

Analyzing Impact of Physical Education on Academic Behavior and Skills Development: Mediating Role of Social Responsibility

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ABSTRACT

The present study examines the impact of physical education upon academic behavior and skills development among university students, with the particular focus upon mediating roles of social responsibility and psychological resilience. The physical education is generally respected for its physical reimbursements, recognized increasingly for its role in supporting students' emotional, cognitive, and behavioral developments. As educational institutions recognize increasingly the standing of holistic development, physical education has emerged as a critical platform not only for encouraging physical well-being but also for enhancing the emotional, cognitive, and social competencies that are vital for academic and social success. Thus, employing a mixed-methods research design, study collected quantitative data through the structured questionnaire measuring students' engagement in physical education, key skills and academic behavior. The standardized instruments were used to assess psychological resilience and social responsibility. Moreover, the statistical outcomes provided deeper insights into students' experiences and

perceptions of how physical education contributed to their academic and personal development. For this purpose, the hypotheses were developed from the theoretical framework covering the diverse nature of links among the research variables. The findings revealed strong, positive relationship between participation in physical education and improved academic behavior and skills in particular context. Notably, social responsibility and psychological resilience mediated significantly the relationships between independent and dependent variables of the study. The students, engaged actively in physical education confirmed higher empathy, accountability, and teamwork that translated into more responsible academic behaviors. Similarly, development of psychological resilience, established as greater emotional regulation, stress management and perseverance, was found to enhance students' ability to adapt and thrive in academic environments. The study concludes that the physical education plays a transformative role in shaping students' academic skill and behavior sets by fostering the crucial psychosocial attributes. These findings underscore the need for educational policy-makers and curriculum designers to prioritize physical education as the strategic avenue for the all-inclusive students' development and success.

Keywords: Physical Education, Academic Behavior, Skills Development, Social Responsibility, Psychological Resilience, Students, & Analysis

INTRODUCTION

Physical activity plays a central role in the lives of athletes, contributing not only to their physical fitness but also influencing various aspects of their psychological well-being. Athlete satisfaction is a multidimensional construct that encompasses their contentment, enjoyment, and fulfillment derived from participating in sports [1]. Understanding intricate relationship between physical activity and athletes' satisfaction is vital for optimizing performance, promoting mental health, and fostering a positive sporting experience [2]. Physical activity has been consistently linked to psychological well-being as engaging in regular exercise is linked with reduced stress, anxiety, and depression, and it contributes to improved moods and cognitive functions [3]. For athletes, whose physical activity is often intense and structured, psychological benefits can be extended intrinsic motivation refers to engaging in an activity for the inherent satisfaction and enjoyment it brings in lives.

In the context of sports, athletes driven by intrinsic motivation participate because they find the activity inherently rewarding. Understanding the role of intrinsic motivation is crucial as it may serve as a key factor influencing athletes' commitment, perseverance, and overall satisfaction with sporting experience [4]. The coping efficacy and belief in one's ability to effectively cope with challenges and adversities, is another vital psychological factor in sports as athletes encounter various stressors, like competition pressure, injuries, and performance expectations [5]. Coping efficacy plays a pivotal role in determining how athletes navigate these stressors, influencing their emotional well-being and overall satisfactions with their sports participations [6]. The athletes' satisfaction is a comprehensive measure encompassing various dimensions, including satisfaction with performance, team dynamics, coaching, and overall experience as required for chasing the diverse leading outcomes.

A satisfied athlete is likely to experience higher levels of motivation, commitment, and resilience, contributing to sustained engagement in the sports and improved performance. The relationship between physical activity and athletes' satisfaction is complex. While positive impact of physical activity on psychological well-being is well-established, specific mechanisms over which physical activity influences athletes' satisfaction need further exploration [7]. The intrinsic motivation and coping efficacy emerge as potential mediators, representing psychological pathways that explain how engagement in physical activity pays to athletes' satisfaction [8]. Regular physical activity is a cornerstone of athletic training, contributing not only to physical health but also significantly affecting psychological well-being [9]. Athletes engage in strenuous activities that extend beyond mere exercise; their involvement is deeply intertwined with personal identity, team dynamics, and performance goals.

The intrinsic motivation, characterized by the internal drive to engage in an activity for inherent satisfaction it provides, is a crucial psychological factor in the athletic context. Athletes who are intrinsically motivated over sports participations [10]. This internal motivation led to sustained effort, persistence, and positive attitude toward training and competition. Athletes regularly face challenges, setbacks, and high-pressure situations as coping efficacy, or the belief in one's ability

to effectively cope with stressors and challenges, becomes a determinant of an athlete's emotional well-being and performance [11]. The high coping efficacy is linked with adaptive stress responses, resilience, and the ability to navigate the demands of competitive sports effectively [12]. Athletes' satisfaction is a comprehensive construct of their sports experience. Satisfaction can be derived from performance achievements, positive team dynamic, effective coaching and overall enjoyment of sporting journey.

High levels of satisfaction are linked to enhanced motivation, commitment, and a sense of personal accomplishment. The relationship between physical activity and athletes' satisfaction is complex and multifaceted [13]. While physical activity contributes to overall well-being, understanding psychological mechanisms that mediate relationship is crucial as intrinsic motivation and coping efficacy emerge as potential mediators that can shed light on how engagement in physical activity influences athlete satisfaction [14]. The regular physical activity is fundamental for athlete health as it contributes to cardiovascular fitness, muscle strength, and physical well-being. Engaging in sports and exercise is linked to a lower risk of chronic diseases and promotes a healthy lifestyle [15]. Athletes' satisfaction is crucial for maintaining motivation and commitment to their sport. A satisfying fosters positive attitude, enjoyment, and sense of accomplishment, encouraging athletes to persevere over challenges.

The intrinsic motivation is a key driver for athletes to stay engaged in their sport. Athletes who find inherent satisfaction and enjoyment are more likely to commit to training, strive for personal improvement, and sustain long-term involvement in their chosen sport [16]. The coping efficacy is essential for athletes facing the inevitable challenges of sports. It influences an athlete's ability to cope with stress, setbacks, and high-pressure situations [17]. The interplay between physical activity, intrinsic motivation, and coping efficacy can lead to optimal performance [18]. Athletes who physically active, intrinsically motivated, and possess effective coping strategies are better equipped to handle demands of competition and achieve peak performance. Intrinsic motivation coping efficacy contribute to athletes' well-being. Athletes with intrinsic motivation experience positive emotions related to their sport, while effective coping strategies help

manage stress and maintain mental health.

LITERATURE REVIEW

The existing literature provides the linkages amid physical education, academic behavior, skills development, social responsibility and psychological resilience form complex web of interaction that contribute to holistic student development. Thus, understanding these linkages is essential for designing effective educational interventions and promoting positive outcomes across many domains [36]. The physical activity enhances brain function, including memories, concentration, and attention span, leading to better academic performance and behavior in the institutions that are required for diverse tasks [37]. The regular exercise reduces stress levels, promoting positive mindset and reducing disruptive behaviors like aggression and impulsivity to remained focused on particular tasks [38], in order to sustain the contextual and behavioral parameters toward the desired consequences.

The participation in physical activities improves motor skills, coordination, and proprioception, which are fundamental for academic tasks such as handwriting and fine motor manipulation as team sports activities in physical education foster collaboration, communication, and leadership skills, which are transferable to group projects and cooperative learning in academic settings [8]. The positive academic behaviors like time management, organization and persistence contribute to skill development and academic success [38]. Thus, the engagement in diverse academic tasks fosters cognitive skills such as critical thinking, analysis, and problem-solving, that are essential for lifelong learning and success in various domain [24]. These further provides the clues toward enhanced learning and offers the provision and opportunities for casing the desired outcomes for anticipated successes.

2.2 Physical Education

The physical education holds significant importance for academic behaviors, influencing various aspects of students' attitudes, engagement, and performance in the academic settings as regular physical activity, the cornerstone of physical education, is linked to improved cognitive function [7]. The participation in physical exercise increases blood flow to the brain that can enhance the concentration, memory, and attention span. Students who participate in physical education are more likely to exhibit alertness and focus in classroom, leading to better academic

performance [10]. The physical education instills valuable skills such as self-discipline, goal-setting, and time management to learn and follow instruction, in face of two challenges during physical activities [12]. Over team sports and cooperative games, students develop social skills like communication, cooperation, and teamwork.

2.3 Social Responsibility

The physical education serves as a powerful platform for fostering social responsibility among students as by incorporating the specific strategies and activities, physical education teachers can promote values like empathy, teamwork, fairness, and respect for others that are basics to social responsibility [17]. The Social activities that require groups to solve problems, accomplish tasks together encourage collaboration and shared decision-making as these experiences teach students to value teamwork and appreciate diverse perspectives [21]. The physical education can explicitly teach values like fairness, honesty, and respect through sportsmanship and ethical conduct [24]. Emphasizing the importance of integrity and fair play helps students understand their role in creating a positive and inclusive social environment, that are required towards these leading outcomes

RESEARCH METHODOLOGY

This study is quantitative in nature that aims to examine relationship in chasing the hypotheses and reaching conclusion. The positivism approach was used to chasing relationships among research variables (physical activity, life satisfaction, and motivation) of study. The research approach specifies the way through which data is collected from the respondents by retrieving them to reach their answers about variables of research in order to reach required conclusion through justification towards desired outcomes. The population of interest in this research is students hailing from colleges in KP, Pakistan wherein 2890 students from colleges wherein a sample is drawn from population (371), has been extracted by using the sampling formula widely used in the social research studies. Thus, 371 questionnaires were distributed among which 353 were recollected and used for analysis. Similarly, the random simple technique was used to access the population of study which comes under the non-probability technique to ensure required data from diverse dimensions. Also, both secondary and primary data were used to collect data from respondents and from existing knowledge databased to analyze data to reach

conclusion. The questionnaires were adopted from previous studies. Similarly, 5-point Likert scale was used to record responses of respondents about research issues in particular context to access respondents and achieving desired outcomes.

RESULTS OF STUDY

Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	SD
Physical Education	338	1.30	4.80	3.2437	.74274
Social Responsibility	338	1.33	4.67	3.1927	.81940
Psychological Resilience	338	1.70	4.70	3.3994	.66565
Skills Development	338	1.60	4.60	3.4273	.65940
Academic Behaviour	338	1.63	4.70	3.4056	.61427
Valid N (listwise)	338				

The descriptive statistics provides information about describing the research variables likewise physical education, social responsibility, psychological resilience, skills development as well as academic behavior in terms of mean, minimum and maximum response rates, sample, standard deviation in order to better describes the research issues of current study. The results of current study regarding the descriptive statistics revealed that all the variables have significant values in tables concerning the variables from different parameters that are within the acceptable as well as threshold values in describing the research variables prior to more towards the exploration of the desired relationships.

Correlation Analysis

Correlations						
		[1]	[2]	[3]	[4]	[5]
Physical Education [1]	Pearson Correlation	1	.335**	.380**	.403**	.546**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	338	338	338	338	338
Social	Pearson	.335**	1	.245**	.127*	.294**

Responsibility	Correlation					
[2]	Sig. (2-tailed)	.000		.000	.019	.000
	N	338	338	338	338	338
Skills	Pearson	.403**	.127*	.384**	1	.513**
Development	Correlation					
[4]	Sig. (2-tailed)	.000	.019	.000		.000
	N	338	338	338	338	338
Academic	Pearson	.546**	.294**	.493**	.513**	1
Behaviour [5]	Correlation					
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	338	338	338	338	338

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The correlation procedure was used to examine the association among the research variables of study like physical education, social responsibility, psychological resilience, skills development and academic behavior with respect to the strength and direction in relationships. The results of correlation procedure confirmed the association wherein positive and significant associations were found among the independent, mediator and dependent variables of study. The results thus revealed the association like physical education and skills development ($R = .403$ & $P = .000$), physical education and academic behavior ($R = .546$ & $P = .000$), physical education and social responsibility ($R = .335$ & $P = .000$), physical education and psychological resilience ($R = .380$ & $P = .000$), skills development and academic behavior ($R = .513$ & $P = .000$), and hypothesis was accepted from results.

H2: There is a positive impact of the physical education, social responsibility, and psychological resilience on skills development (H2).

Regression Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	SE of Estimate
1	.476a	.226	.219	.58265

Regression Analysis

ANOVA						
	Model	SS	df	MS	F	Sig.
1	Regression	33.141	3	11.047	32.541	.000b
	Residual	113.388	334	.339		
	Total	146.530	337			

Regression Analysis

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.712	.197		8.711	.000
	Physical Education	.278	.048	.313	5.785	.000
	Social Responsibility	-.036	.041	-.045	-.871	.385
	Psychological Resilience	.274	.052	.276	5.258	.000

A. Predictors: Physical Education, Social Responsibility & Psychological Resilience

B. Dependent Variable: Skills Development

The regression procedure was used to examine the cause&-effect relationships among research variables of current study. The results of regression provide significant information in predicting skills development through physical education, social responsibility and psychological resilience by using the regression procedure. The results revealed that there is 22.6% variance in the skills development through physical education, social responsibility and psychological resilience with the significant impact of predictors on the dependent variable like physical education (coefficient value = .278 & P-value = .000), social responsibility (coefficient value = -.036 & P-value = .385), and psychological resilience (coefficient value = .274 & P-value = .000), and hypothesis was thus partially accepted from results.

H3: There is significant mediating role of social responsibility in linking physical education and skills development (H4).

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Mediation First Step (a)

Model Summary

R	R Square	MSE	F	df1	df2	p
.3346	.1119	.5980	52.3244	1.0000	336.0000	.0000

Coefficients of Regression

Model	Coefficient	se	t	p	LLCI	ULCI
Constant	1.9954	.1582	12.6110	.0000	1.6842	2.3066
Physical Education	.3691	.0510	7.2336	.0000	.2687	.4695

Predicting Variable: Physical Education, Criterion Variable: Social Responsibility

Mediation Second & Third Steps (b & c)

Model Summary

R	R Square	MSE	F	df1	df2	p
.4027	.1621	.3665	27.4552	2.0000	335.0000	.0000

Coefficients of Regression

Model	Coefficient	se	t	p	LLCI	ULCI
Constant	2.2812	.1857	12.2816	.0000	1.9158	2.6466
Social Responsibility	.2636	.0419	-1.1582	.8744	-.0891	.0758
Physical Education	.3599	.0489	7.3550	.0000	.2636	.4561

Predictors: Physical Education, Social Responsibility

Criterion Variable: Skills Development

Mediation Fourth Step (c)

Model Summary

R	R Square	MSE	F	df1	df2	p
.4026	.1621	.3654	553.087	1.0000	336.0000	.0000

Table 4.19 Coefficients of Regression

Model	Coefficient	se	t	p	LLCI	ULCI
Constant	2.2680	.1533	14.7926	.0000	1.9664	2.5695
Physical Education	.3774	.0491	7.2861	.0000	.2609	.4539

Education

Predicting Variable: Physical Education, Criterion Variable: Skills Development

The mediation procedure was used to examine mediating role of social responsibility in linking physical education and skills development through four different paths of mediation in order to confirm that whether there is partial mediation or full mediating role of social responsibility in linking physical education and skills development. The results of all the four paths have provided significant information that confirmed the partial mediating role of social responsibility due to decrease in coefficient value from (.3774) in direct relationship to (.3599) in the indirect links in the mediation procedure. The mediation analysis thus provides significant outcome about desired mediating role of social responsibility in linking physical education and skills development and thus from these mediation outcomes, the hypothesis was accepted based upon the outcomes from the mediation procedure.

DISCUSSION

The physical education is often perceived primarily as a break from the academic rigors of other subjects, providing students with essential physical activity and chance to expend energy. Still, the impact of physical education extends far beyond the gymnasium; it plays the crucial role in enhancing students' academic behavior and educational experiences. The research consistently shows that physical activity is linked towards improved brain function and cognition [1]. When students participate in physical education, they experience increased blood flow to brain, which helps to enhance awareness and memory retention [2]. These physiological benefits are critical during childhood and adolescence, a time when students are expected to absorb large amounts of new information [3]. Moreover, the physical education teaches a plethora of soft skills that are vital in academic settings.

The physical education helps in providing a natural environment for developing the social skills through interaction with peers and teamwork most team sports require players to work together to achieve a goal [13]. The students learn the importance of cooperation, coordination, and value of working toward shared objectives as students must learn to communicate clearly and quickly, skills that are directly transferable to group projects and everyday interactions [14]. The physical education provides students with opportunities to lead by example and take on

responsibilities as team captains, group leaders [15]. These roles help develop leadership skills that are beneficial throughout life as role of physical education in emotional development is often underrated but significantly impactful as each success in learning a new skill or improving in a sport contributes to positive self-image.

The psychological resilience refers to an individual's ability to adapt successfully in the face of stress, adversity, and trauma as physical education helps build this resilience through multiple boulevards [22]. The regular physical activity is a proven stress reliever. It helps reduce levels of the body's stress hormones, such as adrenaline and cortisol, while stimulating the production of endorphins, chemicals in the brain that are the body natural painkillers and mood elevators [23]. The sports and physical activities provide a safe environment where students can experience failure in the controlled setting, learning to cope with disappointments and setbacks [24]. This experience is vital in building the resilience, as students learn firsthand that failure is a part of learning and improvement that are required comprehending the various tasks and thus related outcomes for success.

RECOMMENDATIONS

1. The educators should design physical education modules that include stress-management strategies, reflective practices and goal-setting exercises. These initiatives can help build students' resilience, improving their ability to cope with academic pressures and adapt to challenges effectively.
2. The educational institutions should embed the structured activities in physical education programs that promote ethical behavior, and community service. This can boost students' sense of social responsibility that, in turn, positively contributes to cooperative learning and academic discipline.
3. The training programs for physical education teachers be updated to include knowledge of how activities influence health and social skills. This enables teachers to intentionally structure activities that not only promote physical fitness but nurture also psychological resilience and academic behaviors.
4. Administrators should promote collaboration between physical education and academic departments to create the integrated learning models. These models should emphasize the interrelation of physical fitness, emotional stability, and

academic success to support the students' skill development.

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