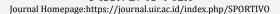


## Edu Sportivo

## Indonesian Journal of Physical Education e-ISSN 2745-942X





# Sports participation and its implication on the academic performance of students in tertiary institutions in Nigeria: A literature review

\*abcdeSemiu Alasinrin 🕞 & abcIssa Yaqub Ajeigbe

Department of Human Kinetics and Health Education, Kwara State University, Malete, Nigeria

Received: 25 October 2021; Accepted 14 December 2021; Published 25 December 2021



#### ARSTRACT

The study focused on sports participation and its implication on the academic performance of students in tertiary institutions in Nigeria. To ascertain the objective of the study, the study focused on Overview of sports, Sports participation, Implication of sports on academic performance of students and Benefits of Sports Performance on academic Performance of Students however, concluded that, sports participation would have no negative implication on students' academic performance in tertiary institutions. The study also concluded that students of tertiary institution in Nigeria should not be discouraged from participating in sports with the misconception that participation in sports worsens students' general performance and specifically performance of students of tertiary institution. What this study implies is that, coaches, lecturers and school management should not seize students from participating in sporting activities as this go a long way in assisting them in all ramifications. It was suggested that future researcher should broaden the scope of the study to at least two to three countries so as to encourage participation in sports. It was further suggested that the Study should be conducted on the effects of sports participation among secondary and primary school students in Nigeria.

Keywords: Sports participation; academic performance; tertiary institution

\*Corresponding Author:

Email: semiu.alasinrin14@kwasu.edu.ng



https://doi.org/10.25299/es:ijope.2021.vol2(3).7929

Copyright © 2021 Semiu Alasinrin, Issa Yaqub Ajeigbe

**How to Cite:** Alasinrin, S., & Ajeigbe, I. Y. (2021). Sports participation and its implication on the academic performance of students in tertiary institutions in Nigeria: A literature review. *Edu Sportivo: Indonesian Journal of Physical Education*, *2*(3), 180-189. https://doi.org/10.25299/es:ijope.2021.vol2(3).7929

**Authors' Contribution**: a – Study Design; b – Data Collection; c – Statistical Analysis; d – Manuscript Preparation; e – Funds Collection



## INTRODUCTION

Sports and its associated competitions across the globe have made participation in sports appealing to several others in various parts of the world, specifically in Nigeria. It is asserted that, inside a healthy body is a sound mind. Choi, Johnson and Kim (2014) emphasized that sporting activities is a key factor in promoting healthy lifestyles among students who engage in sporting activities and through sports, students learn social and cognitive skills. A student who partakes in sporting activities is believed to have a sound mind and thus, the likelihood for him or her to excel in his or her academics is very high. Generally, Bailey, Hillman, Aren't, and Petitpas (2013) identified that students' participation in sports is associated with a cluster of benefits including: social, mental and cognitive wellbeing, and academic performance.

To the researcher perspectives, sports have become a major business and attraction for the Nigerian public at large. The radio, television, internet, and cinema media have contributed to the explosive popularity of professional sports. It is not surprising, therefore, that the popularity of professional sports has been reflected in the sports programs of Nigerian tertiary schools. From the researchers' view student's engagement in sports competition is known to contribute to the developmental outcomes for a healthy lifestyle, where students learn about physical, social and cognitive skills. Looking at it vividly, engagement in physical activity is also recognized to contribute a range of positive outcomes, specifically; physical and mental health, social wellbeing, cognitive and academic performance (Westerterp, 2013). For young people to achieve such outcomes it is recognized that physical education (PE) in schools is an ideal vehicle to promote physical activity due to its availability to all young people. Whilst teachers also have the opportunity to integrate this into the overall education process (Telford, 2012).

Sports nowadays have become embedded in several areas of our life be it culture, religion, and academics. Participation in sports in the higher institution has also been remarkable over the years with a series of competitions both national and international. One of the challenges that students of tertiary institution have is being able to combine academics with sports. Parents, guardians, lecturers, and other stakeholders in the system have a different notion of the influence of sports on academic performance.

The usual thought that leads to set back in participation in sports at a higher institution is whether sports as an activity has a positive impact on other endeavours in life, including academics (Clark & Parette, 2002). Students that participate in sports are exposed to a series of training which add to their knowledge especially towards becoming a better student. It is wrong to assume that sports hinder or promote academic performance without a logical reason or observation of both student athletes and regular students. Not all students will graduate with good results in the University even though they might work hard and hate sport, at the same time all athletes are aspiring to have a good grade, so the notion that sports are the reason why student-athletes fail is not a justifiable one.

The author also affirmed that participating in sports can help improve the physical fitness level of the student, promote his level of discipline and knowledge through exposure to rules and regulation guiding their games as well as providing an avenue for socialization and self-discovery and most University management understands the need for sports and that is why you can hardly see any University without one or two sports facilities. The controversy has always been to what extent can students participate in it and it will not have a negative influence on their academics. Sports can be very challenging with a lot of training and activities for the student-athletes to the extent that even outside the field, they continue to strive to become a better athlete through mental training, and this kind of enthusiasm if diverted towards their study, they will perform at their optimum capacity. This implies that if student of tertiary institution is properly guided, can perform better in their academics (Clark & Parette, 2002). Some higher institutions prefer to spend more money on security hoping to reduce thugs and hooligans within the environment, instead of spending money on building adequate sports facilities to engage such students to divert their excessive energy on sports. Combining academics with sports can be a huge task if the student-athlete is under a series of pressure but it can be enjoyed at the same time if the environment is friendly. Sports can influence a sense of coherence or a personal orientation that expressed the way the individual responds to stress in life (Sollerhed, Ejlertsson, & Apitzsch,).

Sports will continue to motivate some students because being on a team provides them with a sense of belonging, it is also being used by some students to provide perks or peak experiences that counteract the fear of not being able to survive in life outside of sports (Parish, & Williams, 2007). However, there is a growing body of people who hold on to an assertion that students who engage in sports activities do not perform well academically hence yielding a debate among researchers on the effects of students' engagement in sports and academic performance. This debate has been an issue of contention between several researchers over the previous decades. Some studies (See for example; Tomporowski, Davis, Miller, & Naglieri, 2008; Trudeau & Shephard, 2008) identified that engagement in sports have positive influence on students' academic performance. Tremblay, Inman and Williams (2000) revealed that partaking in sports have negative effects on students' academic performance. To identify the effect of sports participation in Canada, Tremblay et al. (2000) discovered that a negative relationship existed between sports participation and standardized test scores among students. It was espoused by Davis and Cooper (2011) that people who partake in sporting activities in schools argue that there exist no positive effects of sports on academic performance. Thorlindson and Bernburg (2006) observed that some parents associate sports with some illmanner behaviors.

People, who question the place of sports in educational institutions, claim that sports participation results in poor performance by sportsmen and sportswomen. These critics claim that students who participate in sports relinquish all their energies into training and partaking in sporting activities and have less time and energy to dedicate to their academic work. Hartmann (2008) asserted that too much periods and energy emphasized on sports shifted focus from academic work of schools. Hartman investigated quite a number of researches done to ascertain the kind of relationship that exists between athletic participation and students' academic achievements. He found out that, most works done in this field claimed students lose their motivation to pursue academic excellence when they get deeply engrossed in sporting activities. On the contrary, Nelson and Gordon-Larsen (2006) discovered that students who engage in sports perform well in science subjects. In a similar vein, Broh (2002) also identified good results in English and mathematics for students who engage in sports.

### **Sports Participation**

The effect of participating in sports as a student on academic performance is theoretically ambiguous. Participation may reduce the time available for studying and learning. Conversely, it has been argued that sports participation increases students' motivation and teaches teamwork and self-discipline, resulting in positive academic spillovers. Darling, Caldwell and Smith (2005) reported that secondary school athletes receive better grades, have higher educational and occupational aspirations, spend more time doing homework, and have a more positive attitude towards school than nonathletes. The associations found for participation in competitive sport and physical activity often yield multiple benefits. Westerterp (2013) recognized that such benefits are not autonomous, independent or disconnected, but instead reinforce each other. Despite these recognized benefits, it remains a concern that within schools "the increasing pressures to improve academic performance often lead to additional instructional time for subjects such as mathematics and language at the cost of time for being physically active" (O'Keefe, Vogel, Lavie, & Cordain, 2012). Trudeau and Shepard (2008) stated that if we want to improve the academic performance, physical fitness and health of our young people, we should not be limiting the time allocated to physical education and school sport. Where possible, this review draws upon evidence that explores the impact of competitive school sport on young people. However, due to the limited research available on these competition specific outcomes, the findings presented focus on the role physical activity, physical education and school sport play on the holistic development of the child. Particular attention has been paid to the academic, diet and health and wellbeing outcomes for young people.

Participation in structured sport activities is said to promote a wide range of "social, physical, and intellectual skills," leading to better academic performance (Eccles, Barber, Stone, & Hunt, 2003). In fact, there is a fair amount of evidence to support this claim. As noted above, secondary school athletes on average perform better academically than non-athletes, an association that persists even after controlling for factors such as race, ethnicity, and family background variables. Many researchers in this area have concluded that the link between sports and academic performance is casual. However, much of the empirical work in this area has treated sports participation as exogenously determined. According to Eccles, Barber, Stone, and Hunt (2003), this empirical strategy risks confusing the effect of participation with unobservable (from the standpoint of the researcher) "characteristics of the youth who sign up for and stay in the programs.

Similarly, it is possible that sport communities in secondary schools have developed a negative reputation with respect to academic performance. While a number of researchers studied sport participation and academic performance in college (Gaston-Gayles, 2005), few studies addressed the relationship between academics and sport participation at the secondary school level. Similarly, these studies have focused on the comparison of non-athletes to athletes; with respect to a variety of dependent variables (Yiannakis & Melnick, 2001). The effect of participation on sports, with respect to its direct effect on the participants themselves, has not been investigated in the literature. Taras (2005) conducted a review of studies on younger students and the effect that physical activity had on school performance. Taras (2005) demonstrated that there may be some short-term improvements due to physical activity, specifically with respect to concentration, but there is no well substantiated long-term improvement of academic performance as a result of more vigorous physical activity.

Studies based on longitudinal research of children which attempt to use methodologically sound corelational data, showed that extracurricular (sport and physical) activity participation was positively related to Grade Point Average, educational aspirations, educational/occupational attainment and standardized achievement test scores (Jamil, Khan & Kareem, 2012). According to Cornelißen and Christian (2007), revealed that youth sports participation is significantly correlated with their academic enhancement in terms of attainment of a higher school degree more successfully and that there is a comparatively higher impact of sports on academic achievement among the female than the male. Din (2006) indicated that there was no significant impact of school-sponsored sports activities on the academic enhancement of the students taking part in sports. The role of sport participation in the academic achievement of students has been a topic of debate for decades. Critics observe that sport activities deflect time away from the classroom, sports diverted talent from academic programs and the students who put their energies into sports are less likely to pursue academic objectives.

They do not have time or energy to achieve excellence and satisfaction in both roles. Supporters of school sport programs argue that sport participation improves students' achievement, motivation, improves students' grades, keeps them in school, raises their educational aspirations, increased students' overall interest and commitment to schooling as well as their engagement in more student-teacher contact, more positive attitudes about schooling, and more parent-school contact. Some researchers suggested

that further studies may be conducted on this topic because previous studies conducted on the topic were limited and their results were not clear (Din, 2006). In educational institutions sports activities are not regarded as essential part education and many people have believed that participation in sports negatively effect on the education of the students (Pfeifer & Cornelißen, 2006). It is also affirmed that relationship between participation in high school sports and academic achievements of students is a topic mostly discussed by the sportsman, society members and researchers (Hartmann, 2008).

## **Implication of Sports on Academic Performance of Students**

Sports have both a positive and negative impact on the physical and biological well-being of students in tertiary institution. These impacts vary depending on whether the students are male or female, due to biological differences; however, some male and female problems can be similar. Active participation in tertiary institution sports can positively affect both male and female athletes physically as well as mentally. Sports positively affect female student athletes in regard to their mental health as well as their general health. Mentally, female student athletes will have a higher view of self than female non-athletes, especially regarding their body image. Also, female athletes have a higher sense of self-worth than their non-athlete classmates. Furthermore, female athletes often have a higher sense of self-confidence than male athletes (LaFountaine, 2007).

Sports negatively affect male student athletes because the athletic environment creates an atmosphere of higher risk for partaking of and involvement in substance abuse with performance enhancing substances as well as illegal substances. Research has recorded supplements, stimulants, and other substances that are commonly found to affect male athletes' hormones. Athletes involved in using these substances were more prone to experimenting with other substances, such as alcohol, tobacco, or illegal drugs. Marijuana has become one of the leading substances abused by student athletes. This can lead to a decrease in sport performance, which includes but is not limited to a lack of alertness, reaction, and memory formation. On top of all of that, marijuana also greatly affects muscle recovery and induces muscles fatigue. Lastly, use of marijuana (as well as any other illegal substance) can lead to the end of college athletic careers as well as overall health. Another illegal substance that is commonly abused by male student athletes is that of alcohol. Research has shown that male athletes are more likely to abuse alcohol than non-athletes, for several different reasons. These reasons include but are not limited to the male athlete's desire for sensation seeking, battles with mood swings, and struggles with adaption (Wilson, Pritchard, & Schaffer, 2004).

For both male and female student athletes, another factor contributing to exhaustion could be the demand of team travel. Sleeping in a non-familiar setting can decrease your quality of sleep. This happening is called "first night affect" and most often occurs when the brain senses it is in a new environment. This affect creates an uneasiness, alertness, and sometimes anxiety that keeps the brain from fully reaching a completely deep sleep (Tamaki & Sasaki, 2017).

## Benefits of Sports Performance on Academic Performance of Students

Many sports psychologists argue for the importance of sport in shaping youth development. Hansen, Larson, and Dworkin (2003) attributed positive youth experiences to organized sport. The researchers claimed that organized activities help youth develop social connections with others and learn skills for cultivating these

connections. Activities where youth work together to achieve goals (i.e. team sports) provides the opportunity for experiences that foster social competencies and develop leadership skills. Youth are also able to develop connections with adults in the wider community by forming meaningful relationships with coaches. Sport settings also provide a context for developing relationships with and gaining a better understanding of peers from diverse ethnic and social class groups. The researchers found that youth in sports activities reported high rates of managing emotions, physical skills, and self-knowledge (e.g. understanding one's own abilities and limitations) compared to youth in academic and leadership activities and who did not play sports.

Research has shown the developmental benefits of sports participation for youth. Focus areas of youth development include personal, interpersonal, and life skills. In a qualitative case study conducted by Holt, Sehn, Spence, Newton, and Ball (2012), researchers examined school staff members' and children's perceptions of school physical education, intramural sports, and team sports with a view toward establishing factors that facilitated positive youth development. The domains of personal development that they studied were identity exploration, initiative, and emotional regulation. The domains of interpersonal development included teamwork and social skills, positive relationships, and the development of adult social networks. Life skills were defined as the skills that are required to deal with the demands and challenges of everyday life.

Students' participation in physical activity within the school setting can take a variety of forms, with a broad classification outlining three major types: (a) physical education classes, (b) school sports, and (c) free-time activity (Centers for Disease Control and Prevention, 2013). Physical education is often the dominant form of physical activity in schools due to its widespread prevalence and mandate by most school districts. The components of physical education classes often vary by school, teacher, class, region, and season. Generally, students are given a range of activities that are individual or team based, with periodic testing of specific skills to measure levels of fitness. Questions remain, however, regarding the actual amounts of activity students achieve in physical education classes. School sports are a second type of physical activity of increasing interest to researchers. Sports within middle and high schools vary widely by school level and type, grade level, district resources, and individual student preferences, and school sports can occur both in team (e.g., soccer, basketball) or individual (e.g., tennis, cross country) contexts. Unlike physical education, participation in school sports is rarely mandated by schools or districts.

This is despite promising evidence that school sports may promote both physical activity and student academic outcomes due to important social contexts, increased involvement with school resources, and identification with school values (Marsh & Kleitman, 2003; Trudeau & Shephard, 2008). The lack of school sports research is unfortunate given the popularity of school sports and athletics, and the large proportion of children's physical activity that is comprised by school sports. Nationally representative data indicate that more than half of high school students annually participate in school sports (Kann et al., 2014; Pate, Davis, Robinson, Stone, McKenzie, & Young, 2006). In all, there exists a great need for additional research that extends the robust findings linking general physical activity and academic achievement to school sports.

One way in which physical activity levels can be increased is to increase student's involvement in organised community sport (Department of Sport and Recreation, 2013).

Organised, community sport and recreational activities have been indicated as exerting a positive effect on academic success and attitude to school. Organised recreation may also have a positive effect on student's attitude and self-esteem. Total organised, extracurricular activity participation was examined in a cohort of high school students. The results of this study showed that total extracurricular participation was positively associated with academic self-concept, educational aspirations, coursework selection, homework completion, absenteeism, academic achievement and college attendance. One study found that participants doing extracurricular activity alone, or in combination with sports, had higher odds of doing more exercise, liking school and doing more homework. These results suggest that identification with school and school values is enhanced by involvement in organised, community sport or recreation. With evidence that students involved in more organised, community sports or recreation are more likely to perform better academically, there needs to be greater impetus for encouraging and supporting children's involvement in community sports and recreation (Department of Sport and Recreation, 2013).

## **CONCLUSION**

The conclusions drawn from the study indicate that sports participation would have no negative effect on the academic performance of tertiary school students. Also, participation in sports would not affect the learning time of students. Although students may spend substantial amount of time in partaking in sporting activities, they still get time to learn. The study shows that students of tertiary institution in Nigeria should not be discouraged from participating in sports with the misconception that participation in sports worsens students' general performance and specifically performance of students of tertiary institution. Students who possess the talent and ability to partake in sports should be motivated by their coaches, lecturers and school authorities to engage in sports since participation in sports has been shown to make students more active even in the lecture room. Concomitantly, students would have immense benefits when participating in sporting activities rather than inactive. Lack of sample size, population, design and location

## **Suggestion for Further Findings**

- 1. The future researcher should broaden the scope of the study to at least two to three countries so as to encourage participation in sports.
- 2. Study should be conducted on the effects of sports participation among secondary and primary school students in Nigeria.

## **ACKNOWLEDGEMENTS**

Thanks to Almighty Allah and to those that contributed to this study either directly or indirectly.

## REFERENCES

- Bailey, R., Hillman, C., Arent, S., & Petitpas, A. (2013). Physical activity: an underestimated investment in human capital? *Journal of physical activity and health*, *10*(3), 289-308. https://doi.org/10.1123/jpah.10.3.289
- Broh, B. A. (2002). *Linking extracurricular programming to academic achievement:* Who benefits and why?. *Sociology of education*, *75*, 69-95. https://doi.org/10.2307/3090254

- Choi, H. S., Johnson, B., & Kim, Y. K. (2014). *Children's development through sports competition: Derivative, adjustive, generative, and maladaptive approaches. Quest,* 66(2), 191-202. https://doi.org/10.1080/00336297.2013.861757
- Clark, M., & Parette, P. (2002). Student athletes with learning disabilities: A model for effective supports. *College Student Journal*, *36*(1), 10-18.
- Cornelißen, T., & Pfeifer, C. (2007). The impact of participation in sports on educational attainment: New evidence from Germany. *IZA DP*, *3160*.
- Darling, N., Caldwell L. L., & Smith, R. (2005). Participation in school-based extracurricular activities and adolescent adjustment. *Journal of Leisure Research*, 37(1), 51–76. https://doi.org/10.1080/00222216.2005.11950040
- Davis, C. L., & Cooper, S. (2011). Fitness, fatness, cognition, behavior, and academic achievement among overweight children: do cross-sectional associations correspond to exercise trial outcomes?. *Preventive Medicine*, *52*, S65-S69. https://doi.org/10.1016/j.ypmed.2011.01.020
- Din, F. S. (2006). Sports activities versus academic achievement for rural high school students. *National Forum of Applied Educational Research Journal-Electronic* 19(3E), 1-11.
- Eccles, J. S., Barber, B. L., Stone, M., & Hunt, J. (2003). Extracurricular activities and adolescent development. *Journal of social issues*, *59*(4), 865-889. https://doi.org/10.1046/j.0022-4537.2003.00095.x
- Gaston-Gayles, J. L. (2005). The factors structure and reliability of the student athletes' motivation towards sports and academics questionnaire (SAMSAQ). *Journal of College Student Development*, 46(3), 317-327. https://doi.org/10.1353/csd.2005.0025
- Hansen, D. M., Larson, R. W., & Dworkin, J. B. (2003). *What adolescents learn in organized youth activities:* A survey of self, reported developmental experiences. *Journal of Research on Adolescence*, 13(1), 25-55. https://doi.org/10.1111/1532-7795.1301006
- Hartmann, D., & Massoglia, M. (2008). Reassessing the Relationship Between High School Sports Participation and Deviance: Evidence of Enduring, Bifurcated Effects. *The Sociological Quarterly*, 48, 485-505. https://doi.org/10.1111/j.1533-8525.2007.00086.x
- Hartmann, D. (2008). *High school sports participation and educational attainment: Recognizing, assessing, and utilizing the relationship.* Report to the LA84 Foundation. Los Angeles, CA: LA84 Foundation.
- Holt, N. L., Kingsley, B. C., Tink, L. N., & Scherer, J. (2011). Benefits and challenges associated with sport participation by children and parents from low-income families. *Psychology of Sport and Exercise*, *12*(5), 490-499. https://doi.org/10.1016/j.psychsport.2011.05.007
- Jamil, J., Khan M. B., & Kareem, F. D. (2012). Effect of physical education and activity levels on academic achievement in children. *Medicine and Science in Sports and Exercise*, 38(8), 1515-19. https://doi.org/10.1249/01.mss.0000227537.13175

- Kann, L., Kinchen, S., Shanklin, S. L., Flint, K. H., Kawkins, J., Harris, W. A., ... & Zaza, S. (2014). Youth risk behavior surveillance—United States. *Morbidity and Mortality Weekly Report*, 63, 1–168.
- LaFountaine, J. (2007). Wellness among first year collegiate female athletes. *Women in Sport & Physical Activity Journal*, 16(2), 83.
- Marsh, H. W., & Kleitman, S. (2003). School athletic participation: Mostly gain with little pain. *Journal of Sport and Exercise Psychology*, 25, 205–228. http://dx.doi.org/10.1136/bjsm.2004.01770710.1123/jsep.25.2.205
- Nelson, M. C., & Gordon-Larsen, P. (2006). Physical activity and sedentary behaviour patterns are associated with selected adolescent health risk behaviours. *Paediatrics*, 117(4), 1281-1290. https://doi.org/10.1542/peds.2005-1692
- Parish, T. S., & Williams, D. (2007). Some tips regarding how to motivate athletes. *International Journal of Reality Therapy*. 26, 39-42.
- Pate, R. R., Davis, M. G., Robinson, T. N., Stone, E. J., McKenzie, T. L., & Young, J. C. (2006). Promoting physical activity in children and youth: A leadership role for schools: A scientific statement from the American Heart Association Council on Nutrition, Physical Activity, and Metabolism (Physical Activity Committee) in collaboration with the Councils on Cardiovascular Disease in the Young and Cardiovascular Nursing.

  Circulation, 114, 1214– 1224. http://dx.doi.org/10.1161/circulationaha.106.177052
- Pfeifer, C., & Cornelißen, T. (2010). The impact of participation in sports on educational attainment—New evidence from Germany. *Economics of education review*, *29*(1), 94-103. https://doi.org/10.1016/j.econedurev.2009.04.002
- O'Keefe, J. H., Vogel, R., Lavie, C. J., & Cordain, L. (2011). Exercise like a hunter-gatherer: a prescription for organic physical fitness. *Progress in cardiovascular diseases*, 53(6), 471-479. https://doi.org/10.1016/j.pcad.2011.03.009
- Sollerhed, A.C., Ejlertsson, G., & Apitzsch, E (2005). Predictors of strong sense of coherence and positive attitudes on physical education in adolescents. *Scandinavian Journal of Public Health*, *33*, 331-342. https://doi.org/10.1080/14034940510005833
- Tamaki, M., & Sasaki, Y. (2017). How half our brain keeps watch when we sleep in unfamiliar places. Retrieved December 11, 2017, from http://theconversation.com/how-half-ourbrain-keeps-watch-when-we-sleep-in-unfamiliar-places-57975
- Taras, H. (2005). Physical activity and student performance at school. *Journal of school health*, 75(6), 214-218. https://doi.org/10.1111/j.1746-1561.2005.tb06675.x
- Telford, P. C. (2012). Methods in Behavioral Research (8th ed.). New York, NY: McGraw Hill.
- Thorlindsson, T., & Bernburg, J. G. (2006). *Peer groups and substance use: Examining the direct and interactive effect of leisure activity*. Adolescence, 41(162), 321-339.
- Tomporowski, P. D., Davis, C. L., Miller, P. H., & Naglieri, J. A. (2008). Exercise and children's intelligence, cognition, and academic achievement. *Educational*

- psychology review, 20(2), 111-131. https://doi.org/10.1007/s10648-007-9057-0
- Tremblay, M. S., Inman, J. W., & Willms, J. D. (2000). The relationship between physical activity, self-esteem, and academic achievement in 12-year-old children. Paediatric exercise science, 12(3), 312-323. https://doi.org/10.1123/pes.12.3.312
- 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, 10*. http://dx.doi.org/10.1136/bjsm.2004.01770710.1186/1479-5868-5-10.
- Wilson, G. S., Pritchard, M. E., & Schaffer, J. (2004). Athletic status and drinking behavior in college students: The influence of gender and coping styles. *Journal of American College Health*, 52(6), 269-73.
- Westerterp, K. R. (2013). Physical activity and physical activity induced energy expenditure in humans: measurement, determinants, and effects. *Frontiers in physiology*, *4*, 90. https://doi.org/10.3389/fphys.2013.00090
- Yiannakis, A., & Melnick, M. (2001). Contemporary issues in sociology of sport. New York: Human Kinetics.