



Impact of Remote Working on Recreational Physical Activity (RPA) Behaviours – a Case Study of the Covid-19 Lockdown in Poland

Authors' contribution:

- A) conception and design of the study
- B) acquisition of data
- C) analysis and interpretation of data
- D) manuscript preparation
- E) obtaining funding

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Abstract

The aim of this article is to describe and explain changes in people's recreational behaviours caused by the shift to remote work (RW) or work from home (WFH) due to lockdowns during the Covid-19 pandemic. A literature review revealed a cognitive, methodological and applicative gap in this area. This relationship has not been analysed so far, particularly among Poles.

The authors developed an electronic questionnaire using a framework designed to study RPA behaviours. A survey based on the questionnaire was conducted from 20 May to 31 Oct. 2020 and included 533 respondents, with 371 people experiencing changes at work, 280 of whom shifted to RW/WFH. A combination of quantitative and qualitative data analysis methods (descriptive statistics and content analysis techniques, affinity diagram, relationship diagram) was used to analyse the survey results. The results of the qualitative analysis allowed a description of changes in the respondents' lifestyles induced by the transition to RW/WFH. The results of the quantitative data analysis showed unequivocally that taking up RW/WFH had a negative impact on RPA behaviours. The frequency and duration of workouts decreased.

The novelty lies in demonstrating the relationship between remote working/work from home and RPA and the inventive methodological approach. The results are universal and can be used to design work-life balance programmes for remote employees.

Keywords: COVID-19, lockdown, remote working (RW), work from home (WFH), recreational physical activity (RPA) behaviours.

Introduction

Since the beginning of the 21st century, the development of information, computer and telecommunication technologies has resulted in an intensive growth of the phenomenon known variously as: "telework", "home-working", "telehomeworking", "working from home", "telecommuting", "remote working", "remote work", "virtual work" and "e-work". While initially telework occurred mainly in developed countries, it is currently

also a growing phenomenon in middle- and low-income countries (Bloom et al., 2015; Garrote Sanchez et al., 2021). The term "telework" was first defined by Nilles (Zhang et al., 2022) in the context of a substitute for going on business trips. In the terminology of the European Foundation for the Improvement of Living and Working Conditions reports, *telework is considered as a work arrangement in which work is carried out totally or partially from home with the support of ICT and partially or never from the employer's premises* (Eurofound, 2022). It is

emphasised that the types of telework are determined by how and where it is performed. Researchers distinguish and focus on three main areas of telework (Zhang et al., 2022): individual work at home – home-based work or work-from-home (WFH); team-based telework – group-based teleworking in a satellite office or a neighbourhood office centre that is remote from the main office but close to employees; and client-based telework – telework that usually involves travel and/or spending time on a customer's premises.

As evidenced by various studies, remote work generates many benefits at an organisational, economic and individual level (Tavares, 2017; Harpaz, 2002; The Lancet Public Health, 2020; Samuelsson, 2022; Ipsen et al., 2022; Allen et al., 2015; Weale et al., 2022; Guler et al., 2021). Positive aspects include flexibility of working hours, employee autonomy and achieving a better work-life balance (Work Life Balance – WLB) (Tavares, 2017; Harpaz, 2002; Galanti et al., 2021; Samuelsson et al., 2022; Ipsen et al., 2021; Weale et al., 2022), saving time spent on daily commuting, less emission, fewer traffic jams, and lower operating costs for employers (Harpaz, 2002; Bloom et al., 2015). According to research, telework is more productive as it minimises unproductive time spent doing meaningless tasks and allows people to focus on the core of the tasks at hand (Ipsen et al., 2021; Bloom et al., 2015; Guler et al., 2021), provided that employees maintain adequate levels of physical activity and are able to function in a comfortable and ergonomic workspace (Argus & Pääsuke, 2021).

There are also studies that identify negative effects of telework. These concern psychological aspects, such as lack of social contact with colleagues, loneliness, disrupted family relationships (Xiao et al., 2021; Bouziri et al., 2020; Galanti et al., 2021; Tejero et al., 2021; Chen, 2022), stress and depression (Tavares, 2017; Galanti et al., 2021; Hayes et al., 2021; Chen, 2022), as well as aspects of physical health, like unhealthy dietary changes (Bouziri et al., 2020; Xiao et al., 2021; Sato et al., 2021; Alah et al., 2022; Griffiths et al., 2022; Ekpanyaskul & Padungtod, 2021; Guler et al., 2021), long periods of sitting in front of a computer screen, weight gain (Suka et al., 2022; Guler et al., 2021; Ekpanyaskul & Padungtod, 2021; Alah et al., 2022), a lack of control over work time duration, often at the expense of sleep time (Bouziri et al., 2020; Alah et al., 2022; Tejero et al., 2021; Ekpanyaskul & Padungtod, 2021), poor working conditions and ergonomics (Argus & Pääsuke, 2021; Ipsen et al., 2021; Du et al., 2022; Ekpanyaskul & Padungtod, 2021) often causing the onset of backpain (Bouziri et al., 2020; Du et al., 2022; Guler et al., 2021) and reduced physical activity (Xiao et al., 2021; Fukushima et al., 2021; Griffiths et al., 2022; Suka et al., 2022; Ekpanyaskul & Padungtod, 2021; Alah et al., 2022). However, physical activity was not the main focus

of the studies mentioned above, as they only dealt with overall measurements of the physical activity of people working on a remote basis.

The outbreak of the Covid-19 pandemic intensified the phenomenon of telework. In many countries, to counteract the spread of Covid-19, the decision was made to close borders and impose long periods of restrictions (quarantine and blockade) or partial limitations on residents and organisations. Organisations instructed their employees to switch to working remotely from home. In 2021, as many as 41.7 million people already worked on a remote basis in the EU, which was double the number of teleworkers in 2019. Conducted during the period of restrictions, studies of productivity and efficiency of WFH or WLB produced inconsistent results, as confirmed by the presented examples. The productivity of those working remotely in Austria (Weitzer et al., 2021) and China (Sun et al., 2023) suffered during the pandemic due to deterioration in physical and mental health, as well as interference of family members with work. In Hungary, the majority of those working in home offices did not suffer from deterioration in mental health or relationships with family members. This study also did not support the assumption of home workers being less efficient or less diligent in their daily work (Tánczos et al., 2022). In contrast, a study conducted by Italian researchers found that, among remote workers, family-work conflicts and social isolation had had a negative impact on productivity, while leadership and autonomy alone had had a positive impact on the productivity and work engagement of these workers (Galanti et al., 2021).

A relatively under-exposed theme in research on remote working is its impact on the lifestyles of employees, including students, and in particular on their recreational physical activity behaviours. Research conducted before the outbreak of the pandemic showed that reduced physical activity among employees caused a deterioration in their engagement in work tasks. Researchers found that employees reporting higher levels of physical activity during their leisure time scored higher in terms of work engagement, including the factors of vigour, dedication and absorption (Kiema-Junes et al., 2022). Sonnentag and colleagues found that a balance between work and leisure time is crucial for employee well-being (Sonnentag et al., 2008). However, the research findings that emerged after the outbreak of the pandemic were generally concerned with the impact of introduced restrictions on lifestyle and physical activity (Alah et al., 2022; Griffiths et al., 2022; Glebova et al., 2022; Guler et al., 2021; Ekpanyaskul & Padungtod, 2021). Glebova and López-Carril (2023) report that sports students changed their personal values and future plans, but it is differentiated between students, and professional athletes are more constant in their plans. The analysis of the literature on the subject

indicates the existence of a research, methodological and applicative gap in this area. The impact of remote working on recreational physical activity behaviours has not been addressed as a separate research theme. Such research has not been conducted in Poland either. Research methodologies are dominated by quantitative research strategies and quantitative methods of analysing their results. There is a lack of an approach combining quantitative and qualitative methods of data analysis, which would allow for a more comprehensive description and explanation of the phenomena under examination. The massive shift towards remote working during the Covid-19 pandemic provided a unique opportunity to study this phenomenon. The authors formulated the following research problem: Did taking up WFH as a result of the restrictions imposed during the Covid-19 pandemic affect RPA behaviours?

The aim of this article is to describe and explain changes in people's recreational behaviours caused by the shift to remote working or work from home due to lockdowns introduced during the Covid-19 pandemic. The following research questions were posed in pursuit of the aforementioned aim:

- What changes in the mode of work were induced by the introduction of RW/WFH?
- Did the change in the mode of work affect the respondents' lifestyles?
- Did the change in the mode of work affect the frequency of RPA?
- Did the change in the mode of work influence the duration of RPA?
- Did the change in the mode of work cause changes in favourite sports?

- Did the change in the mode of work influence the respondents' fitness and weight?
- Did the change in the mode of work cause the emergence of barriers to RPA?
- Did the change in the mode of work cause the occurrence of factors facilitating undertaking RPA?

Materials and Methods

Sampling and Data Collection

The study employed a quantitative research strategy (Creswell, 2013). Based on an electronic self-administered questionnaire, the research was conducted between 20 May 2020 and 31 October 2020 among Polish adults. It covered the periods of the first full lockdown (from 20 May 2020 to 6 June 2020) and the subsequent partial lockdown (from 6 June 2020 to 31 October 2020). The selection of respondents was based on respondent availability, i.e. a non-probabilistic selection method. The electronic questionnaire was distributed via social media (FB, LinkedIn), instant messaging applications (messenger, WhatsApp) and email. For the purposes of the study, the definition of remote working was extended to include remote learning.

A total of 533 people took part in the study, of which 371 people indicated that their work had changed as a result of the pandemic: 280 people had started to work remotely, 33 people had changed their working hours and the remaining 58 respondents indicated other types of changes. The characteristics of the group of respondents who declared changes in the form of work are shown in Table 1.

Table 1. Research participants' demographics and their division into those working remotely (n=280) and those not working remotely but experiencing other changes in their work (n=91).

Demographics	Respondents working remotely (n=280)		Respondents not working remotely (n=91)	
	Frequency	Percentage	Frequency	Percentage
Gender				
Female	170	60.7	60	65.9
Male	110	39.3	31	34.1
Age				
up to 24 years	121	43.3	45	49.4
25 – 44 years	93	33.3	35	38.5
Above 45 years	65	23.3	11	12.1
Mean = , SD = , range=				
Education				
Higher	192	68.6	52	57.1
Secondary	86	30.7	36	39.6

	Respondents working remotely (n=280)		Respondents not working remotely (n=91)	
Primary	2	0.7	3	3.3
Place of residence				
Big city / conurbation	130	46.4	34	37.3
Medium town	82	29.3	32	35.2
Small town	38	13.6	13	14.3
Village	30	10.7	12	13.2
Place of employment				
School/university	126	45.0	14	18.2
Private business (employee)	48	17.1	25	32.5
Not in employment (student/pupil)	46	16.4	4	5.2
Private business (owner)	20	7.1	12	15.6
Public organisation (central administration, local administration)	15	5.4	5	6.5
Other	14	5.0	5	6.5
State-owned enterprise	9	3.2	7	9.1
I don't work	2	0.7	5	6.5

Source: the authors' own work based on the study results

Research Tools

Recreational physical activity (RPA) is differentiated from other forms of physical activity (e.g. transport activity). Researchers indicate that people engage in RPA of their own free will and in their free time (Kantyka et al., 2020). The author's original survey questionnaire was based on a theoretical framework resulting from an analysis of the literature on the characteristics and elements that make up a description of recreational behaviours. These include:

- motivations (cf. Alexandris et al., 2002; Gabler, 2002),
- conditions – time, place, barriers (cf. Park et al., 2017; Alexandris & Stodolska, 2004; Chick & Dong, 2003),
- manner of execution – frequency, form (indoor, outdoor), type of sport (WHO, 2010; White et al., 2016; Ham et al., 2009; Zhang et al., 2015; Maciąg & Kantyka, 2020).

Additionally, the authors supplemented the questionnaire with questions for the respondents' self-assessment of body weight and physical fitness. With a view to pursuing the research objective, the questions concerned the recreational behaviours of the respondents working remotely both before and during the pandemic. The questions in the aforementioned areas were either closed or semi-open. A reliability test of the research questionnaire showed an estimate of Cronbach's alpha at 0.84.

An open-ended question was also added to the questionnaire in order to better understand and explain the mechanisms of the shift to remote working. It concerned

the characteristics of changes in the forms of working that occurred as a result of the restrictions introduced during the Covid-19 pandemic.

The research questionnaire was approved by the Bioethics Committee and was found to have met the ethical standards of the Declaration of Helsinki, 2013.

Data Analysis

The results of the study were analysed using a mixed approach based on quantitative and qualitative methods, as well as analytical tools.

Descriptive statistics methods (modal, median, mean, standard deviation, percentage) were used to analyse responses to closed questions and demographic data (Little, 2013). The results were analysed by means of the Statistica 13 package from Tibco, Inc. A Friedman test, a non-parametric equivalent of a one-factor analysis of variance for repeated measurements, was used to test for the existence of differences between studies (Stanisz, 2006).

Qualitative methods were used to analyse the material obtained as responses to the open-ended question. As the first step, a content analysis was conducted using a word cloud and mind-mapping. The applied tool was the NVivo software. Additionally, an affinity diagram (Plain, 2007; Spiridonidou et al., 2010; Hayes et al., 2021) and relations diagram were used to arrange and structure the findings of the study, as well as to deepen the analysis. The choice of methods was justified by the specificity of the acquired research material (a large number of open-ended statements were obtained: 238 statements, in various grammatical

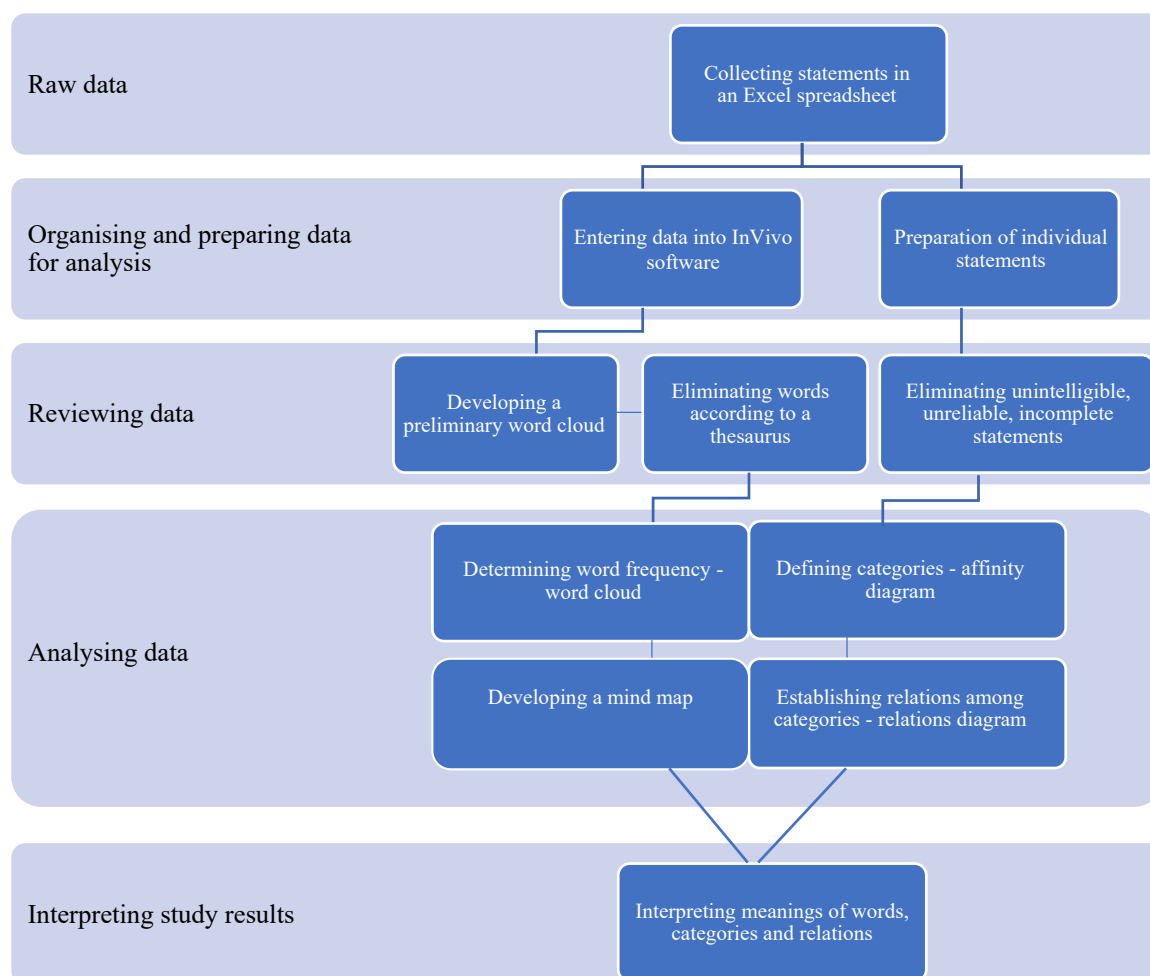


Figure 1. Steps in the qualitative analysis of the research material.

Source: the authors' own work based on (Creswell, 2013).

and stylistic formats, such as full sentences, sentence equivalents, single words and phrases), the time when the study was performed and the preliminary activities conducted in preparation for the proper study (a systematic review of the literature on the subject). A group work method was used in the development of the affinity diagram and the relations diagram. Figure 1 shows the procedural steps in the qualitative analysis of the research material.

Presented in the diagram, the selection of analytical methods allowed for the presentation of the context of the research problem analysed and the broadening of the results of the statistical analysis.

Results

Firstly, the results of the qualitative analysis are presented in order to indicate what changes in the forms of

work were induced by the introduction of remote working and whether this affected the respondents' lifestyles.

Qualitative Analysis Results

The qualitative methods of data analysis allowed the research material to be reduced to its most important meanings: the most frequently occurring words (content analysis – word cloud, in Figure 1, pic. 1), a more comprehensive description of the central category (mind mapping, Figure 2), the key categories (affinity diagram, Figure 1, picture 3) and the relations between them (relationship diagram, Figure 4). The study was conducted in the Polish language.

The aim of the word frequency analysis was to identify the words used by the respondents to describe changes in their work and their impact on their lifestyles. The most frequently used words included work (121 times), classes (47 times), remote (66 times), online (39 times), home (33 times) hours (26 times), time (17 times) and computer



Figure 2. A mind map – remote working.

Source: the authors' own work based on the study results.

(10 times). Further analysis of the pairs of words work/classes and remote/online with other words and phrases produced a mind map describing the dimensions in which changes in work occurred (Graph 2).

As the map above shows, the changes caused by the transition to remote working affected aspects such as working time, place of work, communication at work, type of work, tools, organisation of work, and loss of job (not being able to do one's previous job on a remote basis). However, the map explains only a part of the surveyed reality related to the shift to remote working. A preliminary analysis of the respondents' statements indicated that the issues raised were much broader in scope.

Therefore, an affinity diagram and a relations diagram were used to obtain a deeper insight into the results of the content analysis. The results are presented in Table 2 and in graphic form in Figure 3. The analysis was carried out twice in different study teams. For further processing, the authors chose the affinity diagram of the team in which a larger and more content-appropriate number of categories appeared as a result of the arrangement of the respondents' statements. There were 10 homogeneous cat-

egories with names such as 'on-site work', 'hybrid/mixed work', 'remote work', 'no work', 'spatial organisation of work/offices/services', 'lifestyle', 'work efficiency', 'rules at work', 'emotions, feelings' and 'work time'. Table 2 provides a brief description of each of the identified categories. It includes statements and paraphrases produced by the respondents.

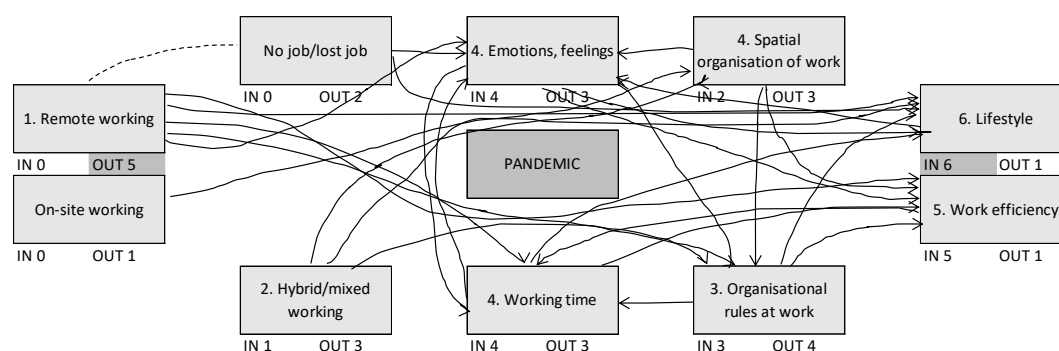
In the table above, those phrases that describe the recreational behaviours of the respondents and their determinants are shown in bold.

OUT means the power of influence of a particular factor on other factors (a higher score means a stronger impact), and IN means that the factor is influenced by other factors (a higher score means the factor is more influenced). The analysis performed shows a chain of cause-and-effect relationships between the categories identified in the affinity diagram. This relationship can be presented as follows: the pandemic affects 1. remote working → 2. hybrid working → 3. organisational rules at work → 4. emotions and feelings, working time, spatial organisation of work → 5. work efficiency → 6. lifestyle.

Table 2. A description of the categories and their characteristics based on an affinity diagram.

Category identified in the affinity diagram	Characteristics of category
on-site work,	maintaining on-site work, introducing shift work
hybrid/mixed work	rotational work system
remote work	combining work with other responsibilities e.g. childcare, changing working hours to accommodate needs of household members, online training , online learning, not leaving home, leaving home only to do shopping, switching from full-time on-site work to remote work (return, no return to on-site work), no more commuting
unemployment	loss of job, interruption in employment - workplace shut down, no sports events
spatial organisation of work/office/duties	change in work organisation, people spread out in separate offices instead of open space, no customer visits, lack of regularity
lifestyle	sleeping longer, less physical activity , more time spent sitting in front of a computer, immobility , sitting without purpose, physical activity at home
work efficiency	reduced self-discipline, inefficient learning, saving time on commuting
rules at work	mask, disinfection, longer/shorter working hours
emotions, feelings	everything has been turned upside down, working remotely is not satisfying, you become lazy, it is difficult to balance work and personal life , too much focus on yourself, more leisure time , greater safety, maintaining distance, easier to organise, pressure of work, no leisure time
working time	overtime, different working hours

Source: the authors' own work based on the study results.

**Figure 3.** A relations diagram.

Source: the authors' own work based on the study results.

Results of the Quantitative Analysis

The results of the quantitative analysis made it possible to indicate the extent to which the respondents' recreational behaviours changed as a result of the switch to remote working.

Impact of Changes in the Mode of Work on the Respondents' Motivations to Engage in RPA

The respondents were asked about their health and psychological motivations to engage in recreational physical

activity during the pandemic and the associated barriers. Those who had switched to remote working most frequently indicated improved well-being (59.26%), improved functional fitness (56.67%) and maintaining a healthy body weight (49.26%) as their motives related to health. The strongest psychological motives included pleasure, rest and relaxation (65.17%), escape from stress (42.32%), opportunity for self-fulfilment (32.21%) and use of leisure time (26.59%).

A shift to remote working does not statistically significantly differentiate the motives for undertaking RPA.

Impact of Changes in the Mode of Work on the Frequency of Undertaking RPA

An important issue addressed in the study was the impact of the transition to remote working on the frequency of respondents' RPA. This frequency was measured by the number of workouts per week. The respondents were divided into three groups (Table 3): occasional exercisers (from 1 to 2 workouts per week), moderate exercisers (from 3 to 4 workouts per week), and intense exercisers (from 5 to 7 workouts per week).

In the group of occasional exercisers, the switch to remote working resulted in an increase in the frequency of RPA from 22.6% to 31.5%. In the group of those exercising moderately, the switch to remote working caused a decrease in the frequency of RPA from 45.9% to 38.5%. The frequency of RPA was not influenced by the switch to remote working in the case of intense exercisers.

With respect to the frequency of RPA, switching to remote working had a negative impact on those exercising moderately and a definitely positive impact on occasional exercisers.

Impact of Changes in the Mode of Work on the Duration of Workout Sessions

An important issue addressed in the study was the impact of the respondents' transition to remote working on the duration of workout sessions. Workout volume is the amount of time spent on RPA. Consequently, with regard to their duration, workout sessions were divided into four groups (Table 4): RPA duration from 0 to 20 min., RPA duration from 21 to 40 min., RPA duration from 41 to 60 min., and RPA duration of more than 60 min.

As can be seen from the data, the transition to remote working resulted in an increase in the number of respon-

Table 3. The frequency of the respondents' engagement in RPA.

Frequency of RPA	Respondents working remotely	
	Before pandemic N 257 (%)	During lockdown N 270 (%)
Occasional exercisers (from 1 to 2 workouts per week)	58 (22.6)	85 (31.5)
Moderate exercisers (from 3 to 4 workouts per week)	118 (45.9)	104 (38.5)
Intense exercisers (from 5 to 7 workouts per week)	81 (31.5)	81 (30.0)

Source: the authors' own work based on the research results.

Table 4. The duration of the workout sessions of the respondents working remotely.

Volume of RPA workout sessions	Respondents working remotely (n=280)	
	Before pandemic N (%)	During lockdown N (%)
0-20 min.	17 (6.07)	41(14.54)
21-40 min.	37 (13.21)	58 (20.57)
41-60 min.	93 (33.21)	102 (36.86)
over 60 min.	133 (47.50)	79 (24.59)

Source: the authors' own work based on the research results.

dents whose workout sessions lasted from 0 to 20 minutes from 6.07% to 14.54%. The number of those exercising from 21 to 40 minutes and from 41 to 60 minutes in one session also increased, from 13.21% to 20.57% and from 33.21% to 36.86%, respectively. A decrease was recorded only in the number of those exercising in RPA workout sessions longer than 60 minutes, from 47.50% to 24.59%.

The switch to remote working had an adverse impact on the respondents who preferred workout sessions last-

ing longer than 60 minutes, while the other four groups showed respective increases.

A potential correlation was also examined between the duration of workout sessions of those working remotely and the frequency of RPA undertaken by them. In conclusion, significant differences ($\chi^2 = 54.9$ at $p < 0.001$) could be observed in the number of workouts before and during the pandemic. During the pandemic, the respondents working remotely worked out less frequently and

for shorter periods. These decreases are also shown by $\chi^2 = 96.4$ at $p < 0.001$. For those working remotely, significant statistical differences can be observed between the length of workouts before and during the pandemic. In conclusion, those working remotely reduced both workout frequency and duration during the pandemic.

Impact of Changes in the Mode of Work on Preferred Sports Disciplines

The most popular forms of RPA before the pandemic among the respondents who switched to remote working included fitness, gym and cycling. After the outbreak of the pandemic, cycling, running and yoga became the most popular disciplines. It is concluded that the change in favourite disciplines was not caused by the shift in the mode of work, but definitely by the shutdown of gyms, fitness clubs and other sports facilities.

Self-assessment of Fitness and Body Weight

The results of self-assessments of fitness and body weight show that the pandemic did not affect the study participants. The quantitative analyses indicate the absence of any significant differences in the respondents' declarations concerning their fitness and body weight. It can be assumed that the relatively short duration of the study may have influenced such assessments of the respondents' physical fitness and body weight.

Remote Working and Barriers to Engaging in RPA

The questionnaire asked the respondents about barriers to participation in RPA during the lockdown. The major constraints indicated by those working remotely included not being able to practice their favourite sport (40.3%), as well as not having access to parks, forests and other areas where they could previously practice physical activity (34%).

Factors Facilitating Workouts in Isolation During the Pandemic

When asked about factors that made it easier for working people to engage in RPA, the study participants most often pointed out more free time (31.8%), possession of sports equipment (17.6%) and free online training instructions (17.1%).

Discussion

The results of the study partly confirm the findings of other authors and indicate new areas of research.

The results of the qualitative analyses clearly indicate that the introduction of remote working/work from home influenced the respondents' lifestyles, including RPA behaviours. At the same time, it is difficult to clearly as-

sess the impact on lifestyle as positive or negative. This is consistent with the findings of other authors. Many of the respondents referred to the positive aspects of working from home such as savings on commuting, better organisation of work and more free time, which is also confirmed in the research reported by other authors (Harpaz, 2002; Samuelsson et al., 2022; Bloom et al., 2015; Allen et al., 2015; Weale et al., 2022; Guler et al., 2021), and the facilitation of childcare, which is also pointed out by Hilbrecht et al., 2008 and Hilbrecht et al., 2013.

The study presented herein also revealed another pandemic-related factor, namely safety. By working from home, those surveyed reduced the risk of contracting the virus. In this context, safety should be regarded as a positive factor. The respondents also mentioned the negative aspects of WFH, such as a disturbed work-life balance, which is also confirmed by other research (Galanti et al., 2021; Tejero et al., 2021; Chen, 2022), less physical activity, immobility, more time spent sitting in front of a computer screen (Fukushima et al., 2021), frustration, fatigue and depression (Tavares, 2017; Galanti et al., 2021; Hayes et al., 2021; Chen, 2022). The results of the study also show that, according to the respondents, the shift to remote working had an impact on their RPA behaviours. Examples include workouts based on online instructions in response to the shutdown of public sports facilities. Glebova et al. (2022) indicated that the development and deployment of new technologies in the sports sector was strengthened.

The results of the quantitative analysis show that the transition to remote working did not significantly change the respondents' motivation to engage in RPA. The most frequently mentioned motives included improvements in well-being, pleasure, rest and relaxation. However, the shift to remote working differentially affected the frequency of undertaking RPA. Occasional exercisers (1–2 workouts per week) increased this frequency, moderate exercisers (3–4 workouts per week) decreased the number of workouts, while there was no change in this respect among intense exercisers (5–7 workouts per week). The results of the study show that the switch to remote working also caused changes in the duration of workout sessions. The proportion of short training sessions of up to 60 minutes increased significantly, while at the same time the proportion of training sessions over 60 minutes decreased. The conducted statistical analysis shows a significant correlation between the frequency and duration of workout sessions: during the pandemic, those working remotely worked out less frequently and for shorter periods. This phenomenon can be explained by the results of the qualitative study and, above all, by the limitations that remote working introduced into the lives of the respondents, as discussed above. Despite the existence of factors indicated by the respondents as

conducive to engaging in RPA while working remotely, such as more free time, possession of sports equipment, online training instructions or greater work organisation flexibility, they did not translate into an increase in the frequency of RPA or the length of workout sessions. On the other hand, changes in favourite sports among those working remotely were caused by the restrictions introduced in Poland during the period under examination (shutdown of indoor and outdoor sports facilities, the ban on access to parks and forests). This is also confirmed by the barriers to engaging in RPA indicated by the majority of the respondents: no possibility to practise their favourite sports and no access to sports facilities.

The results of the study are original, as the theme of the impact of RW/WFH on RPA has not been addressed in the literature to date. Thus, there is a shortage of studies comprehensively covering all the elements that make up a model of RPA behaviours (motives for engaging in RPA, frequency of RPA, duration of workout sessions, barriers to undertaking RPA, sports disciplines, etc.) of people working remotely. They show that the transition to remote working had a negative impact on RPA behaviours, primarily with regard to the frequency and length of workout sessions. The recreational activity of those working remotely decreased.

It is also necessary to point out the methodological aspects of the study. Research on RPA is most often conducted using quantitative methods of data collection and analysis. The introduction of qualitative data analysis provided an opportunity to broaden the scope of the study and thus better describe and explain changes in RPA behaviours. The conducted research is a continuation of the methodological theme of the authors' earlier research, which aimed to incorporate qualitative data analysis methods into the study of RPA behaviours (Kantyka et al., (2022). This is a novel approach worth pursuing in subsequent projects.

The applicative dimension of the study is relevant for employers and institutions responsible for public health policy. According to the MultiSport Index 2022 study, two out of three adult Poles (65%) are currently engaged in physical activity at least once a month, which means a decrease of 3 percentage points compared to the data from the previous year (68%) and at the same time a return to the value from before the outbreak of the pandemic. According to the WHO, the workplace is an environment where health promotion can and should take place. According to Kiema-Junes et al. (2022), promoting employees' leisure time and general physical activity can foster work commitment, although this shall be confirmed in longitudinal studies. An investigation carried out by Seviç and Başaran (2022) showed that recreational physical activity positively affected mental well-being scores and resulted in lower anxiety and phobia scores during

a lockdown. The results clearly show that the positive aspects of remote working/work from home need to be strengthened by additional measures to effectively motivate employees to be physically active. The local public and governmental institutions should support employers and citizens to improve their RPA.

Limitations

The main limitations of the study include the following:

- the use of respondents' self-assessments (the respondents' self-assessments weren't verified with other objective indicators);
- the selection of respondents was based on non-probability sampling (Babbie, 2013),
- the distribution of the questionnaire through social media and e-mail (restrictions during lockdown made it impossible to reach respondents in any other way; the use of the internet and social media in the research restricted the group of potential respondents, since 81.4%, 65% and 53% of Poles use the internet, e-mail, and social media, respectively¹;
- the relatively short period covered by the study (the research focused on the period covering the first wave of the pandemic and related restrictions).

Future directions for research are related to continuing the research on RPA behaviours and its conditioning by remote work/work from home, the effectiveness of the wellness strategies and the quality of recreational offerings of the local institutions (fitness clubs, NGO's, municipality). The methodological research on the use of quantitative methods of data collection and analysis should be developed in interdisciplinary studies on recreational activity.

Conclusion

The COVID-19 crisis provided an opportunity to examine changes in RPA behaviours. The aim of the article was to examine changes in people's recreational behaviours caused by the shift to remote working or work from home due to lockdowns introduced during the Covid-19 pandemic. The literature review showed that the pandemic has had an uncommon impact on the acceleration of the development of remote work, which brought positive and negative effects.

The research results and their discussion, presented above, allow for the formulation of cognitive, methodological and application conclusions. The results of the

¹ Information Society in Poland in 2020.

study clearly show that shifting to RW/WFH affected the respondents' lifestyles and RPA behaviours. During the pandemic, the lives of those who worked remotely was characterised by less frequent and shorter periods of recreational activity. The study presents new insights and bridges a certain cognitive gap in this field.

From the methodological perspective, it is worth underlining that the application and combination of qualitative and quantitative methods of data analysis is an effective approach to solving the scientific problem. Even though the qualitative methods imposed more limitations, they deepened our understanding of the background and quantitative results of the research. Qualitative tools such as the affinity diagram and relations diagram are taken from the toolbox dedicated to quality management methods, and their use in this research proved their universality.

The applicative dimension of the study is relevant for employers and policymakers. Employers should design and implement corporate wellness strategies to ensure the health, well-being and work-life balance of employees and students working and learning on a remote basis. Public health policy should be reviewed to improve support for employers and to secure funds and organisational support for the creation of proper recreational options for local citizens.

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