength, etc.), students' perception of the role of exercise, as well as changes in emotional state, etc. spirit, quality of life. At the same time, the study also considers factors that affect the effectiveness of the program such as content design, school support, personal motivation, timetables, and facility conditions. The results of the study are expected to provide a more comprehensive and objective view of the current situation of physical training activities in universities in Vietnam, thereby making policy recommendations and specific intervention solutions to improve the effectiveness of physical education. contributing to the physical and mental development of students – the future human resources of the country (Case et al., 2021) (Tuan Anh & Duc Huu, 2024)

2. Method and Data base

2.1. Research design

The study uses mixed-methods, a combination of quantitative and qualitative research, to ensure a comprehensive and in-depth assessment of the effectiveness of physical training programs at the university for students. Quantitative research is used to measure physical health indicators, student participation, and how they feel about a physical exercise program. Qualitative research is used to deeply explore the factors that affect program effectiveness, perception, and practical experience of students, administrators, and physical faculty.

2.2. The study's location

The study was conducted at 03 public and non-public universities in Vietnam, representing different regions (in Hanoi), organizing physical training programs for students (including

compulsory physical education, sports clubs, physical extracurricular activities, etc.) including the University of Trade Unions, Academy of Journalism and Propaganda and University of Commerce.

2.3. Object of study

Quantitative survey subjects: Students in years 1–4 who are attending selected universities, have participated in, or have participated in physical training programs in the university. Estimated sample size: 300 – 450 students (100–150 students/school).

Qualitative interviewees: including 12–15 students (4–5 students from each school) selected according to diverse criteria (gender, major, level of physical activity); 6–9 physical education managers/lecturers of schools (2–3 people/school).

2.4. Techniques for Gathering Data

a. Quantitative Data Collection

- Tools: Self-filled questionnaires (questionnaires), clearly structured design including the following main sections: o Personal information: Gender, age, major, year of study, place of residence (dormitory/off-campus).

o Exercise habits: Frequency, form, time, type of physical activity participated.

o Self-reported physical index: BMI (based on height, weight), endurance, feeling of fitness.

o Perceptions and attitudes about physical activity. o Effects on physical and mental health: Sleep, stress, mental learning, body and life satisfaction.

Scale: Use a 5-level Likert scale from "completely disagree" to "completely agree" for the assessment of attitudes and feelings.

How to collect: In person in the classroom or through an online survey (Google Forms), with the support of faculty at the school.

To determine the number of students participating in the quantitative survey, we use the sample size formula for the study describing

the proportion in the overall unknown size, as follows:

$$n = \frac{Z^2 \cdot p(1 - p)}{d^2}$$

n: Minimum sample size required

Z: the Z value corresponds to the meaning level (at 95% confidence, Z=1.96)

P: Preliminary estimate of the percentage of students participating in physical training programs (if data is not available, P = 0.5 can be taken to reach the largest sample size) d: desired error (usually choose d=0.05) Instead of the recipe:

$$n = \frac{(1.96)^2 \cdot 0.5(1 - 0.5)}{(0.05)^2} = \frac{3.8416 \cdot 0.25}{0.0025} = \frac{0.9604}{0.0025} = 384.16$$

N = 385 students

b. Qualitative data collection

Tool: Semi-structured interview guide, revolving around the following topics:

- Personal experience of participating in physical training programs
- Motivation and barriers to participation
- Evaluation of program quality (content, methods, lecturers, facilities)
- Awareness of health and psychological changes after participation

- Proposal to improve the program

Format: In-depth interview in person or online (Zoom/Google Meet), recording and recording with the consent of the participant.

2.5. Ethics in research

Participants in the survey/interview will be clearly informed of the purpose of the research, the right to refuse to participate at any time. The data will be kept confidential and used for research purposes only. Names and personal information will be encrypted to ensure anonymity.

2.6. Limitations of the study

Self-reported data may be skewed due to personal bias or influenced by the mood at the time of response. The research sample is not representative of all Vietnamese students, mainly for schools with models of organizing physical exercise programs.

3. Results and Findings

The results of the study are presented based on two main data sources: a quantitative survey with more than 420 students at three representative universities in Hanoi and qualitative data from in-depth interviews with 15 students and 9 lecturers/teachers in charge of physical activity. The analyses below focus on four content groups: (1) level of participation, (2) impact on physical health, (3) impact on mental health and learning, and (4) awareness and recommendations for program improvement.

Figure 1: Characteristics of the study sample

Characteristic	Frequency (N=311)	Proportion
Gender: Female	277	88.75%
Male	34	11.25%
School year		
Year 1	98	32%
Year 2	87	28%
Year 3	57	18%
Year 4	69	22%
BMI classification		
Underweight	81	26.3%
Normal	144	46.3%
Overweight	36	11.4%

3.1. Level of participation in physical training programs

Analysis of survey data shows that up to 82.4% of respondents have participated in at least one form of physical exercise at school in the past 12 months. In which: 54.2% participated in compulsory physical subjects in the training program. 37.8% participated in sports clubs or voluntary sports groups. 24.1% regularly practice at the school's stadium/sports area outside of

school hours. However, the rate of maintaining regular exercise (at least 3 sessions/week) only accounts for 28.6%, showing a gap between "used to participate" and "maintaining regular exercise". The difference in participation was evident by gender: boys had a higher rate of participation in extracurricular sports than girls (46.7% vs. 29.5%). Final-year students tend to reduce the frequency of exercise, due to the pressure of studying, interning, and preparing for graduation. (fig. 2)

Figure 2: Physical health characteristics by major

Object		100m run (gy)		(gy) Run 800m, 1500m		Five push-ups (times)		Long Jump On-Site (m)		Body bend (cm)		Note
		$\bar{X}$	δ	$\bar{X}$	δ	$\bar{X}$	δ	$\bar{X}$	δ	$\bar{X}$	δ	
Male	Natural science block	14.39	0.89	378	42.5	24.66	2.34	221.3	20.2	5.85	0.567	
	Social science block	14.51	0.92	402	49.1	21.72	2.08	219.1	19.35	5.78	0.571	
Female	Natural science block	18.72	1.18	287	26.5	10.82	1.45	167.2	15.85	6.18	0.398	Female 800
	Social science block	19.35	1.25	298	29	9.28	0.86	165.6	15.47	6.05	0.39	Female 800

3.2. Effects on physical health

When asked about their personal feelings, 65.3% of students said that physical activity significantly improves endurance, muscle strength and endurance in daily activities. Nearly 60% said they experienced less fatigue or pain since exercising more often. Notably, the average BMI (Body Mass Index) of the group of students who exercised regularly was more stable than that of the group that exercised less or did not exercise. Specifically: Group exercising ≥ 3 sessions/week: Average BMI 21.6 (within the healthy threshold); Group that did not exercise or exercised irregularly: average BMI of 23.5, of which a significant percentage was slightly overweight. In

addition, students who exercised also reported deeper sleep, less headaches, shoulder, neck and eye pain – common problems among students who studied online a lot or sat in front of a computer for a long time. In order to clarify the current physical fitness status of students under the impact of physical education activities at universities, we have surveyed the growth rate of students' physical fitness qualities over 1 academic year. After conducting the end-of-year academic performance test, we compare it with the initial test results and obtain the results shown in Figure

3.

Figure 3: Physical activity level of university students

Index	Parameter	Natural science block		Social science block	
		Male	Female	Male	Female
Run 100m	Growth rate (gy)	0.28	0.24	0.25	0.23
	Growth rate (%)	1.95	1.30	1.73	1.19
800m run (women); 1500m (nam)	Growth rate (gy)	16.95	7.52	16.18	6.89
	Growth rate (%)	4.39	3.58	4.09	2.37
Lie on your stomach and do push-ups	Growth rate (times)	1.45	0.92	1.39	0.91
	Growth rate (%)	6.25	9.209	6.23	9.34
Turn on the distance in place	Growth value (cm)	8.80	4.58	7.90	4.36
	Growth rate (%)	4.09	2.75	3.40	2.61
Bend your body	Growth value (cm)	1.31	1.45	1.29	1.44
	Growth rate (%)	22.40	20.40	21.5	20.57

Figure 3 shows that the growth rate of most of the physical fitness indicators is very low, this may be due to the small amount of exercise, especially the duration of extracurricular training and the low quality of learning (self-discipline). From the above situation, there is also a very urgent requirement for physical education for students, which is the need to use many measures and forms to improve students' physical fitness.

3.3. Impact on mental health and academic performance

The quantitative results showed a positive association between physical activity and mental health: 71.4% of students felt mentally relaxed, reducing stress after exercise. 64.2% said that sports help improve concentration and memory in learning. The group of students who exercised regularly reported experiencing mild depression or school anxiety less than the other group (only

14.8% compared to 31.7%). Qualitative data further corroborate these results.

A 3rd year female student at the University of Trade Union shared: "Every time I finish running, I feel like I am relieved of stress. Every day I study hard, practice for an hour will make my mind much clearer."

A physical education lecturer at the University of Commerce said: "There are students who suffer from insomnia during the exam, we recommend practicing yoga or playing badminton gently, and many of them have responded very positively."

These results contribute to the affirmation that the physical and mental are two closely linked aspects – exercise not only improves the body, but also provides the foundation for academic and life persistence (Figure 4)

Figure 4: The relationship between social factors and students' physical fitness

Low financial activity		Central Board of Directors		High financial performance		Test	P
New number	Proportion	New number	Proportion	New number	Proportion		
153	55.4	99	35.9	24	8.7	$z = 3.21^{**}$	0.0013
10	29.4	16	47.1	9	23.5		
48	47.5	45	44.5	8	7.9	$\chi^2 (3) = 4,23^*$	0.23
42	47.7	33	37.5	13	14.8		
30	56.6	19	35.8	4	7.5		
43	62.3	19	27.5	7	10.2		
43	52.4	31	37.8	8	9.8	$\chi^2 (7) = 7,3^*$	0.39
80	56.3	50	35.2	12	8.5		
17	53.1	12	37.5	3	9.4		
22	44	20	40	8	16		
146	52.1	103	36.8	31	11.1	$z=0.627^{**}$	0.53
17	54.8	13	42	1	3.2		
118	54.4	79	36.4	20	9.2	$z = - 1.17^{**}$	0.23
45	47.9	37	39.4	12	12.8		

(n= 350; p> 0.05)

There is a clear difference in the TC between the male and female sexes. Among male students, 70.6% achieved the recommended level of LC. For female students, the average and high percentage of students was 44.6%. The results presented in the table above show that there is a statistically significant difference in the different levels of sexual orientation with the gender variable ($p=0.0013$), and at the same time, the study has not recorded an association with the

remaining factors such as school year, club participation, BMI classification, and current residence

4. Awareness, motivation and barriers

Cognitively, nearly 90% of students agree that physical exercise is necessary and has longterm benefits. However, the level of practice is not commensurate with that perception. The main barriers that prevent students from participating

regularly include: Lack of time due to dense class schedules (78.5%); No one to train with, lack of motivation (52.1%); Limited or deteriorated facilities (41.3%); The compulsory physical program is too mechanical, lacking in attractiveness (36.8%)

A final year student shared: "I like to play football, but the school yard is small and

crowded. The club also didn't maintain evenly, so I gradually quit."

From the lecturer's side, a notable opinion is: "If you only consider physical fitness as a subject to complete credits, students will not see practical value. It is necessary to innovate both the way of communication and the way of organizing."

Figure 5: Factors affecting students' physical fitness

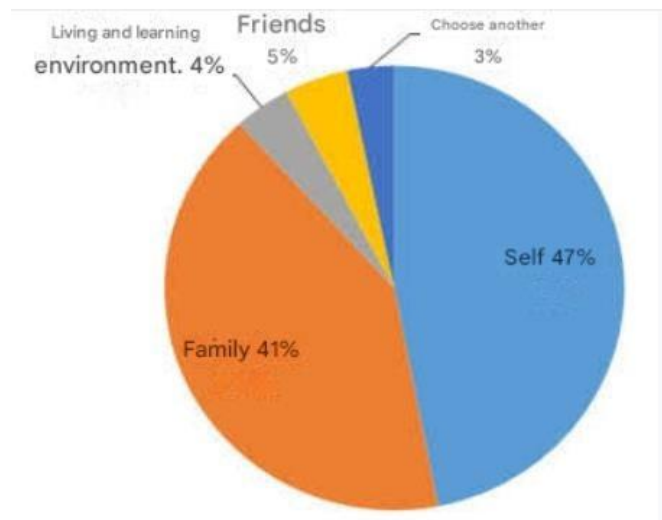


Figure 5 shows that physical exercise programs at universities have had a positive impact on the physical, mental health and quality of learning of Vietnamese students. However, the level of participation is still uneven, largely due to barriers in time, facilities and how the program is organized. To improve effectiveness, it is necessary to innovate the approach – from viewing physical fitness as a subject to seeing it as an essential part of the student lifestyle. Only then will physical exercise really become a "healthy habit" instead of a formal task.

4. Discussion

The study was conducted on 350 full-time students from 3 universities in Hanoi in the academic year 2023-2024 with a symmetrical stratified random sampling method, which can ensure the representativeness of each class in the total sample, and at the same time help the research reduce selection bias. First-year students accounted for the highest proportion in the whole sample with 98 students accounting for 32%, third-year students were the lowest with 57

students accounting for 17%. Due to the characteristics of students, the participation rate of female students is very high, accounting for 277 total samples with a rate of nearly 89%, male students 34 accounting for 11%. This reflects the ratio of men and women of the discipline and is similar to the population characteristics in the study of the same subject with no difference in the ratio of men and women. (Fountain et al., n.d.)

During the course of studying at the university, most students have been educated about a healthy lifestyle and eating well, so nearly half of the students' BMI is within the normal limit with a rate of 46.3%. However, the rate of underweight and overweight and obesity is still relatively high, in which, the rate of underweight is higher than the rate of overweight or obese students. According to the results of the study presented, more than half (52.4%) of the total number of students participating had insufficient levels of financial institutions, while the average and high levels of financial institutions were 37.3% and 10.3%, respectively. The low level of

the Board of Trustees is 5 times higher than the level of high level of the Board of Trustees and 1.5 times higher than that of students with an average level of Board of Trust. Similar to the above study, the same group of students also showed results when about 51.5% of students had low credit status.

(Fountaine et al., n.d.; Olfert et al., 2022)

Other studies in Asia also reported that the same study conducted in 2018 had 39.6% of students with low LC. The author argues that students are very aware of the benefits of the Council, but the general situation is that students have a low level of Council. Through many studies and evaluations, students in general around the world as well as Vietnam in particular, most of them do not meet the minimum level of the WHO to be able to ensure physical capacity and healthy health. It can be said that in Vietnam, the lack of a council is an issue that needs more attention, when university students nationwide. This similarity can be traced back to the same basic training program between schools. (Bland et al., n.d.)

The association with physical activity of students through the study had a low level of sexual activity with a difference of 2 times between the two sexes. Specifically, male students have a low rate of 29.4%, female students are 55.4%. Although the proportion of men compared to women in the study is small, these are in line with the specifics of universities in Vietnam. The study demonstrated that there was a statistically significant difference between the level of sexual orientation and sex with $p = 0.0013$. Similarly, our study found that low rates of sexual intercourse among male and female students were 12.2 percent and 57.4 percent, respectively. Or in Ngo Thi Tam's research in 2022, it is also consistent that there is a statistically significant relationship between the Council and the gender of students. The results of the study showed that there was no difference in the status of the school board between students of different years of training. Similar to the results of the study at three universities in Southern Africa, the four-year training system and data analysis showed that no

difference was detected between academic years in terms of the level of sexual orientation. (Agans et al., n.d.; Small et al., n.d.) (Lowry et al., n.d.)

Our study is consistent with their study, the analysis data showed no association between school years and physical activity ($p=0.23$). The study at Inonu University also reported the same results when it was argued that the year of training did not affect the status of the students' QQ.2 In the current study, the year of study was not related to the level of QQ, which is in contrast to previous findings reported by the result that the rate of inadequate BOARD activity among firstyear students was higher 3 times more than second-year students. According to the results of the data analysis study, the body mass index (BMI) and the level of BMI of university students through the study have not found a statistically significant association ($p=0.39$) although studies reporting on the association between them have been recorded in the world. As in our study, the results suggest that students with a low BMI (underweight) have a 3 times higher rate of inadequate BMI than the group of students with a high BMI (overweight) and 1.8 times higher than the group of students with an average BMI. (Dinger et al., 1997) (Linderman et al., 2009; O. Wilson et al., n.d.) (Journal & 2013, n.d.; Nelson et al., n.d.)

Regarding the current housing factor, the study did not find an association between it and the TC ($p>0.05$). This result is similar to a study in southern Thailand that found that where they live is not an important factor affecting students' student councils. Another study was conducted when the study compared urban and rural areas with activity levels, no significant differences were noted. Research on the association between the Council and current residence has been found to be quite sparse, so comparisons are difficult. However, there is a similar study by Reed on students that showed contrasting results that students who studied in urban areas had better levels of GC than those who studied in rural areas ($p<0.05$). (Calestine et al., n.d.) (N. D. Huu, 2024)

Clubs (clubs), teams, and groups are an organization that gathers people who share the same characteristics, passions, and work together for a certain purpose. A number of studies around the world have been found to prove that joining at least one club, team, or group will help improve the status of the Governing Body. Although no research on this topic has been found on students, related studies on other subjects have been carried out. As our study found, a higher frequency of weekly orgasms, persisted for at least three years, was associated with achieving higher orgasms in adulthood. In Australia, Rohan has researched and believes that fitness is higher in club participants (men are 27% taller and women are 20% taller, both have a $p < 0.001$) and are maintained over time if they continue to participate but often decline during adolescence. (O. W. A. Wilson et al., 2022)

In the subjects of research students at 3 universities in Vietnam, the results showed that there was no statistically significant difference between club participation, team, group and level of association with $p = 0.23$. This study was analyzed with a population of 30% who participated in clubs and 70% who did not. The number of students who do not join the club is dominant, of which, more than 50% have a low student council. Differences in the sample population can also affect the results of the study when the studies were found to be mostly conducted on subjects who were members of clubs, there were few survey studies on a large sample, and there were more students who did not participate than students who participated in clubs as in the current study. It can be seen that this may have affected the statistical results, but in general, the level of student council has not been related to the participation of clubs, teams, and groups.

5. Conclusion

The study shows that students studying at Hanoi City University in the academic year 2023/2024 have a fairly high level of physical activity, with 52.4% of students having low levels of physical activity, 37.3% of students having an average of

37.3% and 10.3% of students having a high level of activity. The results of the study noted that there was a statistically significant difference between the level of student occupancy and gender factors. As for the remaining correlations, the study has not found a difference. Universities need to strengthen propaganda and education about the benefits of adequate physical activity and the impact of limited physical activity on all students by organizing talks, consultations, releasing materials, videos, etc posters, propaganda, impressive workshops and encouraging students to change to raise awareness and attitudes. At the same time, in order for students to have the conditions to participate in activities at sports practice sites, the school needs to support outdoor and indoor facilities, creating a suitable environment for students to exercise. For physical training departments, it is necessary to conduct further research, expand the sample size and diversify disciplines to be able to identify the causes of high rates of physical activity in students. At the same time, increasing attractive and useful sports events for students, such as competitions and fitness classes,... These events will have low or free fees in addition to valuable rewards and opportunities to exchange and learn for participants. For students, it is necessary to improve bad lifestyle habits such as laziness, too much sedentary time with a healthy lifestyle, and regular participation in daily life councils to maintain a healthy body. For further studies, further studies are needed on the causes of decreased mobility in students. At the same time, with the current state of physical activity, it is possible to have communication or intervention strategies, then study the effectiveness of the intervention method, study the effectiveness of the communication program, etc. to achieve the goal of improving physical activity for students to improve mental health and reduce stress in the learning environment in Vietnamese universities today

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