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PARENTS' PERCEPTION OF PHYSICAL ACTIVITY AND PSYCHOLOGICAL WELL-BEING OF CHILDREN DURING THE COVID-19 LOCKDOWN IN SERBIA

Ana Orlić[1], Ana Vesković[1], Jovana Adamović[2], Ivana Milanović[1], Marija Colić[1]

[1]Faculty of Sports and Physical Education, University of Belgrade, Serbia
[2]Preschool Institution "Trešnjica" Belgrade, Serbia

ABSTRACT

The importance of physical activity (PA) for the psychological well-being of children is well documented. COVID-19 lockdown implied a severe reduction in organized and unorganized PA. Our goal was to examine how parents perceive their children's PA and their own PA related behaviours during the first month of COVID-19 lockdown in Serbia compared to the usual circumstances, to investigate the relationship between parents' evaluations of PA and children's PA level during the lockdown, and to examine the relationship between children's PA level and changes in psychological well-being and daily routines. The sample included 127 parents of preschool and school children. We constructed a questionnaire assessing socio-demographic information, parents' ratings of children's PA, their own children's PA-related behaviours, their evaluations of children's PA engagement before and during the lockdown, and their perception of psychological well-being and daily routines of their children during the lockdown. Results showed that the amount of daily PA in children decreased during the lockdown, especially the organized forms, which indicated that online PA programs have failed to replace regular PE classes and sports training. Also, parents valued regular forms of organized PA more than their online counterparts. We confirmed the relationship between parental evaluations and children's PA and showed that it depends on the specific aspect of PA the parents valued. Parents perceived that changes in children's psychological well-being and daily routines during the lockdown were of moderate intensity. PA frequency was related to attention, mood swings and PC and TV use. Our study offers several practical recommendations for children's PA in restrictive circumstances.

Keywords: LOCKDOWN / PHYSICAL ACTIVITY / PSYCHOLOGICAL CHANGES / PARENTAL PERCEPTION / COVID 19

Correspondence with the autor: Ana Orlić, **E – mail:** anaorlic@gmail.com

INTRODUCTION

Children have a natural need to move and be physically active, have fun and enjoy physical activity (PA). Moreover, by participating in PA, they enhance their motor abilities and skills. World Health Organization (WHO, 2020) defines *physical activity* as any bodily movement produced by skeletal muscles that requires energy expenditure. Free play, which includes various kinds of movement patterns, is the dominant form of physical activity in pre-school children, although some pre-schoolers are included in non-competitive organized physical activities, e.g., in sports schools (Vesković, 2018). However, during middle childhood (approximately from 6 to 11 years), and later during adolescence, organized sport becomes the dominant form of physical activity (Vesković, 2018). Most children get involved in organized PA by participating in competitive sports through membership in sports clubs (Vesković, 2018).

Regular physical activity during the lifespan has documented benefits for physical and mental health (Warburton, Nicol, & Bredin, 2006; WHO, 2020), especially for the proper growth and development of children (Strong et al., 2005). Various health-focused organizations define the recommended amount of physical activity needed to achieve health benefits for different age groups and these recommendations are mutually consistent. According to the WHO (2019) children aged 3-4 should be physically active at least 180 minutes a day (at any intensity), of which at least 60 minutes should be of moderate to vigorous intensity (the more, the better). Recommendations of the American National Association for Sport and Physical Education (NASPE, 2010) are very similar: in addition to everyday moderate-to-vigorous PA, they also recommend several hours of free play for more beneficial effects. For school-aged children and adolescents, the WHO also recommends at least 60 minutes of daily PA, which should be of moderate-to-vigorous intensity at least 3 days a week (both aerobic and bone and muscle strengthening exercise) (WHO, 2020).

Unfortunately, despite the numerous well-established benefits of PA, the data indicates that no age group meets the WHO recommendations and that physical activity levels decrease with age: nearly half of the pre-school children and even 80% of adolescents are physically inactive (Janssen, 2007; WHO, 2018). Additionally, it is consistently showed that girls are less physically active than boys (Jandrić, 2010; Telford, Telford, Olive, Cochrane, & Davey, 2016; Tucker, 2008).

A large number of narrative, survey, meta-analytical, epidemiological, experimental, and review studies confirm that acute and chronic physical activity has beneficial effects on psychological well-being, which in accordance to self-determination theory can be defined as the experience of vitality, feelings of optimal functioning and fulfilment (Ryan & Deci, 2001). Regular PA can improve mood, increase positive, and decrease negative emotions (Biddle, 2002; Biddle & Mutrie, 2008). Also, regular PA can improve various aspects of cognitive functioning (attention, working memory, visual perception, executive functions, information processing, etc.) (Landers & Arent, 2007; Sibley & Etnier, 2003).

Whether a child will be engaged in PA or not depends primarily on the parents as the primary agents of socialization. It is hypothesized that two mechanisms lay in the basis of social learning processes related to PA engagement within the family (Zecevic, Tremblay, Lovsin, & Michel, 2010). Firstly, children learn their behaviour by observing parental physical activity, and secondly, they form positive attitudes toward PA by observing parental favourable attitudes on PA. Moreover, the degree of PA may be transgenerationally transmitted, i.e., children of physically active parents will themselves be physically active and teach it to their children (Kunin-Batson et al., 2015). Studies conducted in different socio-cultural environments revealed that it is more likely for children to participate in PA if one or especially if both parents themselves participate in PA or have done so in the past (Ilić, 2012; Kremarik, 2000; Milošević & Vesković, 2013; Moore et al., 1991; Seabra, Mendonça, Thomis, Peters, & Maia, 2008). Physical activity in early childhood is crucially important for developing and maintaining healthy lifestyle habits during the lifespan (Khanom et al., 2020). As previously mentioned, promoting positive attitudes towards PA, active lifestyle, and emphasizing its beneficial effect for health makes a very powerful tool that parents can use to encourage and motivate children to take part in

physical activity (Masia, Plaza, Gonzalez, Deltell, & Rorıguez, 2013; McFarland, Zajicek, & Waliczek, 2014). In other words, children's positive attitudes on physical activity are affected by parent's positive attitudes and values toward PA (Hein, 2015; Zecevic et al., 2010).

Lockdown in Serbia caused by COVID-19. After the WHO announcement of the world pandemic caused by the Coronavirus, the Government of the Republic of Serbia declared a state of emergency on March 15th, 2020 and imposed several measures to try to prevent and control the current outbreak and spreading of the disease COVID-19 (Odluka o proglašenju vanrednog stanja: 29/2020-3, 2020). These measures included closing the kindergartens, sports clubs, and halls and moving the compulsory education online (Odluka o obustavi izvođenja nastave u visokoškolskim ustanovama, srednjim i osnovnim školama i redovnog rada ustanova predškolskog vaspitanja i obrazovanja: 30/2020-3, 2020), including Physical education (PE) classes. Additionally, physical distancing measures, public gathering restrictions, and home quarantine were introduced and occasionally there was a movement ban during curfew, varying in length. The longest curfew lasted 84 hours. These changes in everyday life reduced and occasionally completely disabled the opportunities for physical activity for most citizens, including children. These COVID-19 restrictions that included a movement ban lasted around two months.

Physical activity of children and youth during lockdown caused by COVID-19. Some researchers investigated the relationship between restrictions caused by the outbreak of the COVID-19 pandemic and physical or sports activities of children and youth. Parents in the U.S. reported that the PA levels of their children decreased compared to the pre-pandemic period, especially in older school children and that the dominant form of PA was unorganized PA including free play (Dunton, Do, & Wang, 2020). Similarly, Tulchin-Francis and collaborators (2021) reported that according to parents' perception, children's level of PA rapidly decreased during COVID-19 crises. Another study performed in Germany (Schmidt et al., 2020) shows that the number of physically active days decreased during the lockdown as well as the average daily amount of PA, but there was an increase in the amount of time spent doing unorganized PA, more in small children than in adolescents.

The first aim of this study was to contrast how parents perceive their children's PA and their own PA related perceptions and behaviours during the first month of COVID-19 pandemic-related restrictions in Serbia compared to the usual circumstances. The second goal was to investigate the relationship between parents' evaluations of PA, their participation in PA, and children's PA levels during the lockdown. The third goal was to examine the relationship between children's PA level and changes in certain indicators of psychological well-being (presence of negative emotions, mood swings, degree of loneliness, quality of attention) and daily routines (reading/drawing, TV use, PC use) during the lockdown, as perceived by the parents.

METHOD

Sample

The sample included 127 parents (111 mothers) of children aged 2 to 11 years (M = 6.69, SD = 2.27). The subsample of pre-schoolers' parents included parents of 36 boys and 32 girls and the subsample of lower grades primary school parents included parents of 32 boys and 27 girls. The parents were 22 to 51 years old (M = 36.10, SD = 5.36).

Instrument

The questionnaire, constructed for this study, consisted of 33 questions grouped into four sections. The first section contains basic socio-demographic information (parents' and children's gender and age). The second section consists of parents' frequency estimates of children's PA and PA-related parental behaviours during the lockdown (6 items), and in regular circumstances (6 items). As regular forms of organized exercise were made impossible by the lockdown measures, questions about the organized exercise during the lockdown were

referring to their online counterparts (e.g., regular PE vs online PE). Multiple-choice questions were used to report the frequency and intensity of PA (number of days per week and duration of PA). The third section assessed how important children's physical activity is to the parents during the lockdown (4 items), and during the regular circumstances (4 items). The last section contains questions about the perceived changes in children's attention, emotions, and interests during the lockdown (8 items): one item referred to changes in cognition, i.e., quality of attention, three items to changes in emotions and 3 items to changes in behavior, i.e., in daily habits. The eighth item, intended to examine the development of new interests in children, was of an open type question. 5-point Likert scales were used to assess the parent's PA evaluation and psychological well-being (from 1 – strongly disagree to 5 – strongly agree).

Procedure

Since the Government's declaration of the state of emergency, the lockdown measures were becoming stricter from week to week, which culminated with the Easter movement ban, which lasted 84 hours (April 19th to 21st). The questionnaire was administered online from April 22nd to April 28th, 2020, i.e., immediately after the movement restrictions were lifted. The questionnaire was administered online via Google Forms and took about 15 minutes to complete. Participants were recruited by a snowball sampling technique. The initial pool of respondents was collected in a preschool facility and the questionnaire was further distributed through social media. Before completing the questionnaire, all participants were informed of the purpose of data collection and signed informed consent. The data were analysed using IBM SPSS Statistics v. 20.

RESULTS

As score distributions for most of the questions deviate from the normal distribution, non-parametric tests were used to analyse the data.

Children's PA during the lockdown and the usual circumstances as viewed by their parents. Descriptive and Wilcoxon signed ranks test parameters for the PA frequency and duration are presented in Table 1. Parents perceived their children were less engaged in organized PA during the lockdown than in usual circumstances, which meant that children spent more days a week being physically active in regular PE classes and sports training compared to online PE classes and exercise programs. On the other hand, children were perceived by their parents to be equally engaged in unorganized PA both during and before the lockdown. Besides, although the parents were less physically active themselves during the lockdown, they were encouraging their children to engage in PA and participated in their child's PA with the same frequency.

Table 1 Descriptive statistics and Wilcoxon signed ranks test for the PA-related parental estimates during the lockdown and the usual circumstances

		M	*SD*	*z*	*p*
Organized PA frequency (How many days per week is your child engaged in organized physical activities lasting for 30 minutes minimum? (sports training, PE classes, organized exercise) / (online exercise programs, online PE classes)	LD	3.31	1.93	-3.94	**.00**
	UC	3.99	1.86		
Unorganized PA frequency (How many days per week is your child engaged in unorganized physical activity lasting for 30 minutes minimum (e.g., running, jumping, riding a bicycle)?)	LD	5.98	1.72	-0.08	.42
	UC	6.12	1.36		
Parental encouragement (How many days per week do you encourage your child to exercise or to be physically active?)	LD	5.54	1.85	-1.32	.19
	UC	5.66	1.74		
Parental participation (How many days per week do you participate in physical activities with your child?)	LD	4.39	2.00	-0.46	.64
	UC	4.36	1.90		
Parental PA (How many days per week are you engaged in PA lasting for 30 minutes minimum?)	LD	3.74	2.00	-2.13	**.03**
	UC	4.00	2.02		

Note: LD – lockdown, UC – usual circumstances.

Results shown in Table 2 indicate that children spent less amount of time per day being physically active during the lockdown compared to the usual circumstances, χ^2 (9) = 56.37, $p < .01$.

Table 2. Parents' perception of daily PA during the usual circumstances and the lockdown

How many hours per day is your child engaged in PA?	Usual circumstances		Lockdown	
	f	%	*f*	%
0-1 hour	5	3.9	17	13.4
1-2 hours	16	12.6	25	19.7
2-4 hours	57	44.9	43	33.9
more than 4 hours	49	38.6	42	33.1

Additionally, we compared pre-schoolers to school children and boys to girls. Mann-Whitney U test showed that school children more frequently participate in organized PA during the usual circumstances ($M_{presc.}$ = 3.26, $M_{sch.}$ = 4.83, U = 1036.00, z = -4.77, $p < .01$), as well as during the lockdown ($M_{presc.}$ = 2.82, $M_{sch.}$ = 3.88, U = 1315.50, z = -3.40, $p < .01$). In contrast, pre-schoolers are significantly more engaged in unorganized PA than school children during the lockdown ($M_{presc.}$ = 6.41, $M_{sch.}$ = 5.49, U = 1426.00, z = -3.38, $p < .01$), as well as during the usual circumstances ($M_{presc.}$ = 6.32, $M_{sch.}$ = 5.88, U = 1617.50, z = -2.22, $p < .05$). Parents of pre-schoolers were themselves more frequently engaged in PA with their children then parents of school children, both during the usual circumstances ($M_{presc.}$ = 4.94, $M_{sch.}$ = 3.69, U = 1232.00, z = -3.82, $p < .01$), and the lockdown ($M_{presc.}$ = 5.07, $M_{sch.}$ = 3.61, U = 1172.50, z = -4.10, $p < .01$). Further, there were no differences between boys and girls neither during the lockdown nor during the usual circumstances.

Parents' evaluations of importance of their children's PA during the lockdown and the usual circumstances. As shown in Table 3, children's physical activity is highly valuable for their parents. Moreover, parents value regular PE classes and organized exercise programs more than their online counterparts. However, they think it is important for their children to be physically active and encourage them to do so in both regular and pandemic circumstances.

Table 3. Descriptive statistics and Wilcoxon sign ranks test for the parents' evaluation of children's PA during the lockdown and the usual circumstances

		M	*SD*	*z*	*p*
1. It is important to me that my child engages in moderate physical activity almost every day.	LD	4.73	0.68	-1.72	.08
	UC	4.82	0.60		
2. It is important to me that my child has quality PE classes / quality online PE classes.	LD	3.84	1.31	-6.56	**.00**
	UC	4.76	0.69		
3. It is important to me that my child goes to sport school or trains / follows online organized exercise programs.	LD	3.61	1.35	-6.35	**.00**
	UC	4.46	0.97		
4. It is important for me to regularly encourage my child to be physically active.	LD	4.68	0.75	-1.58	.11
	UC	4.76	0.63		

Note: LD – lockdown, UC – usual circumstances

Man Whitney U test showed that parents of school children value organized sport activities more than parents of pre-school children in regular circumstances ($M_{presc.}$ = 4.26, $M_{sch.}$ = 4.69, U = 1573.00, z = -2.64, $p < .01$), but also during the lockdown ($M_{presc.}$ = 4.26, $M_{sch.}$ = 4.69, U = 1438.00, z = -2.86, $p < .01$). There were no significant differences in between parents of boys and girls.

Relationship between parents' evaluation of PA and children's perceived PA level during the lockdown. Correlations between parent's evaluations and children's perceived PA during the lockdown are

presented in Table 4. The parents who value the active encouragement of their children to be physically active report that their children were more frequently engaged in unorganized PA, indeed do actively encourage their children to exercise, and themselves take part in their children's PA more frequently. In addition, parents placing higher importance on online forms of PA – both online PE and online exercise – report that their children were more frequently engaged in those activities.

Table 4. Correlations (Spearman's Rho) between parents' evaluations of children's PA, their participation in PA and perceived level of children's PA during the lockdown

	It is important to me that my child engages in moderate physical activity almost every day.	It is important to me that my child has quality online PE classes.	It is important to me that my child follows online organized exercise programs.	It is important for me to regularly encourage my child to be physically active.
How many days per week your child engages in organized physical activities lasting for 30 minutes minimum? (online exercise programs, online PE classes)?	.047	.287**	.355**	.105
How many days per week your child engages in unorganized physical activity lasting for 30 minutes minimum (e.g., running, jumping, riding a bicycle)?	.299**	-.041	-.055	.231**
How many days per week do you encourage your child to exercise or to be physically active?	.313**	.035	.078	.434**
How many days per week do you participate in physical activities with your child?	.194*	-.017	.025	.270**
How many days per week you are engaged in PA lasting for 30 minutes minimum?	.025	.016	.162	.107

Note: * – p < .05, ** – p < .01

Parents' perception of psychological well-being and daily routines of children during the lockdown. Descriptive measures of parental assessment of changes in their children's psychological well-being and daily routines are presented in Table 5. Parents reported they noticed low to moderate changes in their children's cognitive and emotional functioning. Loneliness as a consequence of diminished social contact was perceived to increase to the greatest extent. Also, parents reported that their children spend somewhat more time in front of a screen (TV, PC), but also that they read or draw more in comparison to their regular behaviour.

Table 5. Parents' assessment of the changes in psychological well-being and daily routines of their children during the lockdown

	M	*SD*
My child has weaker attention than before.	2.38	1.27
My child has more frequent mood swings than before.	2.42	1.35
My child is more likely to display negative emotions, such as sadness or anger than before.	2.27	1.39
My child is lonely, s/he misses his/her friends.	3.54	1.25
My child spends more time in front of the computer than before.	2.93	1.52
My child reads or draws more than before.	3.09	1.33
My child spends more time watching TV than before.	3.07	1.41

Note: M – mean, SD – standard deviation.

In addition, a third (35.4%) of the parents reported that their children developed new interests during the lockdown. Qualitative analysis of open-ended answers revealed that among those children, a third (31%)

developed a new interest in drawing, painting, and playing with plasticine, and nearly a quarter (23.8%) for writing and reading. Parents also list a newly developed interest in sports activities (16.7 %), acting, dancing, and music (14.3%), doing housework, gardening, taking care of pets (4.8%), and watching TV (4.8%). As for the differences between pre-schoolers and school children, parents of the latter assessed that children's changes in attention were more intense ($M_{presc.}$ = 2.10, $M_{sch.}$ = 2.68, U = 1513.00, z = -2.48, p < .05) and that the time they spend working in front of a computer increased more than in pre-school children ($M_{presc.}$ = 2.66, $M_{sch.}$ = 3.24, U = 1567.50, z = -2.17, p < .05). Finally, no significant differences between boys and girls were obtained.

The relationship between physical activity and well-being of children during the lockdown. As presented in Table 6, there are some small but significant correlations between physical activity and cognitive and emotional functioning of children as perceived by parents. Parents of children who were rated to be more frequently engaged in organized and unorganized PA notice smaller changes in their attention; the same stands for mood swings and organized PA. Importantly, parents whose children were perceived to be more involved in unorganized PA and more encouraged by them to be physically active notice a smaller increase in PC use in their children caused by the changed circumstances. This is also the case with the parents who participate in their children's PA more frequently. Additionally, children perceived to be less involved in unorganized PA watch the TV more often than before.

Table 6. The relationship between physical activity and physiological wellbeing and daily routines of children during the lockdown as perceived by their parents (Spearman's Rho)

	ATT	MS	NE	LO	PC	DR	TV
OPA	**-.179***	**-.175***	-.173	.084	-.062	.086	-.052
UPA	**-.222***	-.126	-.147	-.115	**-.350****	.084	**-.265****
PE	-.168	-.037	-.054	-.128	**-.274****	.087	-.103
PP	-.158	.043	.001	-.054	**-.242****	.033	-.172
PPA	-.071	-.047	.050	.064	-.027	.104	-.083

Note: OPA – organized PA frequency; UPA – unorganized PA frequency; PE – parental encouragement; PP – parental participation in child's PA; PPA – parents' PA; ATT – attention; MS – mood swings; NE – negative emotions; LO – loneliness; PC – personal computer use; DR – **d**rawing and reading; TV – watching TV; * - p < .05; ** - p < .01.

DISCUSSION

Movement restrictions imposed as a response to the COVID-19 outbreak made it more difficult for all citizens to be physically active, including children. The first goal of our study was to investigate how parents perceive their children's PA levels, and their relationship towards their children's PA (evaluation and PA-related behaviours) during the first month of COVID-19 pandemic-related restrictions (i.e., the lockdown) in Serbia compared to the usual circumstances. As expected, parents report that the amount of daily PA in children decreased during the lockdown compared to usual circumstances, which is in accordance with studies conducted in other countries (Dunton et al., 2020; Schmidt et al., 2020; Tulchin-Francis et al., 2021). Specifically, parents perceived that children were less engaged in organized forms of physical activity. As we compared regular and online forms of organized PA, this finding indicates that online PE and exercise programs have failed to replace regular PE classes and sports training. The findings that parents value regular forms of organized PA (PE and sports) more than their online counterparts support this conclusion. However, we cannot claim if this perceived decline in organized PA was due to their unavailability, lower quality or children's lack of motivation. This is especially important for school children, as they are engaged in organized PA than pre-schoolers more frequently.

According to the parents, the frequency of unorganized PA in the whole sample was not affected by lockdown. Comparing pre-schoolers to school children revealed that the pre-schoolers were more engaged in

free play both during the regular circumstances and during the lockdown. These finding indicate that the lockdown didn't change the age dominant form of PA, i.e., free play for pre-schoolers and organized PA for schoolchildren (Vesković, 2018).

Additionally, we demonstrated that parents themselves were less physically active during the lockdown. However, it is worth noting that generally speaking, parents value and encourage their children's PA during the lockdown as much as they did before the pandemic.

Our second goal was to investigate the relationship between parents' evaluations of PA, their participation in PA, and children's PA levels during the lockdown. In this study, we confirmed the significance of positive parental evaluations for children's PA demonstrated during regular circumstances (Hein, 2015; Khanom et al., 2020; Masia et al., 2013; McFarland et al., 2014; Zecevic et al., 2010). We showed that this relationship remains even in circumstances where being physically active became more difficult. However, our study also points that the relationship between parental evaluations and their children's perceived behaviours depends on the specific aspect of PA they value. Parents who generally believe that everyday PA is important and who find it important to encourage their children to be physically active, report more frequent PA-encouraging behaviours in themselves and more frequent free play in their children. On the other hand, the parents who believe online forms of organized PA are important, report that their children were more frequently engaged in online organized PA.

Parents report that the changes in children's psychological well-being, and daily routines during the lockdown were of moderate intensity, which indicates that children were psychologically affected by the changes in their environment. The most pronounced change in psychological well-being was related to children's feelings of loneliness, followed by mood swings and negative emotions. In addition, parents believe that their children have weaker attention than before, and this is especially true for schoolchildren. This finding can be attributed to the extent of the disturbance the restrictions brought to their daily lives, which is far greater for children who go to school. Further, parents notice that their children spend more time interacting with electronic devices, which could partly be attributed to the fact that school classes were moved online. Besides, parents state their children read or draw more, and a third of the parents indicate their child had developed a new interest or hobby during the pandemic (mostly creative activities).

The focus of our study was to address whether there was a relationship between the changes in psychological well-being and daily routines, and parental assessments regarding children's PA during the lockdown. Parents report smaller changes in attention in children more involved in both unorganized and organized PA. Regarding mood swings, the changes were related to organized PA only. In summary, the perceived frequency of PA in any form was related to some but not all indicators of psychological well-being. As for daily routines, parents whose children spend more time engaged in unorganized PA, who encourage their children to be active, and who participate in their children's PA more frequently, report a smaller increase in PC use. Additionally, more unorganized PA was related to smaller changes in TV use. In other words, parents who report a greater frequency of unorganized PA and are actively involved in their child's PA believe the changes in their children's tendency to use electronic devices were smaller. However, all the reported correlations were relatively small to moderate, indicating that there are more sizeable influences that determine the changes in children's well-being and daily routines during the lockdown.

As we previously discussed, parents perceived the increase in loneliness as the most salient problem during pandemic-induced social isolation. According to a recent review, previously healthy children and adolescents can experience mental health disturbances caused by social isolation and feelings of loneliness, and the length of loneliness is more important than its intensity (Loades et al., 2020). Although our results do indicate that greater use of electronic devices is related to less physical activity, we cannot unequivocally recommend that children should spend less time interacting with them, as there are evidence-based claims that

digital technology can be a helpful tool in reducing loneliness (Loades et al., 2020). That is why it would be useful to help children and young people find alternative ways of using electronic devices which would lead to an increase and not a decrease in PA, particularly during periods of prolonged social isolation. Those alternatives could include online exercise programs which are organized but at the same time socially interactive.

Finally, no differences between boys and girls were observed in our study. Previous studies (e.g., Tucker, 2008; Jandrić, 2010; Telford et al., 2016) consistently show that boys are more physically active than girls. Our findings are encouraging, especially if we take into account that parents in our study value PA in boys and girls to an equal extent.

The main limitation of our study is a relatively small sample size and the use of custom-made instead of a standardized instrument. Our strategy was to seize the immediate (versus delayed) parental assessments of their children's reactions to the dramatic changes in their daily lives imposed by the movement restrictions. That implied a short and limited time window to conduct the study but resulted in less distorted and more reliable assessments.

CONCLUSION

COVID-19 pandemic-related restrictions necessarily led to a decrease in physical activity in the population, including children. The results of this study indicate that changes in the level of physical activity are associated with changes in certain indicators of children's psychological well-being, based on parents' assessments. Obtained results point to several ideas about how to improve both physical activity and the psychological well-being of children in similar circumstances. Firstly, online PE classes and exercise programs should be designed to mimic their live counterparts not only physically, but also socially. Secondly, parents should be aware of the importance of their attitudes and behaviours for children's involvement in physical activities and try not to devalue online forms of physical activity in front of their children but to actively support them to engage in online PE classes and help them choose the most suitable online exercise programs.

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