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Involvement in Physical Education as Predictor of Students Health and Academic Success: A Cross-sectional Approach

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Abstract: *The purpose of the current study was to examine the contribution of college-based physical education participation to health and academic success. Additionally, gender-based differences in students' responses regarding physical education, students' health and academic success were examined. Physical education, students' health and academic achievement were examined with the help of properly validated and reliable self-made closed-ended questionnaires. Results indicated that physical education was positively and significantly related to health (r=.887) and academic success (r=.905) of college students. Regression analysis produced significant positive effects of physical education on students' health and academic achievement (p < .05). Male and female students reported no significant differences regarding physical education, students' health and academic success (p > .05). Further longitudinal study is required to obtain in-depth information on the link of college-based physical education with students' health and academic success at the college level.*

Key Words: Involvement, Physical Education, Students Health and Academics, College Students

Introduction

Physical education has grown in popularity over the last decade as a result of its important function in changing people's attitudes toward physical activities that are vital for physical fitness and excellent physical attractiveness. It is critical to learn effectively about educational activities related to physical knowledge, which is only feasible through physical education in educational institutions (Von-Hippel & Bradbury, 2018). Physical education has been a staple of practically every institution, from colleges to universities. The central focus is the kids' participation in physical activities that are vital for their mental and physical well-being (McPherson et al., 2018). Physical education is important for students because it motivates them to engage in positive physical activities that are beneficial to their health (Teferi, 2020). The importance of excellent health in learning activities cannot be overstated.

Students' health is a crucial phenomenon because excellent health is a key predictor of a variety of beneficial outcomes in students' life, including strong mental health, physical fitness, and academic accomplishment. Students' good health is essential for academic performance, which is a crucial benefit of successful physical education (Carlson et al., 2008). Effective healthy activities are important for students' wellness, which can only be achieved if students in the concerned

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institutions engage in effective physical activities (Rasberry et al., 2011). As a result, physical education plays an important part in determining a student's good physical appearance as well as cerebral growth.

Academic success is a substantial result of students' efforts and potential, which overflowed at desirable academic attainments, further nurturing the students' talents to accommodate to desired settings. The achievement of pupils is a huge challenge not only for the teachers but also for the parents (Hattie & Clinton, 2012). Parents have always been concerned about their children's academic roles at institutions, which can only be achieved through effective procedures, as well as physical appearances and mental grooming (Jaakkola et al., 2015). As a result, physical education has remained an important subject that motivates students to engage in physical activities while still achieving respectable academic performance and advancement (Gao et al., 2018). The students were always the centre of attention when it came to the many factors that were used to provide crucial background information as well as certain favourable opportunities to provide the desired support.

Physical education is so important in directing students' conduct toward desired academic outcomes while also enabling them to keep situations at the desired levels throughout their academic careers. The kids' health is critical in giving the required developmental possibilities through strong mental health and emotional grooming, which is the pivotal determining element for all the important determining factors (Janssen & LeBlan, 2010). Physical activity participation by students is thus important in preserving students' apprehensions about their academic careers, resulting in certain effective capacities in students' reactions (Kvalø et al., 2017). As a result, physical education is an important predictor of various student outcomes related to health and academic activities in order to preserve desired and leading skills (Shimamoto, Suwa, & Mizuno, 2021). Physical education has a significant impact on students' health and their ability to achieve their academic goals.

The purpose of this study was to examine the links between physical education and students' health, as well as the links between physical education and students' academic achievement and the link between students' health and academic performance. The researchers carefully selected the research variables and converted them to a theoretical framework from which hypotheses were developed with the goal of testing them in the field by collecting primary data and analysing it using statistical procedures to find answers and reach the desired conclusion.

Objectives

1. To examine the association between physical education, students' health and academic success.
2. To examine the effects of physical education on students' health and academic success.
3. To analyse the gender-based differences in students' responses regarding physical education, students' health and academic success.

Literature Review

Physical education has been regarded as a significant phenomenon in the modern period, centred on education related to physical activities. Physical activities are important for students' health and mental development in a variety of scenarios where the importance of multiple leading outcomes is overwhelming (Janssen & LeBlanc, 2010). Physical education has thus remained an important attribute associated with physical activity that has been overshadowed by the physical appearance and well-health of the individuals concerned (von-Hippel & Bradbury, 2015). Physical education is important not just for kids' overall well-being but also for fostering their attitudes toward physical activities (McPherson et al., 2018). Yang et al. (2010) reported that punctuality

could be nurtured through sports participation which had a positive impact on stress. Camiré et al. (2009) highlighted that participation in sports has the ability to develop positive skills and qualities such as hard work as well as a sense of others.

Physical education is important for students to achieve a variety of wanted outcomes, such as good health, decent physical appearances, and respectable mental grooming, all of which are surpassed at desired capacities towards intended ends. Students benefit from mental grooming in academic activities because it motivates them to work hard to achieve their academic goals (Janssen & LeBlanc, 2010). Students are constantly pushed to retain strong positions in today's competitive economy in order to protect themselves from the different restraints that lie ahead (von Hippel & Bradbury, 2015). A sense of belonging, autonomy, competency and positive relationship could be developed and associated with sports participation (Walker, 2019). Therefore, sports participation provides such an environment and climate to the participants where they can learn various life skills necessary for livelihood and productive citizenship (Bean et al., 2018).

Proper and organised sports participation has the potential in order to develop various professional life skills, i-e, discipline, commitment, punctuality and hard work ethic, which are the ultimate needs of participants' lives, especially in their profession and general in their social lives (Jacobs et al., 2017; Dionigi & Son, 2017; Weiss et al., 2013; Camiré & Trudel, 2013). Physical activities are thus important for mental and emotional development, as well as students' intense motivation in their academic pursuits (Teferi, 2020). To preserve their academic and health priorities, students' performance is also improved by physical and mental involvement in various co-curricular activities. Sporting participation has also been identified as helping develop the attribute of teamwork, eradicate racism, understanding of ethnic differences, constructive and effective management and utilisation of time, self-esteem and sympathy, which also play an important role in non-sports settings (Lasch, 2018; Wilson, 2018; Baird, 2018; Adachi & Willoughby, 2016).

The majority of researchers highlighted that sports participation could develop a sense of punctuality alongside different potential life skills of the participants like leadership and a sense of control; these features are needed for professional excellency (Ewing & Seefeldt, 2002; Smoll & Smith, 2002; Davis, 2002; Fredricks & Eccles, 2010; Rosinki, 2010; Head & Alford, 2015; Mahoney, 2000). Development of life skills either directly related to the timing of practice (punctuality) (Wright & Li, 2009; Fraser-Thomas & Cote, 2009) or in associated areas such as personal and social responsibility, time-management, or in some cases, outcomes generated by an increased ability to persevere, work consistently and sportsmanship (Carerres-Ponsoda et al., 2012; Camiré & Trudel, 2013; Danish, 2002a). These include a sense of consistency, self-regulation as well as self-control, and a sense of responsibility is increased through sports participation (Fox, Barr-Anderson, Neumark-Sztainer, & Wall, 2010; Frederick & Eccles, 2006; Burner, Hall, & Côté, 2011; Durlak, Weissberg, & Pachan 2010; Gould, Chung, Smith, & White 2006; Johnston, Harwood, & Minniti, 2013; Parker & Hellison, 2001).

Conceptual Framework

After careful selection of research variables and conversion into the construct utilised as a framework for conducting the research and reaching the result, the researchers supplied the theoretical framework. As a result, this framework depicts the complete tale of research from beginning to end, with the arrows representing potential linkages between research variables as well as statistical tools for analysis of dependent and independent variables in the current research project.

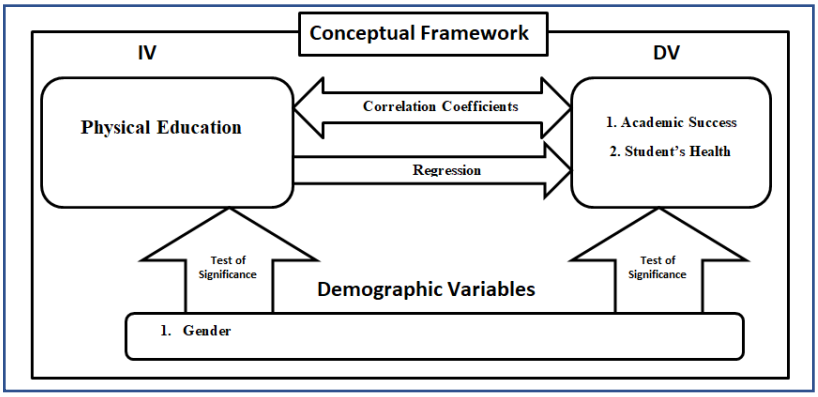

Figure 1

Development of Hypotheses

H 1 There is a significant positive association between physical education, students' health and academic success.

H 2 There is a significant positive effect of physical education on students' health and academic success.

H 3 There are no significant gender-based differences in students' responses regarding physical education, health and academic success.

Research Methodology

Population and Sampling

The participants in this study were college students aged 19 to 24 who were chosen from several colleges in the Pakistani province of Khyber Pakhtunkhwa (KP). It's worth noting that the colleges where Health and Physical Education (HPE) students were enrolled were contacted. The Directorate of Colleges, KP, provided a detailed list of the concerned colleges for this purpose. According to official records, there are nine (09) Boys' Colleges in total, with a total enrollment of 175. On the other side, there are three (03) Girls' Colleges with a total enrollment of 110 students. These colleges have a total population of N=285. The population was finite. Therefore, all the students were included in the survey.

Data Collection Instrument

According to the nature and requirements of the current study, the researchers collected primary data using questionnaires. The quantitative studies are based on the instrumentation that is essential for collecting primary data. The questionnaire design and measurement are crucial components of the study that aids in collecting first-hand for doing the research for a certain goal. In order to acquire the essential data, the questionnaires were altered from prior studies.

Validity and Reliability

The validity and reliability of an instrument are critical features of research that determine its applicability in a given setting. The instrument was validated by pilot testing at the main study level, and Cronbach alpha was employed to establish reliability. When the validity and reliability of instruments are investigated, the validity of the instruments is questioned, according to the researchers. As a result, researchers applied the proper methodologies to verify the instrumentation's utility.

Table 1: Reliability Statistics

	Variables	Cronbach's alpha	Results
1.	Physical Education	.876	Strong
2.	Academic Success	.895	Strong

	Variables	Cronbach's alpha	Results
3.	Student's Health	.931	Strong

Data Analysis

According to the needs of research studies, the researchers analysed the acquired data using various methodologies in order to extract the necessary results and reach a conclusion. To extract the needed information about probable correlations among research variables, the acquired data was examined using various statistical tools based on hypothesised relationships.

Data Analysis and Interpretation

H 1: Relationship between Physical Education and Students' Health

Table 2. Correlation Analysis

Descriptive Statistics			
	Mean	Std. Deviation	N
Physical Education	2.5750	.70533	285
Student's Health	2.6649	.74610	285

Descriptive statistics showing the mean and standard deviation for physical education and students' health. The total respondents of in the study were 285. The mean for physical education was 2.57±.705, and the mean for students' health was 2.66±.746.

Table 3.

Correlations			
		Physical Education	Student's Health
Physical Education	Pearson Correlation	1	.887**
	Sig. (2-tailed)		.000
	N	285	285
Student's Health	Pearson Correlation	.887**	1
	Sig. (2-tailed)	.000	
	N	285	285

The association between physical education and student health was .887, which indicates that physical education and students' health were 88.70% positively and strongly associated with each other. The sigma value appears as .000, which is less than the set alpha value of 0.01 (Sig.= .000 < 0.01), which indicates that the alternative hypothesis there is a positive and significant association between physical education and students' health is hereby strongly accepted.

H 2: Relationship between Physical Education and Academic Success

Table 4. Correlation Analysis

Descriptive Statistics			
	Mean	Std. Deviation	N
Physical Education	2.5750	.70533	285
Academic Success	2.5048	.72738	285

Descriptive statistics show the mean and standard deviation for physical education and academic success of students. The total respondents of in the study were 285. The mean for physical education was 2.57±.705, and the mean for academic success was 2.50±.727.

Correlations			
		Physical Education	Academic Success
Physical Education	Pearson Correlation	1	.905**
	Sig. (2-tailed)		.000
	N	285	285
Academic Success	Pearson Correlation	.905**	1
	Sig. (2-tailed)	.000	
	N	285	285

The association between physical education and academic success was .905, which indicates that physical education and students' academic success were 90.5% positively strong associated with each other. The sigma value appears as .000, which is less than the set alpha value of 0.01 (Sig.= .000 < 0.01), which indicates the alternative hypothesis. There is a positive and significant association between physical education, and academic success is hereby strongly accepted.

H 3: Effect of Physical Education on Students' Health

Table 5. Regression Analysis

Model	R	R Square	Adjusted R Square	F	β	Sig.
1	.887[a]	.786	.785	1039.812	.938	.000

a. Predictors: (Constant), Physical Education

Table No. 3 presents the impact of physical education on students' health. The r was appearing .887, and the r square was .786 for independent variables physical education and dependent variable student's health, which indicates that there is a 78.60% variation occurring in student's health due to physical education, which is significant F (283,2) = .938, Sig.= .000 < α= .01). The same Table showed that the unstandardised beta for physical education was .938 which indicates that if a one-unit increase in physical education will cause of 93.80 unit increase dependent variable student's health. Hence, the alternative hypothesis There is a significant and positive impact of physical education on the students' health is hereby accepted.

H 4: Effect of Physical Education on Students' Academic Success

Table 6. Regression Analysis

Model	R	R Square	Adjusted R Square	F	β	Sig.
1	.905[a]	.820	.819	1286.159	.934	.000

a. Predictors: (Constant), Physical Education

Table 4 shows the impact of physical education on academic success. The r appeared .905, and the r square was .820 for independent variables physical education and dependent variable academic success, which indicates that there is a .82 % variation occurring in student's academic success due to physical education, which is significant F (283,2) = .934, Sig.= .000 < α= .01). The same table showed that the unstandardised beta for physical education was .934 which indicates that one-unit increase in physical education will cause of 93.40 unit increase dependent variable academic success. Hence, the alternative hypothesis is hereby accepted.

H 5: Gender-based Differences in Research Variables

Table 7. Test of Significance

Testing Variables	Gender of the participants	N	Mean	Std. Deviation	t	Sig.
Physical Education	Male	170	2.4978	.66262	-2.263	.024
	Female	115	2.6891	.75262		
Student's Health	Male	170	2.5588	.67296	-2.958	.003
	Female	115	2.8217	.82086		
Academic Success	Male	170	2.4346	.71584	-1.993	.047
	Female	115	2.6087	.73496		

An independent sample t-Test was used to analyse the gender-based difference in research variables, and the results have been presented in table 5. It can be seen from the table that the p-values for all the variables were noted as (physical education= .024; students' health= .003; academic success=.47). These p-values were found lesser than the critical value. Therefore, the hypothesis is hereby accepted.

Discussion

The goal of this study was to see how participation in college-based physical education affects one's health and academic success. In addition, gender variations in student reactions to physical education, health, and academic success were investigated. Physical education, student health, and academic achievement were investigated using self-made closed-ended questionnaires that were appropriately validated and dependable.

Results of the correlation analysis clearly indicated that students' involvement in physical education was significantly correlated with students' health and academic success. Physical education was composed of students' involvement in their physical activities, exercise, and taking part in their scheduled practical of physical education, sport and gymnastics. It is important to mention that the physical education variable was aggregated from physical education practical classes at their respective colleges. Our results support several past studies in this area.

Physical education has an important role in students' health since participation in physical activities aids in the retransformation of students' mental and physical structures, which in turn aids in the grooming of their health conditions. Physical education is critical in influencing pupils' attitudes toward physical fitness and appropriateness (Kohl & Cook, 2013). As a result, physical education is the most important phenomenon that instructs pupils on how to apply their abilities and knowledge to physical structuring (Iri, Ibis, & Aktug, 2017). Physical education is essential for determining the adequacy of physical activities in relation to their priorities in order to maintain their position in critical situations for the benefit of pupils (Shimamoto et al., 2021). Physical education is therefore essential for describing the physical and emotional balances of the pupils in question.

Conclusion

Physically active and aerobically fit students frequently outperform their sedentary and unfit peers academically on both a short- and long-term basis. Physical activity has been related to increased cognitive development and long-term brain health, in addition to a healthy physique. Overall, research suggests that increases in aerobic fitness as a result of physical activity are associated with changes in the anatomical and functional integrity of the brain, both of which are important for academic achievement. It has been discovered that the strongest correlations between aerobic fitness and academic achievement exist. When it comes to tasks that need working memory and problem solving, regular physical activity is extremely beneficial for students. Both real correlational studies and experimental randomised controlled trials have yielded

similar results. Physical exercise opportunities across the curriculum do not hinder academic performance; therefore, spending more time on physical education and other physical activity opportunities before, during, and after school/college outweighs the benefits of using school time purely for academic learning.

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