

# The Impact Of Physical Education On Behavioral Transformation And Personality Development

Nasira Parveen<sup>1</sup>, Dr. Noor Muhammad<sup>2</sup>, Rashid Naeem Khan<sup>3</sup> & Afshin Begum<sup>1</sup>

## Abstract

*This study aimed to examine the impact of physical education on behavioral transformation and personality development among students in higher institutions Punjab, Pakistan. The physical education is increasingly recognized not only for its physical health benefits but for its potential in fostering positive personality traits and inspiring behavioral improvements. Through a survey of students across various higher institutions, this research investigates how participation in the physical activities influences key behavioral traits, including discipline, teamwork, resilience, and self-confidence. The study aimed to examine the hypothesized relationship among the research variables wherein findings highlight strong positive correlation between consistent participation in physical education and improvements in personality attributes, particularly the self-discipline, cooperation, and stress management. Additionally, the students report increased self-esteem and adaptability, suggesting that physical education supports personal growth by fostering proactive and resilient mindset. In this regard, some recommendations have been extracted from conclusion of current study that may help the students and institutions for considering the issues in a tailor-made format.*

**Keywords:** Physical Education, Behavioral Transformation, Personality Development & Higher Education Students.

## INTRODUCTION

The impact of physical education on behavioral transformation and personality development is a complex and multifaceted topic that involves various factors, including motivational climate and psychological resilience. The physical education involves structured physical activities and sports that can contribute to behavioral transformation as regular exercise is linked to improved mood, reduced stress, and enhanced cognitive function [1]. Participation in sports fosters social skills, teamwork, and discipline that can positively influence behavior. The physical education can play role in shaping personality traits like perseverance, discipline and self-confidence [2]. Engaging in physical activities helps individuals to develop a sense of achievement and mastery, that can contribute towards a more resilient and confident personality [3]. Motivational climate within a physical education setting refers to the atmosphere created by instructors, peers, and the overall concerned environment. The positive motivational climate encourages effort, improvement, and love for physical activity as such an environment can contribute to a more positive and adaptive personality development.

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<sup>1</sup>PhD Scholar, Department of Sports Sciences & Physical Education, Gomal University, Pakistan.

<sup>2</sup>Department of Sports Sciences and Physical Education, Gomal University, Pakistan.

<sup>3</sup>Lecturer, Department of Sports Sciences, University of Sargodha, Sargodha, Pakistan.

The psychological resilience involves the ability to recover from challenges and adversity. Physical education, by promoting coping mechanisms, goal-setting, and perseverance can contribute to the development of psychological resilience [4]. Individuals who engage in regular physical activity is better equipped to handle the stress as positive motivational climate and enhanced psychological resilience may amplify positive effects of physical education on behavior and personality [5]. The physical education can have a significant impact on the behavioral transformation and personality development through various mechanisms [6]. In this regard, physical education is thus important in forming and nurturing the behaviors of students towards the desirability and commitment towards the realization of tasks. The research in sports offer the valuable insights into designing the effective physical education programs that contribute not only to physical health but also to holistic personal development. The linkages amid physical education, behavioral transformation, personality development, motivational climate, & psychological resilience form the complex and dynamic interplay.

The regular participation in physical education activities, such as sports and exercise, can lead to behavioral transformations [7]. The physical activities release endorphins, positively affect mood and behavior as discipline and structure inherent in physical education contribute to behavioral changes, fostering traits likewise self-control and goal-setting [8]. The physical education helps in shaping personality by instilling qualities like discipline, perseverance, and self-confidence [9]. Team sports and group activities promote social skills, teamwork, and leadership, influencing the change of individual's personality and outcomes. The positive experiences in physical education may contribute to more resilient and adaptable personality. The motivational climate in education setting impacts students' attitudes, effort and engagement. A motivational climate, characterized by support, encouragement, and focus on improvement rather than competition, enhances impact of physical education on behavioral and personality outcomes [10]. The engagement in physical activities within a supportive and motivating environment can contribute towards development of spiritual resilience [11].

### **Objectives & Hypotheses**

1. To examine the association among physical education behavioral transformation and personality development (H1).
2. To examine the impact of physical education on behavioral transformation and personality development (H2-3).

### **LITERATURE REVIEW**

The background of a study provides the context and rationale for investigating a particular topic towards impact of physical education on behavioral transformation and personality development, with a mediating role of motivational climate and psychological resilience in higher education. In contemporary era, physical education is recognized as an integral component of educational plans, contributing not only to physical health but also to broader aspects of the human development, including behavioral transformation and personality change [28]. In higher education settings, where individuals are transitioning to maturity and facing new challenges, so, the role of physical education becomes increasingly important in shaping holistic development [29]. The transition to higher education represents the critical period in an individuals' life characterized by academic demands, increased independence, and the formation of identity [30], overwhelmed at the desired and leading outcomes. In this linking, among these challenges, physical education holds potential to play transformative role in fostering positive behavioral changes and shaping personality traits in diverse circumstances.

Thus, understanding the underlying mechanisms, such as motivational climate and psychological resilience, can offer appreciated insights into optimizing impact of physical education programs on the students' behaviors [31]. Thus, numerous studies have highlighted the positive effects of physical education on various aspects of progress, including improved mental health, cognitive function, and socio-academic skills [32]. Nevertheless, specific pathways through which physical education influences behavioral transformation and personality development in higher education remain less explored [33]. The literature emphasizes the need for a nuanced understanding of mediating factors involved, like climate within physical education programs and psychological resilience of individuals. The physical education remains crucial for students in higher education, offering range of benefits that extend beyond traditional focus on physical fitness. The physical education helps well-being by inspiring physical activity as engaging in physical activities helps students maintain good physical health, reduce risk of chronic diseases, and enhance their overall quality of lifespan [5].

The physical activity has been linked to enhanced cognitive function as participating in physical education can improve concentration, and attention, that are vital for academic success in higher education institution [7]. Physical education contributes to holistic development by addressing not only physical fitness but social, emotional, and cognitive aspects [11]. It helps in creating the environment of trust and commitment through team sports and group activities, students develop social skills, leadership, and emotional resilience towards success. The motivational climate in sports plays a crucial role in development of students in higher education. It refers to atmosphere created by coaches, peers, and sports environments, influencing individuals' motivation, effort, and satisfaction [14]. So, positive motivational climate fosters intrinsic motivation, inspiring the students to engage in sports for the sheer pleasure and satisfaction it brings. Thus, this internal motivation is associated with sustained interest and long-term participation [17]. The students in higher education are likely to perform better in sports when they perceive positive and supportive motivational climate.

This climate promotes a mastery-oriented focus, where individuals are driven by desire to improve their skills and reach personal goals [20]. The enjoyment is crucial for sustaining engagement and fostering lifelong appreciation for physical participations. Psychological resilience in sports is highly important for students in higher education, as it equips them with the mental strength and coping mechanisms necessary to navigate challenges and demands of both academic and athletic pursuits [22]. The higher education students face intense academic pressure and psychological resilience in sports helps them cope with pressure, to manage stress, stay focused, and maintain a positive mindset in academic and athletic endeavors [24]. The sports offer a dynamic environment where situations change rapidly as developing resilience enables students to adapt to unexpected changes, both in sports arena and in academic lives [27]. Psychological resilience fosters mental toughness, allowing students to persevere through challenges and setbacks and mental fortitude is movable to academic backgrounds, helping them navigate hard homework and overcome the related obstacles.

The behavioral transformation in sports is highly significant for students in higher education as it encompasses the development of positive behaviors, attitudes, and habits that extend beyond the sports arena [21]. Participation in sports promotes personal discipline and self-control, students learn to adhere to training schedules, follow rules, and make lifestyle choices that contributes to their overall well-being [25]. Sports involvement requires effective time management. Balancing academic commitments with sports activities teaches students valuable skills in prioritization, planning, and organization [26]. In sports, students set and strive for specific performance goals and goal-setting mentality decodes into academic and

personal life, nurturing proactive approach to achieving the objectives. The personality development in sports has dominant standing for the students in higher education as it goes beyond physical skills to shape enduring character traits, behaviors, and attitudes, as the engagement in sports offers opportunities for students to assume leadership roles, fostering development of leadership skills that are transferable to academic and professional settings [30].

Team sports stress collaboration and teamwork as personality development in sports enhances students' ability to work harmoniously with others, contributing to a positive team environment [31]. The sports involvement necessitates effective communication with coaches, teammates, and opponents as developing good communication skills in sports enhances student ability to express themselves clearly and work collaboratively in academic and professional contexts [34]. Thus, the challenges and setbacks experienced in sports contribute toward desired leading development of resilience and insistence. The physical education, over structured physical activities and exercises, directly influences behavioral transformation in higher education students as participation in the physical education programs lead to changes in habits, conduct, and interpersonal skills leading towards personality development [35]. Engagement in physical education donate to development of personality traits such as discipline, perseverance, teamwork, and leadership as, challenges and experiences in physical education settings shape enduring characteristics that effect personality development [36].

## RESEARCH METHODOLOGY

The research design of current study is quantitative wherein main aim is to examine the statistical relationships amid research variables (physical education, behavioral transformation personality development) so as to reach conclusion and making desired decisions about relationships among research variables as developing an inclusive research strategy is crucial for conducting effective and meaningful research. The choice of research approach is influenced by nature of the research question, the available resources, and goals of the study. The population of interest in this study consists of the students (2280) hailing from higher educational institutions, Punjab, Pakistan. A sample of 332 was selected by using the statistical formula for sample-size determination to select appropriate sampling. Thus, 332 questionnaires were distributed wherein 306 were recollected and used for analysis to reach the conclusion. The secondary and primary sources were used to collect data over existing research and questionnaire and analyzed by using the argumentation and statistical procedures to attain the desired outcomes and making suitable research decisions. The questionnaire for this study was adopted from various previous studies likewise scale for physical education was adapted from [6], scale for behavioral transformation adapted from [27], scale of personality development was adopted from [33], by sing 5-point Likert scale to record the respondents' responses.

## RESULTS OF STUDY

The results of study are presented in this section that are mainly the outcomes of the statistical procedures that are used to examine relationships among the research variables of study in order to extract the desired information and making the required decisions about relationships among research variables.

Table 1 Descriptive Statistics

	N	Minimum	Maximum	Mean	SD
Physical Education	306	1.30	4.80	3.2442	.75358
Behavioural Transformation	306	1.70	4.70	3.4778	.58816

Personality Development	306	1.63	4.62	3.3940	.60014
Valid N (listwise)	306				

The descriptive statistics revealed the information for describing the research variables in terms of minimum and maximum responses of the respondents towards the research variables of current study. The results revealed important information about the research issues in terms of values that are within the threshold values and thus describe the research issues in particular context for the particular purpose.

Table 2 Correlation Analysis (H1)

		[1]	[2]	[3]
Physical Education [1]	Pearson Correlation	1	.604**	.644**
	Sig. (2-tailed)		.000	.000
	N	306	306	306
Behavioural Transformation [2]	Pearson Correlation	.604**	1	.652**
	Sig. (2-tailed)	.000		.000
	N	306	306	306
Personality Development [3]	Pearson Correlation	.644**	.652**	1
	Sig. (2-tailed)	.000	.000	
	N	306	306	306

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

The correlation procedure was used to examine the association amid research variables of current study in order to extract the information about the strength and direction in association. Thus, correlation revealed significant and positive association among variables like physical education is significantly associated with Behavioural transformation (R = .644 & P = .000) and personality development (R = .652 & P = .000), and thus from these correlation outcomes, the hypothesis is thus accepted.

Table 3 Regression Analysis (H2)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	.604a	.365	.363	.46932

Table 4 Regression Analysis (H2)

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.548	1	38.548	175.007	.000b
	Residual	66.961	304	.220		
	Total	105.509	305			

Table 5 Regression Analysis (H2)

Coefficients	
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Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.947	.119		16.397	.000
	Physical Education	.472	.036	.604	13.229	.000
a. Predictors: Physical Education						
b. Dependent Variable: Behavioral Transformation						

The regression procedure was used to examine the prediction of behavioral transformation through physical education by using the cause-&-effect relationship. The results of regression procedure provide important information in reaching the conclusion wherein 36.5% change occurred in the transformation through is due to physical education as confirmed by ANOVA outcomes with the significant coefficient of regression like ( $\beta = .472$  & P-value = .000), and thus from these results, hypothesis is accepted.

Table 6 Regression Analysis (H3)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	.644a	.415	.413	.45967

Table 7 Regression Analysis (H3)

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	45.618	1	45.618	215.892	.000b
	Residual	64.235	304	.211		
	Total	109.853	305			
a. Dependent Variable: Personality Development						

Table 8 Regression Analysis (H3)

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.729	.116		14.865	.000
	Physical Education	.513	.035	.644	14.693	.000
a. Predictors: Physical Education						
b. Dependent Variable: Personality Development						

The regression procedure was used to examine the prediction of personality development through physical education by using the cause-&-effect relationship. The results of regression procedure provide important information in reaching the conclusion wherein 41.5% change occurred in the personality development through is due to physical education as confirmed by ANOVA outcomes with significant coefficient of regression like ( $\beta = .513$  & P-value = .000), and from these results, hypothesis is accepted.

## DISCUSSION

The existing studies revealed that overcoming the challenges in physical education, setting and achieving fitness goals, and learning to cope with setbacks play role in building resilience [12]. A positive motivational climate enhances motivation and engagement in physical activities, while psychological resilience helps individuals cope with challenges, setbacks, and failures they may encounter in the process of development and desired outcomes. The physical education serves as platform for behavior transformation and personal development with motivational climate and psychological resilience acting as crucial factors that influence the direction and strength of these effects. The regular physical activity is crucial for maintaining good physical health as physical education helps in preventing health issues like obesity and cardiovascular diseases, by promoting the active lifestyle [13]. These interactions contribute to the development of social skills, empathy, and sense of community. The exercise is linked toward better cognitive function, greater memory, and increased attention span. Thus, the physical education contributes to overall brain health and academic performance [14]. Through structured activities & routines, physical education fosters discipline and self-control.

Students learn the importance of following rules, respecting others, and taking responsibility for actions [15]. The physical activity is helpful in reducing stress that includes improved emotional regulation, reduced aggression, and improve coping mechanisms. The physical education instills values like teamwork, leadership, and perseverance, contributing to development of well-rounded personality. The success and improvement in physical activities boost self-esteem, self-confidence as facing challenges in a supportive environment helps build resilient adaptable personality [16]. Positive motivational climate inspires the intrinsic motivation, fostering a genuine interest and enjoyment in physical activities as intrinsic motivation is essential for long-term engagement and personal growth [17]. The learning and mastering of various physical skills contribute to a sense of accomplishment and competence [37]. Thus, motivational climates that emphasize cooperation and support contribute to development of positive social relationships, enhancing overall well-being [18]. The physical education offers prospects for individuals to face challenges, promoting development of coping skills as psychological resilience helps the individuals bounce back from adversity and adapt to life's challenges that hinders them from attaining the desired tasks and leading consequences.

The ability to cope with stress and adversity is crucial for mental health, psychological resilience cultivated through physical education contributes toward emotional well-being. The phenomenal importance lies in interconnectedness of these gears [19]. A well-designed physical education program, with positive motivational climate and a focus on psychological resilience, can have far-reaching effects on individuals' physical health, behavior, personality and overall well-being [20]. The significance of physical education for behavioral transformation and personality development is profound, encompassing many physical, mental, and social aspects of an individuals' well-being [21]. The physical education encourages the regular physical activity, helping individuals develop habits that contribute to healthier environments as participation in physical activities improve towards better desired outcomes that ensures the desirability and dedication towards attainment of leading strategic tasks. This contributes to development of discipline, self-control, and sense of responsibility, physical activity is linked to release of endorphins that are known to improve mood and reduce stress.

The participation in physical education can be effective means of managing and alleviating stress as many physical education activities involve teamwork and collaboration [22]. Through sports and group exercises, individuals learn to work together, fostering teamwork and social skills that are valuable for personality development [23]. The success and improvement in

physical activities pay to increased self-confidence and self-esteem and overcoming challenges in caring environment helps build resilience and a positive self-image [24]. The regular physical activity has been shown to improve cognitive functions like memory, attention, and problem-solving skills. This cognitive enhancement contributes to overall mental well-being and can positively impact behavior toward desired achievements. The physical education lays foundation for providing an outlet for the emotional expression and regulation as engaging in physical activities can be the positive way to manage emotions, reduce anxiety, and improve overall emotional well-being [25]. Consequently, interacting with peers in physical education setting promotes positive social relationships that are vital for maintaining the trust and commitment towards success [26], leading toward desired outcomes for success.

## **CONCLUSION**

The study concludes that physical education has a significant and positive impact upon students' behavioral transformation and personality development in higher education settings. The physical education serves as catalyst for fostering qualities like discipline, resilience, and teamwork, which are essential for students' personal and social growth. Through structured physical activities and sports, students develop better self-control, stress management abilities, and cooperative skills, which contribute to a well-rounded personality. Moreover, study finds that regular engagement in PE improves self-confidence and adaptability, helping students navigate academic and social challenges more effectively. These outcomes underscore the importance of physical education as a core component of the educational experience, extending its relevance beyond physical health to vital psychological and social dimensions. Integrating physical education into the curriculum not only enriches students' personal development but also prepares them for future challenges, promoting lifelong skills for well-being and productivity. Consequently, educational institutions and policymakers are encouraged to strengthen programs to enhance their contribution to holistic student development.

## **Recommendations**

1. The higher education institutions should integrate more structured and diverse physical education programs into their curricula. Thus, emphasis on sports, team activities, and individual fitness regimes can maximize benefits for students' behavioral and personality development.
2. The physical education programs should be designed to foster teamwork, leadership, and social interaction, which are crucial for behavioral transformation. Group activities, such as team sports, cooperative challenges, inspire students to grow empathy, communication and problem-solving skills.
3. The periodic assessments and constructive feedback can help students recognize personal growth in behavioral and personality attributes. The reflection sessions led by physical education instructors can also guide students in setting personal development goals from diverse perspectives.
4. Institutions should ensure that PE instructors are trained not only in physical fitness but also in the developmental psychology, allowing them to better guide students in their behavioral transformation and personality development that are required for attaining the desired outcomes.
5. Providing a range of extracurricular physical activity options, like fitness clubs or sports leagues, can promote continued engagement in the physical education beyond compulsory courses, supporting ongoing personal growth and resilience that are required from the different dimensions.

## **REFERENCES**



- [1] Trudeau, F., & Shephard, R. J. Physical education, school physical activity, school sports and academic performance. *International Journal of Behavioral Nutrition and Physical Activity*, 5(1), 10. (2008).
- [2] Abós, Á, Sevil, J., Julián, A., Abarca, A., & García, L. Improving student predisposition towards physical education by optimizing their motivational processes in Acro sport unit. *Eur. Phys. Educ. Rev.* 23, 444–460. (2017).
- [3] Baena, A., Gómez, M., Granero, A., & Camacho, M. Predicting satisfaction in physical education from motivational climate and self-determined motivation. *J. Teach. Phys. Educ.* 34, 210–224. (2015).
- [4] White, L., Bennie, A., Cinelli, R., Hilland, T., Owen, K., Lonsdale, C. Self-determination theory in physical education: A systematic review of qualitative studies. *Teach. Teach. Educ.*, 99, 103247. (2021).
- [5] Standage, M., & Treasure, D. C. Relationship among achievement goal orientations and multidimensional situational motivation in physical education. *British Journal of Educational Psychology*, 72(1), 87-103. (2002).
- [6] Treasure, D. C., & Roberts, G. C. Applications of achievement goal theory to physical education: Implications for enhancing motivation. *Quest*, 47(4), 475-489. (1995).
- [7] Treasure, D. C., & Roberts, G. C. Applications of achievement goal theory to physical education: Implications for enhancing motivation. *Quest*, 47(4), 475-489. (1995).
- [8] McKenzie, T. L., & Kahan, D. (Eds.). *Physical activity and health: A report of the Surgeon General. Human Kinetics.* (2017).
- [9] Harwood, C., Keegan, R., Smith, M., & Raine, A systematic review of the intrapersonal correlates of motivational climate perceptions in sport and physical activity. *Psychology of Sport and Exercise*, 18, 9-25. (2015).
- [10] Valero, A., Østerlie, O., Martínez, S., & García, M. Gamification in Physical Education: Evaluation of Impact on Motivation & Academic Performance within Higher Education. *Int. J. Environ. Res. Public Health*, 17, 4465. (2020).
- [11] Braithwaite, R., Spray, C. M., & Warburton, V. E. Motivational climate interventions in physical education: A meta-analysis. *Psychology of Sport and Exercise*, 12, 628-638. (2011).
- [12] Liukkonen, J., Barkoukis, V., Watt, A., & Jaakkola, T. Motivational climate and students' emotional experiences and effort in physical education. *The Journal of Educational Research*, 103, 295-308. (2010).
- [13] Treasure, D. C., & Roberts, G. C. Students' perceptions of the motivational climate, achievement beliefs, and satisfaction in physical education. *Research Quarterly for Exercise and Sport*, 72, 165-175. (2001).
- [14] Liukkonen, J., Barkoukis, V., Watt, A., & Jaakkola, T. Motivational climate and students' emotional experiences and effort in physical education. *The Journal of Educational Research*, 103, 295-308. (2010).
- [15] Balaguer, I., Duda, J. L., Crespo, M., & Mayo, C. The coach-created motivational climate, young athletes' well-being, and intentions to continue participation. *Journal of Clinical Sport Psychology*, 13(1), 27–53. (1999).
- [16] Newton, M., Duda, J. L., & Yin, Z. Examination of the psychometric properties of the Perceived Motivational Climate in Sport Questionnaire-2 in a sample of female athletes. *Journal of Sports Sciences*, 18(4), 275–290. (2000).
- [17] Ntoumanis, N., & Biddle, S. A review of motivational climate in physical activity. *Journal of Sports Sciences*, 17(8), 643–665. (1999).
- [18] Ozbay, F., Johnson, D. C., Dimoulas, E., Morgan III, C. A., Charney, D., & Southwick, S. Social support and resilience to stress: From neurobiology to clinical practice. *Psychiatry (Edgmont)*, 4(5), 35–40. (2007).
- [19] Southwick, S. M., & Charney, D. S. *Resilience: The Science of Mastering Life's Greatest Challenges.* Cambridge University Press. (2012).
- [20] Fletcher, D., & Sarkar, M. Psychological resilience: A review and critique of definitions, concepts, and theory. *European Psychologist*, 18(1), 12–23. (2013).
- [21] Connor, K. M., & Davidson, J. R. Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, 18(2), 76–82. (2003).

- [22] Luthar, S. S., Cicchetti, D., & Becker, B. The construct of resilience: A critical evaluation and guidelines for future work. *Child Development*, 71(3), 543–562. **(2000)**.
- [23] Masten, S. Ordinary magic: Resilience processes in development. *American Psychologist*, 56(3), 227–238. **(2001)**.
- [24] Ozbay, F., Johnson, D. C., Dimoulas, E., Morgan III, C. A., Charney, D., & Southwick, S. Social support and resilience to stress: From neurobiology to clinical practice. *Psychiatry (Edgmont)*, 4(5), 35–40. **(2007)**.
- [25] Fletcher, D., & Sarkar, M. A grounded theory of psychological resilience in Olympic champions. *Psychology of Sport and Exercise*, 13(5), 669–678. **(2012)**.
- [26] Locke, E. A., & Latham, G. P. The Role of Goal Setting in Sport and Exercise: A Systematic Review and Meta-Analysis. *Psychological Bulletin*, 127 (2), 187–207. (2002).
- [27] Goldsmith, M., & Passmore, J. Coaching for Behavioral Change: An Interview with Marshall Goldsmith. *International Coaching Psychology Review*, 14 (1), 31–39. **(2019)**.
- [28] Fry, M. D., & Gano-Overway, L. A. Social Identity and the Transition to High School: The Impact of a Team-Based Transition Program on Social Identity, Sportsmanship, and Peer Relationships. *Journal of Applied Sport Psychology*, 22, 2, 179–196. **(2010)**.
- [29] Hanton, S., & Connaughton, D. Promoting Behavior Change in Athletes: A Practical Application of Psychological Strategies. *The Sport Psychologist*, 16, 3, 254–268. (2002).
- [30] Allen, M. S., and Laborde, S. The role of personality in sport and physical activity. *Curr. Dir. Psychol. Sci.* 23, 460–465. **(2014)**.
- [31] Liao, Y., Cheng, X., Chen, W., & Peng, X. Influence of Physical Exercise on Adolescent Personality Traits: The Mediating Role of Peer Relationship and the Moderating Role of Parent–Child Relationship. *Front. Psychol.* 13:889758. **(2022)**.
- [32] Allen, M. S., and Laborde, S. The role of personality in sport and physical activity. *Curr. Dir. Psychol. Sci.* 23, 460–465. **(2014)**.
- [33] Stephan, Y., Sutin, A. R., & Terracciano, A. (2014). Physical activity and personality development across adulthood and old age: Evidence from two longitudinal studies. *Journal of Research in Personality*, 49, 1–7.
- [34] Lucas, R. E., & Donnellan, M. B. (2011). Personality development across the life span: Longitudinal analyses with a national sample from Germany. *Journal of Personality and Social Psychology*, 101, 847–861.
- [35] Allen MS, Laborde S. The role of personality in sport and physical activity. *Current Directions in Psychological Science*. 2014, 23: 460–465.
- [36] Allen MS, Magee CA, Vella SA, Laborde S. Bidirectional associations between personality and physical activity in adulthood. *Health Psychology*. 2017; 36:332–336.
- [37] Stephan Y, Sutin AR, Terracciano A. Physical activity and personality development across adulthood and old age: Evidence from two longitudinal studies. *Journal of Research in Personality*. 2014; 49:1–7.