

The influence of covid-19 pandemic on the recreational and sports behavior patterns of physically active people

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Abstract:

The goal. During the Covid-19 pandemic, the importance of physical activity is increasingly emphasized. Staying indoors for long periods of time, sedentary lifestyles, social isolation, remote work or study, and the news that people were exposed to every day, all have a negative impact on their physical and mental health and well-being. The aim of the study is to identify differences in physical activity before and during the Covid-19 pandemic among physically active people. **Material and methods.** The study was conducted on a purposive sample of 249 participants who engaged in physical activity before and during the Covid-19 pandemic. This research utilized the diagnostic survey method with the use of a questionnaire (online). The chi-square test (χ^2) was used to examine the relationship between variables. **Results.** The frequency of regular pre-pandemic physical activity affects the current behavior of physically active people during the pandemic. People participating in the study declared that they were inspired to engage in physical activity by friends (31.2%), mass media (8.1%), parents (11.3%), and physical education teachers (8.9%). Moreover, individuals undertaking physical activity 4-5 times per week before the pandemic were more likely to limit their activity during the pandemic to 1-3 times per week. On the other hand, the majority of those with physical activity of 6-7 times per week did not change their activity frequency despite the pandemic outbreak. **Conclusions.** Sports competitions are a determinant of regular physical activity during the pandemic. There is a visible increase in the need of participating in physical activity resulting from the anti-Covid-19 prophylaxis or treatment for the negative effects of Covid-19 disease.

Key Words: physical activity behaviors, Nordic-Walking, running, COVID-19 pandemic

Introduction

During the Covid-19 pandemic, the importance of physical activity is increasingly emphasized. Staying indoors for long periods of time, sedentary lifestyles, social isolation, remote work or study, and the news that people were exposed to every day, all have a negative impact on their physical and mental health and well-being. Experts point out that how much we move in general, is essential to our health (Upeniec, Vinberga, Arnis, 2016; Yang, Koenigstorfer, 2020; Upeniece et al., 2021). Lack of movement during the pandemic could have negative health consequences in the future (Piechota, 2021). Undertaking physical activity during the ongoing pandemic should therefore be considered from two important perspectives. Firstly, as a preventative measure – we know that physically active people go through the disease more smoothly and that regular exercise stimulates the body's immune response and reduces the risk of upper respiratory tract infections. Secondly, as a rehabilitative (restorative) measure – counteracting both the effects of hypokinesia and social isolation, resulting from the pandemic situation, and the post-Covid complications, which are increasingly diagnosed after the coronavirus infection (both symptomatic and asymptomatic) (Bodasińska, Piech, 2021).

Many researchers acknowledge the indications for a two-pronged approach to undertaking regular physical activity (as anti-covid prophylaxis or as a treatment of the post-Covid conditions) but at the same time also see major research gaps, particularly in the first area, when it comes to various age groups, especially of children and adolescents. Nevertheless, it seems it is easier to go through this difficult time for those who are active (Wijndaele et al., 2007; Rimmele et al., 2009). On the other hand, the implementation of physical activity into daily health behaviors requires awareness to create a habit of an active lifestyle, which is a long-term and pattern-based process. New ways of being active are needed, taking into consideration the many restrictions connected to the pandemic. Outdoor physical activity can be a great opportunity here (Kravalis, Ciekurs, Ropa, 2021), as well as stress-reducing relaxation exercises (Romero-Ramos, Romero-Ramos, José González Suarez 2021). The habits of physical activity within families and various institutions, such as schools, are also important. If these habits are sustainable, they allow people to be active during such difficult times as the COVID-19 pandemic (Sallis et al., 1992; Miklánková, Górný, Klimešová, 2016; Piech et al., 2016; Agopyan et

al., 2017; Ho Jin Chung, Ho Keat Leng, Chanmin Park, 2019; Pill, Harvey, 2019; Baj-Korpak et al., 2022; Trylińska-Siekielska et al., 2022).

The authors of this article also assume that people who systematically engage in physical activity, especially those who participated in sports and recreational competitions before the pandemic, do not stop practicing sports also during the pandemic.

Thus, the aim of the study is to identify differences in physical activity before and during the Covid-19 pandemic among physically active people. Moreover, the authors want to check whether people who systematically engaged in Nordic-Walking training and running before the pandemic, still undertake physical activity regularly in the conditions of the prevailing pandemic.

Material & methods

Research material

The study was conducted on a purposive sample of 249 participants who engaged in physical activity before and during the Covid-19 pandemic (running and Nordic-Walking). The majority were 31 to 50 years old, university educated, urban residents, and male. Detailed socio-demographic characteristics of the entire sample are presented in Table 1.

Tabela 1. Socio-demographic characteristics of the participants of the study

Education	n	%
Higher	173	69.48
Vocational/high school	74	29.72
No data	2	0.80
Sex	n	%
Female	95	38.15
Male	152	61.04
No data	2	0.80
Age (years old)	n	%
20-30	26	10.44
31-40	91	36.55
41-50	84	33.73
51-60	34	13.65
Above 60	13	5.22
No data	1	0.40
Place of residence	n	%
City/ town	190	76.31
Village	57	22.89
No data	2	0.80

Research method

This research utilized the diagnostic survey method with the use of a questionnaire (online). The chi-square test (χ^2) was used to examine the relationship between variables. Statistical significance was set at $p < 0.05$. In the statistical analyses performed, sample sizes were smaller than the total number of respondents. Since only complete data were included in the analyses, if responses were missing, then the data of those respondents were removed.

Results

Table 2 describes physical activity during Covid-19 in relation to the following: pre-pandemic activity, type of activity undertaken during Covid-19, participation in sporting events, training duration, and involvement in extracurricular physical activity at school. When examining physical activity across the sample, the relationship between the frequency of physical activity during Covid-19 can be found in multiple variables. The variable related to past participation in physical activity, for which no statistically significant differences were found between frequency of physical activity during the pandemic, was engaging in physical activity at school. In other words, the frequency of undertaking physical activity during Covid-19 did not differ between those being active at school and those not undertaking such activity. This study shows that individuals undertaking physical activity 4-5 times per week before the pandemic were more likely to limit their activity during the pandemic to 1-3 times per week. On the other hand, the majority of those with physical activity of 6-7 times per week did not change their activity frequency despite the pandemic outbreak.

The study revealed a significant relationship between the form of exercise undertaken during Covid-19 and the frequency of undertaking activity during this period. Individuals taking up activity 4 to 5 times per week were most likely to exercise individually. Further, both the individual and group exercises were chosen by those taking up physical activity 6 to 7 times per week. Group-only activities were preferred most often by those exercising 1 to 3 times per week. Lastly, group exercise as the only form of exercise was not used by those who were most active during the pandemic period.

The results clearly show that individuals who are more active during Covid-19 are also likely to participate more frequently in sporting competitions and events. In addition, the frequency of participation in competitions is dependent on the frequency of engaging in physical activity. Those individuals who engage more frequently in physical activity are also more likely to participate in sporting events or competitions during the year. Nearly 48% of the group with the highest frequency of activity per week, participate in sports competitions more than 10 times per year as compared to those with physical activity undertaken 1-3 times, which is 26%. Based on the analysis, it can also be indicated that people who undertake physical activity more frequently during Covid-19, are also characterized by longer training experience.

Table 2. Chi-square differences in frequency of engaging in physical activity before and during the Covid-19 pandemic according to various activity-related variables

Variable	Frequency of engaging in physical activity during COVID-19 (per week)			χ^2 (df)	p
	6-7	4-5	1-3		
Engaging in physical activity before COVID-19 (per week)	n=51	n=9	n=96		
6-7	84.31	9.57	2.08	189.13 (4)	0.000
4-5	7.84	79.79	43.75		
1-3	7.84	10.64	54.17		
Form of physical activity during COVID-19	n=51	n=94	n=98		
Individual	43.14	57.45	47.96	23.07 (4)	0.000
Individual and group	56.86	40.43	35.71		
Group	0.00	2.13	16.33		
Participation in competitions	n=51	n=95	n=99		
Yes	94.12	92.63	80.81	8.68 (2)	0.01
No	5.88	7.37	19.19		
Frequency of participation in competitions	n=48	n=88	n=81		
More than 10	47.92	32.95	25.93	12.49 (4)	0.01
6-10 times per year	25.00	35.23	23.46		
1-5 times per year	27.08	31.82	50.62		
Training experience	n=95	n=51	n=100		
More than 10 years	64.71	48.42	39.00	8.96 (2)	0.01
Up to 10 years	35.29	51.58	61.00		
Engaging in physical activity at school	n=51	n=94	n=100		
Yes	66.67	67.02	62.00	0.63 (2)	0.73
No	33.33	32.98	38.00		

Based on the results shown in Table 3, an assessment was made as to whether sex, education, place of residence, and age differentiate the frequency of taking up activity during Covid-19. It was found that there were no significant associations between any of the socio-demographic variables and the frequency of taking up physical activity during the pandemic. Also, no such association was revealed between these variables and the frequency of activity-taking before the pandemic outbreak (data not shown here). However, the education variable approaches statistical significance, both before and during the pandemic. This suggests that with a larger sample, an association between education and frequency of physical activity may be demonstrated. The existing trend shows that individuals with higher education, regardless of an external factor such as the pandemic, may be more likely to engage in physical activity more frequently per week.

Table 3. Chi-square differences in frequency of physical activity during Covid-19 by gender, age, residence, and education

Variable	Frequency of engaging in physical activity during COVID-19 (per week)			χ^2 (df)	p
	6-7	4-5	1-3		
Sex	n=51	n=94	n=99		
Male	72.55	62.77	55.56	4.17 (2)	0.12
Female	27.45	37.23	44.44		
Age (years old)	n=51	n=94	n=100		
20-30	7.84	13.83	8.00	11.02 (8)	0.20
31-40	43.14	37.23	33.00		
41-50	33.33	37.23	31.00		
51-60	11.76	7.45	21.00		
Above 60	3.92	4.26	7.00		
Place of residence	n=51	n=93	n=100		
City/ town	74.51	72.04	83.00	3.51 (2)	0.17
Village	25.49	27.96	17.00		
Education	n=51	n=94	n=99		
Higher	82.35	71.28	63.64	5.71 (2)	0.06
Vocational/ high school	17.65	28.72	36.36		

Interesting data can be found in Table 4. People participating in the study declared that they were inspired to engage in physical activity by friends (31.2%), mass media (8.1%), parents (11.3%), and physical education teachers (8.9%).

Table 4. People who inspired respondents to engage in physical activity

Variable	n	%
PE teachers	24	8.9
Friends	78	31.2
Massmedia	16	8.1
Others	101	40.5
Parents	28	11.3

Table 5 informs us about the preferences for physical activity during Covid-19. More than 23% of the respondents changed the type of activity during the pandemic period.

Table 5. Changes in the type of physical activity because of the Covid-19 pandemic

Variable	n	%
Yes	58	23.4
No	189	76.6

Further data indicate that the individuals surveyed engaged in outdoor activities during the pandemic period. This is due to the many restrictions that were put in place during this time.

Table 6. The place of undertaking physical activity according to the respondents

Variable	n	%
Gym	10	4
Outdoor	197	79,5
Sport pitch	1	0,5
Swimming pool	2	1
Forest/park	30	12
Others	7	3

The questionnaire also included open-ended questions about the benefits of physical activity during the pandemic. Most frequently, the respondents indicated the following:

Benefits of physical activity during the Covid-19 pandemic:

1. Sports – preparing for competitions; achieving the goals set before the pandemic at the start of the season; implementing training plans; training in a specific form of sport; a form of habit;
2. Others – not feeling the negative effects of the pandemic; physical activity being the only form of movement since starting working from home; a sense of well-being and normality.

Dicussion

The pandemic period was associated with people staying in their homes and limiting their activities. Nationwide lockdowns were associated with a complete change in the usual behavioral patterns, manifested by, among other things, a prolonged and significant deficiency or complete absence of physical activity (at least for several months), referred to as hypokinesia (Zheng et al., 2020). Exercise deficiency and the occurrence of a state of hypokinesia may lead to very serious dysfunctions of the body and may significantly reduce the quality of life, both on the grounds of physical and mental health (Arocha Rodulfo, 2019; Marker et al., 2018). The pandemic situation poses a strong stressor, or even a traumatic experience, for different age groups. It can cause numerous negative consequences of emotional and social nature (Gallagher et al., 2020). It should be emphasized that in Poland this phenomenon can be especially dangerous, as we do not belong to the countries where active leisure patterns are common. Unfortunately, as noted by K. Sas-Nowosielski (2003) and E. Biernat (2011), a more sedentary physical culture is very slowly becoming part of life of a modern Polish person. This also applies to children and youth, where a great reluctance to physical activity, including physical education classes, is visible (Mogila-Lisowska, 2010; Bednarek, 2011). According to Korpak (2021) schools, which should prepare young people for physical activity, do not seem to fully fulfill their role.

Our study shows that exercise or training can mitigate the negative effects of the pandemic and result in a better mood. It is often the only physical activity while working remotely from home. This also corresponds with other studies conducted during the Covid-19 pandemic, indicating that adolescents and young adults use physical activity to relieve tension associated with stressful situations. For instance, exercise (running, cycling, indoor exercise) was a common activity used by Australian medical students to cope with the pandemic stress (Lyons et al., 2020). Using exercise as a way to reduce tension was also shown to be a protective factor against stress in French students during lockdown (Bourion-Bédès et al., 2021).

Individuals who were more physically active perceived their stress levels as lower and were more likely to see the difficulties as challenges. Connected to this, physical inactivity was a significant predictor of higher pandemic stress levels as perceived by Turkish students (Aslan et al., 2020).

As shown in a study of more than 13,000 people in 18 countries, people who exercised daily or almost daily during the pandemic, had the best mood, regardless of their levels of physical activity before the pandemic, while the reduced frequency of exercise was associated with poorer mood (Brandt et al., 2020). Lower physical activity levels were associated with increased negative mood amongst adults during the lockdown in Scotland. Those who significantly reduced their activity levels during the pandemic revealed higher levels of negative mood than those who maintained or increased their physical activity (Ingram et al., 2020).

Considering the above data, it can be said that it is important to prepare people for lifelong physical activity. Family and school, especially school-based physical education, should play a very important role here. Freedons and Evenson (1991) show that active parents are more likely to have active children and, in contrast, inactive parents tend to have inactive children. Tabak (2013) found that children of physically active parents are physically more active than their peers, whose parents do not participate in sports. The father's level of physical activity is important here. Joint activity of adolescents with parents and siblings was also noted. The decrease in its frequency was considered alarming. It is postulated to increase the physical activity levels of parents. Panczyk (2004) believes that it will be difficult for contemporary schools to reduce the extent of hypokinesia among students and further, in adult populations. However, according to this author, it is a necessary condition for better development and health. Therefore, various ways of validating physical activity at school and in the family should be sought. It is important to note here that our respondents, were physically active even before the pandemic, participating in sports and recreational events.

As this study shows, parents and physical education teachers are less important in the current lifestyle of the respondents than the group of friends. The friends were the ones who encouraged the respondents to be physically active. Sports motivation was an important factor in not stopping activity during the pandemic. The respondents paid attention to the implementation of training plans, preparation for competitions, and habituation to this lifestyle. The physical activity was undertaken outdoors, which also had a strengthening and hardening effect on the body. According to the WHO, it is considered that to obtain the maximum benefits from physical activity, at least 150 min/week of moderate-intensity or 75 min/week of vigorous-intensity should be performed (WHO, 2010). It is important to note that during the Covid-19 pandemic, our respondents met the requirements recommended by the WHO.

Conclusions

1. The frequency of regular pre-pandemic physical activity affects the current behavior of physically active people during the pandemic.
2. Sports competitions are a determinant of regular physical activity during the pandemic.
3. According to the respondents, the frequency of undertaking physical activity during the pandemic changed slightly, as compared to the pre-pandemic times.
4. The habit of undertaking regular physical activity in the period before the pandemic largely determines the behavior of respondents during the pandemic.
5. The respondents perceived the importance of physical activity during the Covid-19 pandemic in 4 areas: hedonistic (relaxation, feeling of happiness, enjoying freedom, being in nature), health (preventive healthcare, mental well-being, maintaining physical fitness, taking care of the body), and sports (medals, competitions, results, preparation for the competitions, achieving pre-season goals or training plans). The newly created problem area is connected to health conditions related to Covid-19 disease (counteracting social isolation, preventing hypokinesia, counteracting the health effects occurring after Covid-19, supporting the body's immunity in fighting the virus).
6. There is a visible increase in the need of participating in physical activity resulting from the anti-Covid-19 prophylaxis or treatment for the negative effects of Covid-19 disease.

Conflicts of interest - Authors don't have any conflicts of interest to declare.

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