



## Carta al Director

### ASSESSMENT LEVEL OF PHYSICAL ACTIVITY OF YOUNG SCHOOL CHILDREN IN MONTENEGRO, USING THE PAQ-C QUESTIONNAIRE, DURING THE COVID-19 PANDEMIC

Dear Editor,

Accurate assessment of physical activity is crucial to better understand current levels of physical activity in the at-risk population, devise strategies to maintain or improve physical activity, and assess the effectiveness of such strategies (1). The influence of the modern way of life and the increasing development of technology leads to an increased rate of obesity among young people. One of the main reasons is a low level of physical activity that leads to the appearance of various diseases (2).

The aim of this research was to assess the level of physical activity of younger school children in Montenegro during the COVID-19 pandemic, as well as to examine the differences in level of physical activity between children from rural and urban areas in Montenegro.

The total sample of examinees in this study is 385, male and female, aged 6 and 9. All examinees were divided into two subsamples. The first subsample consisted of 180 first- and fourth-grade children from rural areas in Montenegro, while the second subsample consisted of 205 first- and fourth-grade children from urban areas in Montenegro. To assess the level of physical activity, the PAQ-C standardized questionnaire was used. The reliability and validity of this questionnaire have been confirmed in many studies (1). This questionnaire examines the types of physical activities that are performed as part of everyday life. It contains a group of nine questions related to children's physical activity in different parts of the day, such as the time during the school break, the time during the lunch break, after school, and on weekends. Each children's response is rated on a scale of one to five, where one (1) represents low physical activity and five (5) high physical activity. Values in between indicate the intermediate level of physical activity in children. Data obtained through the research are processed using descriptive and comparative statistical procedures. Differences

in the level of physical activity were determined using the t-test for small independent samples, with statistical significance at  $p < 0.05$ .

Based on the results of descriptive statistics, it can be noted that first- and fourth-grade elementary school pupils in Montenegro have an intermediate level of physical activity with an average value of  $2.88 \pm 0.6$ . The results of the t-test indicate there are no statistically significant differences in level of physical activity between schoolchildren from rural and schoolchildren from urban areas in Montenegro, but those from urban areas have higher numerical values ( $2.84 \pm 0.7$  for rural schoolchildren and  $2.91 \pm 0.6$  for urban schoolchildren). Also, the results of the t-test show that there are statistically significant differences in level of physical activity between first-grade schoolchildren from urban and those from rural areas in favor of the children from urban areas ( $2.69 \pm 0.7$  for rural first-grade schoolchildren and  $2.93 \pm 0.6$  for urban first-grade schoolchildren). When it comes to fourth-grade urban and rural schoolchildren there are no statistically significant differences in level of physical activity, but schoolchildren from rural areas have higher numerical values ( $3.02 \pm 0.7$  for rural fourth-grade schoolchildren and  $2.88 \pm 0.5$  for urban fourth-grade schoolchildren).

The results obtained in this study are similar to the results obtained on a sample of Bulgarian children aged 7 to 10 years (PAQ-C score  $> 2.50$  and  $< 3.50$ ), and on a sample of children in England with the following values: 2.9 for boys and 2.7 for girls (3,4). Also in this study, it was shown that children in rural areas have a lower level of physical activity when compared to children in urban areas. The question is whether the trend is slowly changing as shown in a global study that found that adults in rural areas have a higher nutritional status and lower level of physical activity than adults in urban areas (5). Although this letter has the basic goal of presenting the results obtained, it is very important to remind potential readers about the significance of assessing the level of physical activity in order to be able to later act preventively and correctively. There is a limitation that could significantly affect the above presented results, namely the work suspension of educational institutions in Montenegro during the COVID-19 pandemic. This fact should be taken into account and the need to carefully compare the results available from the periods before and after the COVID-19

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restrictions, as well as the changes that will occur in children living in urban and rural areas, should be emphasized.

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## REFERENCES

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1. Voss C, Dean PH, Gardner RF, Duncombe SL, Harris KC. Validity and reliability of the Physical Activity Questionnaire for Children (PAQ-C) and Adolescents (PAQ-A) in individuals with congenital heart disease. *Plos One* 2017;12(4):1-15. DOI: 10.1371/journal.pone.0175806
2. Vasiljevic I, Bjelica D, Gardasevic J. Analysis of nutrition for boys and girls who are first cycle pupils in primary school. *Journal of Sports Sciences* 2018;11(1):15-8.
3. Kolimechkov S, Lubomir P, Alexandrova A, editors. Physical activity assessment using a modified paq-c questionnaire V. Proceedings of the *international scientific congress "Applied sports sciences"*. Sofia, Bulgaria; 2017. p. 346-50. DOI: 10.37393/ICASS201772
4. Voss C, Ogunleye AA, Sandercock GR. Physical Activity Questionnaire for children and adolescents: English norms and cut-off points. *Pediatrics International Journal* 2013;55(4):498-507. DOI: 10.1111/ped.12092
5. NCD Risk Factor Collaboration. Rising rural body-mass index is the main driver of the global obesity epidemic in adults. *Nature* 2019;569(7755):260-4. DOI: 10.1038/s41586-019-1171-x