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Physical Activity Analysis and Comparison of Secondary School Students in Terms of Selected Regions of Slovakia: A Cross-Sectional Study

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Analiza aktywności fizycznej uczniów szkół średnich i jej porównanie na podstawie wybranych regionów Słowacji: badanie przekrojowe

Streszczenie

Wyniki zgromadzonych badań pokazują, że regularna aktywność fizyczna odgrywa ważną rolę we wzmacnianiu zdrowia, a jej brak skutkuje obniżeniem sprawności i wydolności fizycznej. Badania koncentrowały się na analizie i porównaniu aktywności fizycznej uczniów szkół średnich w wy-

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branych regionach Słowacji. Badanie przekrojowe aktywności fizycznej przeprowadzono w okresie od stycznia do grudnia 2021 r. metodą celowego doboru na próbie badawczej 1830 uczniów szkół średnich (w wieku 17,35 ±0,82 lat), którzy uczęszczali do ostatnich (czwartych) klas liceów i średnich szkół zawodowych. Przeanalizowano odpowiedzi grupy badawczej uczniów testem chi-kwadrat (χ^2) na poziomie istotności (α) 0,01, 0,05 z perspektywy poszczególnych regionów Słowacji. Analizując odpowiedzi z ankietowej próby uczniów, stwierdzono, że charakter aktywności ruchowej uczniów szkół średnich ma głównie charakter rekreacyjny – średnio w 54,24% (n = 902) (p < 0,01). Z punktu widzenia głównego miejsca realizacji zajęć ruchowych zauważono, że średnio 43,95% (n = 804) uczniów z grupy badawczej realizowało je głównie w pomieszczeniach zamkniętych (siłownia, hala sportowa...) (p < 0,01). Wyniki pokazują, że charakter oraz motywy realizacji aktywności ruchowej z punktu widzenia poszczególnych regionów są różne, natomiast dla zwiększenia wolumenu aktywności ruchowej uczniów szkół średnich konieczne jest stosowanie skutecznych programów pozalekcyjnej aktywności ruchowej.

Słowa kluczowe: uczniowie, młodość, aktywność fizyczna, szkoła średnia.

Abstract

Accumulating evidence indicates that regular physical activity plays an important role in strengthening health, however, its absence causes a loss of physical fitness and organism endurance. Our study was aimed at analysing and comparing physical activity of secondary school students in terms of selected regions of Slovakia. A cross-sectional survey measuring (January – December, 2021) physical activity was conducted through intentional sampling with the survey size of 1829 secondary school students (aged 17.35 ± .82) who attended the last year (4^{th}) of grammar and vocational secondary schools. Each answer of the survey group was analysed, compared and evaluated by using the chi-square test (χ^2) with the significance level (α) of .01 and .05. After analysing the survey answers, on average, 54.24 % (n = 902) of the survey group indicated the recreational form of physical activity (p < .01). In terms of the main place of performing physical activity, the survey answer of *"Indoor* (*Gym, hall...*)*"* covered 43.95 % (n = 804) of the survey group (p < .01). Physical activity of secondary school students varies depending on the region, while it is necessary to apply effective out-of-school physical activity programmes to increase the volume of physical activity of secondary school students.

Keywords: male students, period of adolescence, physical activity, secondary school.

1. Introduction

In today's hectic world, it is increasingly problematic for society to maintain a healthy lifestyle due to a lack of awareness of importance of physical activity [5, 26]. Badly learned habits from an early age are stated as an issue in connection with physical activity, which intersects into adulthood [30].The first impulse to physical activity is from parents, they are the ones who have to entice their children to spend their leisure time meaningfully [35]. Regular physical activity can be significantly influenced by parents and peers, because they are the most important social groups in an adolescent's life. Physically active parents and peers naturally lead them towards regular physical activity [2].

Regular physical activity affects 50% of health and is perceived as a basic biological requirement. Because of not being able to meet this requirement due to a volume of physical activity, the current tendency has the character of a slight stagnation rather than an increase [8, 13]. Failure to meet this requirement is causing an increase in chronic diseases in a school population [14]. Regular physical activity contains a preventive tool that protects its beneficiaries against development of chronic diseases, yet 70% of the school population is spending their leisure time in a sedentary manner, which is directly related to a physical inactivity [10, 20]. Physical inactivity can be a trigger of health risks, not only in the school population, but especially in the adult one, because in terms of energy expenditure (body condition), it is movement that has any value [24]. The health risk of physical inactivity can also result not only in chronic diseases, but also in increased fear of physical activity and a consequent fall or injury resulting from it. Physical inactivity can negatively affect and limit various aspects of an adolescent's life. With regular physical activity, the minimum length of which is 60 minutes/day, there is a significant reduction in the risk of chronic diseases [32]. Properly identifying and applying factors that not only lead adolescents to physical activity, but also force them to stay in this activity is challenging.

Adolescence is a critical period of life and due to hormonal changes other interests arise, resulting in reduced physical activity. In particular, spontaneous physical activity declines, which should be replaced by organised physical activity, whether at a school or during leisure time. Within the framework of teaching physical education, it is very important to respect the interests of school population, especially when it comes to creating and developing positive attitudes towards physical activity. The number of school students for whom compulsory school physical education is the only physical activity carried out [20, 21] is growing significantly. Despite the above, the school population, by its passive non-participation in the physical education, renounces offered opportunities for several objective and subjective reasons [37]. And for that reason, we can consider adolescence as a crucial period when the relationships and attitudes of young people towards physical activity can be significantly shaped [25]. Organized and unorganized physical activity may positively affect their attitude to it and its implementation in adulthood. The importance of entertainment and relaxation increases in the period of adolescence. This fact can certainly be considered favourable in general, but it is important what form of entertainment and relaxation adolescents choose [23].

And for that reason, our study was aimed at analysing and comparing physical activity of secondary school students in terms of selected regions of Slovakia.

2. Methods

2.1. Participants

In accordance with the study aim, the target population was adolescents (male) who were attending the last year (4^{th}) of grammar and vocational secondary schools of selected regions of Slovakia. The target population consisted of a convenience sample, which was recruited through social media, school principal and physical education teachers. Aiming at intentional sampling of the target population, the recruitment process was adjusted regularly, regarding the age, gender and year of study. The inclusion criteria of the survey group were as follows: a) the survey group should not have any health issues; b) the survey group should be from the same year of secondary school students. After meeting the inclusion criteria of the survey group, 1829 grammar and vocational secondary school students (male) (aged 17.35 ± .82) were included in the study data interpretation process. The distribution of the survey group (n = 1829) was as follows: a) Banská Bystrica Region (n = 553, 30.24%); b) Bratislava Region (n = 263, 14.38%); c) Košice Region (n = 180, 9.84%); d) Prešov Region (n = 501, 27.39%); e) Žilina Region (n = 332, 18.15%). Lack of access to an online survey (the Internet and a mobile phone/computer) was the exclusion criterion of the survey group (n = 1829), yet its original number did not change, remained the same.

2.2. Measures

When collecting the survey data, the research instrument of cross-sectional design and survey was used. It was created for that purpose (non-standardised survey) and consisted of two sections: a) Demographic information (age, gender, year of study and region); b) Survey questions, which consisted of four closed questions concerning the main nature, place, motive and obstacle for performing out-of-school physical activity. The survey questions were inspired by several authors [3, 31]. During a single 15-minute session, the survey group (n = 1829) answered the online survey questions, which were available at all times, and reviewed the survey in order to validate the clarity of the non-standardised survey (allowed only to persons over 18 years of age). Online feedback obtained during a single 15-minute session did not indicate any issues with the cross-sectional design and non-standardised survey. In case of underage students, the non-standardized survey was distributed (face-to-face) by authors (meeting parental consent requirements) in their native language. Both versions of the non-standardised survey did not require any information about the respondents' identity, while the survey group's (n = 1829) participation was voluntary. Incentives were not given for participation, but the survey group (n = 1829) received

the report with their personal results afterwards. The online version of the non-standardised survey was selected because of its cost effectiveness, time saving, easy accessibility and a rapidly changing epidemic situation of COVID-19. The online non-standardised survey was created and administered using the online survey portal – Microsoft Forms, Office 365 (Microsoft Corporation, Redmond, WA, USA). The survey data were collected through the survey administered from January to December, 2021.

2.3. Procedures

Having obtained permission to carry out the cross-sectional study from the school principal, parental consent and secondary school students' assent form, the survey group (n = 1829) consisted of adolescents who were attending the last year (4^{th}) of grammar/vocational secondary schools of selected regions of Slovakia: a) Western Slovakia – Bratislava Region (Ba); b) Northern Slovakia – Žilina Region (Za); c) Central Slovakia – Banská Bystrica (Bb); d) Eastern Slovakia – Košice Region (Ke), Prešov Region (Po).

There are often large differences in the economic performance depending on the region. It is measured by gross domestic product per inhabitant. The selected regions of Slovakia are no exception. The decision to choose these regions for the survey group (n = 1829) was also influenced by factors as follows: a) The region of the capital city – Bratislava is the richest region in Slovakia, while the gross domestic product in purchasing power parity is 2.5 times higher than the average in Slovakia, while the Prešov Region has been the poorest region for many years; b) The unemployment rate within the Eastern Slovakia region differs significantly, even though it has declined, compared to the previous period (2017) (9.9% – Prešov Region, 9.7%), while the average unemployment rate in the other regions has been around 3.7%.

2.4. Data analysis

In accordance with the selected regions, each survey answer of the survey group (n = 1829) was analysed, compared and evaluated by using the programme of Tap3 – Gamo (Banská Bystrica, Slovakia). The obtained survey data of the survey group (n = 1829) were polled after cleaning. The methods of percentage frequency analysis (%), arithmetic mean ($\bar{x}$) and multiplicity (n) were used. The percentage values were used in the survey questions with single-choice answers, while the difference between each region (variable of location) was evaluated by the method of inductive statistics - chi-square test (χ^2), whose significance level (α) was .01 and .05 [18].

3. Results

3.1. The main nature of performed physical activity

In accordance with the study aim, Figure 1 illustrates the main nature of performed physical activity in the survey group (n = 1829) and confirms that recreational physical activity predominated (54.24%, n = 902). After processing the survey data, the highest incidence of the main nature of performed physical activity was recorded in the survey group from the Bratislava Region (n = 164, 62.36%). A relatively higher incidence of the same response was registered in the survey group from the Žilina Region (n = 198, 59.64%) and Prešov Region (n = 286, 57.09%). A higher preference of the survey answer *"Competitive physical activity"* was recorded in the survey group from the Central (Banská Bystrica Region – n = 212, 38.34%), Eastern (Košice Region – n = 59, 32.78%) and Western (Bratislava Region – n = 83, 31.56%) Slovakia. A higher preference of preferring both forms of physical activity was discovered in the survey group from the Eastern (Prešov Region – n = 63, 12.57% and Košice Region – n = 19, 10.56%) and Northern (Žilina Region n = 36, 10.84%) Slovakia. A very positive finding was that only 3.24% (n = 9) of the survey group from the Western (Bratislava Region) Slovakia stated that they did not perform any physical activity, which was a much lower result, compared to the other results of the selected regions of Slovakia. For instance, 10.24% (n = 34) of the survey group from the Žilina Region do not perform any physical activity at all. As a matter of fact, very similar results emerged in the remaining regions of Slovakia (Figure 1). Taking into account the incidence of the main nature of performed physical activity, the intergroup difference of each region revealed statistical significance ($p < .01$) within the majority of selected regions, with the exception of the mutual statistical comparison between the Banská Bystrica Region and the Košice Region, the Prešov Region and the Košice Region, the Prešov Region and the Žilina Region ($p > .05$) (Table 1).

Table 1. Statistical interpretation of the main nature of performed physical activity

	Survey group				
Region	**B. Bystrica (n = 553)**	**Bratislava (n = 263)**	**Košice (n = 180)**	**Žilina (n = 332)**	**Prešov (n = 501)**
B. Bystrica (n = 553)	x	$\chi^2_{(3)} = 20.5$, $p < .01$	$\chi^2_{(3)} = 3.01$, $p > .05$	$\chi^2_{(3)} = 36.43$, $p < .01$	$\chi^2_{(3)} = 34.10$, $p < .01$
Bratislava (n = 263)	$\chi^2_{(3)} = 20.5$, $p < .01$	x	$\chi^2_{(3)} = 18.70$, $p < .01$	$\chi^2_{(3)} = 32.17$, $p < .01$	$\chi^2_{(3)} = 25.37$, $p < .01$
Košice (n = 180)	$\chi^2_{(3)} = 3.01$, $p > .05$	$\chi^2_{(3)} = 18.70$, $p < .01$	x	$\chi^2_{(3)} = 12.03$, $p < .01$	$\chi^2_{(3)} = 6.30$, $p > .05$

Table 1. Statistical interpretation… (cont.)

Region	B. Bystrica (n = 553)	Bratislava (n = 263)	Košice (n = 180)	Žilina (n = 332)	Prešov (n = 501)
Žilina (n = 332)	$\chi^2_{(3)} = 36.43$, $p < .01$	$\chi^2_{(3)} = 32.17$, $p < .01$	$\chi^2_{(3)} = 12.03$, $p < .01$	x	$\chi^2_{(3)} = 7.06$, $p > .05$
Prešov (n = 501)	$\chi^2_{(3)} = 34.10$, $p < .01$	$\chi^2_{(3)} = 25.37$, $p < .01$	$\chi^2_{(3)} = 6.30$, $p > .05$	$\chi^2_{(3)} = 7.06$, $p > .05$	x

B. Bystrica: Banská Bystrica

Source: own research.

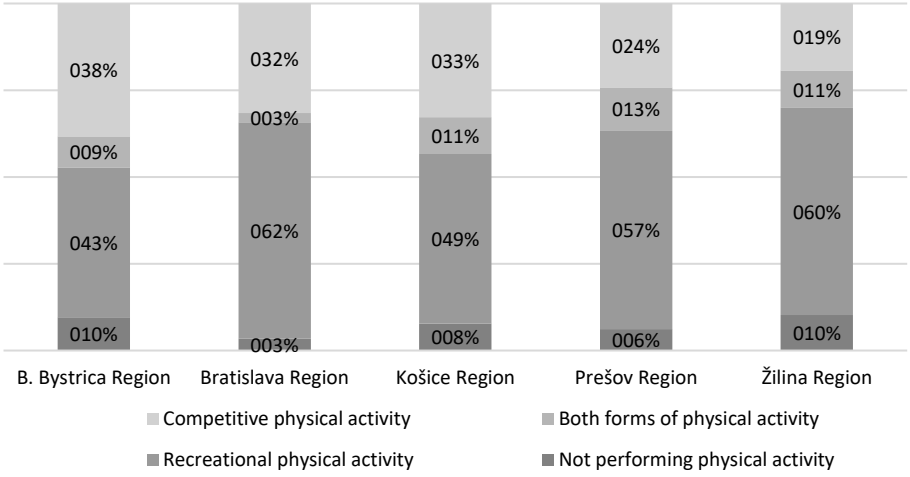

Figure 1. The main nature of performed physical activity

Source: own research.

3.2. The main place of performing physical activity

After evaluating the previous survey question (3.1), Figure 2 illustrates the main place of performing the physical activity of the survey group (n = 1829) and confirms that the survey answer of *"Indoor* (*Gym, hall...*)*"* covered, on average, 43.95% (n = 804) of the survey group (n = 1829). Being more accurate, the survey answer of *"Indoor* (*Gym, hall...*)*"* had the highest incidence of responses, ranging from 35.74% (n = 94, Bratislava Region) to 52. 62% (n = 291, Banská Bystrica Region). Not performing any physical activity had again the lowest incidence of responses (n = 112, 6.17%), which is considered as a positive finding. The majority of selected regions, with the exception of the survey group from the Banská Bystrica Region (n = 88, 15.91%), obtained the threshold of 30% and more for the survey answer of *"Outdoor* (*Yard, street...*)*"*. Preferring both places of performing physical activity was more dominant within the survey group from the

Bratislava Region (n = 78, 29.66%), rather than the remaining selected regions of Slovakia (n = 228, 17.89%). Taking into account the incidence of the main place of performing physical activity, the intergroup difference of each region revealed statistical significance (p < .01, 05) within the majority of selected regions, with the exception of the mutual statistical comparison between the Košice Region and Žilina Region, the Košice Region and the Prešov Region, the Prešov Region and the Žilina Region (p > .05) (Table 2).

Table 2. Statistical interpretation of the main place of performing physical activity

	Survey group				
Region	**B. Bystrica (n = 553)**	**Bratislava (n = 263)**	**Košice (n = 180)**	**Žilina (n = 332)**	**Prešov (n = 501)**
B. Bystrica (n = 553)	x	$\chi^2_{(3)}$ = 40.60, p < .01	$\chi^2_{(3)}$ = 43,42, p < .01	$\chi^2_{(3)}$ = 33.80, p < .01	$\chi^2_{(3)}$ = 36.83, p < .01
Bratislava (n = 263)	$\chi^2_{(3)}$ = 40.60, p < .01	x	$\chi^2_{(3)}$ = 14.13, p < .01	$\chi^2_{(3)}$ = 10.18, p < .05	$\chi^2_{(3)}$ = 21.10, p < .01
Košice (n = 180)	$\chi^2_{(3)}$ = 43,42, p < .01	$\chi^2_{(3)}$ = 14.13, p < .01	x	$\chi^2_{(3)}$ = 4.99, p > .05	$\chi^2_{(3)}$ = 3.76, p > .05
Žilina (n = 332)	$\chi^2_{(3)}$ = 33.80, p < .01	$\chi^2_{(3)}$ = 10.18, p < .05	$\chi^2_{(3)}$ = 4.99, p > .05	x	$\chi^2_{(3)}$ = 3.60, p > .05
Prešov (n = 501)	$\chi^2_{(3)}$ = 36.83, p < .01	$\chi^2_{(3)}$ = 21.10, p < .01	$\chi^2_{(3)}$ = 3.76, p > .05	$\chi^2_{(3)}$ = 3.60, p > .05	x

B. Bystrica: Banská Bystrica

Source: own research.

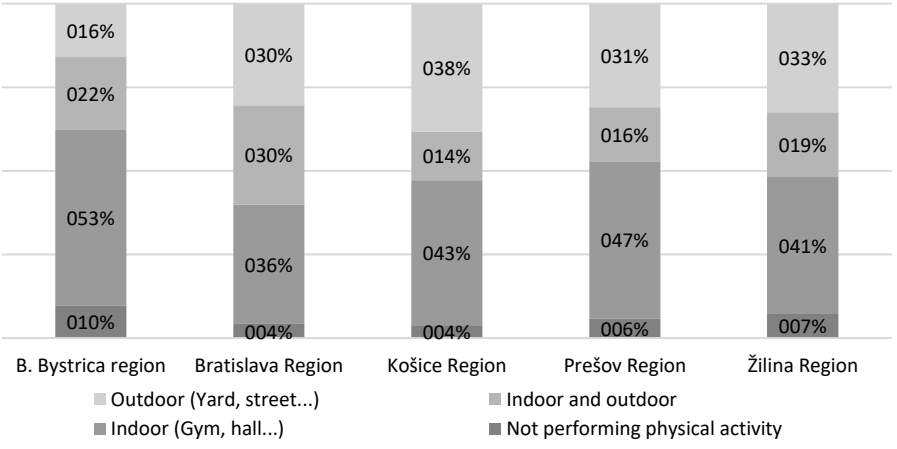

Figure 2. The main place of performing physical activity

Source: own research.

3.3. The main motive for performing physical activity

After processing the survey data of the previous survey question (3.2), Figure 3 illustrates the main motive for performing physical activity of the survey group (n = 1829) and confirms a greater variety in responses. For example, the survey answer of *"Make me happy"* had the highest incidence of responses within the survey group from the Bratislava Region (n = 118, 44.87%), however, the incidence of responses from the remaining selected regions decreased by half (n = 353, 22.58%). Considering the survey answer of *"Weight loss and appearance"* as the main motive for performing physical activity, it ranged from 14.44% (n = 26, the Košice Region) to 22.97% (n = 127, the Banská Bystrica Region). Not performing any physical activity had again a very low incidence of responses (n = 82, 4.5%). On the other hand, very few respondents felt motivated to perform some physical activity due to social pressure. Hence, that answer had the lowest incidence of responses (n = 55, 3%). The survey answer of *"Improving health"* covered, on average, 23.89 % (n = 438) of the survey group (n = 1829). In addition, the motive of *"Social contact"* had a higher incidence of responses within the survey group from the Košice Region (n = 26, 14.44%) and the Banská Bystrica Region (n = 62, 11.21%), while the incidence of responses from the remaining selected regions was lower (n = 63, 5.75%). As for mental relaxation, the incidence of responses was ranging from 7.98% (n = 20, the Bratislava Region) to 15.66% (n = 52, the Žilina Region). Taking into account the incidence of the main motive for performing physical activity, the intergroup difference of each region revealed statistical significance ($p < .01$) within the majority of selected regions, with the exception of mutual statistical comparison between the Banská Bystrica Region and the Žilina Region, the Žilina Region and the Prešov Region ($p > .05$) (Table 3).

Table 3. Statistical interpretation of the main motive for performing physical activity

	Survey group				
Region	**B. Bystrica (n = 553)**	**Bratislava (n = 263)**	**Košice (n = 180)**	**Žilina (n = 332)**	**Prešov (n = 501)**
B. Bystrica (n = 553)	x	$\chi^2_{(6)} = 70.04$, $p < .01$	$\chi^2_{(6)} = 60.82$, $p < .01$	$\chi^2_{(6)} = 11.98$, $p > .05$	$\chi^2_{(6)} = 22.10$, $p < .01$
Bratislava (n = 263)	$\chi^2_{(6)} = 70.04$, $p < .01$	x	$\chi^2_{(6)} = 85.30$, $p < .01$	$\chi^2_{(6)} = 42.39$, $p < .01$	$\chi^2_{(6)} = 35.42$, $p < .01$
Košice (n = 180)	$\chi^2_{(6)} = 60.82$, $p < .01$	$\chi^2_{(6)} = 85.30$, $p < .01$	x	$\chi^2_{(6)} = 44.07$, $p < .01$	$\chi^2_{(6)} = 53.65$, $p < .01$
Žilina (n = 332)	$\chi^2_{(6)} = 11.98$, $p > .05$	$\chi^2_{(6)} = 42.39$, $p < .01$	$\chi^2_{(6)} = 44.07$, $p < .01$	x	$\chi^2_{(6)} = 7.45$, $p > .05$
Prešov (n = 501)	$\chi^2_{(6)} = 22.10$, $p < .01$	$\chi^2_{(6)} = 35.42$, $p < .01$	$\chi^2_{(6)} = 53.65$, $p < .01$	$\chi^2_{(6)} = 7.45$, $p > .05$	x

B. Bystrica: Banská Bystrica

Source: own research.

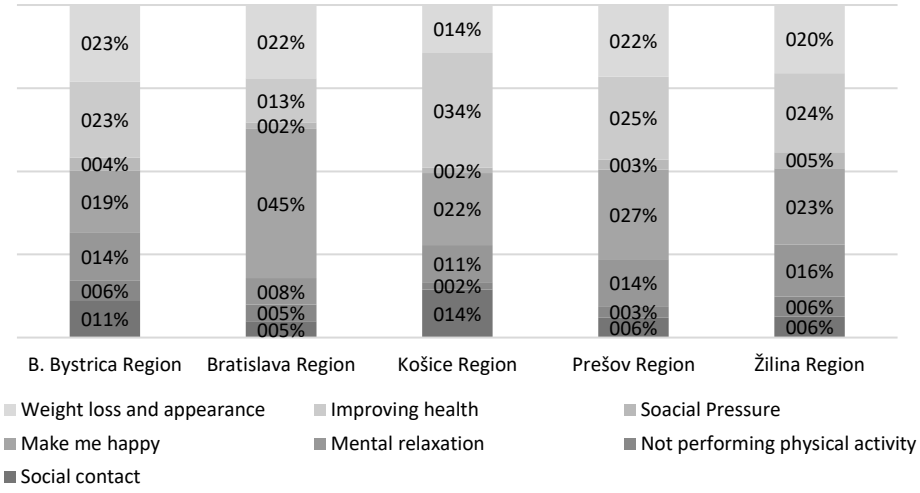

Figure 3. The main motive for performing physical activity

Source: own research.

3.4. The main obstacle for performing physical activity

When evaluating the last survey question (3.4), Figure 4 illustrates the main obstacle for performing physical activity for the survey group (n = 1829) and confirms a greater difference of responses. For example, the survey answer of *"None of listed"* had the highest incidence of responses, within the survey group from the Bratislava Region (n = 166, 63.12%) and Prešov Region (n = 142, 28.54%). However, the same survey answer had the lowest incidence of responses within the survey group from the Žilina Region (n = 22, 6.63%) and the Banská Bystrica Region (n = 51, 9.22%). Different alternatives of spending one's leisure time was the most common response within the majority of the selected regions (n = 470, 30.04%), with the exception of the survey group from Bratislava (n = 27, 10.27%). No interest in physical activity was more dominant within the survey group from the Banská Bystrica Region (n = 59, 10.67%) and the Žilina Region (n = 28, 8.73%) rather than the remaining selected regions of Slovakia (n = 107, 11.35%). A very surprising finding was that, on average, 19.73% (n = 310) of the survey group selected the survey answer of *"Limited access to sports facility"*. However, the same survey answer was less frequently chosen (n = 20, 7.98%) within the survey group from the Bratislava Region. The choice of the health issue as the survey answer was ranging from 10% (n = 18, the Košice Region) to 15.97% (n = 80, the Prešov Region). The answer *"Too expensive to perform physical activity"* was chosen by 20.25% (n = 370) of the survey group (n = 1829). Taking into account the incidence of the main obstacle for perform-

ing physical activity, the intergroup difference of each region revealed statistical significance ($p < .01$) within the selected regions of Slovakia (Table 4).

Table 4. Statistical interpretation of the main obstacle for performing physical activity

Study group					
Region	**B. Bystrica (n = 553)**	**Bratislava (n = 263)**	**Košice (n = 180)**	**Žilina (n = 332)**	**Prešov (n = 501)**
B. Bystrica (n = 553)	x	$\chi^2_{(5)} = 271.91$, $p < .01$	$\chi^2_{(5)} = 30.05$, $p < .01$	$\chi^2_{(5)} = 26.54$, $p < .01$	$\chi^2_{(5)} = 87.55$, $p < .01$
Bratislava (n = 263)	$\chi^2_{(5} = 271.91$, $p < .01$	x	$\chi^2_{(5)} = 99.55$, $p < .01$	$\chi^2_{(5)} = 226.08$, $p < .01$	$\chi^2_{(5)} = 89.70$, $p < .01$
Košice (n = 180)	$\chi^2_{(5)} = 30.05$, $p < .01$	$\chi^2_{(5)} = 99.55$, $p < .01$	x	$\chi^2_{(5)} = 22.32$, $p < .01$	$\chi^2_{(5)} = 15{,}99$, $p < .01$
Žilina (n = 332)	$\chi^2_{(5)} = 26.54$, $p < .01$	$\chi^2_{(5)} = 226.08$, $p < .01$	$\chi^2_{(5)} = 22.32$, $p < .01$	x	$\chi^2_{(5)} = 66{,}51$, $p < .01$
Prešov (n = 501)	$\chi^2_{(5)} = 87.55$, $p < .01$	$\chi^2_{(5)} = 89.70$, $p < .01$	$\chi^2_{(5)} = 15{,}99$, $p < .01$	$\chi^2_{(5)} = 66{,}51$, $p < .01$	x

B. Bystrica: Banská Bystrica

Source: own research.

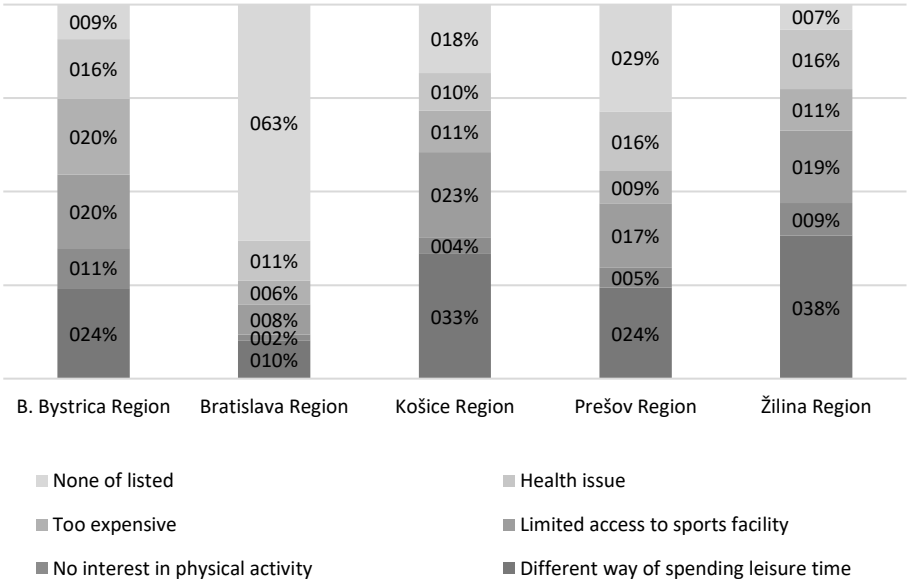

Figure 4. The main obstacle for performing physical activity

Source: own research.

4. Discussion

4.1. The main nature of performed physical activity

Regular physical activity of recreational nature is very important for health and quality of life. Recreational physical activity available to adolescents varies across regions of the world due to difference in school enrolment, hours spent at school and involvement in productive work [22]. An intervention to increase participation in recreational physical activities will be more effective if it suits the preferences of a target population. A significant part of a given recreational physical activity is conditioned by one's socioeconomic status [17]. This statement particularly correlates with our results, because 62.36% (n = 164, the Bratislava Region – developed region) of the survey group selected recreational physical activity. Besides that, the financial aspect of performing recreational physical activity did not play an important role for them (n = 16, 6.46%). Recreational physical activity supports personal development, self-improvement and creates space for self-activation [4]. Competitive and recreational physical activity evolves with human development and serves different purposes, demonstrably affecting human health [19]. Performing competitive physical activity tends to peak during the early years of adolescence and drops afterwards [11, 34]. An urban target population of males appears to have a higher participation in performing competitive physical activity. A given difference is apparent up to the age of 15 and thereafter it is relatively small.

4.2. The main place of performing physical activity

Performing indoor and outdoor physical activities has a potential for bolstering resilience to environmental stressors, including those associated with the COVID-19 pandemic [15]. Exposure to nature is an important aspect of performing outdoor physical activities, which provides a range of health benefits. Performing outdoor physical activities plays an important role in maintaining physical and mental well-being [16]. The majority of selected regions match the threshold of 30% and more for the survey answer of *"Outdoor* (*Yard, street...*)*"*. A lower incidence of responses may be caused by how and where the survey group (n = 1829) performed their outdoor physical activities. There is certain evidence of a positive relationship between time spent outdoors and physical activity, while a negative relationship is shown when matching time spent outdoors with sedentary activity of a target population spending < 1 hour/day outdoors. The incidence of sedentary activity is reduced regarding those who spend > 1 hour/day outdoors performing physical activity. Spending more time outdoors is associated with being more physically active and less sedentary, which cannot be said about those who spend more time indoors. A decline in perform-

ing outdoor physical activity is caused mainly by an attitude of parents who constantly organise their children's physical activity and move them indoors, due to a fear of injury and unknown environment [27]. And the given statement was confirmed as the survey answer of *"Indoor* (*Gym, hall...*)*"* scored 43.95% (n = 804) in the selected regions. In particular, staying indoors for an almost entire day results from various campaigns which recommend staying indoors during peak hours (10:00–4:00) to avoid sun exposure and traffic air pollution [28]. Structured, indoor, achievement-oriented physical activity (competitive activity, excessive workout) seems to replace outdoor physical activity [33].

4.3. The main motive for performing physical activity

Performing physical activity becomes less frequent as the target population gets older, with a number of reasons as to why. A hobby, such as gaming can have an effect on performing physical activity, in particular for adolescents (male) who spend the majority of their leisure time playing on computer and video game consoles. An improvement in the quality of video game consoles is becoming increasingly appealing to adolescents and, of course, the aforesaid passion is replacing that of performing physical activity [12]. Despite that, adolescent boys understand the importance of regular physical activity and declare their participation in it. The main motive for performing physical activity was having fun and interaction with peers [6]. As a matter of fact, very similar responses emerged in our survey results, for example, the survey answer of *"Make me happy"* had the highest incidence of responses within the Bratislava Region (n = 118, 44.87%), while the incidence of responses from the remaining regions decreased by half (n = 353, 22.58%). In addition, the motive of *"Social contact"* (interaction with peers) had a higher incidence of responses within the survey group from the Košice Region (n = 26, 14.44%), Banská Bystrica Region (n = 62, 11.21%), whereas the incidence of responses from the remaining selected regions was lower (n = 63, 5.75%). A less common motive was an impact of performing physical activity on the participants' health. As many as 60% performed some physical activity (running, cycling) every day, however, only 55% felt fit [9]. Comparing our results, the survey answer of *"Improving health"* was chosen on average by 23.89% (n = 438) in the selected regions, which is 36.11% less.

4.4. The main obstacle for performing physical activity

Many motives and obstacles for performing the physical activity have been discussed in the literature. Obstacles such as lack of time, being lazy, having other interests, study commitments are all marked as crucial obstacles given by adolescent boys for not performing any physical activity [9]. The obstacles mentioned correlate with our results, because 30.04% (n = 470) of the regions con-

cerned selected the survey answer of *"Different way of spending leisure time"*. Some other obstacles for performing the physical activity are as follows: a) lack of sporting facilities (75%); b) lack of peer support (58%); c) lack of public sporting clubs (55%) [1]. On average, 19.73% (n = 310) of the majority of selected regions selected the survey answer of *"Limited access to sports facility"*. Obstacles, which make it impossible to perform any physical activity are not significant to a large extend because the target population will always find an excuse not to perform any physical activity from their subjective point of view. Subjectively perceived obstacles are not adequate indicators of why adolescent boys do not want to perform any physical activity because the only true obstacle to perform some physical activity is being lazy (lack of time). Watching television and playing on video game consoles is negatively associated with performing physical activity, which means that adolescent boys who watch more television and play on video game consoles, perform less physical activity and vice versa [29]. Apart from that, other obstacles associated with not performing any physical activity are as follows: a) lack of time (21.3%); b) lack of money (15.9%); c) school obligations (15.8%) [36]. Not performing any physical activity due to financial demands was selected by 20.25 % (n = 370) of the survey group (n = 1829).

5. Conclusions

Doing any physical activity is better than doing none. Physical activity is an important factor influencing human health. Regular physical activity has a positive effect on disease prevention and provides several benefits, such as increased performance, better sleep, social interaction and fun. It is very important to consider the strengths and limitations of the submitted study. We consider it very important that the collected data consisted of a representative target population of adolescent boys who belong to the age group relevant for establishing the health-related behaviour. The cross-sectional design and non-standardised survey were limitations of our study because to define the conclusive statement about the causality in our results, we have to carry out more studies with the longitudinal design. However, the significance of our study is that it provides crucial information about the nature, place, motive and obstacle for physical activity performed by adolescent boys.

References

[1] Alsubaie A., Omer E. (2015): *Physical Activity Behaviour Predictors, Reasons and Barriers among Male Adolescents in Riyadh, Saudi Arabia.* International Journal of Health Sciences, 9(4), pp. 400–408.

[2] Barkley J., Salvy S., Sanders G., Dey S., Carlowitz K., Williamson M. (2014): *Peer Influence and Physical Activity Behavior in Young Children.* Journal of Physical Activity and Health, 11(2), pp. 404–409; https://doi.org/10.1123/jpah.2011-0376.

[3] Barkley J., Fennell C., Lepp A. (2019): *The Relationship between Cell Phone Use, Physical Activity, Sedentary Behavior in Adults Aged 18–80.* Computers in Human Behavior, 90(1), pp. 53–59; https://doi.org/10.1016/j.chb.2018.08.044.

[4] Bartík P. (2005): *Postoježiakov 2. stupňa základnej školy k telesnej výchove.* Acta Universitatis Matthiae Belli. Zborník vedeckovýskumných prác, pp. 158–164.

[5] Bendíková E. (2017): *Theory of Health, Movement and Lifestyle of Human Beings.* Debrecen University in Debrecen. Debrecen.

[6] Borra S. (1995): *Food, Physical Activity and Fun.* Journal of American Dietetic Association, 95(7), pp. 816–818; https://doi.org/10.1016/S0002-8223(95)00228-6.

[7] Chen S., Kim Y., Gao Z. (2014): *The Contributing Role of Physical Education in Youth's Daily Physical Activity and Sedentary Behavior.* Bmc Public Health, 14(1), pp. 396–409; https://doi.org/10.1186/1471-2458-14-110.

[8] Corder K., Collings P., Wijndaele K. (2015): *Magnitude, Determinants of Change in Objectively Measured Physical Activity, Sedentary Time and Sleep Duration from Ages 15 to 17.* International Journal of Behavioural Nutrition and Physical Activity, 12(1), pp. 61–70; https://doi.org/10.1186/s12966-015-0222-4.

[9] De Róiste Á., Dinneen J. (2005): *Young People's Views about the Opportunities, Barriers and Supports to Recreational and Leisure.* Brunswick Press. Dublin.

[10] Dias P., Domingos I., Ferreira M., Muraro A., Sichieri R., Goncalves-Silva R. (2014): *Prevalence and Factors Associated with Sedentary Behavior in Adolescents.* Revista de Saúde Pública, 48(2), pp. 266–274; https://doi.org/10.1590/s0034-8910.2014048004635.

[11] Fahey T., Delaney L., Gannon B. (2005): *School Children and Sport in Ireland.* Economic and Social Research Institute. Dublin.

[12] Green K. (2010): *Key Themes in Youth Sport.* Routledge. New York.

[13] Harding S., Page S., Falconer C. (2015): *Longitudinal Changes in Sedentary Time and Physical Activity.* International Journal of Behavioural Nutrition and Physical Activity, 12(1), pp. 44–50; https://doi.org/10.1186/s12966-015-0204-6.

[14] Hills P., King A., Armstrong P. (2007): *Contributions of Physical Activity and Sedentary Behaviours to Growth, Development of Children and Adoles-*

cents. Sports Medicine, 37(2), pp. 533–545; https://doi.org/10.2165/00007256-200737060-00006.

[15] Jackson B., Stevenson K., Larson L., Peterson N., Seekamp E. (2021): *Outdoor Activity Participation Improves Adolescents' Mental Health and Well-Being during the COVID-19 Pandemic.* International Journal of Environmental Research and Public Health, 18(5), pp. 1–18; https://doi.org/10.3390/ijerph18052506.

[16] Janssen I., LeBlanc G. (2010): *Systematic Review of Health Benefits of Physical Activity and Fitness for School-Aged Children and Youth.* International Journal of Behavioural Nutrition and Physical Activity, 7(40), pp. 1–15; https://doi.org/10.1186/1479-5868-7-40.

[17] Jedlička J. (2009): *Zdravý životný štýl.* Slovenskápoľno. univerzita v Nitre. Nitra.

[18] Kampmiller T., Cihová I., Zapletalová L. (2010): *Základy metodológie výskumu v telesnej výchove a športu.* Icm Agency. Bratislava.

[19] Kudláček M. (2013): *Increase of Effectiveness of School PE Classes through Sport Preferences Survey.* Acta Gymnica, 43(1), pp. 41–48; https://doi.org/10.5507/ag.2013.005.

[20] Kumar B., Robinson R., Till S. (2015): *Physical Activity, Health in Adolescence.* Clinical Medicine, 15(3), pp. 267–272; https://doi.org/10.7861/clinmedicine.15-3-267.

[21] Kuśnierz C., Zmaczyńska-Witet B., Rogowská A. (2020): *Preferences of Physical Education Profiles among Polish Adolescents.* Frontiers in Public Health, 8(3), pp. 465–478; https://doi.org/10.3389/fpubh.2020.00466.

[22] Larson R., Verma S. (1999): *How Children and Adolescents Spend Time Across the World.* Psychological Bulletin, 125(20), pp. 701–736; https://doi.org/10.1037/0033-2909.125.6.701.

[23] Macek P. (2003): *Adolescence.* Portál. Praha.

[24] Mackett R., Paskins J. (2008): *Children's Physical Activity.* Children and Society, 22(1), pp. 345–357; https://doi.org/10.1111/j.1099-0860.2007.00113.x.

[25] Malina R., Bouchard C., Bar O. (2004): *Growth, Maturation and Physical Activity.* Human Kinetics. Champaign.

[26] Marko M., Bendíková E. (2020): *Physical Program and Its Impact on Muscular and Skeletal Systems of Female High School Students within Physical and Sport Education.*, Matej Bel University in Banská Bystrica. Banská Bystrica.

[27] Novotná B., Novotná N., Bendíková E. (2020): *Pohybová aktivita žiakov mladšieho školského vekuvo vz´tahu k ich zdraviu.* Verbum. Ružomberok.

[28] Schipperijn J., Kerr J., Ersboll A., Troelsen J., Ersboll A., Troelsen J. (2014): *Context-Specific Outdoor Time and Physical Activity among School-Children across Gender and Age.* Frontiers in Public Health, 2(20), pp. 1–15; https://doi.org/10.3389/fpubh.2014.00020.

[29] Serra-Paya N. (2015): *Physical Activity Behaviour, Aerobic Fitness and Quality of Lfve in School-Age Children.* Social and Behavioural Sciences, 7(1), pp. 1758–1762; https://doi.org/10.1016/j.sbspro.2015.04.333.

[30] Steinberg L. (2002): *Adolescence.* McGraw-Hill. Boston.

[31] Stuckey M., Carter S., Knight E. (2017): *Role of Smartphones in Encouraging Physical Activity in Adults.* International Journal of General Medicine, 12(10), pp. 293–303; http://dx.doi.org/10.2147/IJGM.S134095.

[32] Tudor-Locke C., Myers A. (2001): *Challenges and Opportunities for Measuring Physical Activity in Sedentary Adults.* Sports Medicine, 31(2), pp. 91–100; https://doi.org/10.2165/00007256-200131020-00002.

[33] Valentine G., McKendrck J. (1997): *Children's Outdoor Play.* Geoforum, 28(2), pp. 219–235; https://doi.org/10.1016/S0016-7185(97)00010-9.

[34] Walsh J., Tennehis D., Woods B. (2011): *The Children's Sport Participation and Physical Activity Study.* School of Health and Human Performance. Dublin.

[35] Zecevic C., Tremblay L., Lovsin T., Michel L. (2010): *Parental Influence on the Young Children's Physical Activity.* International Journal of Paediatrics, 9(2), pp 1–9; https://doi.org/10.1155/2010/468526.

[36] Zelenović M., Manić M., Stamenković A., Čaprić I. (2021): *Barriers to Physical Activity in Adolescents.* Turkish Journal of Kinesiology, 7(1), pp. 22–30; https://doi.org/10.31459/turkjkin.840536.

[37] Zrnzević N., Arcić R. (2013): *Motivation of Students to Physical Education Classes.* Activities in Physical Education and Sports, 3(2), pp. 215–220.

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