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Comparative Study regarding the Extracurricular Sports Activity among Primary and Middle Schoolers

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Abstract

The extracurricular sports activity among schooler children plays a significant role in the elimination of their sedentary behaviour. The purpose of this study was to analyse on a sample of 408 students aspects related to the following: the body mass index (BMI), the type of physical activities practiced, the parameters of the physical efforts made, the level of performance attained and the access to sports bases. The subjects within the research were divided into 4 groups: female primary schoolers (FP, n=126, 9.83 ± 1.30 years old), male primary schoolers (MP, n=103, 10.04 ± 1.22 years old), female middle schoolers (FM, n=98, 12.40 ± 1.36 years old) and male middle schoolers (MM, n=81, 12.22 ± 1.33 years old). The subjects underwent anthropometric and interrogative analyses, through the survey method. By using the Anova One – Way ($p < 0.05$), we obtained significant differences of the BMI between FP–MM, MP–MM and FM–MM. The type of preferred sports activities differentiated MP – MM, the last group being centred on cyclical activities. The duration of the session presents significant differences between MP – FM. The weekly frequency and the annual duration of sports activity features a similar level. The volume of annual physical activities is differentiated between BP and FG. The performance level attained is different between MP – FM and MP – MM.

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Consequently, it may be stated that the preferences of schoolers regarding extracurricular sports activity are practiced with a frequency of 8 months per year, 3 times a week, each session lasting for 90 minutes, while their nature is cyclical at leisure level, too.

Keywords: *extracurricular physical activity; students; evaluation; monitoring; sedentary behaviour.*

Introduction

Physical activity is essential to the early development of any child and impacts many aspects of a child's health. Current health organizations argue that higher levels of physical activity in school-aged children are consistent with important short- and long-term health benefits in physical, emotional, social, and cognitive fields (King et al., 2003; Zeng, 2017).

Through this study we try to complete the subject of practicing physical effort outside the school program. Students in the Romanian education system have quite large deficiencies in the independent practice of physical exercise, resulting in a series of health problems that they may have throughout life. Thus, our contribution to the approached subject is given by the direct approach of the students through the survey and the highlighting of the aspects related to the possibility of the Romanian students to practice extracurricular sports activities (Lisinskiene & Sukys, 2016).

Growth and development represent two processes particularising the first years within a person's life. They are influenced by the action of internal (genetic) and external factors (environmental). Environmental factors also include physical activity, diet and family. Systematic physical activity (a minimum of 60 minutes daily) leads to the enhancement of the cardiovascular, respiratory system and to the improvement in school performances. Among young people who exercise permanently, studies have reported better mental processes – planning, organisation, inhibition and memorising. Other studies highlight the improvement of the problem-solving capacity in math and the reading skills in young people who exercise systematically (Albu et al., 2020; Albu et al., 2018; Albu, et al., 2017; Chaddock et al., 2012; Haapala, 2013; Scudder et al., 2014). 4

Many factors have been pointed out as contributors to the current obesity epidemic. Years of inactivity, poor eating habits, and genetic factors have all played significant role. Nonetheless, the reality is that these factors may be only symptoms of more complex causes. Factors like supervised and restricted play, less recess, and overspecialized and highly competitive sports have created together an environment for children that promotes sedentary

living and reduces physical activity (Bocarro et al., 2008; Hedley et al., 2004; Rosenfeld, 2004).

Certain authors argue that a physically active lifestyle during childhood is positively associated with brain and cognitive health. An increasing database of research pinpoints that aerobically fit children display higher academic achievement scores, higher cognitive performance, more efficient neuroelectric activation underlying attentional processes, and larger brain volumes in the hippocampus and basal ganglia than their less fit counterparts (Buck et al., 2008; Castelli et al., 2007; Chaddock et al., 2010a, 2010b, 2011; 2012; Chomitz et al., 2009; Hillman et al., 2005, 2009; Kamijo et al., 2011; Pontifex, 2011; Sibley & Etnier, 2003).

Methods

The aim of the research is to highlight the concerns of primary and secondary school students for extracurricular sports activities, as well as the way they carry them out. For this, we initiated a survey process of 408 students who met the criteria for integration into the study population we followed. The survey was conducted during January – April, 2021, the questionnaires being applied directly to each respondent. The analysis of the students involved was performed by comparing the answers according to age group and gender. Thus, they were divided into 4 groups: female primary schoolers (FP, $n = 126$, 9.83 ± 1.30 years), male primary schoolers (BP, $n = 103$, 10.04 ± 1.22 years), female middle schoolers (FG, $n = 98$, 12.40 ± 1.36 years) and male middle schoolers (BG, $n = 81$, 12.22 ± 1.33 years). The analyzed parameters were: the body mass index (BMI), the type of physical activities practiced, the parameters of the physical efforts made, the level of performance attained and the access to sports bases. Each qualitative response of the respondents was quantified in value in order to determine the differences between the analyzed parameters. In the questionnaires applied, subjects indicated the subjects practiced outside the school curriculum. Hence, after processing the data collected, each discipline was ascribed a number depending on its motor pattern: 1 for cyclical sports and 2 for the others. In addition, each student's practice level was noted with 1 for a leisure activity or with 2, for performance sport. Questions regarding perceived intensity while practicing the sports activities analysed and the degree of access to sporting bases provided a scale from 1 to 5. Thus, values were directly proportional with the parameters studied.

Statistical analysis was performed by processing data using Graph Pad Prism 6. The results were compared through the Anova One-Way test,

trying to observe the differences between boys and girls, but also between the two levels of education. The statistical results aimed to highlight the way in which extracurricular physical exercise is practiced by students. The significance level was set at 0.05.

Results

By using the Anova One – Way ($p < 0.05$), we obtained significant differences of the BMI between FP- BG, BP – BG and FG – BG. The type of preferred sports activities differentiated BP – BG, the last group being centred on cyclical activities. The duration of the session presents significant differences between BP – FG. The weekly frequency and the annual duration of sports activity features a similar level. The volume of annual physical activities is differentiated between BP and FG. The performance level attained is different between BP – FG and BP – BG. Table 1 featured the centralised data of the study

Table 1 - Study findings

	FP	MP	FG	MG	p
BMI (kg/m ²)	18,21 ± 3,83	18.53 ± 3.79	18.84 ± 4.09	21.70 ± 4.24	< 0.0001
Sports activity type	1.31 ± 0.74	1.38 ± 0.76	1.24 ± 0.81	1.05 ± 0.74	0.02
Duration of a session (min)	77.11 ± 59.92	77.96 ± 58.87	49.60 ± 49.81	65.44 ± 57.64	0.0009
Weekly frequency (no. of sessions/week)	2,42 ± 2.03	2.85 ± 2.16	2.63 ± 2.20	2.82 ± 2.50	0.47
Annual duration (months)	7.89 ± 4.81	8.28 ± 4.65	7.16 ± 5.12	7.49 ± 5.09	0.40
Annual volume (min)	8815 ± 11188	14057 ± 31621	6746 ± 8710	10197 ± 15216	0.05
Perceived intensity (1-5)	2.62 ± 1.60	2.80 ± 1.66	2.61 ± 1.79	2.62 ± 1.81	0.83
Performance level	1.07 ± 0.63	1.15 ± 0.68	0.90 ± 0.60	0.90 ± 0.62	0.01
Access to sporting bases (1-5)	1.69 ± 1.42	1.75 ± 1.45	1.63 ± 1.30	1.36 ± 1.30	0.23

The study findings provide a view of the students' possibilities and habits (regarding the two study cycles). Body mass index features a statistical differentiation between the middle school boys and each of the other groups ($p < 0.0001$). Their value $-21.70 \pm 4.24 \text{ kg/m}^2$ is higher than the others, which may be due to boys' higher body mass index during middle school. In what concerns the type of leisure physical activity, the difference is made between the two groups of boys ($p = 0.02$): primary school boys prefer noncyclical activities (1.38 ± 0.76), but as they get older, they tend to choose subjects with a higher degree of repeatability regarding motor actions (basketball, football, gymnastics, swimming, horse-riding, dance sport, jogging, bike riding, outdoor physical activities, tennis, ballet, karate, kwan ki do, roller skating, taekwondo, kickboxing, fitness, fencing, etc). The duration of a sporting activity is different for middle school girls ($49.60 \pm 49.81 \text{ minutes}$) and the two primary school groups. At the same time, there is a visible difference between the two age levels: older groups allocate less time to extracurricular physical activities. The number of weekly sporting activities is the same for all groups analysed, from 2.42 ± 2.03 (FP) to 2.82 ± 2.50 (MG). The same goes for the annual duration of independent sports practice: students are active 8 months on average. Whereas a differentiation would be expected in what concerns total annual estimated duration allocated to sports, the statistical significance of the Anova test is at the limit ($p = 0.05$). Visually, greater average time is dedicated to sports activities by middle school students and by boys. Perceived intensity during a sporting activity is not differentiated by age levels or genders ($p = 0.83$); it is situated in the middle of the scale we outlined through the questionnaire. The performance level attained by our subjects reached a peak of 1.15 ± 0.68 (MP), more than boys (0.90 ± 0.62) and girls (0.90 ± 0.60) in middle school. Access to sporting bases –with scores from 1 to 5 –is similar for the four groups, from 1.75 ± 1.45 down.

Discussion

The BMI of middle school boys – higher than the one of the other groups –is a warning sign concerning the importance of exercising for students; lack of exercising may entail negative modifications of health indicators. The group is different from the others in terms of a significantly higher body mass (56.82 ± 13.62). this led to an increase in the body mass index, even if the height is different, too. Preference for sporting subjects is different from one person to another, because the development environment may also have a contribution. In our case, only boys changed

their option for sporting subject type, from dynamic to cyclical. This may be explained by the older age and the need to experience new sports. The time allocated to extracurricular motor activities is essential for good health. Middle school girls allocate less time to sports activities, less than the primary school girls. The difference is not significant compared to boys of the same age, which indicates less time dedicated to exercising. The differences may be caused by the stuffed curriculum, the perceived pressure of high school admission, the technological temptations, etc. Whereas the values are close, the number of weekly sessions is 3 on average, while the activity spans across 7-8 months for all groups. The annual time volume dedicated to sports is the same for all groups, with rather visible variations. The values reported show a higher level among boys, given their well-known appetite for moving. Perceived intensity during physical effort is average and above, which means that, despite the subjective appraisal, they are able to dose their effort depending on the individual capacity. Sports performance is a rather challenging ideal because it requires significant resources, which students do not possess. According to our subjects' reports, primary school boys have scored significantly higher than both middle school groups. This is probably related to the lower time volume dedicated to extracurricular sports activities. Sporting bases represent an important pillar of selection mass development for performance sport. Children within our study have restricted access to sports bases: they reached a maximum level of 3, on the 5-level scale we used. Hence, the other findings are not fortuitous: there is an interdependence between all aspects approached in our study.

Conclusion

Consequently, it may be stated that the preferences of primary and middle school students regarding extracurricular sports activities span across 8 months per year, three times a week, each session lasting 90 minutes on average. Their nature is cyclical and they are mainly leisure sports. In what regards preferences for sports subjects, they are different from one person to another: boys change their preferences from dynamic activities to cyclical activities. BMI is a warning sign on the importance of exercising for students (higher scores are recorded by boys). The annual volume of time dedicated to sports activities features rather high variations, but it is the same for all groups; boys recorded higher scores; perceived intensity was average or even above. Given that sports performance requires significant resources, many students do not have such resources, hence performance is a challenging

ideal in terms of sports. Our study shows that access to sports bases is reduced: maximum level of 3, on the 5-level scale we used.

Hence, the other findings are not coincidental: there is an interconnection between all the aspects approached in this piece of research.

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