SPORT TK-EuroAmerican Journal of Sport Sciences

https://revistas.um.es/sportk Online ISSN: 2340-8812

Received: **29/03/2024.** Accepted: **01/12/2024.** Published: **20/04/2025**

Scientific and methodological foundations of the formation of football playing skills in middle school students

Zhomart Izhanov*, Yerlan Seisenbekov, Yerlan Seisenbekov, Rysgul Kokebayeva, Kendibay Abishev, Shamurat Orazov, Adilbay Tastanov

[1] Abai Kazakh National Pedagogical University, Almaty, Kazakhstan.

* Correspondence: Zhomart Izhanov; zhomart_izhanov@mail.ru

ABSTRACT

This study was conducted to develop and assess a new experimental football training program designed to engage students in football and enhance their skills, knowledge, and techniques related to football. The experimental training program (a combination of theory and practice) was assessed based on three elements of the program: teaching modules, practical coaching, and game competition. Based on the results, increasing practical coaching for football students further enhances their football skills. The relationship between game competition (GC) and students' football skills development (SFSD) was significant ($\beta = 0.929$; $p=0.000$). Also, the relationship between experimental teaching and training program (ETTP) and football skills was significant ($\beta =0.875$; $p=0.000$). Therefore, football skills were developed with the program and the majority of students performed exceptionally well during and after the completion of the program. The results show that students' performance increased significantly as compared to former theory-based models. Also, students' level of engagement increased with the new experimental training program. The experimental training program was developed to overcome the weakness of the current football training program, which was lacking in skills development and student engagement.

KEYWORDS

Experimental Training Program; Football Training; Middle School; Physical Education; Skills

1. INTRODUCTION

Football is one of the most popular sports in the world and the increase in its popularity had made this sport a great source of motivation and inspiration for students (Kirk, 2004; Kang et al., 2015) Football also refers to soccer (Orejan, 2011), it is a multi-player game that consists of 11 players in each team and generally divided into the goalkeeper, defenders, midfielders, and forwards players (Sałabun et al., 2020). Football sport requires physical fitness, which can be defined as, the ability of the athlete to perform the sports tasks effectively without undue fatigue (Bompa, 2000). Football player fitness requires significant and specific training program beside of health-management elements, such as a dietary program (Samur, 2019).

Sports management at the school level is a growing field that requires skillful teachers and coaches to fulfill students' training requirements of various sports (Winnick & Porretta, 2016). Providing quality training to students in the development of football skills requires comprehensive knowledge of the sport in terms of skills and suitable techniques (Pangrazi & Beighle, 2019). The process of training middle school students by the international standard of sports requires effective training modules (Hussein et al., 2022).

Additionally, the rapid increase in the popularity of football sport almost in all countries have increased the demand for trained professionals and training modules. Thus, the demand for training and development programs for future football players has increased (Silva et al., 2023). Football training at the school level has impacted positively the physical and mental health of the students (Ma, 2021). As well as, the football sports industry across the globe has become a productive business model that can impact significantly the country’s development in various sectors (Bohlmann & Van Heerden, 2008)

These studies have found that youth sports participation has an impact positively on academic performance and in defining goals for future professional careers (Muñoz-Bullón et al., 2017; Trudeau & Shephard, 2008). Additionally, these sports training are positively associated with students’ future goals regarding career progress (Mazerolle et al., 2012). Designing effective training programs at the school level requires an in-depth understanding of the game (Roberts, 2011).

The improvement in the professional knowledge and skills of future football players requires an understanding of the future sports requirements and expected developments in technology related to the relevant sport (Haugaasen & Jordet, 2012). Understanding these basic factors requires a

scientific approach to assessment. The scientific approach to the assessment for football sports requires a comprehensive model.

The traditional physical culture and sports training has now become insufficient as the advancement in technology in football education and game competition in schools (Dyakova & Dyakov, 2019). The importance of physical culture and sports training at the school level requires dedication from the institute and local administration (Azimovna, 2021). Moreover, students' engagement in the physical culture and sports teaching is essential in the development of students as a coach or professional players in different sports fields (Yanık, 2018). the students' engagement in sports activities has been explored by numerous authors and found positive association with academic grades and performance (Trudeau & Shephard, 2008; Stevens et al., 2008; Wunsch et al., 2021).

Therefore, students' engagement in football training programs requires a deeper understanding of the sports and students' capabilities through scientific research to develop a model that highlights the importance and professional development in this field. Moreover, limited studies have been conducted in the Kazakhstan middle school regarding football sports and training from the school level and there exists a gap in the literature and also in the practical aspect of sports. Additionally, due to the traditional sports coaching and teaching curriculum limited number of students reach international positions in football sports. Football skills development at the school level requires effective training programs that need to be built by students and sports requirements. This study was specifically designed for middle school students to attract them towards football sports and to equip them with skills and techniques. For this purpose, we have developed a training program that was developed based on future requirements of the football sport. The proposed model of training was based on traditional approaches to training along with innovative digital platforms for the training to facilitate students, teachers, and coaches of physical culture and sports. The program was developed based on the latest advancement in sports technology and methodologies.

There are five hypotheses in the present study. Hypothesis 1: Teaching modules are positively associated with football skills development. Hypothesis 2: Practical coaching is positively associated with the students' football skills development. Hypothesis 3: Game competitions are positively associated with football skills development. Hypothesis 4: Experimental teaching and training programs are positively associated with students' engagement. Hypothesis 5: Experimental teaching and training programs are positively associated with football skills development.

2. METHODS

2.1. Participants

This longitudinal study was conducted in two parts. The first part consisted of students' engagement towards the football sports experimental training program designed based on traditional teaching methodologies along with the combination of innovative sports coaching and teaching technologies. The experimental coaching and teaching program consists of a theory and practical approach. The trained students were initially given opportunities to play at the junior level competitions at partnering schools and colleges and based on students' performance they were gradually introduced to local town's level competitions and moved to intercity competitions. The study consists of 3 years period, the progress of students was assessed and the progress of students was documented using self-developed instruments.

The study sample consisted of 80 middle school students from classes 7^{th} and 8^{th} that showed positive interest in the program and were asked for voluntary involvement with the study. The students were taught football skills and play methodologies using a series of practical sessions using visual aids and virtual simulation that was supervised by trained sports teachers, professional coaches, and football national team players. The training program consists of 32 modules regarding the football field, players' positions and playing styles, and 8 football competitions that took place for 2 years on the school and off the school. Additionally, after the completion of modules and practical sessions, students were given opportunities to participate in district-level junior competitions under school supervision and coaching. During district participation, students were given remunerations so they become more engaged and motivated with the profession.

2.2. Conceptual models

Figure 1, presents the model that was used to assess the students' football skills development with the already running program for physical culture sports at the school and the new experimental program developed to train and teach future football players at the junior level.

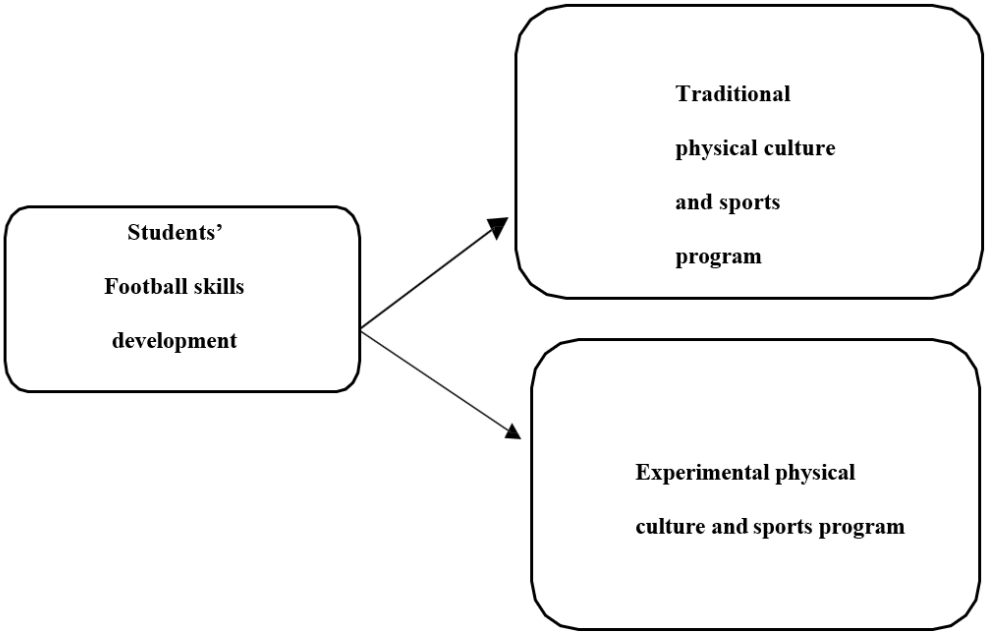

Figure 1. Model used to assess the students' football skills development with the running programs

Figure 2 shows the modules of the experimental training program and the effectiveness in terms of students' football skills development.

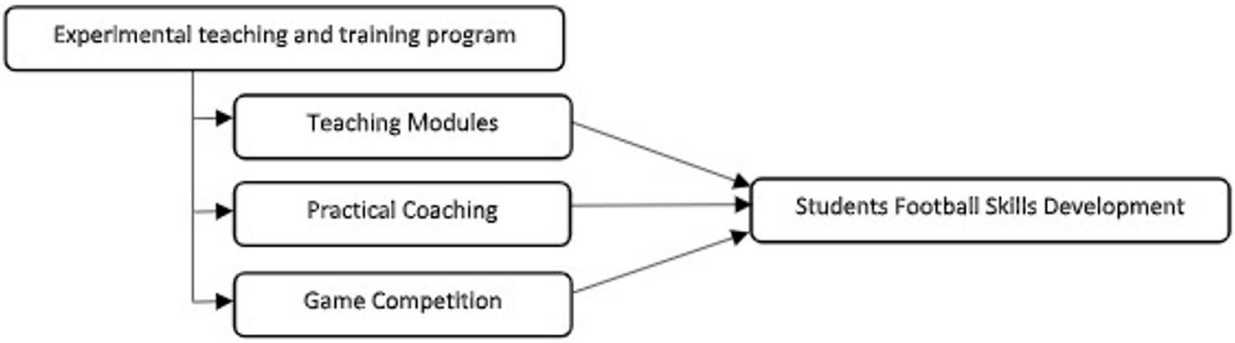

Figure 2. Modules of the experimental training program and the effectiveness in terms of students' football skills development

Figure 3 shows the model used to assess the success of the experimental training program in terms of football skills development and students' engagement at the middle school level.

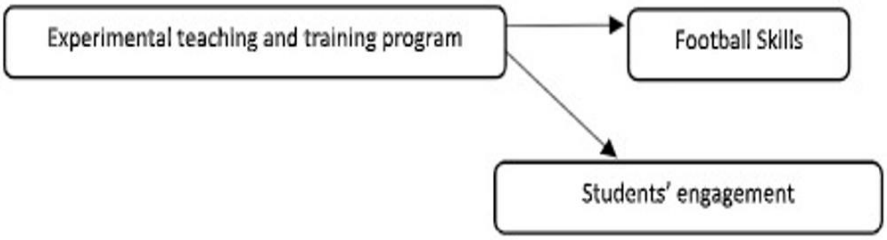

Figure 3. Model used to assess the success of the experimental training program in terms of football skills development and students' engagement at the middle school level

2.3. Instruments

All constructs and items were measured on a Likert five-point scale from 1 (strongly disagree) to 5 (strongly agree).

1. Students' football skills development (SFSD): SFSD was measured using a self-developed scale consisting of 21 items. The Cronbach's alpha value we obtained using SPSS 21 was (α 0.88). A sample item example: "I gain valuable football skills under the experimental training program."
2. Training modules (TM): TM was measured using a self-developed scale having 16 items. The scale Cronbach's alpha value (α 0.89) was obtained. A sample item example: "Training modules provide an in-depth understanding of the football sports game plan."
3. Practical coaching (PC): The PC instrument was self-developed and consists of 18 items with Cronbach's alpha value (α 0.90). A sample item example: "I gain valuable practical knowledge and skills of football through on-field coaching"
4. Game Competition (GC): GC instrument was self-developed and consists of 21 items with Cronbach's alpha value (α 0.87). A sample item example: "I gain valuable skills in actual gameplay"
5. Students' engagement (SE): SE instrument was self-developed and consists of 21 items with Cronbach's alpha value (α 0.90). A sample item example: "On a scale of 1 to 5, how engaged do you feel in the sports program at school"
6. Football Skills (FS): FS instrument was self-developed and consists of 19 items with Cronbach's alpha value (α 0.92). A sample item example: "On a scale of 1 to 5, how would you rate your overall football skills".

2.4. Statistical analyses

The statistical analyses were carried out with the Statistical Package for the Social Sciences (SPSS) version 21. The statistical techniques that are described in the results section were applied. The statistical significance (p value) was set at $p<0.05$.

3. RESULTS AND DISCUSSION

Table 1 provides the regression analysis of all three research independent variables (teaching modules-TM, practical coaching-PC, and game competition-GC) that are directly proportional to the dependent variable (Students' football skills development- SFSD). The regression analysis shows the effectiveness of each variable. It was observed the practical approach to training football games is more effective as compared to theoretical, according to Reilly & Gilbourne (2003). The Estimate- β values of TM (0.652), PC (0.712), and GC (0.929) show the impact of each unit increase in students' football skills development- SFSD.

Table 1. Regression analysis results of all three research independent variables (teaching modules-TM, practical coaching-PC, and game competition-GC)

Paths	Estimate-β	F Value	Std. Error	*p*
TM□SFSD	0.652	292.628	0.17225221	0.000
PC□SFSD	0.712			
GC□SFSD	0.929			
ETTP□SFSD	0.875	132.875	0.1298678I	0.000
ETTP□FS	0.961	190.242	0.13148372	0.000
Model Strength	**R square**	**Adjusted R Square**	**Std. Error of the Estimate**	
IV-TM, PC & GC DV-SFSD	0.986	0.969	0.28536	
IV-ETTP DV-SE	0.894	800	0.51879	

*Significance levels: ***p< .001; *p< .05; TM = Teaching Modules, Students' football skills development = (SFSD), Practical coaching (PC), Game Competition (GC), Students' engagement (SE), experimental teaching and training program-(ETTP), Football Skills FB, IV-Independent Variables, DV-Dependent variable.*

Directly Proportional TM □ SFSD: The relationship between teaching modules TM and Students' football skills development-SFSD was statistically significant (β = .652***; p=0.000). Therefore, we accept Hypothesis H1 since there exists a positive direct association between TM and SFSD. The

increase in TM will increase SFSD. This finding was in agreement with Griffiths et al. (2018), with exploring student progression in football coaching and development.

Directly Proportional PC SFSD: The relationship between practical coaching –PC and Students' football skills development-SFSD was statistically significant (β = 0.712***; p=0.000). Therefore, we accept Hypothesis H2. Furthermore, when we increase the practical coaching for football students it will further enhance their football sports game skills. These findings are in according to Gould et al. (2007) which studied about coach's life skills in football educations in award winning schools.

Directly Proportional GC SFSD: The relationship between Game competition –GC and Students' football skills development-SFSD was statistically significant (β = .929***; p=0.000). Therefore, we accept Hypothesis H3. As GC is directly proportional to SFSD when students involve in actual game competition it further develops their football game skills. This finding is in agreement with findings of Farias et al. (2019) on student game-play performance in invasion games following three sport seasons.

Directly Proportional ETTP SE: The relationship between experimental teaching and training program (ETTP) and Students' engagement-SE was statistically significant (β =.875***; p=0.000). Therefore, we accept Hypothesis H4. This model shows the importance of the program in the student's engagement. Students' engagement leads towards better focus and motivation thus resulting in better students' performance.

Directly Proportional ETTP FS: The relationship between experimental teaching and training program (ETTP) and football skills was statistically significant (β = .875***; p=0.000). Therefore, we accept Hypothesis H5. Football skills were significantly developed with the program and the majority of students perform exceptionally well during and after the completion of the program.

The following table shows a summary of the hypotheses of the study (Table 2), while Table 3 shows the mean scores values for the training programs.

Table 2. Hypotheses summary

Hypotheses	**Status**
Hypothesis 1: Teaching modules are positively associated with football skills development.	Accepted
Hypothesis 2: Practical coaching is positively associated with the students' football skills development.	Accepted
Hypothesis 3: Game competitions are positively associated with football skills development.	Accepted

Hypothesis 4: Experimental teaching and training programs are positively associated with students' engagement.	Accepted
Hypothesis 5: Experimental teaching and training programs are positively associated with football skills development.	Accepted

Table 3. Mean scores (knowledge, skills, techniques, physical fitness, students' engagement, students' performance)

		Mean	Standard deviation	*p*
Experimental training program	Knowledge	4.2197	1.43216	<0.01
	Skills	6.0912	1.85724	<0.01
	Techniques	5.2653	2.75423	<0.01
	Physical Fitness	5.1087	1.43675	<0.01
	Students' Engagement	5.7145	1.62356	<0.01
	Students' Performance	6.7126	1.09321	<0.01
The traditional (old) training program	Knowledge	2.4917	2.21246	<0.01
	Skills	3.5214	1.24164	<0.01
	Techniques	3.2315	1.34436	<0.01
	Physical Fitness	2.9803	2.52431	<0.01
	Students' Engagement	2.1740	1.72564	<0.01
	Students' Performance	3.8120	1.78434	<0.01

The experimental training program was developed to improve student's performance and engagement with football sports against the traditional training program that was running for the past eight years. We have observed that the old training program was losing its ability to train students for football sports. Students were also losing engagement with the program. Therefore, the need for upgradation in the program with the fusion of the latest technologies was much needed. The old training program was mostly theory- based with basic fitness excises with no such place for actual game competitions (Helgerud et al., 2011; Kostiukevich et al., 2017). The experimental program success can be observed in Table 3 from the mean scores, the gap between mean scores across the two training programs shows the effectiveness of the new training program. The experimental training program performance across all the factors was significantly superior as compared to the traditional (old) training program. The new training program has shown better students' performance, physical fitness, understanding of football sports, and game techniques.

Regarding limitations and future recommendations, this study was conducted in Kazakhstan at a middle school with students from 7^{th} and 8^{th} grade, which may not be generalizable to other age brackets. However, this study will serve as a platform for the development of training programs for

different age groups of students at the school, college, or university level. Future studies on students' motivation to join football training can be explored from the perspective of career progress and the popularity of football sports. Additionally, research on the use of technical assistance such as virtual reality can be applied to future learning physical characteristics of each student and their potential in terms of football field position. Individual training for goalkeepers, defenders, midfielders, and forward players can be developed to future enhance the specialization aspect of the sports.

4. CONCLUSIONS

The experimental training program has shown significant improvement in the performance of the school students. Students felt motivated by the program as the new training program provided them with the skills and abilities that were required for the sports. Students responded positively to the practical sessions and participation in the actual games under the supervision of a trained coach. The on-field sports provide them with a real understanding of the sports and also allow them to apply the skills and techniques learned through the training program. Students felt comfortable with the format of the program as the program enables them to understand sports from a theoretical aspect as well as a practical approach. The fusion between theory and practice has enabled students to understand sports from the basic foundation towards the applicability of knowledge, skills, and techniques on the actual ground. The program has shown significant improvement in the performance of the students. The training program was organized in a way that enabled students to learn and perform at the same time. The frequent training session has allowed students to future strength skills and techniques that they have acquired through the training program. The program also develops a sense of professionalism in students that will help students in their future career prospects.

5. REFERENCES

1. Azimovna, F. M. (2021). Educational importance of physical education, sports and health measures in higher educational institutions. In E-Conference Globe (pp. 321- 325). https://papers.econferenceglobe.com/index.php/ecg/article/download/533/526
2. Beetz, M., Kirchlechner, B., & Lames, M. (2005). Computerized real-time analysis of football games. *IEEE Pervasive Computing*, *4*(3), 33-39. https://doi.org/10.1109/MPRV.2005.53
3. Bohlmann, H. R., & Van Heerden, J. H. (2008). Predicting the economic impact of the 2010 FIFA World Cup on South Africa. *International Journal of Sport Management and Marketing*, *3*(4), 383-396. https://doi.org/10.1504/IJSMM.2008.017214
4. Bompa, T. O. (2000). *Total training for young champions.* Human Kinetics.
5. Dyakova, G., & Dyakov, T. (2019). Swot-analysis of organization for including a football game in the educational programme on physical culture and sport for female students. *Trakia Journal of Sciences*, *17*, 652-656.

6. Farias, C. F. G., Harvey, S., Hastie, P. A., & Mesquita, I. M. R. (2019). Effects of situational constraints on students' game-play development over three consecutive Sport Education seasons of invasion games. *Physical Education and Sport Pedagogy*, *24*(3), 267-286. https://doi.org/10.1080/17408989.2019.1571184
7. Gould, D., Collins, K., Lauer, L., & Chung, Y. (2007). Coaching life skills through football: A study of award-winning high school coaches. *Journal of Applied Sport Psychology*, *19*(1), 16-37. https://doi.org/10.1080/10413200601113786
8. Griffiths, R., Probert, J., & Cropley, B. (2018). The flipped university: exploring student progression in football coaching and development. *Education+Training*, *60*(5), 375-388. https://doi.org/10.1108/ET-12-2017-0186
9. Haugaasen, M., & Jordet, G. (2012). Developing football expertise: a football-specific research review. *International Review of Sport and Exercise Psychology*, *5*(2), 177-201. https://doi.org/10.1080/1750984X.2012.677951
10. Helgerud, J., Rodas, G., Kemi, O. J., & Hoff, J. (2011). Strength and endurance in elite football players. *International Journal of Sports Medicine*, *32*(09), 677-682. https://www.thieme-connect.com/products/ejournals/abstract/10.1055/s-0031-1275742
11. Hussein, A. A., Habeeb, H. A., & Ibrahim, R. S. (2022). The impact of mental training overlap on the development of some closed and open skills in five-aside football for middle school students. *Revista Iberoamericana de Psicología del Ejercicio y el Deporte*, *17*(4), 205-209.
12. Kang, S. J., Ha, J. P., & Hambrick, M. E. (2015). A mixed-method approach to exploring the motives of sport-related mobile applications among college students. *Journal of Sport Management*, *29*(3), 272-290. https://doi.org/10.1123/jsm.2013-0065
13. Kirk, D. (2004). Framing quality physical education: The elite sport model or sport education?. *Physical Education & Sport Pedagogy*, *9*(2), 185-195. https://doi.org/1740898042000294985
14. Kostiukevich, V. M., Stasiuk, V. A., Shchepotina, N. Y., & Dyachenko, A. A. (2017). Programming of skilled football players training process in the second cycle of specially created training during the year. *Physical Education of Students*, *21*(6), 262-269. https://doi.org/10.15561/20755279.2017.0602
15. Ma, C. (2021). A study on the influence of football sports on college. *Psychiatria Danubina*, *33*, 74-75. https://hrcak.srce.hr/file/389924
16. Mazerolle, S. M., Gavin, K. E., Pitney, W. A., Casa, D. J., & Burton, L. (2012). Undergraduate athletic training students' influences on career decisions after graduation. *Journal of Athletic Training*, *47*(6), 679-693. https://psycnet.apa.org/doi/10.4085/1062-6050-47.5.16
17. Muñoz-Bullón, F., Sanchez-Bueno, M. J., & Vos-Saz, A. (2017). The influence of sports participation on academic performance among students in higher education. *Sport Management Review*, *20*(4), 365-378. https://doi.org/10.1016/j.smr.2016.10.006
18. Orejan, J. (2011). *Football/Soccer: history and tactics.* McFarland.
19. Pangrazi, R. P., & Beighle, A. (2019). *Dynamic physical education for elementary school children*. Human Kinetics Publishers.

20. Reilly, T., & Gilbourne, D. (2003). Science and football: a review of applied research in the football codes. *Journal of Sports Sciences*, *21*(9), 693-705. https://doi.org/10.1080/0264041031000102105
21. Roberts, S. J. (2011). Teaching games for understanding: The difficulties and challenges experienced by participation cricket coaches. *Physical Education and Sport Pedagogy, 16*(1), 33-48. https://doi.org/10.1080/17408980903273824
22. Sałabun, W., Shekhovtsov, A., Pamučar, D., Wątróbski, J., Kizielewicz, B., Więckowski, J., & Nyczaj, B. (2020). A fuzzy inference system for players evaluation in multi- player sports: The football study case. *Symmetry, 12*(12), 1-49. https://doi.org/10.3390/sym12122029
23. Samur, S. (2019). Process management in football youth development program. *Journal of Education and Training Studies, 7*(9), 8-21. https://doi.org/10.11114/jets.v7i9.4342
24. Silva, H., Nakamura, F. Y., Beato, M., & Marcelino, R. (2023). Acceleration and deceleration demand during training sessions in football: a systematic review. *Science and Medicine in Football*, *7*(3), 198-213. https://doi.org/10.1080/24733938.2022.2090600
25. Stevens, T. A., To, Y., Stevenson, S. J., & Lochbaum, M. R. (2008). The importance of physical activity and physical education in the prediction of academic achievement. *Journal of Sport Behavior, 31*(4), 368-388.
26. Trudeau, F., & Shephard, R. J. (2008). Physical education, school physical activity, school sports and academic performance. *International Journal of Behavioral Nutrition and Physical Activity, 5*(1), 1-12. https://doi.org/10.1186/1479-5868-5-10
27. Winnick, J. P., & Porretta, D. L. (2016). *Adapted physical education and sport.* Human Kinetics.
28. Wunsch, K., Fiedler, J., Bachert, P., & Woll, A. (2021). The tridirectional relationship among physical activity, stress, and academic performance in university students: a systematic review and meta-analysis. *International Journal of Environmental Research and Public Health, 18*(2), 1-18. https://doi.org/10.3390/ijerph18020739
29. Yanık, M. (2018). Effect of participation in school sports teams on middle school students' engagement in school. *Education Sciences, 8*(3), 1-8. https://doi.org/10.3390/educsci8030123

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

FUNDING

This research received no external funding.

COPYRIGHT