



Original Research Article

Sports Participation and Academic Achievement Among Secondary School Students: A Comparative Analysis

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Abstract

Background: Sports participation is vital for adolescent development, and its association with academic performance is yet to be established, especially in Bangladesh. This study investigated the relationship between participation in organised sports programs and academic performance in secondary school students in the city of Rajshahi.

Methods: A quantitative cross-sectional study was conducted in 1335 students in five secondary schools in classes 6, 7, and 8. A structured questionnaire was used to obtain data on demographic characteristics, sports participation, and self-reported mathematics and science scores. The academic performance of sports participants and non-sports participants was compared using independent-samples t-tests.

Results: Ninety-one students participated in organised sports, and 1,244 students did not participate in organised sports. Non-participants achieved higher mean mathematics scores than sports participants (66.05 ± 21.47 vs. 59.24 ± 18.97 ; $t = 2.94$, $p < .05$). A similar pattern was observed in science (68.70 ± 19.50 vs. 60.66 ± 18.23 ; $t = 3.81$, $p < .05$). The mean score comparisons between the different grades revealed a consistently higher mean score for the non-participants at all grade levels, with the greatest difference in scores occurring in the Class 8 grade level in science. The most common sporting activities were football and badminton.

Conclusion: This sample of sports participants had a lower academic score, albeit with relatively small effect sizes. The results of this study support a balanced approach to support sports participation and provide adequate academic support in the context of secondary school education in Bangladesh.

1. Introduction

The importance of children and adolescents' participation in sports is well known. Participation in sports also enhances physical fitness and other psychological benefits such as social interaction, team play, discipline, leadership, goal setting, and time management. Sports and other extra-curricular activities are thus integral components of students' education in the school environment. Students may have opportunities to acquire personal and social skills through organised physical activities that are not necessarily taught in the classroom. That is why more and more educational institutions recognise the benefits of physical activity and sports to students' academic lives. The link between sports involvement and academic outcomes is complex, and there has been extensive research interest in this area. Participation in physical activity and school sports may be beneficial for cognitive functioning and academic achievement, as suggested by some studies (Swandana et al., 2025). Exercise has been linked to better focus, self-regulation, motivation, attention to the classroom, and cognitive functioning. For instance, there is a positive association between physical activity and cognition among children (Spahiu & Kushta, 2023), and the potential benefits of exercise on brain function and cognitive processes (Anderson et al., 2024; Nafisa et al., 2025). Likewise, Haime Jee (2026) found evidence that physical activity, physical fitness, and academic performance could be positively linked in children and adolescents (Jee, 2026). The results indicate that relevantly designed sports activities can have an impact on educational and developmental outcomes. Non-cognitive attributes that are important for academic success may also be fostered through school sports. Participants in sports are expected to abide by rules, cooperate with teammates, face challenges, behave properly, and strive for objectives. This can boost perseverance, responsibility, self-confidence, and time-management skills. Past studies have also indicated that extracurricular activities can help foster a sense of school engagement and positive development (Pharaswal & Latif, 2023). This view presents opportunities to consider how sports can be integrated with academic learning.

However, in some cases, the relationship between sports participation and academic performance is not necessarily positive. Increased levels of participation can involve significant training, competition, travel, and recovery time. Students who spend a lot of time and energy on sports may have limited homework, revision, and/or preparation time for exams. The impact of physical fatigue and imbalance between school and sports workload can also affect learning. Therefore, the sports-academic achievement relationship could be affected by the frequency of participation, duration of participation, intensity of sports, type of sports, academic load, and personal factors. Kall et al. (2014) also noted the need to consider the impact of school physical activity on academic outcomes in the context of the broader school environment (Käll et al., 2014). Another difficulty is that there are numerous factors that impact academic achievement that are not related to sports involvement. There are a variety of factors that can influence a student's success, including socioeconomic factors, parents' support, school environment, student's academic motivation, student's study habits, availability of educational resources, and individual learning abilities. It is thus not possible to fully understand the relationship between sports and academic outcomes without taking this context into account. It should be noted that results from one education system cannot be automatically transferred to another one as there are significant variations in school systems, cultural expectations, sporting opportunities, and available resources between countries (Kovács et al., 2024). This is of special concern in Bangladesh. Many secondary schools provide opportunities for sports, but these opportunities for organised sports participation can differ depending on school facilities, institutional policies, community attitudes, and resources. There is also a lot of competition in secondary schools, and as students advance in school, they are usually subjected to greater pressure to do well. In this regard, it can be difficult to maintain a balance between academic workload and extracurricular activities. Although the role of sports and their relevance to education are evident, there is limited empirical evidence on the link between sports participation and academic performance of secondary school students from Bangladesh (Premaraja, 2022). Much of the discussion about sports and young people has concentrated on the physical fitness, health, and overall development of sports rather than focusing on comparisons of sports and non-sports participants in terms of academic outcomes. The limited evidence is especially striking when applied to school-aged groups in non-metropolitan areas other than the largest metropolitan areas. Rajshahi also offers an important background for analysing this issue, as secondary school students are engaged in a range of organised sports, and still have a regular academic workload. Therefore, knowing if gender differences in mathematics and science performance exist among students who participate in sports and those who do not, may be of value to teachers, school administrators, parents, and policymakers who are interested in fostering a balance in student development.

Therefore, the present study aimed to determine the correlation between sports involvement and academic achievement of secondary school students in Rajshahi city, Rajshahi district, Bangladesh. In particular, it examined the performance of students who participated in organised sports and those who did not in mathematics and science, it investigated mathematics and science performance at the grade level (Classes 6, 7, and 8), and it provided a description of some characteristics of students who participate in organised sports. The study was based on the hypotheses that academic performance can be differentiated between sports players and non-players, and sports participation is measurably related to academic outcomes of students. The study aims to provide context-specific evidence to the literature

on sports participation and educational performance, to provide context-specific evidence to the literature on balanced educational development of secondary school students, and to support a more balanced understanding of academic and sports development among secondary school students.

2. Materials and Methods

2.1 Study Design and Setting

The present study was of a quantitative cross-sectional design, which was used to investigate the relationship between sports involvement and academic performance of secondary school students in Rajshahi, Bangladesh. The cross-sectional design was chosen because it allowed information to be gathered from a relatively large number of students at one time and compared with the academic results of those students who were involved in organised sports with those who were not involved in organised sports. This study was carried out in five secondary schools of the town of Rajshahi with the students of classes 6, 7, and 8.

2.2 Study Participants and Sampling

A total of 1335 secondary students were involved in the study. All boys and girls in the Sixth, Seventh, and Eighth Forms were invited. The sampling method employed was simple random sampling, which offered eligible students the chance of being selected for this study. Students were eligible for participation in the survey if they were enrolled in Classes 6, 7, or 8 and attended school regularly. Students who missed the data collection period or did not want to answer were not included. Participants were divided into two groups: students who participated in organised sports and students who did not participate in organised sports. A total of 91 students in the sample were identified as sports participants, and 1,244 students were identified as non-participants.

2.3 Data Collection Instrument

The data were gathered using a structured self-administered questionnaire designed to match the aim of the study. The questionnaire consisted of questions related to demographic parameters, sports participation, and academic performance (Tian & Sun, 2018). Information related to sports included the type of sport, frequency of sports, and length of time in sports; academic performance was measured via self-reported math and science scores. The questionnaire was checked for clarity, relevance, and appropriateness for secondary school students.

2.4 Data Collection Procedure

Students were sampled during school hours with permission from the school authorities. The participants were provided with information on the study and instructions for completing the questionnaire. This was an opt-in study, and confidentiality and anonymity were ensured throughout the study. The questionnaires were collected immediately after completion to reduce missing data and ensure a uniform approach to data collection.

2.5 Study Variables

The dependent variable was participation in organised sports, which was divided into participation and non-participation groups. The main outcome measured was academic performance, based on mathematics and science scores. Other sport-related factors considered were the type of sport, how often the participant played a sport, how long they participated in a sport each day, and the level of family support for participation in sports.

2.6 Statistical Analysis

The collected data were coded and statistically analysed. The characteristics of the participants and study variables were summarised using descriptive statistics. Means and standard deviations were used to present continuous academic-performance variables, and frequencies were used to summarise sports participation characteristics. Independent-samples t-tests were employed to compare the mean mathematics and science scores of sports participants and non-participants. Comparisons were also conducted between the different grades in Classes 6, 7, and 8. A $p < .05$ was used to determine statistical significance. Independent-samples t-tests were performed after making certain assumptions, including those of normality and homogeneity of variance, as stated in the manuscript. Effect sizes were also provided for the total mathematics and science comparisons to show the size of the group differences.

3. Results

3.1 Participant Characteristics

A total of 1,335 secondary school students from five schools in Rajshahi, Bangladesh, participated in the study. Of these, 91 students said they had been involved in organised sports, and 1,244 students said they had not been involved in organised sports. The sample comprised students in classes 6, 7, and 8, including both male and female students.

3.2 Academic Performance by Sports Participation

Table 1 shows that there were no differences in math and science scores between sports participants and non-participants. The non-participants had higher mean scores in both subjects of the academic curriculum. The mean scores observed for sports participants and non-participants were 59.24 ± 18.97 and 66.05 ± 21.47 , respectively, in mathematics. The reported effect size was small ($d \approx 0.33$), and the difference between the two groups was statistically significant ($t = 2.94$, $p < .05$). The same trend was observed for science. The mean score of sports participants was 60.66 ± 18.23 , while the mean score of non-participants was 68.70 ± 19.50 . This difference was statistically significant ($t = 3.81$, $p < .05$), and the reported effect size was small to moderate ($d \approx 0.42$).

Table 1. Comparison of academic performance between sports participants and non-participants

Subject	Sports participants (n = 91), M $\pm$ SD	Non-participants (n = 1,244), M $\pm$ SD	t	p	Cohen's d
Mathematics	59.24 $\pm$ 18.97	66.05 $\pm$ 21.47	2.94	< .05	0.33
Science	60.66 $\pm$ 18.23	68.70 $\pm$ 19.50	3.81	< .05	0.42

Note: M = mean; SD = standard deviation; d = Cohen's effect size.

3.3 Academic Performance by Grade Level

The academic performance of sports participants and non-participants in Classes 6, 7, and 8 is presented in Table 2. There was a higher mean in mathematics and science scores at all grade levels for those who did not participate. Among Class 6 students, the differences between sports participants and non-participants were relatively small in mathematics (59.68 ± 18.04 vs. 63.25 ± 19.99) and science (64.91 ± 17.22 vs. 66.92 ± 17.91). However, non-participants had higher mean scores in Class 7, especially in science (68.95 ± 19.07) compared with the sports participants (61.00 ± 19.70). The greatest differences were seen in Class 8 students. Non-participants obtained higher mean scores in mathematics (66.97 ± 23.09 vs. 55.76 ± 16.95) and science (70.15 ± 21.40 vs. 56.07 ± 17.20).

Table 2. Comparison of academic performance by grade and sports participation

Grade	Subject	Sports participants, M $\pm$ SD	Non-participants, M $\pm$ SD	t	Reported p
Class 6	Mathematics	59.68 $\pm$ 18.04	63.25 $\pm$ 19.99	0.96	< .05
Class 6	Science	64.91 $\pm$ 17.22	66.92 $\pm$ 17.91	0.69	< .05
Class 7	Mathematics	62.06 $\pm$ 21.60	67.45 $\pm$ 21.09	1.37	< .05
Class 7	Science	61.00 $\pm$ 19.70	68.95 $\pm$ 19.07	2.24	< .05

Class 8	Mathematics	55.76 ± 16.95	66.97 ± 23.09	2.56	< .05
Class 8	Science	56.07 ± 17.20	70.15 ± 21.40	3.45	< .05

3.4 Pattern of Sports Participation

The most frequent sports played by the sports participants were football (35 students) and badminton (35 students). Fifteen students reported cricket and five students reported volleyball.

Table 3. Distribution of reported sports participation

Sport	Frequency
Football	35
Badminton	35
Cricket	15
Volleyball	6
Total reported	91

4. Discussion

This study examined the relationship between sports participation and academic achievement among secondary school children in Rajshahi district, Bangladesh. The main results showed that students who were not involved in organised sports gained higher mean scores in mathematics and science than those involved in sports. The overall differences were statistically significant, with relatively small effect sizes reported. The descriptive direction of the results was the same across all grades (6, 7, and 8), and the greatest score differences were found within Class 8 in science. The results of this study indicate that the association between sports involvement and academic performance may exist in this sample, but the magnitude and direction of the association should be interpreted with caution.

This is in contrast to a large body of literature that claims that physical activity and organised sports play a role in academic and cognitive development. There is a body of research that suggests that participation in sports can benefit children's focus, self-control, self-discipline, motivation, and time management, and thus lead to academic achievement. For instance, Aguayo et al. (2022) found evidence of physical activity and fitness being correlated with cognitive functioning and academic achievement of children (Berrios Aguayo et al., 2022). Likewise, a positive link between physical activity and cognition, and physical activity in the school environment can positively impact education without negatively impacting academic outcomes (Bell, 2017; Horiuchi et al., 2014; Latino & Tafuri, 2023). The current results suggest that such advantages are not consistently reflected in the outcomes of examinations in all educational settings. This may be due to one of the following reasons: sports are time-consuming and need to be taken up regularly, which means time for practice, competition, travel, and recovery. These activities will not be integrated properly with academic activities if they are not, which means that students will have less time for revision, homework, and examination preparation. This may be especially important as most of the sports participants in the present study reported that they participated in sporting activities on a regular basis, typically for 1–2 hours per day and for about 6 days per week. Participation can be a significant physical and psychosocial benefit, but can also be a challenge if the program is too demanding and students do not have a structured time-management program.

The pattern of grade levels is also displayed. The differences between sports participants and non-participants increased for higher classes and became more evident in the class 8 students. This may be a reflection of the increased academic rigour during secondary school. Examination pressure, greater academic workload, and expectations placed

on students by their families and schools may be greater for older students. In such cases, pacing athletics and academic preparation might be more challenging (Menting et al., 2019). It is also important to note that the relatively small effect sizes. In addition, the overall scores of non-participants in mathematics and science were significantly better, but the effect sizes reported in this study suggest that differences in academic achievement cannot be attributed to sports participation alone to a large extent. There are a number of factors that need to be considered when studying academic performance, such as study habits, academic motivation, socioeconomic factors, parental education, school resources, nutrition, access to private tutors, and learning capabilities (Soares & Silva Almeida, 2019; Wang & Chen, 2024). Therefore, the present findings should not be interpreted as evidence that sports participation is a cause of academic performance detriment. Rather, they argue that the sports-sports attainment link is situational and could be affected by factors not included in the current investigation.

The educational context in Bangladesh should be considered when analysing the findings. Much of the literature on sports and academic performance has been produced in a context where school sports are well-structured and sports are often linked with academic support (Shan, 2025). There can be significant differences between school units in terms of opportunities, facilities, coaching quality, institutional support, and the organisation of school sports in Bangladesh. Therefore, participation in sports alone does not offer the same educational-related benefits as found in more structured settings. This indicates the need to consider not only whether students are involved in sports, but also how, how much, how long, and how organised (Cornwell & Jahn, 2023). The study still validates the educational value of maintaining a balance. The results do not imply that the opportunities for sports should be lessened. With respect to the overall literature on sports, adolescents' physical health, mental health, teamwork, discipline, socialisation, and other developmental issues are all considered to be significant. Rather, schools can coordinate sports schedules with academic demands and offer adequate study support and guidance on managing time for student athletes.

There are some restrictions that must be recognised. Because of the cross-sectional design, causal inferences cannot be drawn and self-reported academic and sports participation data may be subject to reporting bias. Furthermore, various potentially confounding factors, such as socioeconomic status, parental education, study time, academic motivation, and nutritional status, were not statistically controlled. Comparisons among groups should also be interpreted within the context of the large difference between the number of sports participants and non-participants. Future studies should use a longitudinal design, objective academic data, a more detailed assessment of sporting intensity, and multivariate regression models to determine whether the relationship still holds after controlling for relevant confounders. The overall findings of the study are that students who did not participate in sports had higher mathematics and science scores in the sample, with relatively small effect sizes suggesting that there is probably more to the relationship between sports participation and scores in mathematics and science. This confirms the importance of contextually appropriate strategies to provide development opportunities from sports without compromising appropriate academic support.

5. Conclusion

In this study, an association between sports participation and academic performance of secondary school students in Rajshahi, Bangladesh, was studied. The results showed that the mean scores of non-participating students were higher than the mean scores of students who participated in organised sports in mathematics and science. This trend was observed throughout classes 6, 7, and 8, with the extent of the gap differing by grade and subject. The greatest disparity was observed in Class 8 in all subjects, especially in science. However, the effect sizes were fairly small, indicating that any effect on academic achievement due to participation in sports is unlikely to be the total effect. The results of this study should be taken with a grain of salt as a cross-sectional study does not prove causation. Factors such as study habits, parental support, socio-economic status, motivation, and time management can also impact academic success. Thus, the findings do not necessarily indicate that there is a direct link between participation in sports and deterioration of academic performance. Students' physical health, psychological well-being, discipline, teamwork, and social development continue to be important in sports. Schools need to encourage a balance so that learners can engage in sports and have enough academic support. Longitudinal designs and multivariable analyses should be used in future studies to better elucidate this relationship.

Declarations

Author Contributions

Raju Ahmed: Supervision, Data Collection Methodology, Data Analysis, Writing Original Draft; Nishat Tasnim: Data Collection, Investigation, Visualization; Md. Hasan Al Azad: Writing, Review & Editing.

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Conflict of Interest

The authors declare no conflict of interest.

References

- Anderson, N. D., Murphy, K. J., & Troyer, A. K. (2024). Physical and Cognitive Benefits of Exercise (pp. 312–318). Oxford University Press New York. <https://doi.org/10.1093/oso/9780197749340.003.0038>
- Bell, L. (2017). Physical Activity Benefits Academic Achievement in Children. NEJM Journal Watch, 2017. <https://doi.org/10.1056/nejm-jw.na45689>
- Berrios Aguayo, B., Latorre, P. Á., Salas Sánchez, J., Pantoja Vallejo, A., & Pantoja-Vallejo, &. (2022). effect of physical activity and fitness on executive functions and academic performance in children of elementary school. A systematic review. Cultura, Ciencia y Deporte. <https://doi.org/10.12800/ccd.v17i51.1699>
- Cornwell, T. B., & Jahn, S. (2023). Sport participation (pp. 109–125). Edward Elgar. <https://doi.org/10.4337/9781802208412.00018>
- Horiuchi, A., Shimazaki, T., & Takenaka, K. (2014). Impact of children's physical activities on cognitive performance and academic achievement. The Japanese Journal of Health Psychology, 27(1), 63–76. https://doi.org/10.11560/jahp.27.1_63
- Jee, H. (2026). Physical activity and academic performance in adolescents: a systematic review of intensity, frequency, and mediating factors. Journal of Exercise Rehabilitation, 22(1), 3–8. <https://doi.org/10.12965/jer.2550854.427>
- Käll, L. B., Nilsson, M., & Lindén, T. (2014). The impact of a physical activity intervention program on academic achievement in a Swedish elementary school setting. Journal of School Health, 84(8), 473–480. <https://doi.org/10.1111/josh.12179>
- Kovács, K., Oláh, Á. J., & Pusztai, G. (2024). The role of parental involvement in academic and sports achievement. Heliyon, 10(2), e24290. <https://doi.org/10.1016/j.heliyon.2024.e24290>
- Latino, F., & Tafuri, F. (2023). Physical Activity and Academic Performance in School-Age Children: A Systematic Review. Sustainability, 15(8), 6616. <https://doi.org/10.3390/su15086616>
- Menting, S. G. P., Hendry, D. T., Schiphof-Godart, L., Elferink-Gemser, M. T., & Hettinga, F. J. (2019). Optimal Development of Youth Athletes Toward Elite Athletic Performance: How to Coach Their Motivation, Plan Exercise Training, and Pace the Race. Frontiers in Sports and Active Living, 1, 14. <https://doi.org/10.3389/fspor.2019.00014>
- Nafisa, H. T. Z., Islam, S., Eva, I. I., Rimti, F. H., Rimu, F. H., Siam, N. H., ... & Ahmed, S. (2025). Prevalence and risk factors of neck pain: a cross-sectional screening-based study of 7,919 Bangladeshi workers. European Journal of Medical and Health Sciences, 7(3), 10-16. <https://doi.org/10.24018/ejmed.2025.7.3.2273>
- Pharaswal, L., & Latif, A. (2023). The Benefits of Participating in Extracurricular Activities. GFNPSS-International Journal of Multidisciplinary Research, 4(9), 2384–2388. <https://doi.org/10.46376/ijmr/4.9.2023.2384-2388>

- Premaraja, R. P. (2022). Experimental design for data collection to study the association between sports participation and academic achievement. *International Journal of Learning and Change*, 14(4), 428. <https://doi.org/10.1504/ijlc.2022.124469>
- Shan, s. (2025). The impact of participation in school sports on academic performance and teamwork skills. *Interdisciplinary humanities and communication studies*, 1(2). <https://doi.org/10.61173/0ys3d047>
- Soares, d., & silva almeida, l. (2019). A predictive model of students' academic achievement: the effect of psychological and parental variables. *Iceri proceedings*, 1, 10743. <https://doi.org/10.21125/iceri.2019.2637>
- Spahiu, E., & Kushta, E. (2023). Assessment of the Relationship between Physical Activity and Cognitive Functioning in Children and Adolescents. *European Journal of Biomedical and Life Sciences*, 36–42. <https://doi.org/10.29013/elbls-23-2-36-42>
- Swandana , A., Ahmad, N. Y., Trinanda, A., Al Azim, A. A., & Porto, J. A. (2025). Integration of Cognitive-Behavioural Therapy with Adaptive Swimming Instruction for Children with Water-Related Anxiety Disorders: A Randomised Controlled Trial. *INSPIREE: Indonesian Sport Innovation Review*, 6(02), 98-105. <https://doi.org/10.53905/inspiree.v6i02.147>
- Tian, H., & Sun, Z. (2018). Questionnaire Design for Academic Achievement Assessment (pp. 293–307). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-662-56198-0_10
- Wang, L., & Chen, C. J. (2024). Factors Affecting Student Academic Performance: A Systematic Review. *International Journal on Studies in Education*, 7(1), 1–47. <https://doi.org/10.46328/ijonse.276>