Forms and methods of online physical education instruction in Slovakia from the perspective of elementary school students

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Abstract:

Introduction: Physical education (PE) it is the only school subject that focuses on the overall development of students' psychomotor skills and mental hygiene and has a profound effect on designing daily movement routines and habits. The COVID-19 pandemic and subsequent restrictions have caused the largest disruption of education in history and have already had an impact on learners and teachers around the world. It was inevitable that schools had to transfer the way of teaching to online environment. However, the ability to respond to school closures and the extent to which schools have accepted the irreplaceability of this subject was very individual.

Methods: This study analyses the current situation of distance learning in the subject of PE in the second stage of primary education in Slovakia from the student's perspective. **Objective:** The participating students have been educated online since November 2020. The authors designed a simple questionnaire for this age group to determine the most common forms of online PE instruction and examine the students' thoughts on such teaching. The survey sample comprised 1155 students from 5th to 9th grade who were 10–15 years old. The data were collected in February 2021. **Results:** The survey data analysis revealed that individual primary schools employed various teaching forms and methods. Many schools did not provide any PE classes (53.4%), and some students did not participate in any physical activity of their own accord (23.3%). Other schools replaced standard PE classes with theoretical lessons (21.23%). Only a small number of schools provided two PE classes per week in line with the framework curriculum. Practical PE classes were often limited to sending prepared videos (67.8%) without any follow-up reports from the students. Only 11.2% of the teachers actively participated in their classes and exercised in front of the camera, and 11% of them requested their students to do the same. Students reported that their parents or PE teachers were the primary motivators for their engagement in physical activity during the pandemic. **Conclusions:** Schools in Slovakia have not been able to fully transfer PE classes to the online environment.

Key Words: distance learning, lockdown, COVID 19, physical activity

Introduction

Because children spend most of their daytime hours at school, schools have become instrumental in shaping individual attitudes of children towards physical activity (Hanke, 1997). School is one of the settings where individuals adopt a certain attitude towards physical exercise (Rychtecký & Fialová, 2004). Schools influence movement behaviours of children and youth with the aim to empower them to develop life skills that lead to self-directed leisure-time physical activity and take responsibility for their own health (Bronikowski & Bronikowska, 2011).

An increasing body of evidence shows that physical activity habits instilled in children are more likely to be carried into adulthood. Sedentary lifestyle and lack of exercise in childhood and adolescence is linked to physical inactivity in adulthood (Hallal, Victora, Azevedo & Wells, 2006; Belanger, Gray-Donald, O'Loughlin, Paradis, Hutcheon, Maximova & Hanley, 2009). Participation in physical activity during childhood and adolescence is a significant predictor of physical activity in adulthood (Telama, Yang, Hirvensalo & Raitakari, 2006).

Physically inactive children are less likely to be motivated to participate in physical activity and are more likely to become obese and prone to various diseases that can affect their school attendance and result in poorer academic performance. Such individuals then face additional difficulties in accessing the labour market. In addition, physical inactivity places a direct economic burden on social and health systems.

In our schools, students engage in mandatory physical activities during physical education (PE) classes that mostly focus on competition and performance-related activities. The subject of PE is often perceived as marginal and inferior to other intellectually more demanding subjects.

PE is currently compulsory in 81% of primary schools and 82% of secondary schools worldwide. However, there are considerable disparities in the number of hours allocated to the subject of PE, i.e., from one lesson weekly in the first grade of primary schooling in Portugal and Norway to five classes in France. The allocation of three PE classes per week is in line with the resolution adopted by the European Parliament in 2007 stating that PE should have its rightful place in all school curricula. In recent years, many countries have increased time allocation for mandatory PE classes, e.g., from two to four classes per week in neighbouring Poland and from two to three classes in Ukraine and Slovenia (Antala, 2014).

Only two classes per week (lasting 45 min each) are allocated to the subject of PE in the framework curriculum in Slovakia. Within the state educational programme (ŠVP), the subject is incorporated into the curricular area of Health and Movement.

The primary goal of PE is to create a stimulating environment for recognizing the need for a lifelong care for oneself through acquisition of knowledge about the importance of physical activity for health, disease prevention, balanced diet, sport activity and its organisation, movement performance and its assessment (ŠVP 2015).

PE involves a process of continuous cultivation of physical and mental well-being of students. The subject of PE is an integral part of established education. It is the only school subject that focuses on the overall development of students' psychomotor skills and mental hygiene. PE fulfils the essential adaptation, compensation and relaxation functions and has a profound effect on designing daily movement routines and habits. Based on the outline of sensitive periods provided by Belej (1992), the age of students in the second stage of primary education (10–15 years of age) is critical for the development of their fundamental motor skills and habits. Neglecting this development can have far-reaching damaging consequences.

Since the outbreak of the COVID-19 pandemic in early 2020, all interpersonal contacts were severely restricted because social distancing was considered to be the most effective precautionary measure that could prevent the spread of coronavirus (Viana & De Lira, 2020). Though all abovementioned facts suggest that PE is an essential component of a well-rounded curriculum, the Ministry of Education, Science, Research and Sport in Slovakia issued a directive (30.09.2020) that recommended schools and school facilities to provide PE classes only in a theoretical form.

The primary goal of PE is not to transfer theoretical knowledge but to create patterns for lifelong physical activity. This seems to be the greatest challenge when it comes to distance education because it deprives PE of its experiential aspect (Filiz & Konukman, 2020, Chan et.al. 2021).

Materials and methods

The sample comprised 1155 Slovak students (545 girls – 47.2% and 610 boys – 52.8%) in the second stage of primary education (5th grade – 20.2%; 6th grade – 21.5%; 7th grade – 20.3%; 8th grade – 19.3 %, and 9th grade – 18.8%). The representation of students based on the size of their place of residence reflected the settlement structure of Slovakia (Ira & Podolák, 2010). Nearly half of the participants (49.7%) came from medium-sized towns (from 30000 to 100000 inhabitants); 12.8% of students resided in big cities (over 100000 inhabitants); 6.2% of students lived in small towns (1000 to 29999 inhabitants), and 24.4% of students came from small villages (less than 1000 inhabitants). A total of 46.2% of students lived in a family house, whereas 52.8% of them lived in an apartment building.

To collect data, we designed a non-standardised questionnaire that contained basic information including the student's gender and place of residence. The questionnaire aimed to assess the frequency and forms of PE classes delivered during the pandemic and to determine the participants' thoughts on distance learning in PE.

The questionnaire was distributed to school principals in all regions of Slovakia. After consideration, the principals could then send the questionnaires to students in their schools.

The data were collected using a questionnaire designed in Google Forms in February 2021, when many children had already been home-schooled for nearly a year. The results were analysed based on frequency of responses and expressed in percentages.

This study aims to analyse the forms and frequency of online PE instruction in Slovak schools and examine the students' thoughts on such learning.

Results

Approximately 76.7% of the respondents reported that they exercised at home during the pandemic of their own accord. A total of 23.3% of the respondents did not engage in any physical activities at home. Figure 1 shows students' participation in organised physical activity before and during the pandemic.

Before the pandemic, 53.3% of the students were members of sports clubs and practised regularly with their coaches. After imposing strict restrictive measures, only 20.7% of the students were allowed to continue their practices.

Fig. 1 Students' participation in organised PA (physical activity) before and during the pandemic

In another part of the questionnaire, the respondents were asked whether their school provided PE classes and if so, how often they were delivered. A total of 17% of the students had one PE class per week, and 35.3% of the students had two PE classes per week. With the purpose of PE in mind, it was essential for teachers and the school system in general to adapt to the current situation and adjust the forms in which PE classes had been delivered before the pandemic. The results of analysis (Figure 2) revealed that more than half of the respondents (53.44%) did not have any PE classes at all. A total of 25.32% of the respondents had practical PE classes, either at the scheduled class time (14.51%) or upon agreement with the teacher (10.81%). A total of 21.23% of the respondents reported to have only theoretical PE classes, either at the scheduled class time (15.52%) or upon agreement with their teacher (5.71%).

Fig. 2 Forms of PE classes provided

Even if the students had practical PE classes, these were often limited to sending various videos. The teachers used different forms of assignments. The questionnaire results showed that 67.8% of them opted to send various workout/exercise videos or links to fitness websites. A total of 40.1% of the teachers sent videos presenting a theory of sport and sport disciplines, 36.2% favoured quizzes about sport, sports people or Olympism, whereas 19% of them did not send any assignments.

Only 11.2% of the teachers exercised in front of the camera with their students, and 11% of them requested their students to do the same. A total of 77.1% of the teachers asked their students to complete theoretical assignments, and 27.1% of the teachers arranged with their students to send feedback in a form of videos or photographs.

A total of 12% of the students used applications (Strava and Relive) to track their physical activity during PE classes. Some students engaged in physical activities by following exercise programmes on YouTube. Specifically, 20.78% of the students followed *O2 Akadémia Mateja Tótha* [O2 Matej Tóth Academy], 16.63% followed *Hýbme sa spolu s Richardom* [Let's move together with Richard], and 62.58% did not use any programmes.

We also tried to determine whether the students felt that someone motivated them to engage in physical activity. Many students (32.11%) responded that although no one motivated them, they exercised because they

wanted to. For 28.62% of the students, the primary motivator was their parent(s); for 23.37% of the students, it was their PE teacher; for 15.78%, it was their coach.

The students who reported that they did not engage in any physical activity were asked about the reasons for their choice. The most common reason for 21.3% of them was their laziness. A total of 26% of the students reported to have no time or suitable conditions for exercising, and 50% of the students reported other not specified obstacles as a reason for their physical inactivity. Nevertheless, when asked about their level of satisfaction with a distance form of PE classes, 59.8% of the students reported that they were satisfied; 20.7% reported to be very satisfied; while 19.5% reported that they were not satisfied with this form of teaching and learning. This result was rather surprising for us because in the next section of the questionnaire, the students were given an option to express what they liked or disliked about it.

Out of the total number of respondents, 779 students chose to provide reasons why they liked this form of instruction. The most common answers were that they liked the quizzes, assignments about Olympism, and videos about different types of sports. Many students learnt about sports rules; they were always looking forward to teachers' videos with ideas for some physical activities they could try out in their own free time. They enjoyed frequent trips to nature and physical activities with their parents and siblings.

Some students even learnt to design their own training plans. Many students expressed their gratitude to their teachers for keeping in touch with them and encouraging them to exercise. Mostly girls reported that their teacher was the one who encouraged them to start exercising regularly at home. However, many students reported that they did not like anything about distance education mostly because they did not have any PE classes at all. Some students admitted to cheating because they felt comfortable sitting at home, and they did not actively seek any physical activity. There were also students who reported that they had PE classes only during the first wave of the pandemic. PE classes were removed from the timetable during the second wave.

In the last question, the respondents were asked to provide reasons for why they did not like distance PE instruction. A total of 737 respondents decided to answer this question. The majority of respondents stated that they did not have PE classes at all. Those students whose schools provided some form of PE reported that even if though they liked everything about these classes, they would prefer to be at school with their classmates. Many missed team sports, competitions, and races. Those who practiced in a sports club felt disappointed with the repetitive nature of the exercises. Some students were unhappy about the number of difficult quizzes and presentations they had to prepare. Let us quote one of the responses: "Although I do not like PE, I would prefer to be at the gym with my classmates."

Discussion

Modern technologies have become an indispensable part of our lives and have both negative and positive effect on active lifestyles (González, Gómez, Navarro, Cairós, Quirce, Toledo & Marero-Gordillo, 2016). When it comes to PE in Slovakia, the prevalent opinion leans towards the negative impact primarily because schools have not been able to fully transfer PE classes to the online environment.

The pandemic and the consequent restrictive measures affected the teaching and learning process worldwide. In Slovakia, the instruction was moved online for almost a year with short interruptions when students of second stage of primary education returned to schools. However, practical PE classes were not permitted. Tendencies promoting the transition to online education in several areas have been around for some time (Chiasson, Terras & Smart, 2015).

E-learning is reported to be a popular alternative teaching method in many institutional organisations worldwide (Sawang, Newton & Jamieson, 2013). However, provision of online practical PE classes is not easy for both educators and students owing to the absence of interaction between them compared to a traditional classroom setting, which makes student engagement more difficult (Webster, C.A.; D'Agostino, E.; Urtel, M.; McMullen, J.; Culp, B.; Loiacono, C.A.E. & Killian, C. 2021; Meyer-Peyton, 2000; Purcell-Robertson & Purcell, 2000).

Prior to imposing the restrictive measures, 53.3% of the respondents engaged in organised physical activity. In comparison, Badura, Geckova, Sigmundova, Dijk & Reijneveld, 2015) reported that 60% of Czech children participation in organised physical activity. For example, in Portugal, only 30% of children were engaged in organised sport and recreational activities (Marques, Ekelund & Sardinha 2015).

Globally, children who participate in organised physical activity are generally more active than those who do not. Thus, in addition to improving sport performance and purposeful spending of their leisure time, they also have a better starting position to meet the global recommendations for physical activity for improving health. In addition, participation in organised physical activity contributes to higher levels of involvement in moderate or vigorous physical activities (Belanger, Gray-Donald, O'Loughlin, Paradis, Hutcheon, Maximova & Hanley, 2009; Marques, Ekelund & Sardinha 2015).

Organised sport accounts for more than 60% of total daily energy expenditure (Olds et al. 2009). In addition, organised physical activities are more popular among children in comparison to the unorganised activities (Belanger, Gray-Donald, O'Loughlin, Paradis, Hutcheon, Maximova & Hanley, 2009). Participation in organised physical activities during early adolescence is associated with more physical activity later in life.

Participation in organised sport in childhood and adolescence is a good predictor of physical activity in adulthood (Telama, Yang, Hirvensalo & Raitakari, 2006).

Therefore, participation in organised physical activity is considered vital and of utmost importance. The survey results revealed that the COVID-19 pandemic severely limited all physical activities in sports clubs. Only 21% of the respondents were able to engage in physical activity under professional supervision during the pandemic.

Currently, we have a sufficient body of relevant information on the health benefits of physical activity for children and adolescents. Despite all evidence-based knowledge and recommendations, the outbreak of the COVID-19 pandemic resulted in strict restrictive measures in all areas of human life including sport and physical activity. Thus, students no longer had access to any physical activities for several weeks and months. The framework curriculum in Slovakia recommends two PE classes per week (ŠVP). This minimum number of PE classes was provided only at one-third of elementary schools. However, the survey results contradict the statements of Slovak PE teachers who consider the time currently allocated to PE in schools to be insufficient and recommend three or more PE classes per week (Balgá, 2020).

Almost half of the respondents (47.7%) reported to have no PE classes during the pandemic despite the recommendations from the National Institute for Education [*Štátny pedagogický ústav - ŠPÚ*] experts to incorporate at least one physical activity per week that would include the curricular areas of either physical fitness, aerobic activity, games, or sporting activity using equipment. In contrast, many PE teachers had legitimate reasons for why they did not deliver their PE classes. Oftentimes, they were asked to help in the afterschool clubs, and following the reopening of schools they had to teach 1st to 4th graders.

Pushing the subject of PE aside in favour of other more academic subjects results from a rather inferior status that is still attached to PE within the curriculum in our country even though the subject of PE in almost every country in the world has enjoyed a status comparable to other subjects (Hardman, 2008).

During the pandemic, the competent authorities in Slovakia failed to create a stimulating environment for students to meet the recommended levels of physical activity as they did, for instance, in the United States. Teachers in the United States implemented distance education programmes and put forward recommendations for physical activities that could be easily performed in a home setting. They delivered their online PE classes on a daily basis so that the students performed one hour of moderate-intensity physical activity in line with the World Health Organization guidelines (2020).

On the contrary, many teachers in Slovakia did not deliver their practical PE classes and, as a substitute, they would send different, mostly theoretical quizzes and assignments. Some of them decided to adopt a practical approach, but oftentimes they would only provide their students with videos demonstrating exercises. It was up to students whether they watched the videos and engaged in physical activities. Children at this age still need some level of supervision from their teachers. Only 11.2% of the students reported to have a PE teacher providing synchronous instruction demonstrating individual exercises.

In contrast, teachers did not demand exercising in front of the camera from their students. They preferred their students to send videos, photos, or theoretical assignments as feedback.

Teachers had to wrestle with a new situation and adapt to current conditions created by the global pandemic. During both waves of the pandemic, the competent authorities did not come up with a unified course of action for delivering online PE classes. Teachers from individual elementary schools employed strategies that were best suited for them. The National Institute for Education organised webinars for PE teachers in which the experts confirmed that the subject of PE did not have to be included in the school's schedule developed for the time of remote learning. It was recommended to use other available forms and methods of PE instruction. PE teachers were advised to use easily accessible web sites, e.g., www.hybsadoma.sk, www.telocvikari.sk, and www.akademiamatejatotha.sk, or applications such as Strava and Relive for older students. Teachers had to provide their students with varied activities that did not require a lot of space or sophisticated equipment, e.g., rope skipping, running stairs, or long forgotten elastics game. The survey showed that the students used the recommended online platforms. A total of 25.1% of them followed Matej Tóth Academy, and 20.1% exercised with the programme "Let's move together" which was streamed live on Mondays, Wednesdays, and Fridays at three o'clock. A total of 75.6% of the students used other links for fitness websites. Different institutions uploaded workout and exercise videos on YouTube, and teachers often send them to their students.

Today, when the use of different types of technology (mobile, the Internet) has become an inseparable part of our lifestyle, the time has come to take advantage of their positive impact and use them in PE instruction to make the subject more attractive (Antala & Masarykova, 2020). There is a vast body of evidence that ICT (Information and Communication Technologies) increases motivation, confidence, and engagement in learning (Blamire, 2009). Using technologies in teaching can promote modern pedagogies that place students at the heart of the teaching process as active participants of their own learning. ICT can enhance experiential and

collaborative learning, project-based teaching, and problem solving (OECD 2015). The pandemic has created an opportunity for the more effective use of modern technologies in PE instruction. However, the questionnaire results indicate that the reality is quite different.

Motivation to engage in different types of physical activity is inherent in every child. It would be ideal if the child did not lose that motivation over the course of his or her lifetime. However, the current trend in Slovak schools, indicates a continuous rapid decline in student interest in physical activity and points out an increasing level of student laziness (Balga, 2020). The current epidemiological situation is likely to exacerbate the problem. The COVID-19 pandemic and the consequent restrictive measures have seriously disrupted the natural environment of all people. Children have been the most sensitive and vulnerable to all of these changes. They have not been able to engage in physical activity as much as they used to and have to find new ways of being active.

In general, adolescents are greatly affected by the environment in which they live; thus, it is the family, as a basic social institution, that is essential in shaping children's personality (Vágnerová, 2012). Our respondents confirmed this by describing their parents as the primary motivators for them to be active.

School should also create a stimulating environment that supports physical activity (Pavlovic, A., DeFina, L.F., Natale, B.L. et al. 2021). PE teacher is the person who motivates and encourages his or her students to participate in physical activity. Online education dramatically altered the experiential nature of PE, and the preparation of an engaging and effective online PE class has become a very challenging task. Despite this extremely difficult situation, teachers worked hard to motivate their students to engage in physical activity. Nearly one third of the respondents (27.8%) identified teachers as their motivators. For example, in Hungary, keeping physical activity diaries has proven to be a successful motivation method (the European PE Association, 2020). In Slovakia, PE teachers received a set of guidelines on the importance of motivating students to exercise and collaborate with class teachers and parents regarding this matter. They were also advised to create own videos and use them as a primary motivation factor for their students.

During the second wave of the pandemic, almost a year into a home-based learning, teachers and coaches noticed a rapid decline in student interest in any form of PE instruction at schools and in their individual trainings in different sports clubs. Children became tired of the theoretical knowledge, quizzes, and online exercises. It has been extremely difficult to keep them interested in any type of physical activity in a home setting. They miss their friends. Motivation and the resources of activities and exercises also have their limitations. Repetition of varied workout and compensatory exercises seems to be dull and disengaging for children under 15 years of age.

Since 2000, there has been a vast body of scientific research (Smeets & Mooij, 1999; Hennessy, Deane & Ruthven 2003; Volman & Van Eck, 2001; Voogt, 2003; Drent & Meelissen, 2008), which shows the benefits of ICT usage in a teaching process in which, in comparison to a traditional form of instruction, the social student-teacher and student-student interaction significantly increased. However, these benefits have not been transferred into the online space under Slovak conditions. One of the reasons behind this failure was that PE classes were cancelled, and teachers lacked the necessary motivation to work with modern technologies. Moreover, given their age and previous education, many teachers do not possess skills and competencies to exploit the potential of ICT.

Physical activity is a basic biological human need; yet, currently in Slovakia, we observe a growing number of students who avoid exercising. PE is a mandatory subject at schools; yet, many students do not actively participate in PE classes (Bendíková, 2011; Dobbins, Husson, Decorby & Larocca, 2013; Balga, 2020). It can be assumed that these students were satisfied with online or theoretical PE classes without direct supervision and described it as sufficient. Children often substitute the emotional excitement and competitiveness with virtual games.

Conclusions

The COVID-19 pandemic has significantly affected the instruction process of PE at schools as well as other organised physical activities of children. Children's access to team sports activities has been severely restricted for several weeks and even months.

Teachers had to adapt to the new situation and adopted individual approaches to the delivery of PE classes. Some schools provided no PE classes (either practical or theoretical), and the students perceived this very negatively. Most commonly, teachers opted for theoretical approach as a substitute for standard classes. Of note, the respondents rated sending quizzes and different assignments positively because they found it interesting and learnt something new.

When teachers provided online PE classes, they did so sporadically, mostly upon agreement or they just sent different assignments and quizzes for their students to complete. The practical PE instruction at the scheduled class time and with a direct and active student-teacher interaction was reported to be an exception. In addition, teachers frequently used various platforms and showed or sent to their students previously created exercise routines.

PE should foster a lifelong attitude towards physical activity; this goal is problematic to attain in the midst of the pandemic. PE is a practical subject, which has been currently transferred to the realm of theory.

Children have been deprived of the experiential aspect of PE instruction for many months, and there has been no substitute provided by the schools.

The great potential of ICT has not been fully exploited in online instruction of PE. In our opinion, the responsibility rests with the school officials who, following the guidelines of the Ministry of Education, made the final decision about the form of delivery of PE classes at their school. It is up to schools to ensure at least comparable quality of instruction, adapt to the new situation, and work towards the goals set forth in the state education programme for respective ISCED levels of education.

Conflicts of interest

The authors declare no potential conflicts of interest with respect to the research, authorship, and publication of this article.

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