

PE Class Attendance and Engagement in Recreational Activities during the COVID-19 Pandemic

Andrea Vrbik¹, Ivan Vrbik² and Srna Jenko Miholić³

¹Faculty of Kinesiology, University of Zagreb

²University of Slavonski Brod

³Faculty of Teacher Education, University of Zagreb

Abstract

This study was conducted among 137 male students (average age 16.1) of a vocational high school via an online questionnaire concerning online schooling, PE class participation and participation in recreational (leisure) activities before and during the pandemic lockdown. According to the p-value of the Wilcoxon test ($p=0.014$), the mean value (3.92:3.61), the mode value (4:3) and the frequency of the mode value (46:48) for the observed variables, the students attended PE classes when they were held regularly significantly more than online PE class. Furthermore, the p-value of the Wilcoxon test ($p=0.003$), the mean (3.72:3.41), the mode (5:3) and the frequency of the mode (57:46) value indicated that students were significantly more engaged in recreational activities before the lockdown than during the lockdown. In order to encourage physical activity during online schooling, a few possible solutions are presented.

Key words: corona virus; physical activity; sedentary behaviour; screen time; youth.

Introduction

Striving to decelerate the spread of the COVID-19 virus, many countries around the world, Croatia not being an exception, have proposed different restrictive measures limiting the mobility of their citizens. In this unbelievable situation, which took the whole mankind by surprise, a sudden opportunity arose to observe everyday life from another perspective, to question life values and their position on our list of priorities,

and to spend more time with our families and household members. The majority of people faced with limited mobility had a tremendous urge to go out, and - to move. This observation confirms what expert kinesiologists constantly warn us about: the necessity and the importance and psycho-somatic need of physical activity. Suddenly, living rooms felt too small, balcony views limited, and the quality of breathing air, with all the recommended ventilation, inadequate.

The population of students at all education levels, alongside their teachers and professors, was faced with an unusual and previously unknown model of online schooling. It required a significant change in the way of learning, listening to classes, writing and submitting homework, etc. Additionally, online schooling wasn't the same for classes of all subjects and, in order to respect their differences, the qualities of the teacher such as adaptability, innovation and effort again played important roles in this transfer of knowledge. Following teachers on social media, in educational programs on national television and through conversations, one could easily conclude that the vocation of a teacher is truly a calling, and, in this situation, the teachers responded professionally, in an organized manner and with interestingly structured goals, not to mention all day availability. In the given circumstances, teachers and students spent significantly larger amount of time by their computers than before, permanently increasing sedentary behaviour routine and decreasing their levels of physical activity and exercise (Güzel et al., 2020; Deschasaux-Tanguy et al., 2020).

There is a strong body of research proving the health benefits of physical activity in school-aged children and youth, with a positive effect firstly on physiological characteristics (body mass index, muscle tone and strength, joint and spine flexibility, proper bone density), followed by psychological characteristics (reduction of anxiety and depression), physical improvement (motor and sport competence), global, social and academic self-concept, and academic performance (Strong et al., 2005; Jansen & LeBlanc, 2010; Sallis et al., 1999). On the other hand, reported evidence of the growing number of children lacking physical activity or missing the values of targeted physical activity is rising by the day (Trost et al., 2008; Emeljanovas et al., 2015). It seems that the links between kinesiology's fundamental postulates and its base in praxis were weakened in the course of scientific research process (Andrijašević & Jurakić, 2010). For children and teenagers, school is the best environment for physical activity to be promoted due to large number of pupils and students, experts and professionals who work at school and have a developed consciousness of all health benefits of an active lifestyle. Besides that, the existence of a well-rehearsed organizational structure, ready to use facilities and infrastructure, and established possibilities of communication with the network of other social structures dealing in promotion and implementation of physical activity additionally alleviates this process (Trost et al., 2008; Fairclough et al., 2002). At the same time, curricular and academic demands of generic competencies are ascending daily, frequently colliding with the importance of physical education lessons and their duration and occurrence during weekly curricular schedule.

An important role in filling this gap between the recommended and actual daily physical activity could lie in leisure after school activities, such as recreational programs for different sports. Recreational activities have the potential to promote physical activity via structured and unstructured (conventional and unconventional) motion and teach children and youth behavioural and movement skills connected with lifelong participation in physical activity and adoption of a healthy lifestyle (Troost et al., 2008). Almost half a century ago, Buse and Enosh (1977) classified six different factors that influence the participation of individuals in some recreational activity: the characteristics of socio-economic status; demographic information; time at hand for recreation; leisure time; availability, location, quality, number and the cost of recreational infrastructure; an individual's past experience with recreational activities; and the characteristics of an individual. Since then, a significant number of researches was done in order to investigate all aspects of recreational participation. In a review article, Holland et al. (2018) extracted 11 categories of recreational outcomes in nature from 235 articles, namely stating the desired lifestyle change, place attachment, spirituality, academic interest and learning, outdoor recreation interest and skills, new perspectives, environmental management, mental restoration, prosocial behaviours, personal development, and physical health and well-being. Special attention in sports recreation has always been placed in promoting, planning and conducting well organized, goal-oriented and structurally interesting programs for children and youth (Andrijašević, 2010; Andrijašević & Jurakić, 2010).

In the situation of general lockdown, the environmental set-up in the educational context changed both for students and teachers. This research was conducted among high school students with the aim of determining the differences in PE class participation and engagement in recreational activities before and during the COVID-19 lockdown.

Methods

The study was done among 137 male students (average age 16.1) of a vocational high school in Sisak, Croatia, who participated in an online questionnaire concerning online schooling, PE class participation and participation in recreational (leisure) activity before and during the pandemic lockdown. 46 % of the subjects attended 1st grade, 26.3 % 2nd grade, and 27.7 % 3rd grade respectively.

Three weeks after the general lockdown was introduced, an online questionnaire was administered to the students. At that point, students already had three weeks of online schooling experience and have resolved most of the technical difficulties, online schooling demands and work methods for each class, along with establishing an upgraded communication level with their teachers. Students had one week to fill in the questionnaire in total anonymity. In the questionnaire instructions, they were kindly asked to give their honest answers in order to help the researchers find out their true opinions. The first part of the questionnaire consisted of the subjects' demographic data and their impressions about online schooling. The second part of the

questionnaire consisted of questions about PE class attendance in the usual educational environment, the type and frequency of recreational activities before the lockdown, and PE class attendance during online schooling, as well as the type and frequency of recreational activities during the lockdown. There were four types of questions in the questionnaire: the fill-in type, open-ended questions, assigning grades (1 being the lowest, and 5 being the highest), and Likert-type questions in range from 1 to 5 (1 meaning the absence of occurrence, and 5 the complete presence of the characteristics in the variable being assessed).

In order to determine the possible differences in PE class attendance before and during the lockdown, as well as in the involvement in recreational activities before and during the lockdown, a non-parametric Wilcoxon test was administered as an alternative to dependent sample t-test.

Results

When asked to grade the online schooling, the subjects responded accordingly: 10.2 % graded it with 5, 38 % with grade 4, 34.3 % with 3, 7.3 % with 2 and 10.2 % with 1. Regarding the question of grading their teachers, 42.3 % graded them with 5, 37.2 % with 4, 15.3 % with 3, 2.9 % with 2, and 2.2 % graded them with 1. Concerning their perspective on knowledge acquisition, 49.6 % of the students stated that they found online schooling transferring less knowledge than the regular schooling system, as opposed to 14.6 % of the students who thought the acquisition was higher, and 35.8 % who found it to be equal as in regular conditions. When asked if they felt they were being graded fairly for their participation and activity during online schooling, 83.2 % answered affirmatively.

The frequency of attending PE classes during usual, live education is shown in Figure 1. When asked about how often they attended PE classes when they were carried out regularly, the students were offered answers ranging from 1 to 5 (1 – never, 2 – almost never, 3 – occasionally, 4 – almost always, 5 – always).

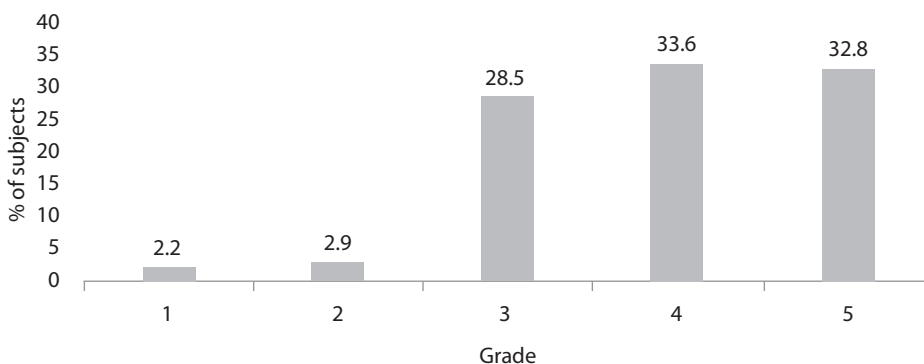


Figure 1. The frequency of attendance of PE classes (held regularly)

The mean value of the answers was 3.92, and the majority of the students (66.4 %) attended the PE classes almost always or always. Only 5.1 % declared never or almost never going to PE classes.

In the situation with the Corona virus lockdown, to the question about how often they attended PE classes during online schooling, the students' answers were also in range from 1 to 5 (1 representing never and 5 representing always), shown in Figure 2.

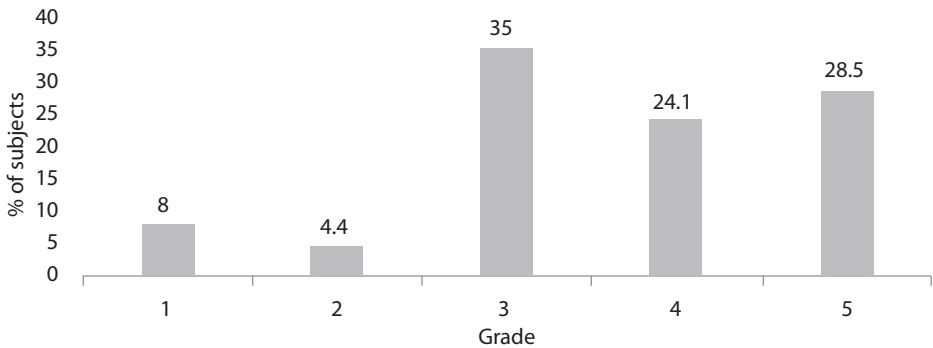


Figure 2. The frequency of attendance of PE classes (online schooling)

The mean value of the answers was 3.6, and the majority of the students (52.6 %) attended PE classes almost always or always. On the other hand, 12.4 % of the students stated that they never or almost never attend online PE classes.

Figure 3 shows the answers to the question about whether the students had been involved in some recreational activity before the lockdown. More than 60.6 % of the subjects responded almost always and always, 21.9 % responded occasionally, and 17.5 % reported almost never and never. The mean value was 3.72.

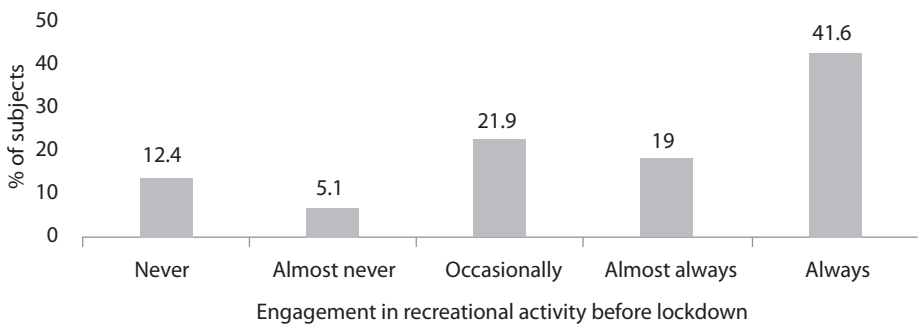


Figure 3. Students' engagement in recreational activity before the lockdown

When questioned if they were involved in some recreational activity then, during the lockdown, 46 % of the students answered almost always and always, 33.6 % responded occasionally, and 20.4 stated almost never and never. The mean value was 3.41.

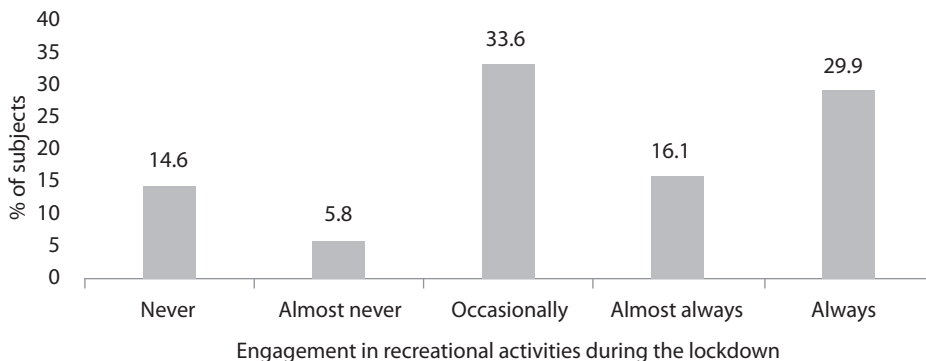


Figure 4. Students' engagement in recreational activities during the lockdown

For the multiple-choice question about which recreational activity they had participated in before the lockdown, the frequencies of the top 5 recreational activities were as follows: playing football (33.85 %), riding a bike (13.85 %), running (13.08 %), going to the gym (9.23 %), and playing handball (5.38 %). As the answers to the same type of question, only this time with regard to participation in some recreational activity during the lockdown, the subjects named as the three dominant activities home workout (42.39 %), running (18.48), and riding a bike (17.39 %). Recreational activities and their frequencies before and during the lockdown are shown in Figure 5.

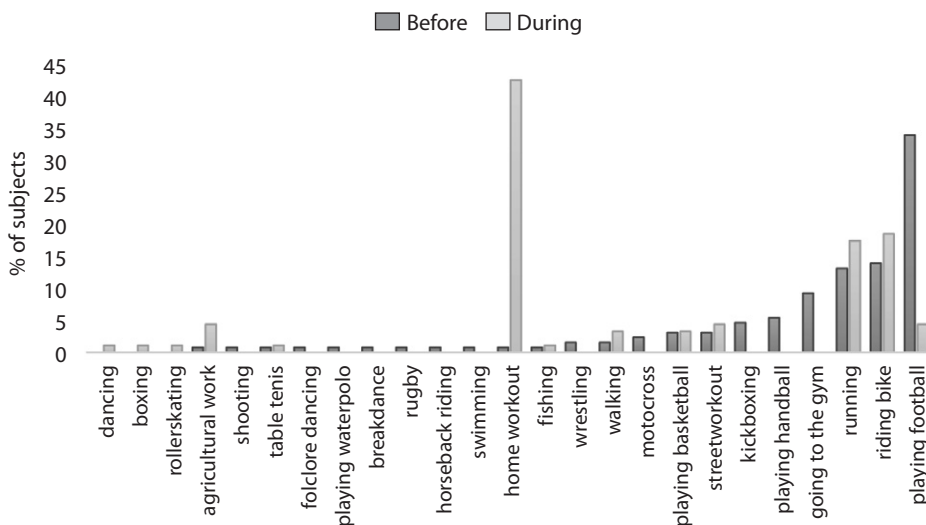


Figure 5. Recreational activities and their frequencies before and during the lockdown

The results showed that 18 % of the students weren't engaged in any recreational activity neither before nor during the lockdown. 11 % of the students were recreationally active before the lockdown, but did not continue the activity during

the lockdown; and 6 % of the students weren't active before, but started with recreational activities during the lockdown. Additionally, 40.9 % of the students stated being engaged in recreational activities during the lockdown every day, 38 % several times a week, 8.8 % once or twice a week, and 12.4 % never. When asked to name the source of the recreational activities, given a multiple choice, the students dominantly noted coming up with the activity on their own (36.24 %), the Internet (28.82 %), social media (13.1 %), and PE classes (12.22 %). Less than 2 % named books and magazines as a source of ideas for recreational activities.

Table 1 presents the results of the Wilcoxon test which show significant differences between PE class attendance and engagement in recreational activities before and during the lockdown.

Table 1

Descriptive parameters and the results of the Wilcoxon test for PE class attendance and engagement in recreational activity before and during the lockdown

	N	Mean	Median	Mode	Mode freq.	Min.	Max.	Std.Dev.	Wilcoxon test p-value
Regular PE class	137	3.92	4	4	46	1	5	0.96	0.014*
Online PE class	137	3.61	4	3	48	1	5	1.18	
Recr. Activ. Before	137	3.72	4	5	57	1	5	1.38	0.003*
Recr. Activ. During	137	3.41	3	3	46	1	5	1.36	

Recr. Activ. Before – recreational activities before the lockdown; Recr. Activ. During – recreational activities during the lockdown; N – number of subjects; Mean – arithmetic mean; Mode freq. – mode frequency; Min. – minimum value; Max. – maximum value; Std. Dev. – standard deviation; * – statistically significant difference.

According to the p-value of the Wilcoxon test ($p=0.014$), the mean (3.92:3.61) and mode (4:3) value, and the frequency of the mode (46:48) for the observed variables, the students attended PE classes when they were held regularly significantly more than online PE classes. Furthermore, the p-value of the Wilcoxon test ($p=0.003$), the mean (3.72:3.41), mode (5:3) and the frequency of the mode (57:46) values indicated that the students were significantly more engaged in recreational activities before the lockdown than during the lockdown.

Discussion

Policy makers and practitioners are always in search of the cumulative research data in aid of understanding various factors that influence the increase or decrease of physical activity levels in children and youth, in order to prepare and organize efficient interventional programs and activities that will hopefully provide significant change in the youth's participation in recreational activities. Several studies indicated significant decrease in physical activity during the pandemic lockdown (Deschasaux – Tanguy et al., 2020; Gallè et al., 2020; Güzel et al., 2020; Tison et al., 2020), observing different

psychological, social, nutritional and physical characteristics and behavioural patterns. In this research, results showed a decrease in PE class participation when organized online. The new setting of online schooling caused both teachers and students to spend significantly more time by their computers working, teaching, learning, answering and concentrating for a prolonged time, focusing on one thing – the computer screen. A normal educational environment provides a much broader scope of different sources, which, albeit from being possible distractors, create a scenery which provides short concentration breaks, allowing students to rest for a while and continue the learning process in a relaxed manner. Presumably, after hours of looking at the screen doing assignments and homework, online PE classes were easy to skip in order to finish tasks and demands in other classes, or just to get some rest. It is not unusual after an exhausting day of obligations to choose the couch, TV and snacks over the Tabata timer or some strengthening exercises (Tison et al., 2020).

Furthermore, the results showed not only a significant decrease of engagement in recreational activities during the lockdown but also, commendably, the difference in the type of recreational activities practiced. Maugeri et al. (2020) obtained similar results on a population of 2524 subjects of different age groups, out of which 346 young subjects coincided with the subjects from the present study regarding age. In their study on how physical activity impacts psychological well-being, the authors determined the decrease in physical activity in young men during the pandemic lockdown, and also concomitant worsening of the psychological status. Furthermore, in the present study subjects named 22 different recreational activities which they participated in before the lockdown, in comparison to 13 recreational activities during the lockdown. The type and frequency of participation in recreational activities before the lockdown were as follows (from the highest frequency to the smallest): playing football, bike riding, running, going to the gym, playing handball, kickboxing, street workout, playing basketball, motocross, walking, wrestling, fishing, home workout, swimming, horseback riding, rugby, brake dancing, playing water polo, folklore dancing, table tennis, shooting, and agricultural work. Type and frequency of participation in recreational activities during the lockdown were (from the highest frequency to the lowest): home workout, running, bike riding, agricultural work, street workout, playing football, walking, playing basketball, fishing, playing table tennis, roller-skating, dancing and boxing. The decrease in the number of recreational activities is understandable for several reasons: firstly and to the biggest extent, as a result of the general lockdown, except vital supply and emergencies, all indoor recreational facilities were closed, therefore stopping people from engaging in them. Secondly, according to the Centre for Disease Control and Prevention (2020), being at home all the time results in acquiring different behavioural routines, mainly of sedentary character (sitting, lying down, playing video games and spending prolonged screen time in general), and the overall prevalence of an unproductive state in which it takes a lot of motivation, discipline and will power to simply move, stretch or exercise. There are different reasons and tendencies for participating in recreational activities in the first place, and it is possible that if these reasons are lacking (e.g. spending time with friends, being in nature, enjoyment in a specific activity), the participation itself

becomes questionable (Deliens et al., 2015). According to Fountaine et al.(2011), one of the most common indicators of the negative influence of screen time on physical activity is the displacement hypothesis (Mutz et al., 1993), which postulates that the more time an individual devotes to the screen, the less time he/she will invest in physical activity (Biddle et al., 2004). Thirdly, for high school population, friends and peers are an important social component which, in times of the quarantine, is only available to them indirectly via social media, mobile phone or Internet, once again increasing the time spent in front of the screen (Caglar et al., 2017).

An additional part of the questionnaire consisted of general questions concerning online schooling, the teacher's online competencies, self-perceived learning outcomes, and fairness of the evaluation process. Almost 50 % of the students gave the highest grades when asked to evaluate online schooling in general, but when asked to compare online schooling knowledge transfer with traditional education, 50 % of the students reported online transfer being less effective. Baber (2020) evaluated students' opinions on the new, online learning during the COVID-19 lockdown, underlining students' motivation, structure of the course, the teacher's knowledge and the facilitation process as key determinants of student satisfaction with online learning. On the other hand, Senturk et al. (2020) found that students' dissatisfaction could be explained by lack of interactive communication, problems with the internet connection or login to different learning platforms, audio/video problems, unattractive presentations and insufficient lesson duration. The students gave the highest marks (almost 80 %) for the teachers' efforts during online schooling, which is presumably connected with perceived teacher's competencies and their availability and readiness to help in certain situations. According to Wen and Kim Hua (2020), teachers have to develop three types of knowledge to adopt online educational technologies in the lesson successfully, namely subject content, pedagogical postulates and mastering the technology.

Conclusion

In the interest of limiting the spread of the COVID-19 virus, countries around the world have introduced general lockdown as a system of protecting their citizens. On the global level, images of empty 5-lane streets, town squares and popular sightseeing places in the biggest world capitals seemed like post-apocalyptic movie scenes. Additionally, postponing the Olympic Games in Tokyo was something that rarely anybody could imagine happening. From the educational perspective, one was faced with quiet school halls without the student's chatter and laughter, and PE gymnasiums without the usual sound of balls hitting the floor. In a new schooling settlement, at home, a questionnaire was administered online to high school students in order to establish the level of PE class attendance and engagement in recreational activities during the lockdown. Although the questionnaire was simple, it was a valuable means for swift attainment of notable data and their consequent interpretation with the goal of effective application. The results showed a decrease in online PE class attendance and engagement in recreational activities, concurrent with the similar research conducted during the pandemic of COVID-19.

In order to motivate physical activity during online schooling, a few suggestions are presented: the importance of movement with all its benefits for human health, especially during the quarantine, should be recognized firstly by the Government and the Ministry of Education. Accordingly, curricular flexibility should be given to PE teachers in order to plan and prepare particular interventional programs for the purpose of satisfying daily physical activity needs of the students (administering PE classes daily for each class, regardless of the timetable). In an effort to promote daily physical activity, workout programs should also be flexible in duration, focusing on long-term benefits of every day activity instead of occasional participation. Moreover, an interesting way of motivating students in exercising (as well as contributing to team work, sense of belonging, unity and fair play) could be a variation of between-class game competitions in joint workout time. Additionally, during the educational process of other classes, implementation of micropauses, e.g. five-minute workout mini-breaks, would be recommendable in order to alleviate stress and create an energized base for further work, both for students and teachers. With respect to social distancing and upholding the restrictive measures, the potential recreational programs should be focused on walking, running, hiking, bike riding, roller-skating, and home workout. Since Internet, social media and television are the main sources of information transfer for the youth, commercially available mobile applications should be used for monitoring daily step-count or meters walked in order to promote outdoor activities, as well as fun, attractive and enjoyable exercise programs in which they can participate daily.

References

- Andrijašević, M. (2010). *Kineziološka rekreacija*: Sveučilišni udžbenik. Kineziološki fakultet Sveučilišta u Zagrebu.
- Andrijašević, M., & Jurakić, D. (2010). Programi sportske rekreacije u slobodnom vremenu djece i mladih. In M. Andrijašević & D. Jurakić (Eds.) *Zbornik radova međunarodne znanstveno-stručne konferencije „Kineziološki sadržaji i društveni život mladih“* (pp 13-20). Kineziološki fakultet Sveučilišta u Zagrebu.
- Baber, H. (2020). Determinants of students' perceived learning outcome and satisfaction in online learning during the pandemic of COVID-19. *Journal of Education and e-Learning Research*, 7(3), 285-292. <https://doi.org/10.20448/journal.509.2020.73.285.292>
- Biddle, S. J., Gorely, T., Marshall, S. J., Murdey, I., & Cameron, N. (2004). Physical activity and sedentary behaviours in youth: Issues and controversies. *The journal of the Royal Society for the Promotion of Health*, 124(1), 29-33. <https://doi.org/10.1177/146642400312400110>
- Buse, R. C., & Enosh, N. (1977). Youth experience: Effect on participation in recreational activities. *Land Economics*, 53(4), 468-482. <https://doi.org/10.2307/3145990>
- Caglar, E., Bilgili, N., Karaca, A., & Deliceoglu, G. (2017). Screen time differences among Turkish university students as an indicator of sedentary lifestyle and inactivity. *Croatian Journal of Education: Hrvatski časopis za odgoj i obrazovanje*, 19(4), 1105-1130. <https://doi.org/10.15516/cje.v19i4.2462>

- Center for Disease Control and Prevention (CDC) (2020). *Coronavirus 2019 (COVID-19) Stress and coping*. <https://www.cdc.gov/coronavirus/2019-ncov/dailylifecoping/managing-stressanxiety.html>
- Deliens, T., Deforche, B., De Bourdeaudhuij, I., & Clarys, P. (2015). Determinants of physical activity and sedentary behaviour in university students: A qualitative study using focus group discussions. *BMC Public Health*, 15, 201. <https://doi.org/10.1186/s12889-015-1553-4>
- Deschasaux-Tanguy, M., Druesne-Pecollo, N., Esseddik, Y., de Edelenyi, F. S., Alles, B., Andreeva, V. A., Baudry, J., Charreire, H., Deschamps, V., Egnell, M., Fezeu, L. K., Galan, P., Chantal, J., Kesse-Guyot, E., Latino-Martel, P., Oppert, J., Péneau, S., Verdot, C., Hercberg, S., & Touvier, M. (2020). Diet and physical activity during the COVID-19 lockdown period (March-May 2020): Results from the French NutriNet-Sante cohort study. *medRxiv*. <https://doi.org/10.1101/2020.06.04.20121855>
- Emeljanovas, A., Mieziene, B., & Putriute, V. (2015). The relationship between physical activity and content of the physical education classes in 11-12 years old Lithuanian school children. The pilot study. *Croatian Journal of Education-Hrvatski časopis za odgoj i obrazovanje*, 17(1), 93-120. <https://doi.org/10.15516/cje.v17i1.1143>
- Fairclough, S., Stratton, G., & Baldwin, G. (2002). The contribution of secondary school physical education to life time physical activity. *European Physical Education Review*, 8(1), 69-84. <https://doi.org/10.1177/1356336X020081005>
- Fontaine, C. J., Liguori, G. A., Mozumdar, A., & Schuna Jr, J. M. (2011). Physical activity and screen time sedentary behaviors in college students. *International Journal of Exercise Science*, 4(2), 3.
- Gallè, F., Sabella, E. A., Ferracuti, S., De Giglio, O., Caggiano, G., Protano, C., Valeriani, F., Parisi, E. A., Valerio, G., Liguori, G., Montagna, M. T., Spica, V. R., Da Molin, G., Orsi, G. B., & Napoli, C. (2020). Sedentary behaviors and physical activity of Italian undergraduate students during lockdown at the time of CoViD– 19 pandemic. *International Journal of Environmental Research and Public Health*, 17(17), 6171. <https://doi.org/10.3390/ijerph17176171>
- Güzel, P., Yildiz, K., Esentas, M., & Zerengök, D. (2020). “ Know-How” to spend time in home isolation during COVID-19: Restrictions and recreational activities. *International Journal of Psychology and Educational Studies*, 7(2), 122-131. <https://doi.org/10.17220/ijpes.2020.02.011>
- Holland, W. H., Powell, R. B., Thomsen, J. M., & Monz, C. A. (2018). A systematic review of the psychological, social, and educational outcomes associated with participation in wildland recreational activities. *Journal of Outdoor Recreation, Education, and Leadership*, 10(3). <https://doi.org/10.18666/JOREL-2018-V10-I3-8382>
- Janssen, I., & LeBlanc, A. G. (2010). Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. *International Journal of Behavioral Nutrition and Physical Activity*, 7(1), 40. <https://doi.org/10.1186/1479-5868-7-40>
- Maugeri, G., Castrogiovanni, P., Battaglia, G., Pippi, R., D'Agata, V., Palma, A., Di Rosa, M., & Musumeci, G. (2020). The impact of physical activity on psychological health during Covid-19 pandemic in Italy. *Heliyon*, 6(6), e04315. <https://doi.org/10.1016/j.heliyon.2020.e04315>

- Mutz, D. C., Roberts, D. F., & Vuuren, D. V. (1993). Reconsidering the displacement hypothesis: Television's influence on children's time use. *Communication Research*, 20(1), 51-75.
- Riddoch, C. (1998). Relationships between physical activity and physical health in young people. *Young and Active*, 17-48. <https://doi.org/10.1177/009365093020001003>
- Sallis, J. F., Prochaska, J. J., Taylor, W. C., Hill, J. O., & Geraci, J. C. (1999). Correlates of physical activity in a national sample of girls and boys in grades 4 through 12. *Health Psychology*, 18(4), 410. <https://doi.org/10.1037/0278-6133.18.4.410>
- Senturk, S., Duran, V., & Yilmaz, A. (2020). The secondary school students' opinions on distance education. *Journal of Education and e-Learning Research*, 7(4), 360-367. <https://doi.org/10.20448/journal.509.2020.74.360.367>
- Strong, W. B., Malina, R. M., Blimkie, C. J., Daniels, S. R., Dishman, R. K., Gutin, B., Hergenroeder, A. C., Must, A., Nixon, P. A., Pivarnik, J. M., Rowland, T., Trost, S., & Trudeau, F. (2005). Evidence based physical activity for school-age youth. *The Journal of pediatrics*, 146(6), 732-737. <https://doi.org/10.1016/j.jpeds.2005.01.055>
- Tison, G. H., Avram, R., Kuhar, P., Abreau, S., Marcus, G. M., Pletcher, M. J., & Olgin, J. E. (2020). Worldwide effect of COVID-19 on physical activity: A descriptive study. *Annals of Internal Medicine*, 173(9), 767-770. <https://doi.org/10.7326/M20-2665>
- Trost, S. G., Rosenkranz, R. R., & Dziewaltowski, D. (2008). Physical activity levels among children attending after-school programs. *Medicine & Science in Sports & Exercise*, 40(4), 622-629. <https://doi.org/10.1249/MSS.0b013e318161eaa5>
- Wen, K. Y. K., & Kim Hua, T. (2020). ESL teachers' intention in adopting online educational technologies during COVID-19 pandemic. *Journal of Education and e-Learning Research*, 7(4), 387-394. <https://doi.org/10.20448/journal.509.2020.74.387.394>

Andrea Vrbik

Faculty of Kinesiology
University of Zagreb
Horvaćanski zavoj 15, 10000 Zagreb, Croatia
andrea.vrbik@kif.hr

Ivan Vrbik

University of Slavonski Brod, EDUDpt
Trg Ivane Brlić Mažuranić 2, 35000 Slavonski Brod, Croatia
ivan.vrbik@gmail.com

Srna Jenko Miholić

Faculty of Teacher Education
University of Zagreb
Savska cesta 77, 10000 Zagreb, Croatia
srna.jenko@ufzg.hr

Sudjelovanje na nastavi Tjelesne i zdravstvene kulture i bavljenje rekreacijskim aktivnostima tijekom pandemije izazvane koronavirusom

Sažetak

U ovom istraživanju sudjelovalo je 137 učenika muškoga spola (prosječna dob 16,1) srednje strukovne škole putem upitnika koji se odnosio na online nastavu, sudjelovanja na nastavi Tjelesne i zdravstvene kulture prije i tijekom općega zatvaranja izazvanog koronavirusom, te bavljenje rekreacijskim aktivnostima prije i tijekom općeg zatvaranja. Prema p-vrijednosti Wilcoxonova testa ($p = 0,014$), aritmetičkoj sredini (3,92 : 3,61), modu (4 : 3) i frekvenciji moda (46 : 48) promatranih varijabli, učenici su pohađali značajno više nastavu Tjelesne i zdravstvene kulture kad se održavala normalno u odnosu na online nastavu. Nadalje, p-vrijednost Wilcoxonova testa ($p = 0,003$), aritmetička sredina (3,72 : 3,41), mod (5 : 3) i frekvencija moda (57 : 46) upućivali su na značajno veće sudjelovanje u rekreacijskim aktivnostima prije zatvaranja nego tijekom zatvaranja. S ciljem povećanja tjelesne aktivnosti tijekom online nastave, predloženo je nekoliko mogućih rješenja.

Ključne riječi: koronavirus; tjelesna aktivnost; sjedilačko ponašanje; vrijeme uz ekran; mladi

Uvod

Pokušavajući usporiti širenje zaraze izazvane koronavirusom, mnoge zemlje, a tako i Hrvatska, uvele su različite restriksijske mjere s namjerom ograničavanja slobodnoga i neometanoga kretanja građana. U toj nevjerojatnoj situaciji, koja nas je sve zatekla, pojavila se iznenadna prilika promotriti svakodnevni život iz druge perspektive, preispitati životne vrijednosti i njihove mjesta na listi prioriteta i provoditi malo više vremena sa svojim obiteljima i ukućanima. Većina ljudi suočena sa zabranom ne-nužnog kretanja imala je potrebu učiniti baš to – izaći van i kretati se. Ovakvo opažanje potvrda je onoga o čemu stručnjaci kineziolozi stalno upozoravaju: nužnost, važnost i psihosomatska potreba za tjelesnom aktivnosti. Odjednom, dnevni boravci učinili

su se premalim, balkonski pogledi ograničeni, a kvaliteta zraka u prostorijama uz sve preporučeno provjetranje, nedovoljna.

Populacija učenika i studenata sa svojim nastavnicima i profesorima, suočila se s dotada neuobičajenim modelom *online* nastave. To je zahtijevalo znakovitu promjenu u načinu učenja, slušanja predavanja, pisanja i predaje zadaće itd. Dodatno, *online* nastava nije bila ista za sve predmete te su, kako bi se ispoštovale razlike između pojedinih predmeta, prilagodljivost, inovativnost i nastavnički trud ponovno igrali važne uloge u tom prijenosu znanja učenicima. Prateći kolege preko društvenih mreža, edukacijskih programa na nacionalnoj televiziji i tijekom razgovora, lako se dalo zaključiti kako je zanimanje nastavnika uistinu poziv te da su nastavnici u ovoj situaciji odgovorili na nove zahtjeve profesionalno, organizirano i s interesantno strukturiranim ciljevima te gotovo cjelodnevnom dostupnosti. U danim okolnostima, nastavnici i učenici provodili su puno više vremena uz svoja računala nego prije, permanentno povećavajući sjedilačku rutinu i smanjujući svoje razine tjelesne aktivnosti (Güzel i sur., 2020; Deschasaux-Tanguy i sur., 2020).

Postoji jako velik broj istraživanja koja dokazuju zdravstvene koristi bavljenja tjelesnom aktivnosti u djece i mladih, s primarno pozitivnim efektima na fiziološke karakteristike (indeks tjelesne mase, mišićni tonus i snagu, pokretljivost zglobova i kralježnice te odgovarajuću gustoću kostiju), psihološke karakteristike (smanjenje nervoze i depresije), tjelesni napredak (motoričke i sportske kompetencije), globalno, društveno i akademsko poimanje te akademsku izvedbu (Strong i sur., 2005; Jansen i LeBlanc, 2010; Sallis i sur., 1999). S druge strane, dokazi o rastućem broju djece koja uopće nisu tjelesno aktivna ili su nedovoljno tjelesno aktivna svaki dan se povećavaju (Trost i sur., 2008; Emeljanovas i sur., 2015). Čini se da su temeljni postulati kineziologije uslijed razvoja znanstveno-istraživačkoga procesa, oslabili sa svojom bazom u praksi (Andrijašević i Jurakić, 2010). Za djecu i tinejdžere škola je najbolje okruženje u kojem se tjelesna aktivnost može promicati, zbog stalnoga kontakta s velikim brojem učenika i studenata, te eksperata i profesionalaca koji ondje rade i imaju razvijenu svijest o svim zdravstvenim koristima aktivnoga životnog stila. Osim toga, postojanje dobro uhodane organizacijske strukture, spremnih prostora i infrastrukture te uspostavljenih mogućnosti za komunikaciju s mrežom ostalih stručnjaka povezanih s promocijom i provedbom tjelesne aktivnosti, dodatno olakšava taj proces (Trost i sur. 2008; Fairclough i sur., 2002). Istovremeno, kurikulni i akademski zahtjevi generičkih kompetencija povećavaju se na dnevnoj bazi, vrlo često se sudarajući s važnosti nastave Tjelesne i zdravstvene kulture, njenim trajanjem i učestalosti unutar tjednog rasporeda nastave.

Važnu ulogu u ispunjavanju tog nesrazmjera između preporučene i stvarne dnevne tjelesne aktivnosti mogle bi imati izvanškolske aktivnosti u vidu različitih sportsko rekreacijskih programa. Rekreacijske aktivnosti imaju potencijal promovirati tjelesnu aktivnost kroz strukturirano i nestrukturirano (konvencionalno i nekonvencionalno) kretanje i učiti djecu i mlade vještinama kretanja i ponašanja povezanih s cjeloživotnim

sudjelovanjem u tjelesnim aktivnostima i usvajanju zdravoga životnog stila (Trost i sur., 2008). Pred gotovo pola stoljeća, Buse i Enosh (1977) klasificirali su šest različitih faktora koji utječu na sudjelovanje pojedinaca u određenoj rekreacijskoj aktivnosti: obilježja socioekonomskog statusa, demografske informacije, raspoloživo vrijeme za rekreaciju i slobodno vrijeme, dostupnost, lokaciju, kvalitetu, broj i cijenu rekreacijske infrastrukture te pethodna iskustva pojedinca s rekreacijskim aktivnostima. Otada, značajan broj istraživanja bavio se ispitivanjem svih aspekata sudjelovanja u rekreacijskim aktivnostima. Holland i sur. (2018) u svojem preglednom članku navode 11 kategorija rekreacijskih ishoda u prirodi iz 235 članaka navodeći željenu promjenu životnoga stila, povezanost s mjestom, duhovnost, akademske interese i učenje, interese i vještine povezane s rekreacijom na otvorenom, nove perspektive, upravljanje okolišem, mentalni oporavak, prosocijalno ponašanje, osobni razvoj i tjelesno zdravlje i osjećaj blagostanja. Posebna pažnja u sportskoj rekreaciji uvijek je bila stavljena na promociju, planiranje i provođenje dobro organiziranih, ciljno usmjerenih i strukturalno interesantnih programa za djecu i mlade (Andrijašević, 2010; Andrijašević i Jurakić, 2010).

U kontekstu obrazovanja, u situaciji općega zatvaranja, promijenili su se okolišni uvjeti i za učenike i nastavnike. Ovo istraživanje provedeno je na učenicima srednje škole s ciljem utvrđivanja razlika u sudjelovanju na nastavi Tjelesne i zdravstvene kulture prije i tijekom općega zatvaranja izazvanog zarazom koronavirusom te utvrđivanja razlika u razini i vrstama rekreacijskih aktivnosti prije i tijekom karantene.

Metode

U ovom istraživanju sudjelovalo je 137 učenika Industrijsko–obrtničke škole Sisak, Hrvatska, primjenom *online* upitnika vezanog za *online* nastavu, sudjelovanje na nastavi Tjelesne i zdravstvene kulture prije i tijekom pandemijske obustave i sudjelovanje u rekreacijskim aktivnostima tijekom slobodnoga vremena prije i za vrijeme karantene. 46 % ispitanika bilo je iz prvog razreda, 26,3 % išlo je u drugi razred, a 27,7 % išlo je u treći razred.

Tri tjedna nakon uvođenja opće obustave, *online* upitnik podijeljen je učenicima. U tom trenutku učenici su već imali iskustvo tri tjedna *online* nastave te su riješili većinu tehničkih poteškoća, upoznali se s principima rada i zahtjevima *online* nastave za svaki predmet te unaprijedili komunikaciju sa svojim nastavnicima. Učenici su imali jedan tjedan da ispune upitnik u potpunoj anonimnosti. U uputama samog upitnika učenici su bili ljubazno zamoljeni da daju svoje iskrene odgovore na postavljena pitanja kako bi pomogli istraživačima ispitati njihova stvarna mišljenja. Prvi dio upitnika sastojao se od demografskih podataka o subjektima i njihovim dojmovima o *online* nastavi. Drugi dio upitnika sastojao se od pitanja vezanih za pohađanje nastave Tjelesne i zdravstvene kulture u normalnom okruženju, tipu i frekvenciji rekreacijskih aktivnosti prije generalnoga zatvaranja te pohađanju nastave Tjelesne i zdravstvene kulture tijekom *online* nastave, kao i tipu i frekvenciji rekreacijskih aktivnosti tijekom zatvaranja. Četiri su tipa pitanja bila u upitniku: odgovori ispunjavanjem, odgovori otvorenoga tipa,

neka pitanja zahtijevala su davanje ocjena (1 najniža, 5 najviša ocjena), i odgovori na Likertovoj skali od 1 do 5, tako da 1 predstavlja potpunu odsutnost obilježja promatrane varijable, a 5 predstavlja potpunu prisutnost obilježja promatrane varijable.

Neparametrijski Wilcoxonov test primijenjen je kao alternativa t-testu zavisnih uzoraka, kako bi se utvrdile razlike u pohađanju nastave Tjelesne i zdravstvene kulture prije i tijekom zatvaranja te sudjelovanje u rekreacijskim aktivnostima prije i poslije općeg zatvaranja.

Rezultati

Upitani kako ocjenjuju *online* nastavu, učenici su ovako odgovorili: 10,2 % dalo je ocjenu 5, 38 % dalo je 4, 34,3 % dalo je 3, 7,3 % dalo je 2 i 10,2 % dalo je ocjenu 1. Na pitanje o ocjenjivanju svojih nastavnika tijekom *online* nastave 42,3 % dalo je ocjenu 5, 37,2 % 4, 15,3 % 3, 2,9 % 2 i 2,2 % dalo je ocjenu 1. Kroz perspektivu stjecanja znanja 49,6 % učenika izjavilo je da smatra kako stječe manje znanja putem *online* nastave u odnosu na uobičajenu učioničku nastavu, u odnosu na 14,6 % koji su smatrali da stječu više nego u učioničkoj nastavi, a 35,8 % smatralo je da jednako stječu znanja u učioničkoj i *online* nastavi. Kada su učenici bili upitani smatraju li da su pravedno ocijenjeni za svoje sudjelovanje u nastavi, 83,2 % učenika odgovorilo je afirmativno.

Frekvencija sudjelovanja na nastavi Tjelesne i zdravstvene kulture tijekom normalne nastave prikazana je u Prikazu 1. Na pitanje *Kada se nastava održavala normalno, koliko si često sudjelovao na nastavi?*, učenici su mogli izabrati između odgovora u rasponu od 1 do 5 (1 – nikada, 2 – skoro nikada, 3 – povremeno, 4 – skoro uvijek, 5 – uvijek).

Grafikon 1.

Aritmetička sredina odgovora iznosila je 3,92, a većina učenika (66,4 %) pohađala je nastavu skoro uvijek ili uvijek. Samo 5,1 % učenika izjavilo je da nikad ili skoro nikad nisu pohađali nastavu Tjelesne i zdravstvene kulture.

Tijekom situacije s koronavirusom, na pitanje *Koliko često si pohađao nastavu Tjelesne i zdravstvene kulture tijekom online održavanja nastave?*, učenici su također mogli izabrati između odgovora u rasponu od 1 do 5 (1 – nikada, 2 – skoro nikada, 3 – povremeno, 4 – skoro uvijek, 5 – uvijek) prikazani u Prikazu 2.

Grafikon 2.

Aritmetička sredina odgovora bila je 3,6, i većina učenika (52,6 %) pohađala je nastavu skoro uvijek i uvijek. S druge strane, 12,4 % izjavilo je da nisu skoro nikada ili nikada pohađali *online* nastavu Tjelesne i zdravstvene kulture.

Prikaz 3 otkriva odgovore na pitanje *Jesi li si se bavio nekom rekreacijskom aktivnosti prije potpunog zatvaranja?*. Više od 60,6 % ispitanika odgovorilo je uvijek ili skoro uvijek, a 21,9 % odgovorilo je povremeno, dok je 17,5 % izjavilo nikada ili skoro nikada. Vrijednost aritmetičke sredina iznosila je 3,72.

Grafikon 3.

Upitani *Baviš li se nekom rekreacijskom aktivnosti, sada, tijekom potpunoga zatvaranja?*, (Prikaz 4), 46 % učenika odgovorilo je skoro uvijek i uvijek, 33,6 % odgovorilo je povremeno, a 20,4 % odgovorilo je skoro nikad ili nikad. Vrijednost aritmetičke sredine iznosila je 3,41.

Grafikon 4.

Na pitanje višestrukoga odgovora *Kojom rekreacijskom aktivnosti si se bavio prije općeg zatvaranja?*, frekvencije 5 najčešćih aktivnosti bile su igranje nogometa (33,85 %), vožnja biciklom (13,85 %), trčanje (13,08 %), odlazak u teretanu (9,23 %) i igranje rukometa (5,38 %). Na isti tip pitanja koji se ticao rekreacijskih aktivnosti tijekom općega zatvaranja, 3 dominantne aktivnosti bile su vježbanje kod kuće (42,39 %), trčanje (18,48 %) i vožnja biciklom (17,39 %). Rekreacijske aktivnosti i njihove frekvencije po zastupljenosti prije i tijekom zatvaranja, prikazane su u Prikazu 5.

Grafikon 5.

Rezultati su pokazali kako 18 % učenika nije bilo uključeno ni u kakve rekreacijske aktivnosti ni prije ni tijekom zatvaranja. 11 % učenika bilo je rekreacijski aktivno prije zatvaranja, ali nije nastavilo s aktivnostima tijekom zatvaranja, a 6 % učenika nije bilo aktivno prije, ali su počeli s rekreacijskim aktivnostima tijekom zatvaranja. Dodatno, 40,9 % učenika izjavilo je da se bave rekreacijskim aktivnostima svaki dan, 38 % nekoliko puta tjedno, 8,8 % jednom ili dva puta tjedno, a 12,4 % nikada. Upitani da navedu izvore iz kojih crpe rekreacijske aktivnosti, na višestrukoj skali izbora, učenici su dominantno isticali samostalni izbor (36,24 %), internet (28,82 %), društvene mreže (13,1 %) i nastavu Tjelesne i zdravstvene kulture (12,22 %). Manje od 2 % navelo je knjige i časopise kao izvor ideja za rekreacijske aktivnosti.

Tablica 1 prikazuje značajne razlike dobivene Wilcoxonovim testom između sudjelovanja u nastavi Tjelesne i zdravstvene kulture prije i tijekom zatvaranja te također bavljenje rekreacijskim aktivnostima prije i poslije zatvaranja.

Tablica 1.

Prema p-vrijednosti Wilcoxonova testa ($p = 0,014$), aritmetičkoj sredini (3,92 : 3,61), modu (4 : 3) i frekvenciji moda (46 : 48) promatranih varijabli, učenici su pohađali značajno više nastavu Tjelesne i zdravstvene kulture kada se održavala normalno u odnosu na *online* nastavu. Nadalje, p-vrijednost Wilcoxonova testa ($p = 0,003$), aritmetička sredina (3,72 : 3,41), mod (5 : 3) i frekvencija moda (57 : 46) upućivali su na značajno veće sudjelovanje u rekreacijskim aktivnostima prije zatvaranja nego tijekom zatvaranja.

Rasprava

Kreatori politike i praktičari uvijek su u potrazi za kumulativnim podacima istraživanja pokušavajući shvatiti što bi moglo utjecati na povećanje ili smanjenje razine tjelesne aktivnosti kod djece i mladih, kako bi pripremili i organizirali učinkovite intervencijske

programe i aktivnosti koji bi pružili značajne promjene u rekreacijskom sudjelovanju mladih. Nekoliko studija ukazalo je na značajno smanjenje tjelesne aktivnosti tijekom općega zatvaranja (Deschasaux-Tanguy i sur., 2020; Galle i sur., 2020; Güzel i sur., 2020; Tison i sur., 2020) promatrajući različite psihološke, socijalne, prehrambene te tjelesne karakteristike i obrasce ponašanja. U ovom istraživanju rezultati su pokazali smanjenje sudjelovanja u nastavi Tjelesne i zdravstvene kulture kada je nastava bila organizirana *online*. Nova postavka *online* školovanja dovela je do toga da i nastavnici i učenici troše znatno više vremena radeći, poučavajući, učeći, javljajući se i radeći na računalima duže vrijeme, usredotočujući se samo na jednu stvar - na računalni ekran.

Uobičajeno obrazovno okruženje nudi mnogo širu ponudu različitih izvora koji, iako remeteći pozornost, stvaraju prizor koji omogućuje kratke pauze u koncentraciji, nudeći učenicima da se odmore neko vrijeme i nastave proces učenja u opuštenijem okruženju. Po svoj prilici, nakon više sati gledanja u ekran ispunjavajući zadatke i zadaće, preskakanje nastave Tjelesne i zdravstvene kulture događalo se kako bi se završile obveze iz drugih predmeta ili samo kako bi se učenici odmorili. Nije neuobičajeno nakon iscrpljujućega radnog dana i obaveza, izabrati trosjed, TV i grickalice umjesto tabata brojača i vježbi za jačanje (Tison i sur., 2020).

Rezultati su također pokazali značajan pad angažmana u rekreacijskim aktivnostima tijekom zatvaranja, ali i pohvalno, raznolikost u vrsti provedenih rekreativnih aktivnosti. Maugeri i sur. (2020) dobili su slične rezultate na populaciji od 2524 ispitanika različitih dobnih skupina, od čega se 346 mladih ispitanika podudara po dobi s ispitanicima iz ovoga istraživanja. U svojoj studiji o tome kako tjelesna aktivnost utječe na psihološku dobrobit, autori su dokazali smanjenje tjelesne aktivnosti kod mladića tijekom globalnoga zatvaranja, kao i popratno pogoršanje psihološkoga statusa. Nadalje, u ovom su istraživanju ispitanici imenovali 22 različite rekreacijske aktivnosti u kojima su sudjelovali prije zatvaranja, u usporedbi s 13 rekreativnih aktivnosti tijekom zaključavanja. Vrsta i učestalost sudjelovanja u rekreativnim aktivnostima prije zatvaranja bile su sljedeće (od najveće učestalosti do najmanje): igranje nogometa, vožnja biciklom, trčanje, odlazak u teretanu, igranje rukometa, *kickboxing*, *streetworkout*, igranje košarke, motokros, hodanje, hrvanje, ribolov, domaći trening, plivanje, jahanje, ragbi, *brakedancing*, igranje vaterpola, folklor, stolni tenis, streljaštvo i poljoprivredni poslovi. Vrsta i učestalost sudjelovanja u rekreativnim aktivnostima tijekom zaključavanja bili su (od najveće učestalosti do najmanje): trening kod kuće, trčanje, vožnja biciklom, poljoprivredni radovi, *streetworkout*, igranje nogometa, hodanje, igranje košarke, ribolov, igranje stolnog tenisa, rolanje, klizanje, ples i boks. Smanjenje broja rekreativnih aktivnosti razumljivo je iz nekoliko razloga: prvo, u najvećoj mjeri, kao rezultat općeg zatvaranja, osim vitalne opskrbe i hitnih slučajeva, zatvoreni su svi rekreacijski objekti, što je onemogućavalo bilo kakve rekreacijske aktivnosti.

Drugo, prema Centru za kontrolu i prevenciju bolesti (2020), obveza stalnoga boravka kod kuće rezultirala je stjecanjem različitih rutina ponašanja, uglavnom sjedilačkog karaktera (sjedjenje, ležanje, igranje videoigara i općenito trošenje produženoga vremena

na ekranu) te stvaranje neproduktivnoga stanja u kojem je potrebno puno motivacije, discipline i snage volje za jednostavno kretanje, istežanje ili vježbanje. Postoje različiti razlozi i tendencije sudjelovanja u određenoj rekreativnoj aktivnosti, a moguće je da ako nedostaju ti razlozi (npr. druženje s prijateljima, boravak u prirodi, uživanje u određenoj aktivnosti) i samo sudjelovanje dolazi u pitanje (Deliens i sur., 2015). Prema Fountaineu i sur. (2011), jedno od najčešćih pojašnjenja negativnoga utjecaja vremena provedenoga pred zaslonima na tjelesnu aktivnost je hipoteza o zamjeni (Mutz i sur., 1993), koja pretpostavlja da što više vremena pojedinac troši na vrijeme pred ekranom, to će manje vremena posvetiti tjelesnoj aktivnosti (Biddle i sur., 2004). Treće, za srednjoškolsku populaciju prijatelji i vršnjaci važna su socijalna komponenta koja je u karanteni dostupna samo neizravnim načinom, putem društvenih medija, mobilnih telefona ili interneta, ponovno povećavajući potrošnju vremena pred ekranima (Caglar, Bilgili, Karaca i Deliceoglu, 2017).

Dodatni dio upitnika sastojao se od općih pitanja koja se tiču *online* školovanja, *online* kompetencija učitelja, samoprocijenjenih ishoda učenja i pravednoga postupka vrednovanja. Gotovo 50 % učenika dalo je najviše ocjene kada ih se pitalo za ocjenu *online* školovanja općenito, ali kada se tražilo da usporede prijenos znanja iz *online* školovanja s tradicionalnim obrazovanjem, 50 % učenika izjavilo je da je *online* prijenos manje učinkovit. Baber (2020) je procijenio mišljenja učenika novim *online* učenjem tijekom zatvaranja zbog zारेze koronavirusom, izdvajajući motivaciju učenika, strukturu programa, znanje učitelja i proces olakšavanja kao ključne odrednice zadovoljstva učenika *online* učenjem. S druge strane, nezadovoljstvo učenika moglo bi se objasniti nedostatkom interaktivne komunikacije, problemima s internetskom vezom ili prijavom na platformu za učenje, audio/video problemima, neprivačnim prezentacijama i nedovoljnim trajanjem lekcije utvrđene u studiji koju su proveli Senturk, Duran i Yillmaz (2020). Studenti su dali najviše ocjene (gotovo 80 %) za trud učitelja tijekom *online* školovanja, što je vjerojatno povezano s percepcijom nastavničkih kompetencija i njihovom dostupnošću i spremnošću da pomognu u određenoj situaciji. Prema Wen i Kim Hua (2020.), učitelji moraju imati razvijene tri vrste znanja kako bi uspješno usvajali *online* obrazovne tehnologije na satu, poput sadržaja predmeta, pedagoških postulata i tehnološkoga znanja.

Zaključak

S ciljem ograničavanja širenja pandemije virusom, zemlje diljem svijeta uvele su mjere općega zatvaranja kao sustav zaštite svojih građana. Na globalnoj razini, prikazi praznih peterotračnih prometnica, gradskih trgova i popularnih turističkih mjesta najvećih svjetskih metropola, izgledale su kao scene iz postapokaliptičnih filmova. Dodatno, odgađanje Olimpijskih igara u Tokiju, bilo je nešto što je rijetko tko mogao zamisliti da se može dogoditi. Edukacijska perspektiva otkrila je potpuno tihe školske hodnike bez učeničkoga smijeha i čavrljanja te prazne sportske dvorane u kojima ne odzvanja zvuk odbijanja lopte od tla. U novom nastavnom okruženju, *online* od kuće, učenicima je

podijeljen upitnik kako bi se saznala učestalost pohađanja nastave Tjelesne i zdravstvene kulture prije i tijekom zatvaranja te sudjelovanje u rekreacijskim aktivnostima prije i poslije zatvaranja. Iako je podijeljeni upitnik bio prilično jednostavan, ponudio je prikupljanje vrijednih rezultata i mogućnost brze interpretacije za praktičnu primjenu. Rezultati su pokazali pad u pohađanju *online* nastave Tjelesne i zdravstvene kulture i također smanjenje sudjelovanja u rekreacijskim aktivnostima, u skladu sa sličnim istraživanjima provedenim tijekom pandemije izazvane zarazom koronavirusom.

Kako bi se potencirala tjelesna aktivnost tijekom *online* nastave, predloženo je nekoliko rješenja: važnost kretanja za ljudsko zdravlje posebno tijekom izolacije i karantene, sa svim prednostima za ljudsko zdravlje, trebalo bi prije svega biti prepoznato od strane Vlade i Ministarstva obrazovanja. Dodatno, kurikulna fleksibilnost trebala bi biti dana nastavnicima tjelesne i zdravstvene kulture tako da mogu pripremiti, planirati i programirati posebne intervencijske programe sa svrhom zadovoljavanja dnevnih potreba za tjelesnom aktivnosti učenika radeći tako svakodnevno sa svim razredima, bez obzira na raspored). Trudeći se promovirati tjelesnu aktivnost, programi vježbanja trebali bi biti prilagodljivi u svom trajanju, usmjeravajući se na dugotrajne koristi svakodnevnoga vježbanja umjesto povremenoga sudjelovanja. Nadalje, interesantan način motiviranja učenika za vježbanje (kao i usvajanje timske rada, osjećaja pripadanja, jedinstva i *fair play*) bila bi varijanta međurazrednih natjecanja u sakupljanju minuta vježbanja. Dodatno, tijekom drugih predmeta, uvođenje mikropauzi, tj. petominutnih mini predaha, preporučalo bi se sa svrhom uklanjanja stresa i stvaranja energetske baze za daljnji posao, kako za učenike tako i za nastavnike. Uz uvažavanje socijalnoga distanciranja i pridržavanjem restriktivnih mjera, potencijalni rekreacijski programi trebali bi se usmjeriti na hodanje, pješaćenje, vožnju bicikla, rolanje i vježbanje kod kuće. S obzirom na to da su internet, društvene mreže i televizija glavni izvori informacija za mlade, komercijalno dostupne aplikacije na pametnim telefonima mogle bi se koristiti za prikupljanje podataka o broju koraka kako bi se promovirale aktivnosti na otvorenom, kao i zabavni, atraktivni i ugodni programi vježbanja u kojima mogu sudjelovati svaki dan.