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PHYSICAL ACTIVITY LEVELS OF 10-YEAR-OLD SERBIAN SCHOOLCHILDREN: A CROSS-SECTIONAL ASSESSMENT WITH THE PAQ-C

Abstract: Regular physical activity (PA) is essential for healthy physical and mental development in children. However, there is a lack of region-specific data on PA levels among school-aged children in Serbia. This study aimed to assess physical activity levels among primary school children using the Physical Activity Questionnaire for Children (PAQ-C), with a particular focus on sex-based differences and the proportion of children meeting the recommended activity thresholds. A total of 51 students (25 boys and 26 girls; mean age = 10.25 ± 0.39) from a primary school in Serbia completed the Serbian-translated PAQ-C. Descriptive statistics were calculated for each item and total PAQ-C scores. Independent samples t-tests were used to examine sex differences. The mean PAQ-C score was 3.11 ± 0.62 , with boys scoring slightly higher (3.26 ± 0.56) than girls (2.96 ± 0.64). While most item-level comparisons showed no significant sex differences, girls reported significantly lower activity on weekday evenings (Item 6, $p = .025$). Based on the cut-off criteria, 72% of boys and 53.8% of girls were classified as sufficiently active. The findings highlight moderate activity levels among the sampled children, with notable sex-based variation in specific PA patterns. These results underscore the need for targeted interventions and regular surveillance to promote adequate physical activity in primary school settings.

Keywords: self-report, primary school, fourth grade pupils, sex differences, physical activity measurement.

Introduction

Regular moderate-to-vigorous physical activity (MVPA) is critical for cardiometabolic, musculoskeletal, and psychosocial health during late childhood and lays the foundation for active lifestyles in adulthood (World Health Organization [WHO], 2020). Current WHO guidelines recommend that children and adolescents

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accumulate ≥ 60 min/day of MVPA, yet surveillance data show that the vast majority fall short of this target. A pooled analysis of 1.6 million adolescents from 146 countries found that 81% did not meet the guideline in 2016, with little improvement since 2001 (Guthold et al., 2020).

Despite growing interest in youth physical activity (PA) across Europe, empirical PA data for primary-school students from the Western Balkans are scarce. Serbian monitoring studies have largely focused on older adolescents or have relied on pedometer data limited to the school day, and they consistently report low or declining PA levels. For example, a recent national study of 5,409 Serbian school-age children showed a significant age-related drop in activity, particularly among girls (Maličević et al., 2022). Likewise, only about 19% of healthy Serbian adolescents achieved a “high” PA category, a figure well below comparable European estimates (Nikolić et al., 2020). Collectively, these reports highlight the need for up-to-date, instrument-based estimates in younger age groups.

Although device-based monitors (e.g., accelerometers) are the gold standard for objectively tracking children’s activity, their cost and logistical demands in large school samples make a brief seven-day recall tool such as the Physical Activity Questionnaire for Older Children (PAQ-C) a far more practical alternative.

PAQ-C is a nine-item, seven-day recall instrument designed for use during the school year for schoolchildren aged 8 to 14 (Crocker et al., 1997; Kowalski et al., 2004). It is inexpensive, takes < 10 min to administer in a classroom, and demonstrates acceptable reliability ($\alpha \approx 0.70$ – 0.90) and moderate correlations with accelerometer-derived MVPA ($r \approx 0.30$ – 0.40) across diverse cultures (Marasso et al., 2021). Saint-Maurice et al. (2014) demonstrated that a calibrated model combining PAQ-C scores with age and sex explained 40% of the variance in accelerometer-measured MVPA, with strong agreement ($r = .63$) and no significant bias. Large normative datasets, most notably an English sample of 7,226 schoolchildren aged 10 to 15, offer age- and sex-specific reference values and cut-off points for identifying sufficient PA levels (Voss et al., 2013). These features make the PAQ-C well-suited for population surveillance and international comparison.

The present cross-sectional study aimed to (1) assess the physical activity levels of primary school children using the Physical Activity Questionnaire for Older Children (PAQ-C), and (2) examine sex differences in physical activity and the proportion of children meeting established sex-specific cut-off points for sufficient physical activity.

Methods

Study design and participants

A cross-sectional classroom survey was carried out in March 2024 at a single primary school in Boljevac, a semi-urban municipality in eastern Serbia. The school follows the national curriculum for fourth grade, which includes three compulsory 45-minute physical education lessons each week. All fourth-grade students from two

classes ($N = 55$) were invited to participate in the survey. A total of 51 children (25 boys and 26 girls) completed the questionnaire. Inclusion criteria required that all participants be enrolled in the fourth grade of the selected primary school, attend school regularly during the previous week without any reported health issues, and provide parental or guardian consent for participation. Exclusion criteria applied to students who had incomplete PAQ-C data ($n = 2$), experienced technical issues during questionnaire administration ($n = 1$), or declared that they had been sick during the week preceding data collection ($n = 1$). The average age of the participants, calculated from official birth records to the date of the survey, was 10.25 ± 0.39 years (with an age range of 9.6 to 11.1 years). The study followed the Declaration of Helsinki.

Instrument

Physical activity was assessed with the Physical Activity Questionnaire for Older Children (PAQ-C), a nine-item, seven-day recall tool suitable for Grades 4–8 (Crocker et al., 1997; Kowalski et al., 2004). The Serbian version was prepared through forward and back translation by two bilingual professors from English linguistics, reviewed by three local physical education teachers, and piloted with a group of ten students. Each of the nine PAQ-C items is scored on a 5-point scale, with higher scores reflecting greater levels of physical activity. The total PAQ-C score is calculated as the arithmetic mean of Items 1–9, resulting in a final score ranging from 1 to 5, with higher values indicating greater physical activity. In the present study, the PAQ-C has demonstrated acceptable internal consistency, with a Cronbach's alpha of 0.85. Additionally, its test–retest reliability has been supported by correlation coefficients ranging from 0.75 to 0.82, indicating satisfactory consistency over time (Kowalski et al., 2004). In terms of external validity, PAQ-C scores have shown moderate convergent validity with objective measures such as accelerometers, with correlation coefficients in the range of 0.30 to 0.40 (Marasso et al., 2021).

Procedure

Data collection was conducted during regular school hours, typically within a classroom setting to ensure a quiet and controlled environment. A trained physical education teacher and researcher introduced the study to the students, clearly explaining its purpose and emphasizing voluntary participation and anonymity. The administration of the PAQ-C followed procedures recommended by Kowalski et al. (2004) to maintain consistency across respondents. Students were instructed to answer honestly and independently, reflecting on their physical activity over the previous seven days. The questionnaire was completed on paper and required approximately 10 minutes. Teacher or researcher were available to clarify unfamiliar terms or activity examples if needed but were careful not to prompt or influence

students' responses in any way. This procedure ensured a reliable self-report environment and minimized potential bias during data collection.

Statistical analysis

Descriptive statistics including means and standard deviations, were calculated for the total sample as well as separately for boys and girls. The Shapiro–Wilk test was used to assess the normality of the distribution for the total PAQ-C score. To examine differences between boys and girls, Welch's independent-samples t-test was employed, as Levene's test indicated unequal variances for several items. Corresponding effect sizes were reported using Cohen's *d* with 95% confidence intervals (CI), where values around 0.2 indicate small effects, 0.5 moderate effects, and 0.8 or above large effects (Cohen, 1988). To evaluate activity sufficiency, participants were classified as “sufficiently active” if they scored ≥ 2.9 (boys) or ≥ 2.7 (girls), based on cut-off values from Voss et al. (2013). For all statistical procedures, significance was set at $\alpha = 0.05$. All analyses were conducted using IBM SPSS Statistics, version 27 (IBM Corp., Armonk, NY).

Results

Descriptive statistics were first calculated for PAQ-C item and total scores, followed by independent samples t-tests to examine differences between boys and girls in PAQ-C total and item-level scores, providing insight into sex-based variations in self-reported physical activity levels among primary school children. The Shapiro–Wilk test confirmed that the distribution of the total PAQ-C composite scores did not significantly deviate from normality.

Table 1 provides descriptive statistics of the study sample. The average age of participants was approximately 10.25 years with balanced gender representation. Boys reported slightly higher average PAQ-C total scores (3.26) compared to girls (2.96), but overall physical activity levels were moderate.

Table 1. Sample Characteristics (N = 51)

Variable	Total Sample	Boys (n = 25)	Girls (n = 26)
Age (years)	10.25 $\pm$ 0.39	10.32 $\pm$ 0.37	10.19 $\pm$ 0.39
PAQ-C total score	3.11 $\pm$ 0.62	3.26 $\pm$ 0.56	2.96 $\pm$ 0.64

Note. Values are presented as M $\pm$ SD. PAQ-C = Physical Activity Questionnaire for Older Children.

Table 2 presents the mean and standard deviation (M $\pm$ SD) of self-reported physical activity levels for each item of the PAQ-C and the overall total score, disaggregated by sex and for the total sample (N = 51). Overall, boys reported slightly higher levels of physical activity than girls across all PAQ-C items. The largest differences between boys and girls appeared in evening, after school and self-perceived physical activity, with boys consistently reporting higher engagement in

these domains than girls. These results suggest that boys in this sample reported greater overall physical activity across all measured domains.

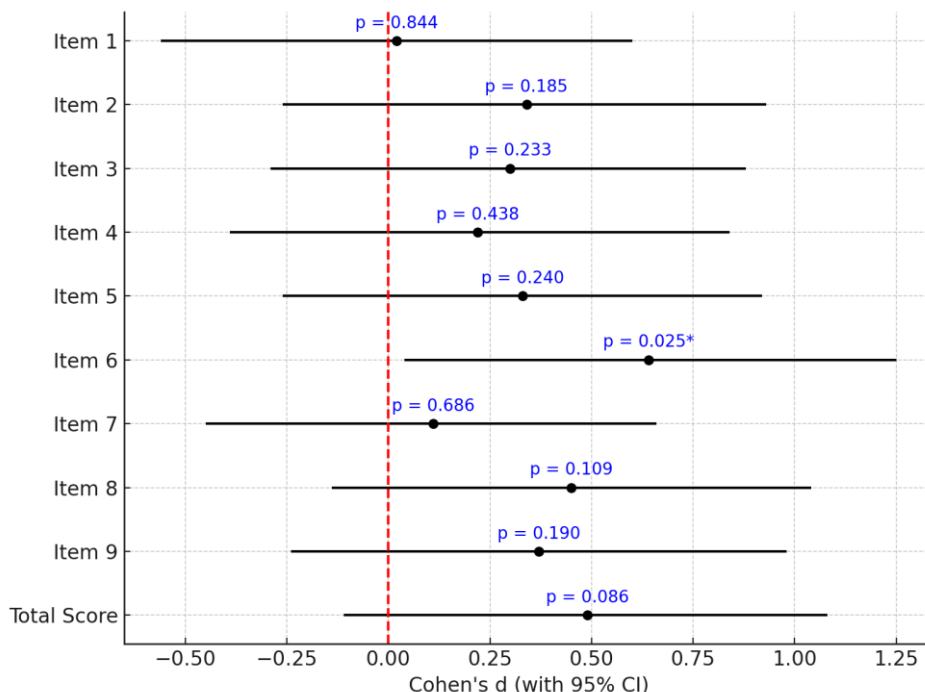
Table 2. PAQ-C Scores by Sex and Total Sample

Item	Total M±SD	Boys M±SD	Girls M±SD
Item 1	2.20 ± 0.59	2.21 ± 0.62	2.18 ± 0.56
Item 2	4.94 ± 0.31	5.00 ± 0.00	4.88 ± 0.43
Item 3	2.29 ± 0.86	2.44 ± 0.58	2.15 ± 1.05
Item 4	1.45 ± 0.61	1.52 ± 0.71	1.38 ± 0.50
Item 5	3.47 ± 1.24	3.68 ± 1.22	3.27 ± 1.25
Item 6	3.04 ± 1.02	3.36 ± 0.70	2.73 ± 1.19
Item 7	3.16 ± 1.42	3.24 ± 1.42	3.08 ± 1.44
Item 8	3.41 ± 1.34	3.72 ± 1.17	3.12 ± 1.45
Item 9	4.00 ± 0.77	4.15 ± 0.75	3.86 ± 0.78
Total Score	3.11 ± 0.62	3.26 ± 0.56	2.96 ± 0.64

Note. M = mean; SD = standard deviation; PAQ-C = Physical Activity Questionnaire for Older Children; Item 1 = activity participation during spare time; Item 2 = activity level during physical education (PE) classes; Item 3 = activity during recess; Item 4 = activity during lunch break; Item 5 = activity after school; Item 6 = evening physical activity; Item 7 = weekend physical activity; Item 8 = general self-perception of activity level; Item 9 = physical activity on each day of the previous week; Total score = average of all nine PAQ-C items.

Figure 1 presents the sex differences in physical activity levels across individual PAQ-C items and the total score, expressed as Cohen's *d* effect sizes with 95% confidence intervals (CI). Most items show small to moderate positive effect sizes, indicating that boys tended to report higher levels of physical activity than girls. However, only Item 6, which reflects physical activity participation during the evening, demonstrated a statistically significant difference (Cohen's *d* = 0.64, *p* = .025), with boys scoring notably higher. Other items, including the total PAQ-C score, showed small-to-moderate effects but did not reach statistical significance. This suggests trends favoring higher male activity but insufficient evidence to conclude consistent differences across all domains.

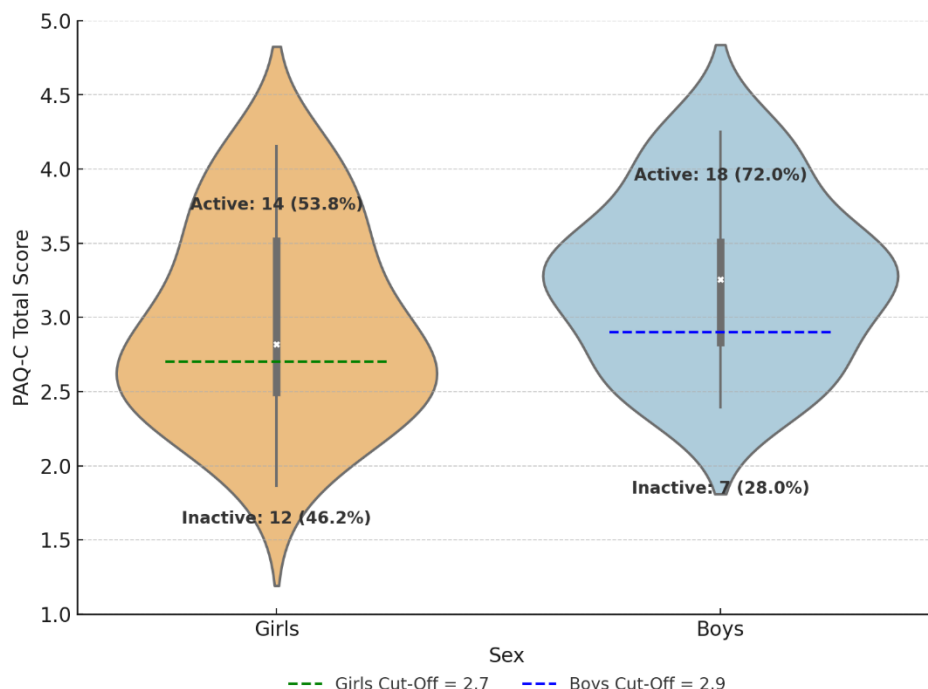
Figure 1. Forest Plot of Sex Differences



Note. Cohen's d = Effect Size; CI = Confidence Intervals; Item 1 = activity participation during spare time; Item 2 = activity level during physical education (PE) classes; Item 3 = activity during recess; Item 4 = activity during lunch break; Item 5 = activity after school; Item 6 = evening physical activity; Item 7 = weekend physical activity; Item 8 = general self-perception of activity level; Item 9 = physical activity on each day of the previous week; Total Score = average of all nine PAQ-C items; * = statistical significance at $p < 0.05$.

Figure 2 presents the distribution of PAQ-C total scores among boys and girls, along with sex-specific cut-off lines for sufficient physical activity (2.9 for boys, 2.7 for girls, Voss et al., 2013). The violin plots show that although both groups exhibit moderate activity levels on average, boys' scores tend to cluster higher. Notably, 72.0% of boys and 53.8% of girls surpassed their respective thresholds, suggesting a higher proportion of sufficiently active boys in this sample.

Figure 2. Distribution of PAQ-C Total Scores Among Boys and Girls With Sex-Specific Cut-Off Points for Sufficient Physical Activity.



Note. Dashed lines represent the physical activity sufficiency cut-offs for PAQ-C total scores: 2.9 for boys and 2.7 for girls. These thresholds were established by Voss et al. (2013).

Discussion

This study provides the first assessment of physical activity levels among Serbian schoolchildren using the Physical Activity Questionnaire for Older Children (PAQ-C). The mean PAQ-C score for the total sample was 3.11 (SD = 0.62), indicating a moderate level of physical activity. Boys reported slightly higher activity levels ($M = 3.26$, $SD = 0.56$) compared to girls ($M = 2.96$, $SD = 0.64$), though the difference was not statistically significant ($p > 0.05$). Based on established sex-specific cut-off points for sufficient activity >2.9 for boys and >2.7 for girls, 72% of boys and 53.8% of girls were classified as sufficiently active, totaling 62.7% of the overall sample. These findings suggest that substantial proportion of Serbian fourth-grade students meet sufficient physical activity levels associated with health-related fitness.

These values are broadly consistent with findings from nearby countries. For instance, in a Croatian study of fourth-grade students, boys scored 3.69 and girls 3.48 on the PAQ-C (Rajković Vuletić et al., 2024), while third-grade students in another Croatian sample showed lower values (3.11 for boys, 2.66 for girls; Badrić & Ravlić,

2017). A large Bosnian study reported PAQ-C scores of 3.16 for boys and 2.91 for girls aged around 12, noting that sex differences were not evident at age 10 (Pojskić & Eslami, 2018). In Serbia, slightly older students aged 13.6 years, had a similar PAQ-C scores of 3.21 for boys and 2.87 for girls (Radisavljević Janić et al., 2020). Another Serbian study involving over 5,000 students aged 11–14 using PAQ-A, found that boys were more frequently classified as highly active compared to girls, and that activity levels decreased with age, particularly among girls (Maličević et al., 2022). International comparisons suggest that our findings are similar to the European average. For instance, 10-year-old children in England reported mean PAQ-C scores of 3.2 for boys and 3.0 for girls (Voss et al., 2013), while Spanish samples typically range between 3.1 and 3.2 (Benítez-Porres, Alvero-Cruz et al., 2016; Benítez-Porres, López-Fernández et al., 2016). In Central and Eastern Europe, similar age groups have reported moderate PAQ-C scores: Czech children averaged 2.7 (Cuberek et al., 2021), Hungarian children scored 2.87 for girls and 3.0 for boys (Makai et al., 2023) and Bulgarian children scored 2.6 for girls and 2.9 for boys (Kolimechkov et al., 2017). Chinese samples have shown lower values, with mean values of 2.7 for boys and 2.6 for girls (Wang et al., 2016).

A noteworthy finding is that only 62.7% of children in our sample met the established sex-specific cut-off points for sufficient physical activity (≥ 2.9 for boys, ≥ 2.7 for girls), with a considerably higher proportion of boys (72%) classified as sufficiently active compared to girls (54%). This prevalence is generally in line with or slightly below levels reported in other European studies, such as those from England (Voss et al., 2013) and Spain (Benítez-Porres, Alvero-Cruz et al., 2016), where greater proportions of students were found to meet either PAQ-based sufficiency thresholds or the WHO recommendation of 60 minutes of daily moderate-to-vigorous physical activity (MVPA). National data from Serbia similarly indicate that approximately 40% of 11-year-olds reported being physically active every day of the week, with a significant decline in activity by age 15 (Đorđević et al., 2022). However, the observed pattern of lower activity levels among girls is consistent across most regional and international findings. Several factors may help explain the moderate PA levels observed in our sample. First, the Serbian national curriculum mandates three 45-minute physical education (PE) classes per week in primary school, which provides a structured opportunity for movement, though it still falls short of the WHO recommendation of 60 minutes of daily MVPA (WHO, 2020). The quality and intensity of PE lessons, however, can vary across schools and instructors, potentially influencing actual engagement in physical activity during these classes (Hollis et al., 2016). Second, extracurricular and informal physical activities play a critical role in shaping overall physical activity levels. While access to organized sports programs or recreational facilities may vary by region, many children remain active through unstructured means such as outdoor play, cycling, or walking to and from school. Few studies have highlighted the importance of environmental and social influences, such as parental support, neighborhood safety, access to parks, and a supportive community sports culture, in promoting physical activity outside of school settings (Sallis et al., 2000; Davison & Lawson, 2006;

Pojškić & Eslami, 2018). Third, the timing of data collection may have influenced results. Assessments were conducted in early March, a period still characterized by colder weather in Serbia, which may have reduced opportunities for outdoor activity. Seasonal fluctuations in PAQ-C scores are well-documented, with lower scores typically observed during the winter months compared to spring and summer (Silva et al., 2011; Atkin et al., 2016). Lastly, the use of self-report measures introduces inherent limitations. Although the PAQ-C is validated and widely used across diverse populations, its reliance on recall may result in over- or underestimation, especially among younger children (Crocker et al., 1997; Kowalski et al., 2004). Despite this, its practicality and ability to estimate MVPA at the group level continue to support its use in large-scale surveillance studies (Saint-Maurice et al., 2014).

Although boys in our study reported higher average PAQ-C scores than girls, the difference was not statistically significant. This finding aligns with regional research by Rajković Vuletić et al. (2024) in Croatia, which also found no significant sex differences in PAQ-C scores among fourth-grade students. Similarly, Voss et al. (2013) observed no sex differences at age 10 in a large English sample, with disparities becoming more pronounced in older age groups. Pojškić and Eslami (2018) reported a comparable trend in Bosnia and Herzegovina. These results suggest that around the age of 10, boys and girls may experience similar opportunities for physical activity and motivation, particularly in school environments where access to physical education (PE), recess, and informal play is relatively equal. Furthermore, at this age, biological and sociocultural factors, such as gender norms or pubertal changes that typically lead to variations in physical activity, may not yet have a significant impact.

A key strength of this study is its contribution to the limited pool of data on younger Serbian schoolchildren using a standardized physical activity instrument. While the PAQ-C has been used in older Serbian populations, few studies have focused on fourth-grade schoolchildren.

However, several limitations must be acknowledged. The reliance on self-report may lead to over- or underestimation. The modest sample size ($N = 51$) from a single semi-urban area limits the generalizability of the findings. Additionally, the absence of objective PA measures such as accelerometry prevents cross-validation. Finally, the cross-sectional design precludes causal interpretations regarding PA patterns.

This study provides valuable baseline data to inform the development of PE policy and programs in Serbia. The relatively high proportion of sufficiently active children is encouraging, but the moderate mean scores highlight a need to enhance daily opportunities for structured and unstructured activity. Future studies should expand to larger and more diverse samples, include objective PA measures, and explore longitudinal patterns to assess intervention impact.

Conclusion

This cross-sectional study assessed physical activity levels among Serbian fourth-grade students using the PAQ-C and examined sex differences in overall activity and the proportion of children meeting established sex-specific cut-off points for sufficient physical activity. The results revealed a moderate mean PAQ-C score ($M = 3.11$), with boys reporting slightly higher activity levels than girls across all items. Although most sex differences were not statistically significant, boys showed higher average scores. Based on established cut-off values (≥ 2.9 for boys, ≥ 2.7 for girls), 72% of boys and 53.8% of girls were classified as sufficiently active, amounting to 62.7% of the total sample. These findings highlight the relevance of the PAQ-C as a monitoring tool and emphasize the importance of promoting regular physical activity among primary school children, with particular attention to groups with lower activity levels.

References

1. Atkin, A. J., Sharp, S. J., Harrison, F., Brage, S., & Van Sluijs, E. M. (2016). Seasonal Variation in Children's Physical Activity and Sedentary Time. *Medicine and science in sports and exercise*, 48(3), 449–456. <https://doi.org/10.1249/MSS.0000000000000786>
2. Badrić, M., & Ravlić, K. (2017). Relationship between functional capacity and physical activity of students. *Croatian Journal of Education*, 19(2), 109–123. <https://doi.org/10.15516/cje.v19i0.2681>
3. Benítez-Porres, J., Alvero-Cruz, J. R., Sardinha, L. B., López-Fernández, I., & Camero, E. A. (2016). Cut-off values for classifying active children and adolescents using the Physical Activity Questionnaire: PAQ-C and PAQ-A. *Nutricion hospitalaria*, 33, 1036–1044. <https://dx.doi.org/10.20960/nh.564>
4. Benítez-Porres, J., López-Fernández, I., Raya, J. F., Álvarez Camero, S., Alvero-Cruz, J. R., & Álvarez Camero, E. (2016). Reliability and Validity of the PAQ-C Questionnaire to Assess Physical Activity in Children. *The Journal of School Health*, 86(9), 677–685. <https://doi.org/10.1111/josh.12418>
5. Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.
6. Crocker, P. R. E., Bailey, D. A., Faulkner, R. A., Kowalski, K. C., & McGrath, R. (1997). Measuring general levels of physical activity: Preliminary evidence for the Physical Activity Questionnaire for Older Children. *Medicine & Science in Sports & Exercise*, 29(10), 1344–1349. <https://doi.org/10.1097/00005768-199710000-00011>
7. Cuberek, R., Janíková, M., & Dygrýn, J. (2021). Adaptation and validation of the Physical Activity Questionnaire for Older Children (PAQ-C) among Czech children. *PloS One*, 16(1), e0245256. <https://doi.org/10.1371/journal.pone.0245256>
8. Davison, K. K., & Lawson, C. T. (2006). Do attributes in the physical environment influence children's physical activity? A review of the literature. *International Journal of Behavioral Nutrition and Physical Activity*, 3(1), 19. <https://doi.org/10.1186/1479-5868-3-19>

9. Dorđević, S., Knežević, S., & Jovanović, V. (2022). Research of physical activity as a part of health-related behavior of school-age children in the Republic of Serbia 2017/18. *Facta Universitatis, Series: Physical Education and Sport*, 161-173. <https://doi.org/10.22190/FUPES220716015D>
10. Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2020). Global trends in insufficient physical activity among adolescents: A pooled analysis of 298 population-based surveys with 1.6 million participants. *The Lancet Child & Adolescent Health*, 4(1), 23–35. [https://doi.org/10.1016/S2352-4642\(19\)30323-2](https://doi.org/10.1016/S2352-4642(19)30323-2)
11. Hollis, J. L., Williams, A. J., Sutherland, R., Campbell, E., Nathan, N., Wolfenden, L., Morgan, P. J., Lubans, D. R., & Wiggers, J. (2016). A systematic review and meta-analysis of moderate-to-vigorous physical activity levels in elementary school physical education lessons. *Preventive Medicine*, 86, 34–54. <https://doi.org/10.1016/j.ypmed.2015.11.018>
12. Kolimechkov, S., Petrov, L., & Alexandrova, A. (2017). Physical activity assessment using a modified PAQ-C questionnaire. In T. Iancheva, S. Djobova, M. Kuleva (Eds.) *Proceedings Book of the International Scientific Congress "Applied sports Sciences"*, (pp. 346-350). NSA.
13. Kowalski, K. C., Crocker, P. R. E., & Donen, R. M. (2004). The Physical Activity Questionnaire for Older Children (PAQ-C) and Adolescents (PAQ-A) Manual. College of Kinesiology, University of Saskatchewan, University of Saskatchewan.
14. Makai, A., Prémusz, V., Dózsa-Juhász, O., Fodor-Mazzag, K., Melczer, C., & Ács, P. (2023). Examination of Physical Activity Patterns of Children, Reliability and Structural Validity Testing of the Hungarian Version of the PAQ-C Questionnaire. *Children (Basel, Switzerland)*, 10(9), 1547. <https://doi.org/10.3390/children10091547>
15. Maličević, S., Mirkov, D., Milanović, I., Radisavljević-Janić, S., Batez, M., & Mazić, S. (2022). Is the physical fitness of schoolchildren dependent on their physical activity levels and nutritional status? The experience from Serbia. *Nutricion hospitalaria*, 39(3), 506–512. <https://doi.org/10.20960/nh.03861>
16. Marasso, D., Lupo, C., Collura, S., Rainoldi, A., & Brustio, P. R. (2021). Subjective versus Objective Measure of Physical Activity: A Systematic Review and Meta-Analysis of the Convergent Validity of the Physical Activity Questionnaire for Children (PAQ-C). *International Journal of Environmental Research and Public Health*, 18(7), 3413. <https://doi.org/10.3390/ijerph18073413>
17. Nikolić, M., Jovanović, R., & Stanković, A. (2020). Characteristics of physical activity among healthy serbian adolescents. *Revista Brasileira de Medicina do Esporte*, 26(1), 30-33. <http://dx.doi.org/10.1590/1517-869220202601187598>
18. Pojskić, H., & Eslami, B. (2018). Relationship Between Obesity, Physical Activity, and Cardiorespiratory Fitness Levels in Children and Adolescents in Bosnia and Herzegovina: An Analysis of Gender Differences. *Frontiers in Physiology*, 9, 1734. <https://doi.org/10.3389/fphys.2018.01734>
19. Radisavljević Janić, S., Lazarević, L. B., Lazarević, D., & Milanović, I. (2020). Predictors of physical activity in early adolescence: The contribution of physical fitness and physical self-concept. *Fizička kultura*, 74(2), 140-151. <https://doi.org/10.5937/fizkul2002000R>

20. Rajković Vuletić, P., Gilić, B., Zenić, N., Pavlinović, V., Kesić, M. G., Idrizović, K., Sunda, M., Manojlović, M., & Sekulić, D. (2024). Analyzing the Associations between Facets of Physical Literacy, Physical Fitness, and Physical Activity Levels: Gender- and Age-Specific Cross-Sectional Study in Preadolescent Children. *Education Sciences*, 14(4), 391. <https://doi.org/10.3390/educsci14040391>
21. Saint-Maurice, P. F., Welk, G. J., Beyler, N. K., Bartee, R. T., & Heelan, K. A. (2014). Calibration of self-report tools for physical activity research: the Physical Activity Questionnaire (PAQ). *BMC Public Health*, 14, 461. <https://doi.org/10.1186/1471-2458-14-461>
22. Sallis, J. F., Prochaska, J. J., & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine & Science in Sports & Exercise*, 32(5), 963–975. <https://doi.org/10.1097/00005768-200005000-00014>
23. Silva, P., Santos, R., Welk, G., & Mota, J. (2011). Seasonal Differences in Physical Activity and Sedentary Patterns: The Relevance of the PA Context. *Journal of Sports Science & Medicine*, 10(1), 66–72.
24. Voss, C., Ogunleye, A. A., & Sandercock, G. R. H. (2013). Physical Activity Questionnaire for Children and Adolescents: English norms and cut-off points. *Pediatrics International*, 55(4), 498–507. <https://doi.org/10.1111/ped.12092>
25. Wang, J. J., Baranowski, T., Lau, P. W. C., Chen, T. A., & Pitkethly, A. J. (2016). Validation of the Physical Activity Questionnaire for Older Children (PAQ-C) among Chinese children. *Biomedical and Environmental Sciences*, 29(3), 177–186. <https://doi.org/10.3967/bes2016.022>
26. World Health Organization. (2020). *WHO guidelines on physical activity and sedentary behaviour*. Retrieved from: <https://www.who.int/publications/i/item/9789240015128>

NIVO FIZIČKE AKTIVNOSTI DESETOGODIŠNJIH UČENIKA U SRBIJI: TRANSVERZALNO ISTRAŽIVANJE PRIMENOM UPITNIKA PAQ-C

Sažetak: Redovna fizička aktivnost od ključne je važnosti za zdrav fizički i mentalni razvoj dece, ali podaci o njenom nivou među školskom decom u Srbiji još uvek su ograničeni. Cilj ovog istraživanja bio je da se proceni nivo fizičke aktivnosti učenika četvrtog razreda koristeći upitnik za procenu fizičke aktivnosti za decu (PAQ-C), s posebnim osvrtom na polne razlike i udeo dece koja dostižu preporučene pragove fizičke aktivnosti. Uzorak je bio sačinjen od pedeset i jednog učenika (25 dečaka i 26 devojčica; prosečne starosti 10.25 ± 0.39 godina) iz četvrtog razreda jedne osnovne škole u Srbiji. Za ispitivanje razlika između polova, primenjen je t-test za nezavisne uzorke. Prosečan PAQ-C skor iznosio je 3.11 ± 0.62 , pri čemu su dečaci postigli nešto viši skor (3.26 ± 0.56) u poređenju sa devojčicama (2.96 ± 0.64). Iako kod većine ajtema nije uočena značajna razlika između polova, devojčice su imale značajno nižu fizičku aktivnost u večernjim satima (Ajtem 6; $p = 0.025$). Prema graničnim vrednostima, 72% dečaka i 53.8% devojčica klasifikovano je kao dovoljno aktivno. Nalazi ukazuju na umerene nivoe aktivnosti kod ispitanih učenika, uz izražene polne razlike u pojedinim obrascima fizičke aktivnosti. Dobijeni rezultati naglašavaju potrebu za ciljanim intervencijama i redovnim praćenjem kako bi se podstakla adekvatna fizička aktivnost u osnovnoškolskom okruženju.

Ključne reči: samoprocena fizičke aktivnosti, osnovna škola, učenici četvrtog razreda, polne razlike, anketa.