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ORIGINAL RESEARCH PAPER

MINDFUL-BASED DANCE MOVEMENT THERAPY FOR EMOTION REGULATION SKILLS DEVELOPMENT AND PAIN REDUCTION IN PATIENTS WITH CHRONIC LOW BACK PAIN

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Abstract

Chronic low back pain (CLBP) is a global problem. Mindful-based methods are used in CLBP rehabilitation, improving emotion regulation skills (ERS) and decreasing pain, including a newly developed intervention Mindful-Based Dance Movement Therapy (MBDMT). Objective: to determine whether the 10x MBDMT in a group improves ERS and reduces pain for CLBP patients. Material and methods: randomized controlled trial N=34; experimental group (n = 13, MBDMT twice a week, 10x, 1,5h): age M=44.23, SD=8,61; male n=1, female n=12; control group (n=21, without MBDMT): age M=42.62, SD=10.35; male n=3, female n=18. Inclusion: low back pain intensity at least 1 (NRS) >3 months; age 25–65 years; ERSQ-27 total <4; spondylosis; lumbosacral disc disorders. Exclusion: acute/subacute pain; cancer; trauma; pregnancy; dance therapy contraindications. Instruments: Emotion Regulation Skills Questionnaire-ERSQ-27; Pain Numeric Rating Scale-NRS; sociodemographic questionnaire. Measurements: ERS with ERSQ-27 for both groups before/after the intervention; pain with NRS for both groups twice a week during the intervention. Results: higher ERS index in the experimental group, compared to the control group (U=55.00, p=0.003) after MBDMT. A decrease in pain intensity for the experimental group (T=-1.98, p=0.048).

Conclusion: there are tendencies for MBDMT to improve ERS and decrease pain in CLBP patients, also there is a need for a larger research group for more significant results.

Keywords: *emotion regulation skills; chronic low back pain; mindfulness; dance movement therapy.*

Introduction

CLBP is one of the major leading causes for long-term disability for the male and female population in 195 countries, including Latvia (*GBD 2017 Disease and Injury Incidence and Prevalence Collaborators*, 2018). In recent years there is growing evidence and recommendations for mindful-based methods in CLBP rehabilitation (*Qaseem et al.*, 2017), as well as for the biopsychosocial approach to address nonspecific CLBP patients (*Foster et al.*, 2018). Mindful-based methods for chronic conditions have become more and more popular in the rehabilitation setting during the last years, and there is growing evidence for the mindful-based approach to decrease subjective pain intensity for patients with chronic conditions, including CLBP (*Zou et al.*, 2019).

As World Health Organisation defines, "pain is an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage. Chronic pain is pain that persists or recurs for longer than three months". (World Health Organization [WHO], 2019) Based on several studies Jensen has developed a neuropsychological model of pain, which has been used widely in mindful-based chronic pain rehabilitation and research. The neuropsychological model of pain describes the central nervous system's (CNS) relationship with subjective pain experience - pain is experienced when CNS systems (prefrontal cortex, anterior cingulate cortex, sensory cortex, insula) have been activated with or without the activity of the peripheral nervous system at the exact moment. Thoughts, emotions, physical and sensory information affects subjective pain perception and intensity (*Jensen*, 2010). It has been proven that there is a link between such structures as the limbic system and cortex, which manifests, in a way, that a mindful emotional experience reduces chronic pain symptoms. When the anterior cingulate cortex (ACC) is activated with mindful emotional experience (for example, labelling emotions), it activates the parasympathetic nervous system stimulating n.vagus and regulating emotional response reactions (*Appelhans & Luecken*, 2006). There is a hypothesis that mindful-based methods could be effective in rehabilitation for CLBP patients, but there is still a need for more research to prove that (*Jensen et al.*, 2014). Mindful-based methods in dance movement therapy have shown an improvement in self-regulation, including emotion regulation, for patients with chronic conditions, also for CLBP, but

there is a necessity for further research for more significant results (*Payne & Brooks, 2017*).

The theoretical base for the current research has been based on the cognitive behavioural (KBT) approach and on KBT third wave that includes the mindful-based approach (*Kabat-Zinn, 2003*). Adaptive emotion regulation has been conceptualised as the interaction between seven ERS defined as 1) the ability to be consciously aware of emotions; 2) the ability to identify and correctly label emotions; 3) the ability to identify what causes and maintains an emotion; 4) the ability to actively modify emotions adaptively; 5) the ability to accept and tolerate negative emotions when necessary; 6) the ability to approach and confront situations that are likely to trigger negative emotions; 7) the ability to provide effective self-support in distressing situations including a) self-compassion; b) self-encouragement; c) active self-coaching, that are grouped in nine scales of ERSQ-27 (*Berking & Whitley, 2014*). (Table 1) MBDMT is a mindful-based therapeutical intervention based on KBT third wave approach. MBDMT has been created in a group setting to develop such skills as mindfulness, self-regulation and adaptive ERS through a body-mind approach and creative process for patients with chronic pain, including CLBP and incorporates several basic principles (*Majore-Dusele et al., 2021*). (Table 1)

The objective of the study: to determine whether the short term MBDMT in a group setting improves ERS and helps to decrease subjective pain intensity in patients with CLBP.

Materials and Methods

Participants. Participants were included as volunteers and those who had signed an informative consent of the study. There were two ways participants were recruited for the research: 1) by cooperation with doctors (general practitioners, neurologists) who screened potential participants by inclusion/exclusion criteria; 2) through a social network (*Facebook*) – in this case, potential participants had to visit their doctor (general practitioner/neurologist) and to provide a signed doctor's confirmation of adequacy for inclusion/exclusion criteria.

Inclusion criteria for the experimental and for the control group: pain at least 1 (NRS) at the lower back for more than three months; age 25 – 65 years old; signed informative consent of the research; ERSQ-27 total index <4; at least one of the following diagnosis (ICD-10): M54.5; M47 – including M47.0, M47.1., M47.2, M47.8, M47.9; M51 – including M51.0, M51.1, M51.2, M51.3, M51.4, M51.8, M51.9 (World Health Organization [WHO], 2016). Exclusion criteria for both groups: acute or subacute low back pain; history of cancer/metastasis; cerebral palsy; spinal cord trauma; history of central nervous system traumatic event; pregnancy in less than

two years; dance movement therapy contraindications: acute state of health (surgical necessity, acute psychosis); infection disease, autoimmune or metabolic pathology; traumatic damage; inner organ pathology (gynaecologic, urologic etc.); the participant does not understand or does not speak Latvian.

At the beginning $n=45$ participants were included, the experimental group $n=24$, the control group $n=21$. Participants were randomly allocated, using stratified block method, into an experimental and a control group by gender (male, female) and by age (40 years old and less, more than 40 years old), experimental: control = 1:1 (Altman et al., 2011). During the research, $n=11$ participants from the experimental group were not able to continue the therapy because of a sudden Covid-19 restrictions in Latvia, which resulted in 45.8% drop out from the experimental group. MBDMT results were analysed only from those who managed to complete the therapy before Covid-19 restrictions, $N=34$ (the experimental group $n=13$; the control group $n=21$).

Both groups were compared by gender, age, education level, the ERSQ-27 total index and pain intensity level (NRS) before the intervention and was not statistically different from each other in those. Mean age for the experimental group $M=44.23$, $SD=8.61$ years (min=32, max=59 years) and for the control group $M=42.62$, $SD=10.35$ years (min=25, max=61 years), age is not statistically different between groups (Mann-Whitney $U=120.50$, $p=0.576$). Gender division as follows: for the experimental group male $n=1$, female $n=12$ and for the control group male $n=3$, female $n=18$, both groups are similar by gender division (Fisher's Exact Test, $p>0.999$). Education level division: the experimental group (higher professional education $n=2$, 15.4%; master's degree $n=2$, 15.4%; college $n=2$, 15.4%; bachelor's degree $n=6$, 46.2%; high school $n=1$, 7.7%) and the control group (higher professional education $n=5$, 23.8%; master's degree $n=4$, 19.0%; college $n=4$, 19.0%; bachelor's degree $n=5$, 23.8%; high school $n=3$, 14.3%). Both groups were not statistically different in education (Fisher's Exact Test, $p=0.816$). ERS by ERSQ-27 total index for the experimental group $M=2.51$ ($SD=0.60$; min=1, max=5.15) and for the control group $M=2.42$ ($SD=0.58$; min=1.59, max=3.33), both groups did not statistically differ in ERS (Mann-Whitney $U=119.500$, $p=0.552$). Pain measurements (NRS) were analysed from less participants, because $n=7$ (33.3%) from the control group did not send pain measurements and $n=1$ (7.7%) from the experimental group did not attend last MBDMT session. Subjective pain intensity was analysed from experimental group $n=12$: pain index (NRS) $M=3.80$ ($SD=0.79$, min=2, max=5) and from control group $n=14$: pain index (NRS) $M=4.64$

(SD=1.87, min=2, max=8). Subjective pain levels did not differ between groups before MBDMT (Mann-Whitney U=109.00, p=0.212).

Instrumentation. Sociodemographic data from participants were collected using a sociodemographic questionnaire online www.visidati.lv: age, gender, education level, duration of pain, localization of pain.

To measure ERS of participants, the Emotion Regulation Skills questionnaire, ERSQ-27; Berking & Znoj, 2008; adapted in Latvian by Paiča & Mārtinsone, 2019, was used. Permission to use the ERSQ-27 Latvian version was obtained from I. Paiča before the use of the questionnaire. The ERSQ-27 has been developed to measure ERS based on the Adaptive Coping with Emotions Model – ACE (Berking & Whitley, 2014). The ERSQ-27 consists of two parts – A and B. Only part B was used in the current research. Part B of the ERSQ-27 consists of 27 statements based on ERS by the ACE model. Answers are presented as Likert scale from 0 to 4 (0 – not at all; 1 – rarely; 2 – sometimes; 3 – often; 4 – almost always). The ERSQ-27 part B measures ERS that are divided into nine scales. For each scale, there are specific ERS in MBDMT theoretical model. (Table 1) The mean value is calculated for each scale and for the ERSQ- 27 total. The higher the value, the better developed ERS (Berking & Whitley, 2014). The ERSQ-27 Latvian version has good validity and reliability results, as well as the original ERSQ-27 questionnaire (Paiča & Mārtinsone, 2019).

To measure subjective pain levels for participants Numeric Rating Scale – NRS was used (Jensen et al., 1986). NRS measures the subjective intensity of pain. NRS has been proven to be used for patients with low back pain (Chiarotto et al., 2019). NRS 11-point scale 0 – 10 was used in the current research, where “0” was “no pain at all” and “10” was “the worst pain ever experienced” (Jensen et al., 1986).

Procedure. The current research as a master thesis has been done within the doctoral thesis of the research “The Development of Mindful-Based Dance Movement Therapy Intervention for Chronic Pain in Psycho-emotional Rehabilitation” by author Indra Majore–Dūšele. The doctoral thesis, including the current research, has been approved by Riga Stradins University ethical committee No.6-3/2/43; 02/28/2019. All therapists, including the author of the study, were included in MBDMT intervention as group leaders, and they had been last year students of the Dance and Movement therapy master’s degree program of Riga Stradins University. Before the MBDMT intervention was started, all students – therapists participated in a 24-hour practical course of MBDMT method learning. The course was led by the author of MBDMT – Indra Majore-Dusele 03.07.2020 to 05.07.2020. in Riga, Latvia. After the course, students – therapists

received a confirmation of MBDMT intervention learning and permission to use it for research purposes.

Participant recruitment for the research took place from 1st of August 2020 till 20th of November 2020 in the region of Riga, Latvia. The data were collected from 01.09.2020. till 29.11.2020. In the beginning, communication with potential participants was held by e-mails and potential participants were recruited in two ways: 1) by cooperation with doctors (general practitioners, neurologists) who screened potential participants by inclusion/exclusion criteria; 2) through a social network (*Facebook*) – in this case, potential participants had to visit their doctor (general practitioner/neurologist) and to provide a signed doctor's confirmation of adequacy for inclusion/exclusion criteria. After that, a telephone interview was done with potential participants to evaluate if a potential participant is suitable for group therapy. After that, the electronic access for the ERSQ-27 questionnaire, sociodemographic questionnaire and informative consent was sent to potential participants. Based on all inclusion/exclusion criteria participants were selected and randomised as described before.

MBDMT intervention took place from 17.09.2020. till 29.11.2020. in dance movement therapy centre. For the experimental group, there were 10 MBDMT sessions twice a week, five weeks, session length 1,5h. MBDMT sessions are described in table 1. (Table 1) The experimental group was divided into several small therapeutic groups – 5 to 10 people in one group. Each group was led by one student – therapist. Regular supervisions were held for students – therapists regarding MBDMT groups. Subjective pain levels (NRS) for the experimental group were measured each session, at the beginning of the session, on paper slips that were collected from participants each session. For the control group, MBDMT intervention was not done and the only thing the control group had to do was to measure their own subjective pain levels (NRS) 2x in a week, five weeks at the same NRS scale as for the experiment group. The only difference – NRS measurements for the control group were made in electronic format, and after all the measurements were collected, participants sent them to researchers electronically. For the control group, reminders were sent to their smartphones twice a week to measure their pain levels. After the intervention, both groups were required to do the electronic ERSQ-27 questionnaire for the second time.

To ensure data confidentiality and protection, results were analysed in a summarised way only, and data were encrypted.

Table 1

Mindful – based dance movement therapy (MBDMT) and emotion regulation skills (ERS) theoretical model and therapy session plan for CLBP patients

MBDMT SESSION S NR.	MBDMT BASIC PRINCIPLES (Majore-Dūšele et al., 2021)	MBDMT SESSION THEMES (Majore-Dūšele et al., 2021)	EMOTION REGULATION SKILLS (ERS) (Berking & Whitley, 2014)	ERSQ-27 SCALES, Latvian adaptation (Paīca & Mārtinsons, 2019)
1.	Mindfulness skills (attention, attitude, inner observer)	Introduction. Awareness of body and movement.	1) the ability to be consciously aware of emotions; 2) the ability to identify and correctly label emotions; 3) the ability to identify what causes and maintains an emotion; 7) the ability to provide effective self-support in distressing situations including a) self-compassion.	ATTENTION TOWARDS FEELINGS BODY PERCEPTION OF FEELINGS
2.	Body awareness	My body; stability; balance; grounding; body in movement.		
3.	Relaxation/ releasing	Body; feelings and sensations; emotions; thoughts in my body; exploring movement polarities.	7) the ability to provide effective self-support in distressing situations including:	CLARITY OF FEELINGS
4.	Relaxation/ releasing	My body; releasing of emotions; connection to others; safe space.	b) self-encouragement.	UNDERSTANDING OF FEELINGS
5.	Distancing/staying with discomfort	My body; my feelings; my emotions and thoughts. My personal space/boarders.	5) the ability to accept and tolerate negative emotions when necessary. 6) the ability to approach and confront situations that are likely to trigger negative emotions.	ACCEPTANCE OF FEELINGS
6.	Distancing/staying with discomfort	My body; movement metaphors. Attention to pain.		RESILIENCE: TOLERATE AND ENDURE FEELINGS

Table 1 countiniu

7.	Distancing/s taying with discomfort	Experience of pain		READINESS TO CONFRONT UNDESIRED EMOTIONS
8.	Meaning making	Relationships with pain	5) the ability to accept and tolerate negative emotions when necessary;	
9.	Self- regulation	Acceptance of pain	4) the ability to actively modify emotions in an adaptive way; 7) the ability to provide effective self-support in distressing situations including: b) self-encouragement; c) active self-coaching.	SELF- SUPPORT MODIFICATION
10.	Acceptance/ integration	Compilation. Saying goodbye.	The ability to adaptively use all ERS	

Note. MBDMT – mindful based dance movement therapy; ERS – emotion regulation skills; ERSQ-27 – Emotion Regulation Skills questionnaire.

Data analysis. Research data were analysed in the statistics program SPSS version 21. Descriptive statistics were used to evaluate sociodemographic data: mean, standard deviation, normal distribution. To answer research questions, inferential statistics were used, only nonparametric statistical methods were used in all data analysis regarding the small sample size: Wilcoxon Signed Rank test, Mann – Whitney U – test, Cronbach’s Alpha.

Results

ERS analysis for CLBP patients after MBDMT. Before analysing results, a Cronbach’s alfa (α) was calculated for each scale and total index of the ERSQ-27 Latvian version (part B) for the sample size. Here data were taken from the ERSQ-27 first-time answered data before the intervention. Fair internal consistency was calculated for the ERSQ-27 scales: attention towards feelings ($\alpha - 0.76$), body perception of feelings ($\alpha - 0.78$), clarity of feelings ($\alpha - 0.72$), understanding of feelings ($\alpha - 0.71$) and modification ($\alpha - 0.71$). Good internal consistency was calculated for scales: readiness to confront undesired emotions ($\alpha - 0.86$), self-support ($\alpha - 0.80$). Poor internal consistency was calculated for scales: resilience: tolerate and endure feelings ($\alpha - 0.58$) and acceptance of feelings ($\alpha - 0.62$). For the total

ERSQ-27 index internal consistency was calculated as excellent and strong ($\alpha = 0.94$) for the sample size.

For the ERSQ-27 total, as well as for each ERSQ-27 scale, the difference after the intervention was calculated as a subtraction between two measurements – before and after MBDMT for each group. Results were compared as dependent and independent samples as well. Statistically significant differences were noticed for five ERSQ-27 scales after MBDMT, comparing both groups, as well as for the total index of the ERSQ-27. (Table 2) Although there were no significant differences in each group independently, results show tendencies for ERS development in the experimental group and for ERS reduction in the control group after intervention. The total index of the ERSQ-27 differs statistically significantly between groups after intervention (Mann – Whitney U – test, $U=55.00$, $p=0.003$) with a tendency to improve for the experimental group and reduce for the control group, making a statistically significant difference after the intervention. Results show statistically significant differences also in the ERSQ-27 scales: attention towards feelings (Mann – Whitney U – test, $U=78.00$, $p=0.039$); body perception of feelings (Mann – Whitney U – test, $U=72.50$, $p=0.022$); clarity of feelings (Mann – Whitney U – test, $U=67.00$, $p=0.013$); understanding of feelings (Mann – Whitney U – test, $U=67.00$, $p=0.006$) and self – support (Mann – Whitney U – test, $U=51.00$, $p=0.002$) compared between both groups after the MBDMT with a tendency to improve for the experimental group and to reduce ERS for the control group making that significant difference only between groups after intervention. (Table 2)

Table 2

Results for the ERSQ-27 total and the ERSQ-27 scales showing statistically significant difference after MBDMT for patients with CLBP

ERSQ - 27 scales		Mdn (IQR)		p value (b)
		Experimental group, n=13	Control group, n=21	
1. Attention towards feelings	Mdn difference	0.00 (- 0.33 -0.17)	0,00 (-0.50 - 0.67)	0,600
	Mdn before MBDMT	2,67 (2,33 - 3,00)	2,67 (1,67 - 3,00)	0,753
	Mdn after MBDMT	3,00 (2,50 - 3,00)	2,00 (1,67 - 2,83)	0,039
	p value (a)	0,429	0,584	
2. Body perception of feelings	-			
	Mdn difference	-0,33 (- 0.83 - 0.33)	0,33 (- 0.67 - 1,33)	0,158
	Mdn before MBDMT	2,67 (2,17 - 3,00)	2,33 (2,00 - 3,00)	0,972
	Mdn after MBDMT	3,00 (2,67 - 3,17)	2,00 (1,83 - 2,83)	0,022
	p value (a)	0,304	0,373	

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3. Clarity of feelings	-			
	Mdn difference	0,00 (- 0,33 - 0,33)	0,00 (- 0,50 - 0,83)	0,529
	Mdn before MBDMT	2,67 (2,67 - 3,17)	2,67 (2,00 - 3,00)	0,506
	Mdn after MBDMT	3,00 (2,67 - 3,00)	2,33 (2,00 - 2,83)	0,013
	p value (a)	0,791	0,429	
4. Understanding of feelings	-			
	Mdn difference	0,00 (- 0,67 - 0,67)	0,33 (- 0,50 - 1,00)	0,089
	Mdn before MBDMT	2,67 (2,33 - 3,00)	2,33 (1,83 - 3,00)	0,675
	Mdn after MBDMT	3,00 (2,33 - 3,00)	2,00 (1,50 - 2,50)	0,006
	p value (a)	0,339	0,150	
5. Self-support	-			
	Mdn difference	0,00 (- 0,83 - 0,33)	0,00 (- 0,33 - 0,67)	0,193
	Mdn before MBDMT	3,00 (2,33 - 3,33)	2,67 (2,00 - 3,33)	0,506
	Mdn after MBDMT	3,00 (2,67 - 3,17)	2,33 (2,00 - 2,67)	0,002
	p value (a)	0,298	0,272	
Total ERSQ -27 index value	-			
	Mdn difference	- 0,04 (- 0,19 - 0,22)	- 0,04 (- 0,85 - 0,39)	0,506
	Mdn before MBDMT	2,70 (2,33 - 2,93)	2,26 (1,91 - 2,92)	0,552
	Mdn after MBDMT	2,70 (2,46 - 2,78)	2,04 (1,88 - 2,43)	0,003
	p value (a)	0,844	0,350	

Note. Mdn – median, IQR – interquartile range, a – Wilcoxon Signed Rank test, b – Mann – Whitney U test, N = 34.

Subjective pain intensity for CLBP patients after MBDMT. Subjective pain intensity difference after the intervention was calculated as a subtraction between two measurements – before and after MBDMT for each group. Results were compared as dependent and independent samples as well. NRS data for analysis were taken from sample size N 26 (experimental group n=12, control group n=14) to include only those who had provided both measurements before and after MBDMT for researchers.

Table 3

Subjective pain intensity before and after MBDMT and the difference after MBDMT for people with CLBP

Subjective pain intensity (NRS)	Mdn (IQR)		p value (b)
	Experimental group, n = 12	Control group, n = 14	
Pain difference (before, after) MBDMT	1.00 (0.25 – 3.00)	0.00 (- 1.00 – 2.25)	0.231
Pain before MBDMT	4.00 (3.75 – 4.00)	5.00 (2.75 – 6.00)	0.212
Pain after MBDMT	2.50 (1.00 – 4.25)	4.00 (2.00 – 7.00)	0.131
p value (a)	0.048	0.592	

Note. Mdn – median, IQR – interquartile range, a – Wilcoxon Signed Rank test, b – Mann – Whitney U test, N = 26.

After the intervention, subjective pain intensity was reduced for both groups, but only for the experimental group with a statistically significant reduction and with a positive median value, which means a reduction in pain intensity (Wilcoxon Signed Rank test, $T = -1.98$, $p = 0.048$) and for the control group no significant changes were noticed (Wilcoxon Signed Rank test, $T = -0.536$, $p = 0.592$).

Although after comparing changes in pain intensity between groups, there is no significant difference (Mann – Whitney U – test, $U = 60.50$, $p = 0.231$), also there is no significant difference comparing results after MBDMT between groups (Mann – Whitney U – test, $U = 113.5$, $p = 0.131$). (Table 3)

Discussion

Findings show higher ERS in the experimental group compared to the control after the intervention. Although ERS index median has not changed before and after the intervention for the experimental group, the index value for the control group has a nonsignificant decrease after the intervention making a statistically significant difference after therapy. The author explains these results with having a short period of time of MBDMT. The length of therapy was only five weeks, ten sessions. Other randomized – controlled trial suggests that at least eight weeks are needed to improve ERS by mindful-based methods, although the best results for ERS development show up practicing mindfulness-based methods in the long term for patients with chronic pain (Gawande *et al.*, 2019) or eight weeks at least (de Jong *et al.*, 2016), or 12 weeks (Payne & Brooks, 2017). Previously mentioned studies suggested that the period was too short for MBDMT to significantly improve ERS for CLBP patients. Considering that internal consistency (Cronbach's alpha) of the ERSQ-27 total score was excellent for the current research group, results indicate a tendency for MBDMT to improve ERS, but there is a need for more research with a larger research group for more significant results.

Previously described results could be explained more by looking at the specific ERSQ-27 scales and ERS together with MBDMT theoretical model. (Table 1) A statistically significant difference between groups was calculated after the MBDMT for five ERSQ-27 scales from a total of nine: 1) attention towards feelings; 2) body perception of feelings; 3) clarity of feelings; 4) understanding of feelings; 5) self – support, where internal consistency of scales was calculated as fair and good. A similar pattern as for the ERSQ-27 total showed up for four ERSQ-27 scales: 1) attention towards feelings; 2) body perception of feelings; 3) clarity of feelings; 4) understanding of feelings - there were no significant differences in each group independently, but results showed tendencies for nonsignificant ERS

development in the experimental group and ERS reduction in the control group after the intervention, making the statistically significant difference between groups. Based on MBDMT theoretical model, results show that several mindfulness skills could be activated such as mindfulness skills (attention, attitude, inner observer) and body awareness (*Majore-Dusele et al.*, 2021) that develops ERS: the ability to be consciously aware of emotions based on the ERSQ-27 scales 1) attention towards feelings and 2) body perception of feelings (*Berking & Whitley*, 2014). Also, results show the activation of such mindfulness skills as relaxation/releasing (*Majore-Dusele et al.*, 2021) that develop ERS: the ability to identify and correctly label emotions based on the ERSQ-27 scale 3) clarity of feelings. Also developing ERS: the ability to identify what causes and maintains an emotion based on the ERSQ-27 scale 4) understanding of feelings (*Berking & Whitley*, 2014). For the fifth of ERSQ-27 scale 5) self – support, statistically significant difference between both groups was calculated after the intervention, but only because of a tendency to a nonsignificant median value decrease for the control group. The ERSQ-27 scale “self-support” includes ERS: the ability to provide effective self-support in distressing situations (*Berking & Whitley*, 2014) that could be activated through principles of self-regulation, acceptance/integration of pain from the MBDMT theoretical model (*Majore-Dusele et al.*, 2021). (Table 1)

Such results – a tendency for nonsignificant improvement or maintenance of the specific ERS and the ERSQ-27 total for the experimental group and decrease in the control group, making a statistically significant difference after the intervention, have been explained as follows. Both groups were measuring their subjective pain levels twice a week, which means they were often focused on their pain. There is proof that focusing on pain could be stressful and could provide emotional distress. In Jensen’s neuropsychological model of pain (*Jensen*, 2010) thoughts, attention towards feelings and sense of control affects the anterior cingulate cortex – ACC that is responsible for affective part of the chronic pain response mechanism (*Apkarian et al.*, 2005). There is some proof that mindful emotional experience activates ACC and the parasympathetic nervous system, creating an adaptive emotional response reaction (*Appelhans & Luecken*, 2006). Mindfulness skills and adaptive self-regulation are trained through MBDMT (*Majore-Dusele et al.*, 2021), using a creative environment and movement metaphors where emotions, images, feelings and thoughts are integrated with movement and verbally reflected, stimulating adaptive emotional self-regulation (*Payne & Brooks*, 2018). For the experimental group, there were MBDMT that provided tools and skills such as mindfulness, relaxation/releasing, self-regulation, acceptance/

integration, that could help the experimental group to regulate their emotions and anxiety when doing pain measurements. Contrary to the control group - they did not have those tools that explain the decrease of ERS for them.

Previously discussed results are not significant enough to convincingly claim that there was an improvement for ERS, and there is a need for future research with a larger research group, but results show up a tendency for MBDMT to improve such ERS as the ability to be consciously aware of emotions; the ability to identify and correctly label emotions; the ability to identify, what causes and maintains an emotion; the ability to provide effective self-support in distressing situations.

A statistically significant reduction was found in subjective pain levels for the experimental group after MBDMT. However, comparing changes in pain intensity between groups, there was no significant difference, as well there was no significant difference comparing results after MBDMT between groups. The effectiveness of using mindful-based methods is proven to decrease subjective pain intensity for CLBP patients also in other randomised - controlled trials in recent years (*Zou et al.*, 2019). There is growing evidence that supports mindful-based methods effects on the central nervous system and mechanisms that are involved in the response of chronic pain as well (*Jensen et al.*, 2014). In another randomised – controlled trial, 116 people with CLBP received a mindful-based stress reduction therapy for eight sessions once a week for two hours, and the most significant decrease of subjective pain intensity CLBP patients marked after 26 weeks compared to the control group, even though measurements were also taken after 4, 8, 52 weeks. The authors of this research have concluded that their results are similar to other studies where a significant reduction in pain was noticed after a long term mindful-based therapy (*Cherkin et al.*, 2016). Considering the previously discussed data, results of the current research suggest a tendency to reduce subjective pain intensity after MBDMT, but for a more significant outcome, future research with a larger group and follow up measurements are needed.

To interpret the results of current research, some restrictions and limitations must be taken into consideration. There was 45,8% participant drop-out from the experimental group due to sudden Covid-19 restrictions in Latvia that negatively influenced the reliability of the obtained data; insufficient engagement from the control group till the end of the study; some people from the experimental group missed 1 – 2 sessions of MBDMT; participants were volunteers; there was no blinding; all participants were from one region and there was a small sample size. The scientific strength of the results is doubtful because of the previously

mentioned restrictions and limitations. Results have practical implications that could be useful for medical professionals working with CLBP patients.

Conclusions

To summarize, there are tendencies for MBDMT to improve total ERS and specific skills such as the ability to be consciously aware of emotions, the ability to identify and correctly label emotions, the ability to identify what causes and maintains emotions, the ability to provide effective self-support in distressing situations. As well, there is a tendency for MBDMT to decrease subjective pain intensity in patients with CLBP, but there is a need for future research with a larger research group for more significant results.

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ORIGINAL RESEARCH PAPER

SELF-REGULATED LEARNING, TRAINING SATISFACTION AND PERCEIVED COMPETENCE OF YOUNG ATHLETES DURING COVID-19 PANDEMIC PERIOD

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Abstract

The aim of this study was to evaluate the perceived competence and satisfaction of Young Athletes at their training and determine the peculiarities of Self-regulated learning during Covid-19 conditions. In this research, we adopted three scales: Self-Regulated Learning Scale (SRL-SRS) (8 subscales with 53 items), Perceived Competence for Learning Scale (PCLS), and Sport Satisfaction Instrument (SSI). In this study, 452 respondents (male – 278, 61.5%; female – 174, 38.5%) (Team sports – 226; individual sports – 226) were analyzed. Age varied from 13 to 19 years old (average 15.85 ± 1.45). Conclusions. The instrument is multidimensional, because of its complexity and it needs further investigation when trying to adapt to a Lithuanian population. The Adopted Self-regulated learning Scale was characterized by good internal compatibility and is suitable for data analysis, but the next step is to prepare a shorter version of SRL. It is important to adopt a shorter version for Coaches and Athletes to make it more easier to implement it into the coaching practice. Such results were obtained, because of the Covid-19 pandemic peculiarities. For further investigation we need to receive more data from usual trainings, not including distance/remote learning and distance/remote coaching.

Keywords: *Self-regulated learning, young athletes, perceived competence, sport satisfaction*

Introduction

The Covid-19 Pandemic period was a challenging time for various fields. This Pandemic changed the world and restricted the freedom to live, communicate, work, travel, engage in favorite activities. The Impact is especially felt in the areas of Physical Activity and Sports. In order to meet these new challenges, we need to be able to cope with the challenges and barriers that arise. Self-regulated learning (SRL) can help to adapt to change.

Self-regulation is a construct that consists of: planning, goal setting, challenge acceptance, evaluation, reflection, self-control or self-reflection, concentration, effort (McCardle et al., 2018). Self-regulated learning (SRL) in education is a construct about learning styles, metacognition and regulation styles, goal-directed behavior. SRL focuses on how learners actively manage their own learning.

Self-regulated learning focuses on how learners actively manage their learning by planning, monitoring, and applying appropriate techniques and methods (Winne and Hadwin, 1998; Zimmerman, 1998, 2000). Self-regulation is thought to involve processes that allow individuals to control their thoughts, feelings, and actions (Baumeister & Vohs, 2004). The various perspectives on self-regulated learning have at least four important assumptions (Pintrich, 2000): (a) learners are active representatives of their learning processes; (b) learners can control their cognition, motivation, behavior and some aspects of the environment; (c) learners have goals or criteria that guide action and form the basis for metacognitive decisions; (d) Self-regulated learning processes strengthen the link between desired outcomes and personal characteristics by adapting to different contexts.

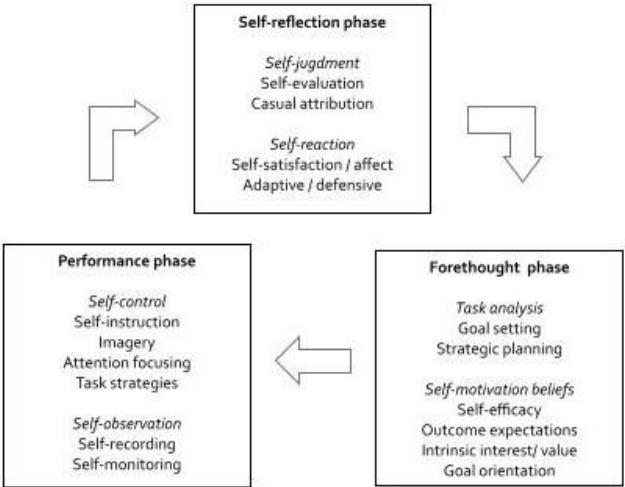


Figure 1. Cyclical phases and sub-processes of SRL (Zimmerman, 2000)

Conceptual models of self-regulated learning are mainly based on (a) metacognition, as learners are able to regulate when they know and control their cognition; and (b) motivation, as engaging in metacognitive and behavioral control requires a lot of effort (Zimmerman, 2011).

The cyclicity of self-regulation consists of the following three phases: Self-reflection, Forethought, and Performance (Fig. 1).

The Perceived Competence Scale (PCS) is associated with feelings and behaviors (Williams, et al., 1998; Williams & Deci, 1996). This is a short 4-point questionnaire that assesses how much participants feel confident in changing (or maintaining) behavior, participating in or implementing educational programs. It has been found that people, who feel more competent about a particular behavior are more likely to change and sustain change and show better results. Better acknowledged Perceived Competence is associated with better academic performance (Obach, 2003).

According to the authors (Pelikan et al., 2021) students, who consider themselves highly competent use self-regulated learning strategies (goal setting and planning, time management, metacognitive strategies) more often and are more fundamentally motivated than students of lower perceived competencies. The study revealed that students, who perceived themselves as highly competent, appeared to be better able to cope with the challenges posed during the Covid-19 pandemic (Pelikan et al., 2021).

Job satisfaction determines motivation and involvement and survival in the chosen activity. Satisfaction with physical activity (Baños et al., 2020) mediates between maintaining autonomy and academic performance. However, boredom with physical activity did not mediate between support for autonomy and student achievement (Baños et al., 2020).

In our study, we sought to find out how young athletes perceive their competence and how the self-regulatory mechanism works during a pandemic, and how young athletes are satisfied with the ongoing training.

The aim of this study was to evaluate the perceived competence and satisfaction of Young Athletes at their training and determine the peculiarities of Self-regulated learning during Covid-19 conditions.

Material and methods

Participants. This research was done in the pandemic period (December, 2020). It was prepared questionnaire online. Collected data were analyzed comparing participants by gender, as well as by looking into differences between Team sport athletes and individual sport athletes.

In this study, 452 respondents (male – 278, 61.5%; female – 174, 38.5%) (Team sports – 226; individual sports – 226) were analyzed. Athletes from Team sports like Basketball, Football, Volleyball, Handball, Rugby, Field hockey, Water polo, Hockey and from Individual sports like

Track and Field Athletics, Judo, Greco-Roman wrestling, Boxing, Cycling, Tennis, Rowing, Powerlifting, Triathlon, Gymnastics, Skiing, Table tennis, Figure skating, Modern pentathlon, Taekwondo took part in this research. Age varied from 13 to 19 years old (average 15.85 ± 1.45). Detailed data are presented in Table 1.

Table 1

Information on the distribution of research participants by groups of sports, their age and training experience in the chosen sport

Sports by Groups	Participants			Age (X±SD)	Experience in years (X±SD)
	Total	Male	Female		
Team Sports	226	150	76	15.99±1.3	7.57±2.6
Individual Sports	226	128	98	15.72±1.6	5.55±2.9

Statistical analysis. Data analysis was performed using SPSS 26 and Jamovi software. Prior to the analysis, the data were checked for missing estimates in the respondents' responses. As most of the scale indicators are not distributed according to the normal distribution, non-parametric criteria were used in the data analysis.

Cronbach's α coefficients were calculated to assess the internal consistency of the scales used for the study and their subscales, and the structural validity of the scales was assessed by the correlation of the statements with the subscale coefficient ITC (Item-total Correlation) and the Cronbach's α coefficient after elimination of the statement (α e.t.). Although the minimum recommended internal compatibility threshold is 0.90 (Cronbach, 1951; Bernstein & Nunnally, 1994), very rarely do researchers achieve an ideal and an internal compatibility ratio of 0.7 is considered satisfactory for most scales (Boateng et al., 2018).

The suitability of the data for factor analysis was determined by evaluating the Spearman-Brown coefficient of increased confidence, the Kaiser-Meyer-Olkin measure, and the Bartlett sphericity test.

Confirmatory factor analysis was performed to isolate the factors. The suitability of the CFA model is assessed by the following reliability indices: CFI (Comparative Fit Index), TLI (Tucker-Lewis Index) and RMSEA (Root Mean Square Error of Approximation) (Moosburger & Kelava, 2012), Satorra-Bentler criterion (χ^2 / df) (Muthén, Muthén, 1998–2012). $CFI \geq 0.95$, $TLI \geq 0.95$, $RMSEA 0.05–0.08$, and $\chi^2 / df < 3.0$ indicate good model compatibility, indicators that do not meet these requirements do not support the model.

Research instrument. In this research, we adopted three scales: Self-Regulated Learning Scale (SRL-SRS) (8 subscales with 53 items) (McCardle et al., 2018), Perceived Competence for Learning Scale (PCLS), and Sport Satisfaction Instrument (SSI).

The Sport Practice Version of the Self-Regulated Learning — Self-Reporting Scale (SRL-SRS) consists of 8 subscales: planning, goals setting, self-monitoring, evaluating, reflecting, self-efficacy for challenges, effort, concentration. Cronbach's α of SRL-SRS – high 0.976; RMSEA – 0.0619 (must be lower than 0.08), CFI – 0.861, TLI – 0.852, χ^2 / df – 2.72. CFA (Confirmatory Factor Analysis) confirmed the model. The model is accepted when the score is from 0 to 0.08. Scores of CFI and TLI are a bit to low (must be higher then 0.9), but are close to 0.9.

The „Planning“ subscale consists of 9 statements (“I determine how to approach a practice task before I begin”; “Before practice tasks, I carefully plan my course of action”; “I try to understand the goal of a practice task before I begin”). it "; " I think about what a practice task requires me to do before I do it "; " I clearly plan my course of action before starting practice tasks "; " Before I do a practice task, I think through the steps in my mind "; " Before practice tasks, I figure out what I need to do to accomplish my goals "; " Before practice tasks, I consider the parts of the task I have to complete "; " I develop a plan for resolving difficulties at practice ”), Cronbach's α – high 0.857, Item-total Correlation ranged from 0.495 to 0.702.

The subscale “Goals setting” consists of 7 statements (“I consciously have goals in mind for how hard I want to work at practice”; “I prioritize the most important goals I have for practice”; “During practice, I consciously have goals in mind to improve how I train "; " Before practice tasks, I figure out my goals "; " I am aware of the outcomes I want to achieve during training "; " I set specific training goals for myself "; " I set personal training goals so I can check my progress ”), Cronbach's α – high 0.855, Item-total Correlation ranged from 0.533 to 0.700.

The subscale “Self-monitoring” consists of 4 statements (“I check how well I am doing during practice tasks”; “While I am engaged in a practice task, I know how much of it I still have to complete”; of my workout while doing it ”;“ I check my work all the way through a practice session ”), Cronbach's α – 0.728, Item-total Correlation ranged from 0.419 to 0.615.

The “Evaluating” subscale consists of 8 statements (“I look back to check if what I did in practice was right”; ”I compare my performance at practice with what I had done before”; procedures at practice "; " I evaluate whether I am getting better from practice to practice "; " I double-check to make sure I did practice tasks right "; " I compare my performance at practice with the goals that I have "; " After finishing, I look back on practice tasks to evaluate my performance "; " I look back to judge if the way I

practiced felt right"), Cronbach's α – 0.873, Item-total Correlation ranged from 0.497 to 0.719.

The „Reflecting“ subscale consists of 8 statements (“I reappraise my practice experiences so I can learn from them”; “I reflect about how I can practice things better next time”; “I reflect upon my actions at practice to see whether I can improve them”; “I think about my practice experiences so I can adjust my goals for practice”; “When thinking about my practice, I reflect about my strengths and weaknesses”; “I think about my past experiences at practice to gain new insights”; “I think about how practice has been going so I can plan for next time”; “I reflect on my practice in order to set new goals”), Cronbach's α – 0.896, Item-total Correlation ranged from 0.575 to 0.742.

The „Self-efficacy for challenges“ subscale consists of 5 statements (“I know how to handle unforeseen situations during practice, because I am resourceful”; “No matter what comes my way at practice, I am usually able to handle it”; “When facing difficulties at practice I can rely on my coping abilities”; “I am confident that I can deal efficiently with unexpected events at practice”; “When I am confronted with a difficulty during practice, I can usually find several solutions”), Cronbach's α – 0.871, Item-total Correlation ranged from 0.680 to 0.720.

The „Effort“ subscale consists of 6 statements (“Even when I don't like a task during practice, I work hard”; “I usually put forth my best effort when performing tasks at practice”; “I am willing to do extra practice on tasks in order to acquire more skill”; “I usually keep working hard even when sport training tasks become difficult”; “If I'm not really good at a task, I can compensate by practicing hard”; “I don't give up at practice even if a task is hard”), Cronbach's α – 0.898, Item-total Correlation ranged from 0.687 to 0.754.

The „Concentration“ subscale consists of 6 statements (“If I'm not really good at a task, I can compensate by fully concentrating”; “I concentrate fully when I do a task at practice”; “I do not lost my focus at practice, even if a task is hard”; “I usually block out distractors when performing sport training tasks”; “I usually stay focused even when tasks become difficult at practice”; “Even when I don't like a task during practice, I try to concentrate on what I'm doing”), Cronbach's α – 0.883, Item-total Correlation ranged from 0.671 to 0.752.

Sport Satisfaction Instrument (SSI) adapted to physical education (Baena-Extremuera et al, 2012) had two subscales „Fun“ and „Boredom“. Cronbach's α of SSI – high – 0.808, RMSEA – 0.0813, CFI – 0.967, TLI – 0.952, χ^2/df - 3.98.

Sport Satisfaction Instrument (SSI) had 2 subscales with 8 items. First subscale – Satisfaction/fun consists of 5 statements (“I usually have fun in the Training”; “I usually find Trainings interesting”; “In the Training, I usually find time flies”; “I usually get involved in the Training”; “I usually enjoy Trainings”) , Item-total Correlation ranged from 0.464 to 0.664.

The second subscale – Boredom – 3 statements (“I often daydream instead of thinking about what I’m really doing in the Training”; “In the Training, I am usually bored”; “In the Training, I usually wish the class would end quickly”). Item-total Correlation ranged from 0.302 to 0.570.

Perceived Competence for Learning scale (PCL) (Williams, et al., 1998; Williams & Deci, 1996) consists of 4 statements, which were adopted in sports practice (“I feel confident in my ability to learn in my Training”; “I am capable of learning the material in my Training”; “I am able to achieve my goals in my Training”; “I feel able to meet the challenge of performing well in my Training”). Cronbach's α of PCL in Sport – high – 0.855, Item-total Correlation ranged from 0.653 to 0.740.

Results

Subscale analysis shows that boys are more ready to meet the challenges ($p < 0.05$) than girls and they are more satisfied ($p < 0.01$) with their trainings in this pandemic period (Tab. 2).

Table 2

Gender differences in subscales

Subscales	Male		Female	
	M	SD	M	SD
Planning	4.05	.63	4.08	.61
Goal Setting	4.14	.67	4.12	.64
Self Monitoring	3.97	.71	3.95	.69
Evaluating	3.93	.77	3.99	.67
Reflecting	4.06	.72	4.13	.67
Self-efficacy for challenges *	4.06	.72	3.89	.76
Effort	4.26	.70	4.19	.74
Concentration	4.14	.71	4.12	.68
Perceived Competence	4.28	.69	4.23	.71
Satisfaction (Fun) **	4.44	.66	4.27	.76
Satisfaction (Boring)	1.96	.99	2.01	.99

* - $p < 0.05$; ** - $p < 0.01$

Data analysis showed that respondents from team sports are more satisfied with their trainings ($p < 0.05$) but athletes from individual sports are more prone to self-monitoring ($p < 0.05$) (Tab. 3).

Table 3

Sport specific differences in subscales

Subscales	Individual Sport		Team Sport	
	M	SD	M	SD
Planning	4.09	.67	4.04	.59
Goal Setting	4.16	.68	4.10	.64
Self-Monitoring*	4.04	.70	3.90	.69
Evaluating	3.98	.73	3.92	.74
Reflecting	4.12	.71	4.05	.69
Self-efficacy for challenges	3.99	.77	3.99	.69
Effort	4.21	.77	4.26	.66
Concentration	4.13	.73	4.13	.66
Perceived Competence	4.25	.77	4.28	.62
Satisfaction (Fun) *	4.29	.80	4.47	.58
Satisfaction (Boring)	1.99	.98	1.98	1.00

*- $p < 0.05$

In terms of perceived competence, no statistically significant differences were found between team and individual athletes (Tab 3). We also found no differences in terms of gender (Tab. 2).

When analysing differences in subscale items (Tab. 4), it was found that female athletes more often ($p < 0.05$) look back to check if what they did in practice was right and more often ($p < 0.05$) compare their performance at practice with what was done before. Male athletes more often are ready to meet the challenges in the practice so they more often mentioned to be usually able to handle unforeseen situations during practice because of resourcefulness ($p < 0.05$) and no matter what comes in their way at practice ($p < 0.05$).

Table 4

Differences in SRL subscale items by gender and sport

SUBSCALE	ITEM	GENDER	Mean	p	SPORT	Mean	p
SELF-MONITORING	05 I check how well I am doing during practice tasks.				Indiv	4.15	$p = 0.036$ $p < 0.05$
					Team	3.96	
	14 While I am engaged in a practice task, I know how much of it I still have to complete.				Indiv	4.29	$p = 0.038$ $p < 0.05$
					Team	4.12	

Table 4 contioniu

SUBSCALE	ITEM	GENDER	Mean	p	SPORT	Mean	p
EVALUATING	06 I look back to check if what I did in practice was right.	Male	4.08	p=0.025			
		Female	4.30	p<0.05			
	07 I compare my performance at practice with what I have done before.	Male	4.08	p=0.047	Indiv	4.23	p=0.034 p<0.05
		Female	4.27	p<0.05	Team	4.07	
	15 I look back to see if I did the correct procedures at practice.				Indiv	4.05	p=0.021 p<0.05
					Team	3.82	
	25 I compare my performance at practice with the goals that I have.				Indiv	4.02	p=0.029 p<0.05
					Team	3.87	
REFLECTING	18 I think about my practice experiences so I can adjust my goals for practice.				Indiv	4.18	p=0.046 p<0.05
					Team	4.03	
SELF-EFICACY for CHALLENGES	36 I know how to handle unforeseen situations during practice, because I am resourceful.	Male	3.91	p=0.004			
		Female	3.65	p<0.05			
	37 No matter what comes my way at practice, I am usually able to handle it.	Male	4.05	p=0.015			
		Female	3.83	p<0.05			

Athletes from individual sports had higher scores than team sports athletes ($p<0.05$) at Self-monitoring, Evaluating and Reflecting subscale items (Tab. 4).

Male athletes more than female athletes feel able ($p<0.05$) to meet challenge of performing well in their training. Male athletes usually have more fun ($p<0.01$), get involved ($p<0.05$) in the training and more enjoy trainings ($p<0.001$) (Tab. 5).

Table 5

Differences in perceived competence scale item and in satisfaction subscale items by gender and sport

SUBSCALE	GENDER	Mean	p	SPORT	Mean	p
Items						
PERCEIVED COMPETENCE	Male	4.40	p=0.04 p<0.05			
4. I feel able to meet the challenge of performing well in my Training	Female	4.26				
SATISFACTION/FUN	Male	4.55	p=0.003 p<0.01	Indiv	4.37	p=0.007 p<0.01
I usually have fun in the Training	Female	4.33		Team	4.58	
SATISFACTION/FUN	Male	4.52	p=0.023 p<0.05			
I usually get involved in the Training	Female	4.34				
SATISFACTION/FUN	Male	4.36	p=0.000 p<0.001	Indiv	4.08	p=0.001 p<0.01
I usually enjoy Trainings	Female	4.04		Team	4.4	
SATISFACTION/FUN				Indiv	2.2	p=0.011 p<0.05
In the Training, I usually wish the class would end quickly				Team	1.89	

Athletes from team sports have usually more fun in the training ($p<0.01$), more often enjoy trainings ($p<0.01$) and less wish the class would end quickly ($p<0.05$) (Tab. 5).

Discussion

In our study, the statements in the questionnaire were applied to sports practice. We used Self-regulated learning scale (53 Items), Perceived Competence for Training scale (4 Items), Sport Satisfaction Instrument (SSI) (8 Items) to identify how young Athletes perceive their Competence in trainings and how they are Satisfied with their trainings as well to identify Self-Regulated Learning skills of young athletes.

In Lithuanian conditions, we chose to adapt a 53-item scale consisting of eight elements: effort (6 items), concentration (6 items), planning (9 items), goal setting (7 items), self-monitoring (4 items), evaluation (8 items), reflecting (8 items), self efficacy for challenges (5 items). This was a daunting test, as such a construct is new in educational practice and we tested its expression during a pandemic. During this period, the trainings were conducted in remote and normal mode, working in reduced groups.

The authors (Baños et al., 2020) analyzed satisfaction, enjoyment, and boredom in physical education lessons as a mediator between support for autonomy and physical education achievements. The study revealed that support / maintenance of autonomy does not directly predict physical education outcomes but is necessary for students to feel satisfied with physical culture. Satisfaction with physical activity mediates between maintaining autonomy and academic performance. However, boredom with physical activity did not mediate between support for autonomy and student achievement. In our study male athletes are more satisfied with their trainings, as well as team sports athletes are more satisfied than individual. It means that athletes got support from coaches, yet we couldn't predict the achievements, because no competitions were organized in this period.

The Covid-19 situation poses significant challenges for teachers, parents, and students/pupils (Huber and Helm 2020). Research by Deci and Ryan (2000) has shown that perceived competence influences self-regulation (SRL), intrinsic motivation, and delay. The authors (Pelikan et al., 2021) considered these variables in the context of distance learning among adolescents. The results of their study showed that students who consider themselves highly competent use SRL strategies (goal setting and planning, time management, metacognitive strategies) more often and are more fundamentally motivated than students with lower perceived competence. They also delay less.

In our study we didn't find differences in perceived competence so at the moment we can not state who is more motivated or more competent to use SRL strategies.

Qualitative analysis (Pelikan et al., 2021) revealed that although all students faced similar challenges (e.g., self-directed learning, time and task management, computer learning, lack of contact with teachers, and peers), students who perceived themselves as highly competent appeared to feel better they also cope with the need for support.

In our study differences were found in SRL Self-monitoring and Self-efficacy for challenges subscales, but no differences were found in Planning, Goal setting, Evaluating, Effort, Reflecting and Concentration.

Researchers state (Carter Jr. et al., 2020), while the COVID-19 crisis is unique, preliminary research on online learning can be useful in supporting teacher practice and proposing future research. Developing (improving) students' SRL skills will ensure the effectiveness of online learning, on which the field of education can ultimately focus in the future.

Conclusions

The instrument is multidimensional, because of its complexity and it needs further investigation when trying to adapt to a Lithuanian population.

The Adopted Self-regulated learning Scale was characterized by good internal compatibility and is suitable for data analysis, but the next step is to prepare a shorter version of SRL. It is important to adopt a shorter version for Coaches and Athletes to make it more easier to implement it into the coaching practice.

Such results were obtained, because of the Covid-19 pandemic peculiarities. For further investigation we need to receive more data from usual trainings, not including distance/remote learning and distance/remote coaching.

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ORIGINAL RESEARCH PAPER

PHYSICAL ACTIVITY DURING COVID-19 PANDEMIC FOR WOMEN IN LATVIA, BARRIERS AND CONDITIONS TO OVERCOME THEM

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Abstract

In 2020/2021, the global pandemic and home isolation is likely to decrease the level of physical activity and worsen the issues related to having a sedentary lifestyle. Thus, we can raise a discussion about the COVID-19 pandemic within a pandemic of a sedentary lifestyle. Through the area of fitness, we can increase the interest to be physically active and improve women's health. However, there are still some challenges in finding the right way to achieve greater involvement in having a healthy lifestyle, especially during the pandemic. Therefore, the goal of the study is to explore the barriers to having a healthy lifestyle and the conditions to overcome them for women in Latvia. The research includes an analysis of an anonymous questionnaire in the form of an online survey to determine the level and type of physical activity for women in Latvia, as well as to identify barriers and conditions that subjectively promote physical activity, based on each woman's opinion. The research involved 436 women from Latvia, aged 18 to 64, who had participated in fitness or other physical activity or sports before the pandemic. Barriers to engaging in physical activity such as lack of time, fatigue, lack of motivation, health issues, etc. have been identified. Furthermore, conditions improving physical activity have been determined, including opportunities to improve emotional state, opportunities to improve figure and health, interest in the activity, support from the coach and family, an opportunity to have a good time, an opportunity to communicate, and self-discipline. It was found that women who were active even before the pandemic remain physically active during

it and engage in both high and moderate intensity physical activity, including a lot of walking, while still spending a lot of time sitting. Considering the promoting conditions, it is possible to improve women's physical activity.

Keywords: COVID-19, pandemic, physical activity, sedentary lifestyle, women.

Introduction

In 2020/2021, the global pandemic and home isolation is likely to decrease the level of physical activity and worsen the issues related to having a sedentary lifestyle. Thus, we can raise a discussion about the COVID-19 pandemic within a pandemic of a sedentary lifestyle. For the most part, important forms of everyday activity such as shopping, care routines etc. have been reduced. An American company that develops wearable devices has presented physical activity data from 30 million users which demonstrate a reduction in average step count in almost all countries in 2020 compared with the same period last year (Fitbit, Inc., 2020).

We were faced with a huge problem already before the COVID-19 pandemic. At a global level, seven of the ten leading causes of death in 2019 were noncommunicable diseases (World Health Organization, 2020a). Sedentary lifestyle, which is characterized by long periods of time spent sitting and low level of PA, is usually associated with increased risks of developing serious diseases, such as depression (Huang et al., 2020), type 2 diabetes, cancer, and coronary artery disease (Stamatakis et al., 2019). The “Global Action Plan on Physical Activity 2018–2030” set a target to reduce physical inactivity by 10 % by 2025 and by 15% by 2030 (World Health Organization, 2018). Despite this initiative and all the available information on the importance of having a healthy lifestyle, evidence indicates that some gaps remain. So how will the achievement of this plan look like during and after the COVID-19 pandemic?

Surveys show that 46% never exercise or play a sport and this is an increase from 42% in 2009. Moreover, 15% of European citizens do not walk for 10min at a time at all in a weekly period and spend time sitting longer than in 2013 – 12% sit for more than 8.5 hours a day. Only 40% exercise or play a sport at least once a week, and only 7% do it at least five times a week. Furthermore, formal sport settings are less popular than informal settings like running in a park or playing something. Only three in ten EU citizens are members of a club where they participate in a sport or recreational physical activities, with 12% being members of a sport club and 11% visiting a health or fitness centre. Overall, in the EU (European Union),

men are more physically active than women – men exercise, play sports or engage in other physical activity (more Special Eurobarometer, 2018).

The main motivation for participation in a sport or physical activity is to improve health and fitness. In comparison to the 2013 survey, respondents are now less likely to say that they engage in a sport or physical activity to improve their health, as the number decreased from 62% to 54%. Other popular reasons to engage in sports are to improve physical condition (47%), which is mentioned more often than in 2013, followed by the desire to relax (38%), to have fun (30%) and to improve performance (28%) (Special Eurobarometer, 2018).

The main reasons listed for not practicing in a sport more regularly is lack of time (40%), lack of motivation or interest (20%) and having a disability or illness (14%). These reasons are mainly the same as the ones given in 2013 (Special Eurobarometer, 2018).

Therefore, it is necessary to strengthen the habit of having a healthy and active lifestyle within the society by developing health promotion in regard to a healthy diet, an active lifestyle and the facilitation of mental health according to peoples' needs, interests and values, while also taking into account motivational factors, as well as barriers and environment, especially during the pandemic.

Nowadays, women must invest more in their bodies than men, which is due to the competition in both the labour market and everyday life, where a woman tries to be equal to a man (Adelman & Knijnik, 2013). Women must work online full time at home or at their workplace, as well as find time to help their kids during online learning, find time for doing housekeeping tasks, find time to rest, be physically active, etc. The issue is in the understanding of how women all over the world should find time for all these activities, while also taking advantage of the activities offered by the field of fitness. Through the field of fitness, we can increase the interest to be physically active and improve women's health. However, there are some challenges in finding the right way to achieve greater involvement in having a healthy lifestyle, especially during the pandemic.

Therefore, the goal of the study is to explore the barriers to having a healthy lifestyle and the conditions to overcome them for women in Latvia.

Materials and Methods

The study was conducted in February and March of 2021 in Latvia, while COVID-19 restrictions were enforced in the country. An analysis of an anonymous questionnaire was conducted in the form of an online survey to determine the level and type of physical activity for women in Latvia, as well as to identify barriers and conditions that subjectively promote physical

activity, based on each woman's opinion. The research involved 436 women from Latvia, aged 18 to 64, who had participated in fitness or other physical activity or sports before the pandemic.

The electronic form of the survey was posted on social networks, as well as sent out to e-mails. The survey consisted of 18 questions with proposed answer options, as well as an option to add additional answer if the answer differed from the proposed options. The survey consisted of:

- 1) questions from the IPAQ short form (Craig et.al., 2003) in Latvian.
- 2) five questions on objective indicators of quality of life to understand the situation regarding employment, marital status, age, whether there are difficulties with the financial situation in this group during the pandemic, which could affect physical activity and opportunities to attend paid physical activity classes.
- 3) six questions on the purpose, place, and type of physical activity, hindering and promoting conditions, the desire to change the situation for the better.

For data analysis, SPSS ver.18.0 data processing programme was used, as well as descriptive statistics was applied.

Results

By summarizing the data, it can be concluded that the surveys of all respondents were valid for further data processing and analysis. Respondents in the study ranged in age from 18 to 64, with an average age of 32 ± 6 years.

When analysing the objective indicators of respondents' quality of life and the group profile to better understand the conditions hindering or affecting physical activity, it can be concluded that 58.9% of respondents have higher education, 18.2% – incomplete higher education, 7.7% – secondary special education, 14.2% – secondary education. Furthermore, 55.1% of respondents are currently employed, 25.7% are still studying, 6.7% are on a parental leave, 3.7% are housewives, 2.2% are unemployed for less than 12 months, and 1% are unemployed for more than 12 months. Moreover, 61.7% of respondents consider their financial situation during the pandemic to be satisfactory, 27.1% claim that they can get by with the financial situation that they are currently in, 4.3% consider their current financial situation unsatisfactory, 1% consider their financial situation as good, 1% - as very good. 32.7% of respondents are married and have a child or children, 33.2% are in a relationship, 10.7% are married, 15.7% are single, 7.7% are unmarried and have a child or children.

By analysing the respondents' physical activity during the COVID-19 pandemic, it can be concluded that only 8 people out of 436 currently

have no physical activity at all. Most (37.8% of respondents) have engaged in high intensity physical activity at least once (37.8%) in the last 7 days (see Figure 1).

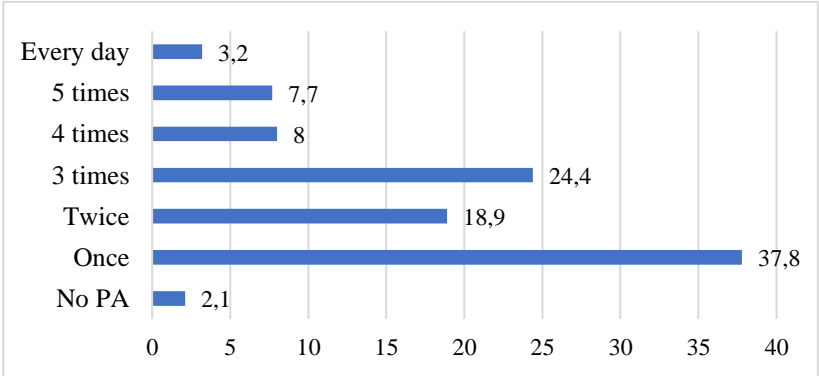


Figure 1. Amount of High Intensity Physical Activity During the Last 7 Days Within the Respondent Group as a Percentage (n=436)

24.4% perform high intensity physical activity 3 times a week, 18.9%j – twice a week during the last 7 days. 3.2% of respondents perform high intensity physical activity every day.

When analysing the duration of high intensity physical activity in one of the days during the last 7 days, it can be concluded that the most frequently mentioned duration of such activities is less than 30min, which applies to 27.4% of respondents. However, it is delightful to hear that many respondents perform such activity longer – 23.1% of respondents engage in physical activity for 30min, 21.1% of respondents – for 45min, 16.9% – for 60min, and 11.4% perform high intensity physical activity for more than 60min in one of the days.

When analysing the moderate physical activity frequency during the last 7 days, it can be concluded that the largest number of respondents (22.8%) perform such activity 3 times a week, and 22.1% – twice a week. The fact that 21.8% of respondents perform such activity during every day of the week is a very good indicator. Meanwhile 15.4% of respondents perform such activity once a week (see Figure 2).

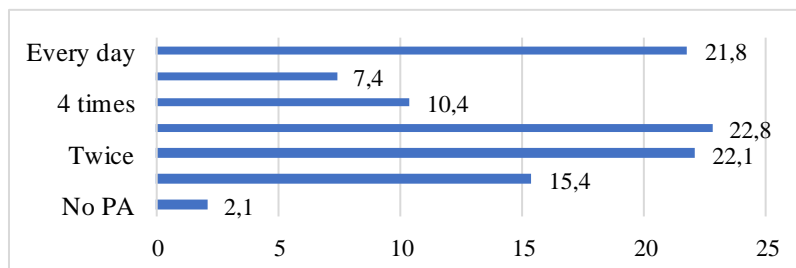


Figure 2. Amount of Moderate Physical Activity During the Last 7 Days Within the Respondent Group as a Percentage (n=436)

Moderate physical activity during the last 7 days on one of the days most often lasted for 30min, 45min or 60min for 23% of respondents. 16.1% of respondents engage for more than 60min, and 14.9% – for less than 30min.

When analysing how often the respondents walk, it can be concluded that all women in this group walk for at least 10 minutes without a break during at least one day of the week, and 33.7% of women walked every day during the last 7 days (see Figure 3).

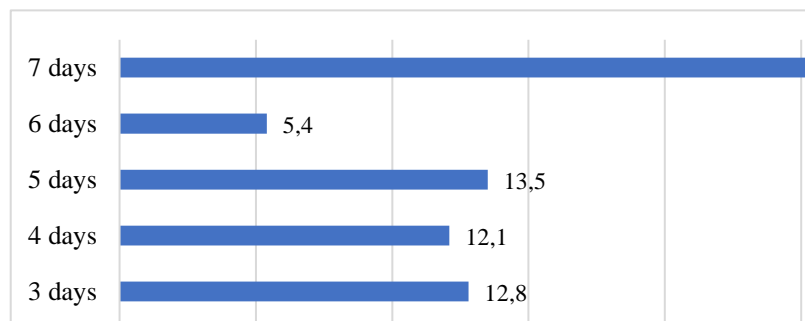


Figure 3. Walked for at Least 10 Minutes Without a Break During the Last 7 Days Within the Respondent Group as a Percentage (n=436)

It is also very good to see that this group most commonly (32.3% of respondents) walked for 60 minutes and longer during one of the last 7 days. 28.1% of respondents walked for 30-45min during one of the last 7 days, and 25.6% of respondents – for 20-30min.

When analysing the amount of time, the respondents spend sitting, it can be concluded that most women (31.3%) spend 4 – 6 hours a day sitting. It is delightful to see that 18.7% of respondents spend only 1 – 3 hours a day sitting (see Figure 4).

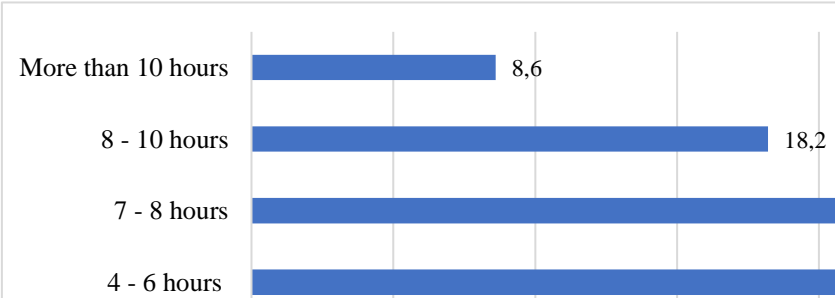


Figure 4. Amount of Time Spent Sitting Daily During the Last 7 Days Within the Respondent Group as a Percentage (n=436)

However, a very large number of respondents (18.2%) spend 8-10 hours sitting, a full workday, and 8.6% of respondents spend more than 10 hours a day sitting. Several respondents had mentioned that this situation even worsened during the pandemic as they must sit much longer than before due to responsibilities at work, during studies and while being at home with children.

By additionally analysing the type and location of physical activity during the pandemic, it can be concluded that many respondents are currently training at home or outdoors (see Figure 5).

The largest number of respondents do it independently, as 49.3% do it at home, using online materials, and 43.3% do it outdoors. 38.7% of respondents engage in physical activity at home with a coach online, whereas 9.9% of respondents do it outside together with a coach (see Figure 5).

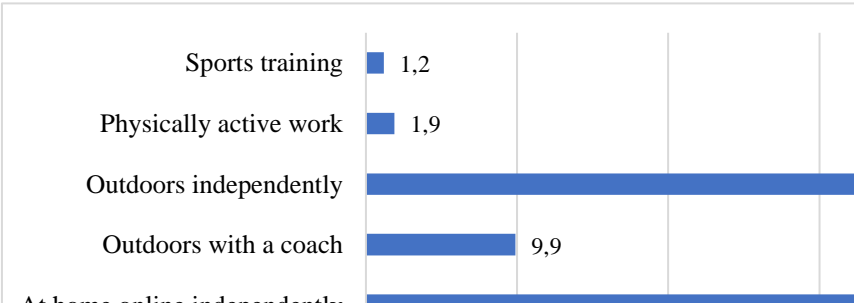


Figure 5. Type of Physical Activity During the Pandemic Excluding Walks Within the Respondent Group as a Percentage (n = 436)

When analysing the respondents' subjective assessment of physical activity, it can be concluded that several women believe that they have insufficient physical activity, and 77.6% of women would like to improve

their situation. 11.6% think that their level of physical activity is already high enough, and 9% do not believe that something should be changed.

When analysing the barriers that prevent women from increasing the level of physical activity, it can be concluded that 50.5% of women have a lack of time, 49.3% have fatigue from daily work and the situation around the world, 39.2% are lazy, 35% have a lack of motivation, 27.6% are hindered by their emotional state, and 17.2% are hindered by a health condition or their mood (see Figure 6).

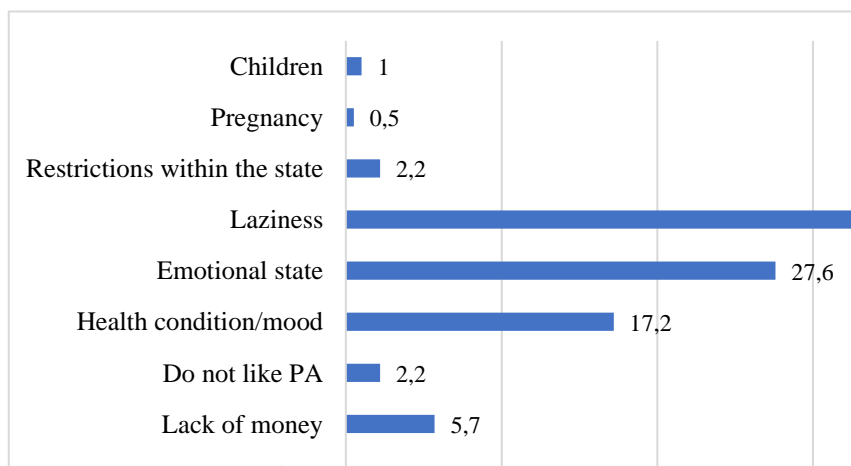


Figure 6. Barriers to Regularity of Physical Activity Within the Respondent Group as a Percentage (n=436)

Only 2.2% mentioned that the situation in the state hinders them. 5.7% noted that the lack of money does not allow them to fully engage in physical activity. 4.4% noted that they lack interest in physical activity, while 2.2% mentioned that they do not like physical activity (see Figure 6).

When analysing things that women currently lack during physical activity within the pandemic, it can be concluded that the most frequently mentioned factor is lack of self-discipline (43.3%), not seeing results from physical activity (currently 35%), lack of company (30%), lack of support from a coach (25.1%), lack of rest and peace (15.3%), lack of support from family (12.2%) (see Figure 7).

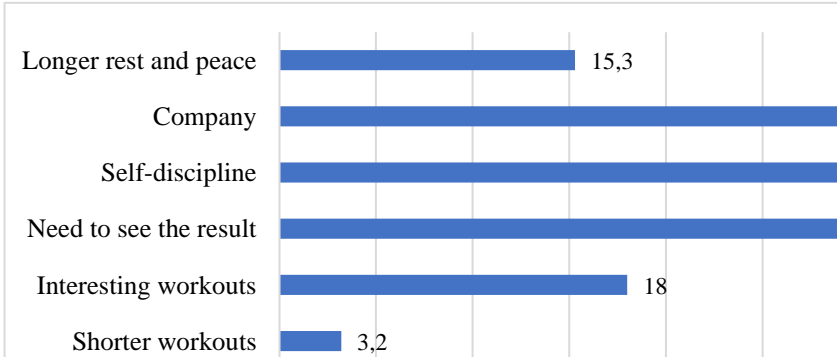


Figure 7. Things Lacking During the Pandemic but Needed to Improve the Level of Physical Activity and Achieve the Target Within the Respondent Group as a Percentage (n = 436)

When analysing the respondents’ motives to engage in physical activity during the pandemic, it can be concluded that the most frequently mentioned targets in the women’s group were body improvement (34.5%), health improvement (26.8%), physical fitness improvement (19.7%), mood improvement (7.6%), an opportunity to relax (only 2.2 %), and an opportunity to communicate (currently only 1%) (see Figure 8).

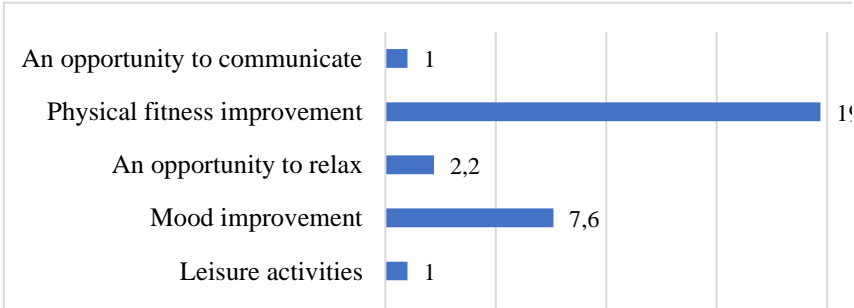


Figure 8. Targets of Physical Activity Within the Respondent Group as a Percentage (n = 436)

When analysing the group’s answers on what helps them not to give up and to still maintain the level of physical activity, it can be concluded that the most frequently mentioned aid is the improvement of the emotional state after training during the pandemic (74.9%), which is followed by body improvement (65.5%) and health improvement (63.3%) (see Figure 9).

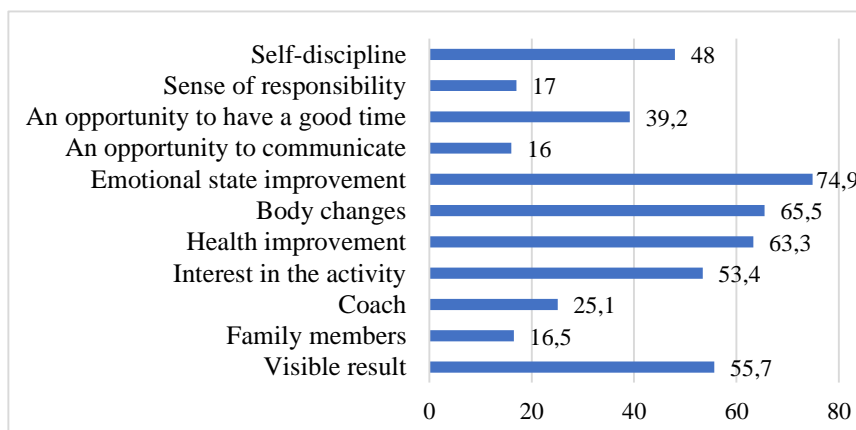


Figure 9. Conditions Promoting Physical Activity During the Pandemic Within the Respondent Group as a Percentage (n = 436)

39.2% of respondents noted that physical activity is currently the only opportunity to have a good time, as well as an opportunity to communicate for 16% of respondents. The interest in the activity was also important, mentioned by 53.4%, support from a coach was mentioned by 25.1%.

Discussion

The world is experiencing a challenge due to the COVID-19 pandemic (World Health Organization, 2020b, 2020c). However, the world has been faced with another pandemic for many years already – lack of physical activity and, consequently, sedentary lifestyle (Pratt et al., 2019; Ozemek et al., 2019). Achieving the minimum level of physical activity and decreasing the time spent sitting during the pandemic has become a hard task and, at the same time, a necessity across the world. Fitness clubs, sports centres, outdoor areas, recreation, and amusement parks were closed in several countries around the world, leading to an even greater decline in physical activity (Peçanha et. al., 2020).

This pandemic period affected people both physically and psychologically (Jiménez-Pavón et al., 2020). Changes in physical activity were reported in 64 studies and most studies reported decreases in physical activity and increases in sedentary lifestyle (Stockwell et al., 2021). Pandemic has created an environment promoting reduced amounts of PA because of fewer opportunities to be physically active (Hipolito Rodrigues & Carneiro, 2020). Some researchers reported that moderate-intensity PA significantly decreased among Spanish people during quarantine, the decrease being significant for both males and females (López-Sánchez et al.,

2020). Similarly, the results of this study also show that women would like to increase their physical activity and they are aware that it is currently insufficient. Women also mention that they have started to spend more time sitting during the pandemic. Other studies also show an increase in the amount of time people spend sitting due to work and studies during the pandemic (Sánchez-Sánchez et. al., 2020).

However, there are also studies that show the exact opposite result, where the level of physical activity for women does not decrease, but on the contrary – increases, revealing a positive correlation to having an active lifestyle before the pandemic (Beliz et al., 2020). The same correlation has been found in the results of this study, as women who have been engaged in physical activity before the pandemic mostly are sufficiently physically active during the pandemic as well, and even more so than mentioned in the recommendations, which is due to them having already had healthy lifestyle habits in the past. Other researchers have found that the pandemic has increased the amount of time people spend walking (Cheval et al., 2020). In this study too women have mentioned that they often move on foot, walk with the dog, go for a walk with children.

Thus, it can be concluded that the restrictions did not particularly affect the physically active part of society. However, even more problems have arisen for the sedentary part of society.

Studies show that during the pandemic, it is much more difficult for people to find motivation and time for physical activity and a healthy diet due to the large amount of work and responsibilities (Robinson et al., 2020). Also in this study, one of the most frequently mentioned reasons for lack of physical activity is lack of motivation, while the second most often mentioned reason is lack of time.

Many studies suggest that the pandemic has a negative effect on the emotional state (Stockwell et al., 2021). Similarly, one of the reasons for the lack of physical activity mentioned in this study was poor emotional state. Moreover, one of the most frequently mentioned targets of physical activity is to improve the emotional state during this period.

To avoid more serious health problems in the long run, several authors offer people to engage in physical activity at home for at least as much as they can, while trying not to reduce the frequency of activity (Chen et al., 2020). This study showed that several women in Latvia engage in physical activity independently at home, which allows them not to reduce the level of physical activity.

Researchers advise people not to complicate the process of physical activity and to perform light exercises that do not require serious preparation and do not cause a lot of fatigue (Chen et al., 2020). In this study, this

recommendation is also very relevant, as several women mentioned that the lack of physical activity is due to the severe daily fatigue.

Another recommendation from scientists is to seek help from sports specialists who can motivate, help adjust the load and offer support throughout the process (Ricci et al., 2020). Sports specialists need to become more accessible and visible to more people by offering their services online and organizing educational activities for the public, motivating people to stay physically active. In this study, several women mentioned that a coach helps to maintain physical activity by offering support and motivation. Moreover, several women also mentioned that they currently cooperate with a coach online or outdoors.

The World Health Organization and other scientific sources recommend the introduction of a short active break during the day to increase the level of physical activity. This would encourage people to approach the performance of the minimum recommendations (150 minutes of moderate physical activity and 75 minutes of high intensity physical activity per week). One of the most frequently mentioned reasons for the lack of physical activity in this study was laziness and difficulties to start moving. By introducing such short and varied breaks a few times a day, it is possible to help women to improve their physical activity without requiring much investment.

Additional physical activity recommendations are to follow online coaches on such platforms as YouTube, Facebook, etc., who demonstrate the possibilities of various activities at home with limited space and without specialized equipment (Dwyer et al., 2020). This study also revealed that a larger number of women in Latvia engaged at home with a coach online, using various platforms both for a fee and free of charge.

Scientists recommend the use of technologies, measuring devices, such as pedometers, heart rate monitors, and other portable devices that will give people feedback and will stimulate interest in and understanding of physical activity. Moreover, the fitness market offers the use of various applications, where it is possible to measure one's physical activity, record achievements, follow the progress, communicate with other people, participate in competitions, and motivate oneself to be more active (Dwyer et al., 2020). Municipalities and other governmental and non-governmental organizations or sports specialists, as well as sports and fitness clubs can organize challenges and competitions for people with various goals of physical activity, which would encourage people to move more.

In order not to harm one's health, the American College of Sports Medicine recommends health checks before starting physical activity by independently following along a coach online or deciding the type and

amount of physical activity for oneself (Ricci et al., 2020). In this study, several women noted that their lack of physical activity is due to ill health or not feeling well. This category of people would need the help of a sports specialist. However, not all people are able to pay for coaching services. Many women have listed lack of money as a reason for having a low level of physical activity. Here begins a long discussion about what is better – not to move at all because of fear of harming one's health due to not knowing what is correct, or to move and follow the recommendations of the World Health Organization on your own.

When developing recommendations for physical activity, it is necessary to consider the fact that people have different understandings, different opportunities, different training, and many other reasons as to why these recommendations cannot be fulfilled.

Conclusions

It was found that women who were active even before the pandemic remain physically active during it and engage in both high and moderate intensity physical activity, walk a lot, but also spend a lot of time sitting. Only 8 people out of 436 currently have no physical activity at all.

Most often in this group, higher intensity physical activity is performed once a week for less than 30 minutes. Moderate physical activity is most often performed 3 times a week for 30 minutes. The largest number of respondents walked for more than 10 minutes without stopping every day, whereas during the week – for more than 60 minutes. Most women spend 4-6 hours a day sitting. By additionally analysing the type and place of physical activity during the pandemic, it can be concluded that the largest number of respondents do it independently at home or outdoors.

The most frequently mentioned target of physical activity in the group of women is body improvement, health improvement, physical fitness improvement, mood improvement, an opportunity to relax, and an opportunity to communicate.

Barriers have been identified that prevent women from increasing their level of physical activity and achieving their target, such as a lack of time, fatigue from daily work and the situation around the world, laziness, lack of motivation, emotional state, state of health or mood, situation in the state, children, lack of money and lack of interest. It was found that during the pandemic women currently lack self-discipline, results from physical activity, company, support from a coach, rest, peace, and support from family.

Conditions that improve physical activity, help to achieve a target and not to give up have been determined, such as the opportunity to improve

one's emotional state through training during the pandemic, body improvement, health improvement, the opportunity to have a good time, the opportunity to communicate, interest in the activity, and support from a coach.

As a result, it is possible to improve women's physical activity by considering each woman's target, barriers and promoting conditions.

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REVIEW PAPER

EVALUATION OF THE EMOTIONAL STATE IN THE OUTDOOR RECREATIONAL ACTIVITIES

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Abstract

The aim of the study is to evaluate the emotional state of volunteer participants in outdoor recreational activities (downhill skiing, cycling) by analysing their facial expressions and self-assessments of emotional state before and after the outdoor recreational activities. Twenty-four volunteers (8 women and 16 men with the average age of 38 years old) participated in the study. The emotional state of the participants was assessed by using Sports Emotion Questionnaire (SEQ) and a software "Face Reader 3.0." The data obtained in the study were processed using SPSS software. Spearman's rank correlation coefficient was calculated. The data obtained from the study shows that all the emotions of the participants are more intense before the recreational activities than after. Summarizing the findings obtained from the study, the results indicate the significance of using the Sports Emotion Questionnaire before and after recreational activities. As data received from self-assessments of emotional state often differ from data obtained by observation or by Face Reader, the recreational specialist needs to develop the ability to observe the emotional state of the respondents by using different methods. An interview or conversation is recommended before, during, and after the recreational activity. The information on the emotional state would allow adapting recreational activities to the current needs of the participant, encouraging more efficient involvement in the physical recreational process.

Keywords: *Recreational activities, emotional state, Face Reader, Sports Emotion Questionnaire*

Introduction

Recreational activity is a voluntary activity or experience that includes games or other activities in an individual's free time for the purpose of pleasure, physical and mental, and emotional well-being (Veal, 2011). Some of the sources describe the recreational as a mentally and physically healing activity (McLean et al., 2008). Participation in recreational activities not only prevents disease and improves physical health, but also benefits their stress and emotions (Asztalos et al., 2009). According to Ilhespy (2009), students' involvement in the outdoor recreational program is important to improve their self-confidence, positive thinking, and more perfectness. Outdoor recreational has been proven useful in promoting academic achievement, work commitment, critical thinking and in preventing delinquency. Based on international research conducted by Garst, Schneider, and Baker (2001), which studied the adolescents who participated in outdoor recreational activities, they found that the individuals had a positive impact on their perception and emotions while participating in outdoors activities.

The term "emotions" refers to any subjective experiences of a personality. When basic emotions or basic effects come together, complex emotional states arise. For example, anxiety, which includes fear, anger, guilt, shame, interest, agitation (Ekman, Davidson, 1994) The term emotional includes assessments of emotional states such as anxiety, stress, tension, depression, anger, confusion, embarrassment, energy, vigour, fatigue, positive affect, negative affect, optimism (Netz et al., 2005). Recognition of other people's emotions is mainly based on the external expression of emotions: facial expressions and postures, changes in speech, and changes in voice, behaviour. The first facial action coding system (FACS) was developed by Ekmans and Friesen in 1978 based on facial anatomy. A system has developed those measures and describes facial behavior. Over time, this system has become the standard for coding facial expressions (Kuilenburg, Wiering & Uyl, 2005). Today technologies offer automatic facial expressions. Zaman and Shrimptom-Smith (2006), acknowledge that a great deal of information comes from facial expressions, but this information can be different from gestures and verbal expression of emotions. *Face Reader* is the program designed for automatic analysis of facial expressions (expression) and it is usually combined with other methods to give context and content to the data obtained.

The Sports Emotion Questionnaire (SEQ) measures a person's emotional state in relation to a specific event using the athlete's self-assessment of the emotional state after the event. The self-assessment survey measures the respondent's subjective opinion, self-interpretation of

the emotional state provides information about the subjective component of emotions or emotional experience (Zaman, Shrimpton-Smith, 2006). Based on the assumption that emotions are the answer to an event - the question of the expected, existing, or already happened questionnaire is formulated not on how the respondent feels in general, but in relation to a specific event (Jones & Lane, 2005). The emotional state plays an important role in physical activity because how a person feels during or after physical activity will largely determine his desire to engage in further activities (Biddle & Mutrie, 2005). Studies have also shown the effects of emotions on athletes before and during physical activity (Terry, 2011). Recognition of emotions in recreational allows for the possibility that changes in the emotional state will be observed in time and, if necessary, the emotional state will be regulated. Due to the many different emotions that a person can experience, it is not possible for the observer to observe and measure them all. It is most important and effective to measure emotions now of their experience because it is difficult to recall the exact same reactions to an event that took place, probably only a few minutes before, and which followed other events (Zaman, & Shrimpton-Smith, 2006). Also during recreational activities, it is often difficult to objectively assess whether the physical recreational activities performed have a positive or negative effect and have achieved the expected result because the athlete is moving and sometimes the conversation is not possible and how people feel during and after activity recreational activities may be critical in determining whether people engage in such activities in the future (Baglin et al., 2004, Biddle & Mutrie, 2005, Terry, 2011). Therefore, it is important to clarify when and under what conditions, recreational activities affect in a positive and a negative way on humans (athletes) emotional state. So, the aim of the study is to evaluate the emotional state through facial expressions and using the respondents' self-assessment of emotional state in downhill skier and cyclist before and after outdoor recreational activities.

Materials and methods

For the assessment of the emotional state the volunteer participants (8 women and 16 men with the average age of 38 years old) took part in the outdoor recreational activities (downhill ski and cycling). The Sport Emotion Questionnaire and the „Face Reader 3.0” software was used before and after these outdoor recreational activities.

Instruments. The Sport Emotion Questionnaire (Jones et al., 2005) consists of a five-factor model that covers a range of pleasant and unpleasant emotions that are experienced in competition and sports. It measures an athlete's feelings about their expected physical activity on five

scales: anxiety, depression, anger, anxiety, happiness. It can be used to assess the emotional state in various sports and physical activity-related events, including during and after the activity.

The “Face Reader 3.0” identifies 6 basic emotions: happy, angry, sad, surprised, scared, disgusted, as well as a neutral emotional state. The program captures facial expressions and determines a person's age, gender, ethnic identity, as well as identifies the subject (Zaman & Shrimpton-Smith, 2006).

Statistical Analysis The data obtained during the study were processed using SPSS software. Spearman's rank correlation coefficient was calculated to find out whether statistically significant differences exist between the results of both - before and after recreational activities.

Results

The approach was developed and approbated in practice to evaluate downhill skier and cyclist emotional state before and after recreational activities. Several practical recommendations were created for recreational specialists. To detect the emotional state before recreational activity the SEQ was used. The gained data using SEQ show that respondents have emotional states related to happiness (41%) and excitement (39%) about the recreational activity in which they are going to participate. Some respondents feel anxious (19%), dejection (1%). None of the respondents showed anger. Comparing data between the genders it is observed that anxiety rates of women are higher than those of men, which coincides with the data obtained in the literature analysis. Anxiety is usually associated with anxiety and fear before acting responsibly, the outcome of which is uncertain. In this study, it is not possible to statistically prove that female anxiety rates are higher due to the small number of female respondents. (Fig.1)

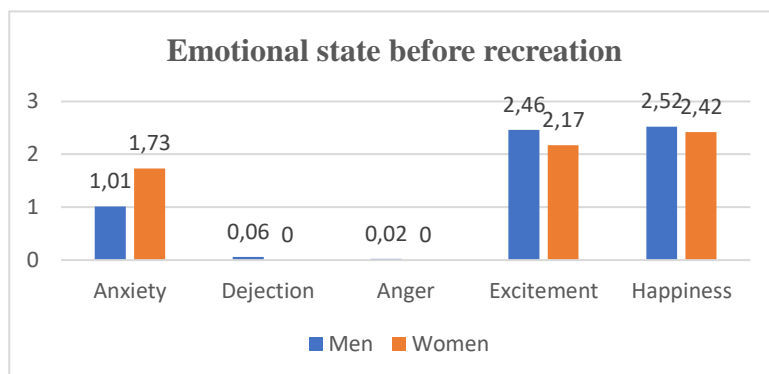


Figure 1. Emotional state using SEQ before recreational activities (men and women)

Women, unlike men, experience less happiness and anxiety in connection with recreational activities, although these indicators are as similar as men's. The obtained data show that the women, unlike men, did not feel completely depressed and angry before the event.

To detect the emotional state after the recreational activities the “Face Reader 3.0.” was used. The obtained data show that the respondents most often felt neutral emotions (23%) or happiness (21%) after recreational activities (Figure 2). These emotions are followed by sorrow, anger, etc. emotions not classified in Face Reader. Surprise, fear, and disgust also were detected. The respondents did not mention negative emotions in their emotional self-esteem reports, which coincides with the data in the theory that people tend to hide their negative experiences. The high percentage of neutral emotions felt could also indicate that respondents have used emotional displays - managing their feelings in a publicly acceptable form.

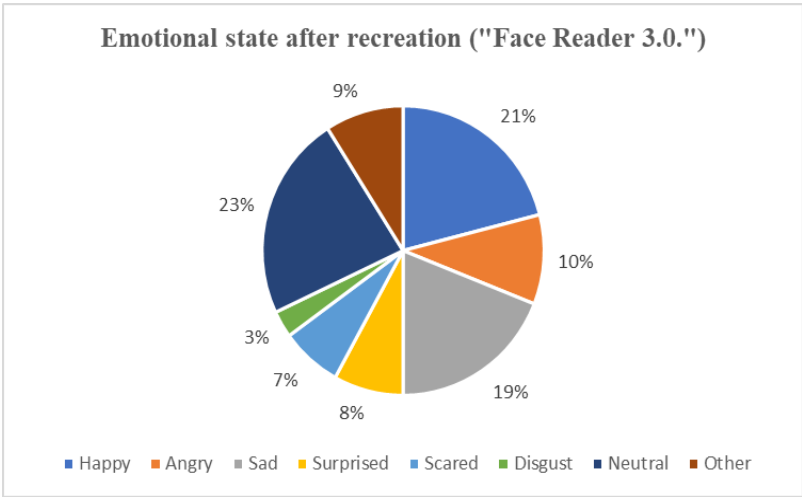


Figure 2. Emotional state after recreational activities
(Using software “Face Reader 3.0.”)

Figure 2 reflect the average distribution of average emotions, but there are large individual differences in the data, which leads to the conclusion that the emotional states of the respondents are different after the recreational al activity.

Comparing the obtained data between men and women, it can be concluded that men most often felt neutral emotions, followed by feelings of happiness, sadness, and other emotions. Women, on the other hand, felt the most controversial emotions - happiness and sadness, followed by neutral emotions (Figure 3).

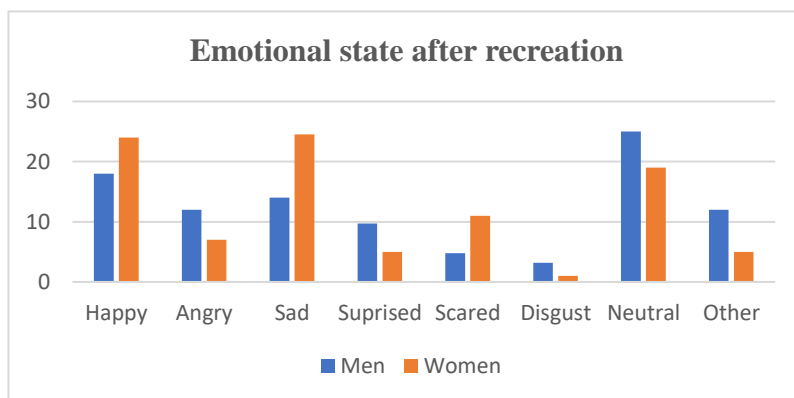


Figure 3. Emotional state after recreational activities men and women
(Using software “Face Reader 3.0.”)

Statistical analysis of the data was performed using the Spearman rank correlation coefficient to determine the interdependence of the traits. Further, the data were corrected to exclude the variables “neutral” and “other” because they are not comparable to other research methods and do not give an idea of the respondent's range of emotions. The obtained results show that happiness is statistically significantly correlated negatively with anger ($p < 0.05$) and dejection or sadness ($p < 0.05$). This means that respondents who show a higher sense of happiness than average show a lower-than-average sense of anger and dejection or sadness. Anger is statistically significantly correlated negatively with happiness ($p < 0.05$). This means that individuals who show a higher-than-average sense of anger show a lower-than-average sense of happiness. Dejection or sadness is statistically significantly correlated negatively with the feeling of happiness ($p < 0.05$). Individuals who show a higher-than-average feeling of dejection or sadness show a lower-than-average feeling of happiness.

Discussion

For a recreational activity to achieve its purpose, the persons performing physical activities must have appropriate personal abilities and skills. Otherwise, the result will be boredom (low challenge/high skill) or anxiety (high challenge/weak skill) (Biddle & Mutrie, 2005). Anxiety is usually associated with anxiety and fear before acting responsibly, the outcome of which one is not sure about. Participation in sports activities provides a positive experience for many people, however, research is mainly focused on the negative emotions of sports participants and their regulation. Positive emotions associated with sports are happiness and joy. Anxiety is generally considered to be a positive emotion associated with agitation and

activation of the autonomic nervous system. A person has positive expectations about their ability to achieve goals in a particular situation (Jones & Lane, 2005).

In the process of assessing the emotional state, it is important to consider the recreational person's previous experience in connection with recreational activity - both the length of service in recreational activities and the previous emotional experience in such activities. The low rates of dejection and anger are probably explained by the principle of volunteering in recreational – people who experience negative emotions relating with recreation activities are more likely to choose not to participate, thus avoiding potentially negative experiences and emotions.

The Sports Emotion Questionnaire (SEQ) is intended to assess the emotional state, but it does not provide information on the causes, context, and content of the emotional state. With this questionnaire it is possible to get an idea, mainly about the indicators of emotional well-being. SEQ focuses on the respondent's self- assessment of subjective feelings. The advantages of the Sports Emotion Questionnaire - the method is simple to use, quick to fill in, easy to process.

Conclusion

Analysing the negative emotions mentioned, observed, or obtained by the methodologies used in the study, it can be concluded that the respondents felt anxious, in some cases also anger and dejection or sadness before recreational activity. The negative emotions recorded after recreational activity were anger, sorrow, and disgust. A more detailed study of these emotions could explain the reasons for the occurrence of these emotions. For example, anxiety is characteristic of a person before a responsible action or event, the success of which he or she is not sure about. Sadness involves loss or separation from something valuable. Sadness can be caused by loss, illness, etc., which means the loss of a source of well-being and joy. Anger is caused by frustration or overwhelming shame and ashamed, an individual is aware only of those traits that at the time seem ugly or inadequate to him (Jones, 2003).

Using mathematical statistical methods, the data obtained by the Sports Emotions Questionnaire before recreational activities and the data obtained by the “Face Reader 3.0.” software after recreational activity was compared. Happiness and anxiety prevail before recreational activities, while happiness and sad predominate after recreational, as these emotions show the highest arithmetic mean values.

Summarizing the findings obtained from the study, the results indicate the significance of using the Sports Emotion Questionnaire before

and after recreational activities. As data received from self-assessments of emotional state often differ from data obtained by observation or by Face Reader, the recreational specialist needs to develop the ability to observe the emotional state of the respondents by using different methods. An interview or conversation is recommended before, during, and after the recreational activity. The information on the emotional state would allow adapting recreational activities to the current needs of the participant, encouraging more efficient involvement in the physical recreational process.

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REVIEW PAPER

PHYSICAL ACTIVITY AND SELF-REGULATION AS A PRECONDITION FOR FUTURE THINKING AND SUSTAINABLE DEVELOPMENT

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Abstract

The Covid-19 pandemic is an unprecedented historical event that has affected all areas of life and changing the lives of people around the world. Therefore, living in the conditions of the “new normality” (Lawrence, 2013) and the “social acceleration” (Rosa & Trejo-Mathys, 2013) encourages a rethinking of the human relations with the world, primarily focusing on the development of conscious and responsible behavior and self-regulation skills. This article focuses on the phenomena of movement and self-regulation for the well-being of society and the development of future thinking competencies. The aim of this work is to reveal the links between the phenomena of physical activity and self-regulation as a precondition for the development of future thinking competencies and sustainable development. Material and methods of research. The argumentative literature review is based on an interdisciplinary approach, the phenomena of physical activity and self-regulation are analysed from the perspectives of social, educational, cognitive sciences and neurosciences. The results of the review show that systematic and planned physical activity is not only a significant measure of a person’s physical and mental health, but a sign of health and physical literacy competencies. Conclusions. Health and physical literacy competencies are closely linked to the development of self-regulatory capacity and are manifested in responsible, well-being and sustainable development-oriented behaviour. Conscious physical activity develops a person’s ability to self-regulate and plan for their future and can therefore be a meaningful means of shaping future thinking skills.

Keywords: *physical activity, self-regulation, executive function, future thinking, socio-emotional competencies, sustainable development*

Introduction

The Covid-19 pandemic is an unprecedented historical event that has affected all areas of life, changing the lives of people around the world in terms of how they communicate with others, work, and study. The pandemic and its management measures, as well as the economic downturn it caused, have negatively impacted the mental health of many people, and created new challenges for those already suffering from mental illness and addiction (Yang et al., 2020). One of the major consequences of a pandemic, i.e., the physical isolation of people has had detrimental consequences for the mental health of people around the world (Giallonardo et al., 2020). People's physical inactivity has increased all over the world. A situation triggered by a pandemic (for example, loneliness, financial uncertainty, anxiety about work, or uncertainty about the future) has caused mental health disorders (for example, increased stress, mental stress, anxiety, and depression) in many people (Lee, 2020). Physical inactivity and poor mental health have become important concerns for the health system (Herbert et al., 2020).

During the pandemic, the importance of the professional qualities of medical, educational, and social professionals became very evident. A successful response to the pandemic was associated not only with medical capacity and competence, but also with the ability of society to cope with the impact of the pandemic (e.g., isolation and containment, family complications, job loss, decreased physical activity, fear and anxiety about the uncertain future etc.) (Guterres, 2020).

The Covid-19 pandemic affected people's lifestyles, social relationships, work habits and learning culture. There is no doubt that long quarantine in the future will have an impact on changes in learning and work culture. In addition to the negative consequences of quarantine, it is also noticeable that, in some cases, learning and working from home can have certain benefits, allowing people to plan their study or work time in person. It is believed that this will change the culture of work and learning in the future.

However, increasing freedom poses a challenge to responsible decision-making and the development of self-regulatory competencies. A person's ability to make socially responsible decisions is becoming an increasing value in thinking about a sustainable world, the well-being of society.

Therefore, living in the conditions of the “*new normality*” (Lawrence, 2013) and the “*social acceleration*” (Rosa & Trejo-Mathys, 2013) encourages a rethinking of the human relations with the world, primarily focusing on the development of conscious and responsible behavior and self-regulation skills. It should be noted that OECD and UNESCO policy documents emphasize the need to develop competencies that will enable the public to be prepared for life in a VUCA-world characterized by: “*volatility* (the nature, speed, volume, magnitude and dynamics of change); *uncertainty* (the lack of predictability of issues and events); *complexity* (the confounding of issues and the chaos that surround any organization) and *ambiguity* (the haziness of reality and the mixed meanings of conditions)” (p. 33) (Horney et al., 2010).

This article discusses how people and society can respond to the challenges of a changing world, how to avoid or mitigate the effects of emergencies by reducing their negative impact on themselves and others. The results of studies conducted during the COVID-19 pandemic period showed (Zinchenko et al., 2020; Pacholik-Żuromska, 2021) that self-regulatory methods can be used to address challenges effectively. Therefore, our review focuses on understanding the mechanisms and effects of self-regulation of human behaviour, revealing the benefits of physical activity for the development of people’s self-regulatory skills and personal well-being for sustainable development and future thinking competencies. The work focuses on the phenomena of movement and self-regulation for the well-being of society and the development of future thinking competencies.

The aim of this work is to reveal the links between the phenomena of physical activity and self-regulation as a precondition for the development of future thinking competencies and sustainable development. The argumentative literature review (Wentzel, 2017) is based on an interdisciplinary approach, the phenomena of physical activity and self-regulation are analysed from the perspectives of social, educational, cognitive sciences and neurosciences.

The review will lead to original research to gain a deeper understanding of the benefits and impact of exercise and physical activity on personal competence development, adaptation to change and the creation of a sustainable world. Human self-regulatory abilities are conceptualized as a value of sustainable behaviour. It is believed that conscious self-regulation can make a significant contribution to the organization of life in new conditions.

Self-regulation and executive function

During the pandemic, many people were forced to change their studies, work, and life habits overnight. For many, distance working, and learning has become a completely new way of life. Significant changes in learning and work are associated with increased time spent at the computer, decreased physical activity, increased/decreased working hours, and an inability to find a balance between work (or study) and family matters (Jaiswal & Arun, 2020). This inevitably affects people's productivity levels and confirms the importance of self-regulation, which is considered an essential aspect of adaptive behaviour (Hofmann et al., 2012).

Self-regulation is the ability to control impulses within oneself. It is both biological (temperament/disposition) and behavioural (personality) (Thomson & Jaque, 2017). Self-regulation refers to rules or principles governing individual behaviour (the functioning of the self) (Bowers et al., 2015). As a multidimensional construct, self-regulation involves behavioural and cognitive processes that allow the individual to optimally manage attention, behaviour, cognitive arousal, or direct it in the desired direction. Korucu et.al (2017) argued that self-regulation skill is necessary both for controlling negative social behaviour and for displaying constructive behaviour and can also affect social behaviours by increasing the ability to understand others' minds. The critical importance of self-regulatory skills is recognized in a variety of contexts (e.g., social behaviour and emotion management, combating harmful habits, learning process, physical activity, elite sports, etc.).

Self-regulation is essentially a matter of altering one's responses, including thoughts, emotions, and actions (Baumeister & Monroe, 2014). Depending on the complexity of the phenomenon, different approaches to self-regulation are distinguished: behavioural-based, temperament-based and a cognitive–neural systems approach. Thomson and Jaque (2017) note, that “*optimal self-regulation is directly related to how well performers manage novel events, a capacity that is influenced by temperament, early developmental experiences, and personality traits*”. However, knowing that human temperament is an innate trait of childhood, the question arises: “*How can you improve your self-regulation skills?*”

Thus, the development of self-regulation in childhood is influenced by the experience of safe attachment. Children's sense of secure attachment is associated with parental resilience to external factors. Resilience is evident when individuals experience difficulties but do not have psychological or physical disorders (Thomson & Jaque,

2017). The behavioural based approach is based on concentration of attention and impulse control by inhibiting or activating control mechanisms (Rothbart & Bates, 2006). Yet the perspective of the executive function is based on the coherence of cognitive processes, including inhibition of dominant response, change in thinking stereotypes, support and manipulation of information, long-term memory used to set goals, plan and solve problems (Miyake et al., 2000). Self-regulation is characterized by a person's ability to consciously set goals and manage their behaviour, using regulation of the cognitive process (planning, modelling of significant conditions, evaluation), regulation of behavioural and personal characteristics (flexibility, independence, reliability) (Morosanova, 2010).

Hofmann et al., (2012), explaining the links between self-regulation and executive function, note that aspects of executive function (working memory operations, behavioural inhibition, and task-switching) are related to self-regulatory mechanisms, and executive function development can improve poor self-regulatory skills. However, the authors also point out that the decrease in the efficiency of the executive function is related to situational risk factors, which emerged from the analysis of socio-psychological aspects of self-regulation.

Studies conducted during the pandemic (Zinchenko et al., 2020) have shown a significant importance of self-regulatory skills for people's lives in quarantine conditions. Individuals with a high level of self-regulation are more successful in atypical and new situations. The success of self-regulation during the quarantine period has manifested itself primarily in lifestyle changes, recognizing and acknowledging the need for quarantine measures. Thus, this study showed that self-regulation during quarantine is related to perceptions of social responsibility. Although optimal self-regulation is directly related to how well a person copes with new events or challenges, it is nevertheless noted (Thomson & Jaque, 2017) that the effectiveness of self-regulation may decrease in the presence of fatigue or stress. However, physical activity helps reduce stress. Therefore, physical activity may be appropriate means to maintain the effectiveness of self-regulation in long-term circumstance, for example during quarantine.

The traditional approach to self-regulation in the context of physical education relies on social cognitive models that provide that people's behaviour is controlled by voluntary beliefs, motives, intentions, and expectations associated with such behaviour (Hagger et al., 2010). This approach reveals that preparation for sports requires attitude, goal setting, planning, effort and introspection in performance, reflection, and

evaluating on the results achieved (McCardle et al, 2018; McCormick et al., 2018). When playing sports and participating in competitions, people develop self-regulatory skills by engaging in activities that require them to cope with unforeseen challenges, playing sports or playing in ever-changing conditions. However, this area has not yet been sufficiently explored.

Movement and executive function

Physical activity has always been a major factor in human evolution throughout the history of human development, shaping our physiology and culture of behaviour. Since ancient times, philosophers have believed that exercise and physical activity are key factors in maintaining a healthy body and mind (Russo, 2003). This idea was actualized in different periods of the history of human development. However, we have only recently begun to understand the effect of physical activity on the human body at the cellular level and are able to analyse the reasons why a passive or sedentary lifestyle is harmful to human health, as well as realize that physical activity can be “the best buy in medicine” (Loprinzi, 2015) or a powerful “medicine” (Di Liegro et al., 2019). It has now become clear that systematic physical activity is an important condition for a healthy lifestyle, physical and mental well-being. Health and physical literacy are increasingly understood as aspects of not only personal, but also social well-being (Lynch & Soukup, 2016; Sentell et al., 2017; Cornish et al., 2020).

According to research in different disciplines, exercise and physical activity or interventions in physical education have a positive effect on human physical and mental health indicators. Individuals who exercise regularly or are physically active have better mood and health status, better functional capacity (Penedo & Dahn, 2005). In addition, physical activity in nature and a sense of connection with nature improve people’s mental health and well-being (Lawton et al., 2017).

Physical activity thus contributes to maintaining and improving brain health at both the structural and functional levels (Chen et al., 2020). Physical activity and exercise are complex behaviours involving repetitive planning, observation, continuous correction, and suppression of unwanted interference (Mullen & Hall, 2015). These same processes are manifestations of executive control and rely on established neural networks involving the prefrontal cortex (Buckley et al., 2014).

The human brain adapts to changing conditions and emerging needs, by changing its functional and structural properties (“neuroplasty”), leading to the learning and acquisition of new skills (Voss et al., 2010; Lin et al., 2018). Studies in humans and animals have

revealed similar evidence that physical activity facilitates neuroplasty in certain brain structures and, as a result, improves cognitive function (Hötting & Röder, 2013) and reduces the likelihood of neurodegenerative processes and diseases (Domingos et al., 2021). Although better physical and mental health of young people is associated with physical activity (Fedewa et al., 2018), positive effects of physical activity on brain structure and function have been found even in the elderly (Domingos et al., 2021), and aerobic exercise improves even the cognitive abilities of older people (Voss et al., 2010).

Human cognitive functions include memory, attention, visual-spatial, and executive functions, while complex cognitive processes include thinking (abstract, cause and effect, creative thinking, and planning) and language functions (Evans, 2003). There is ample evidence that continuous physical activity can enhance executive function (Mullen & Hall, 2015), sport influences changes in the right anterior prefrontal cortex associated with cognitive control (Chaddock-Heyman et al., 2013), and affects self-regulatory mechanisms (Ludwig & Rauch, 2018). Physically active children were also found to have better executive function inhibition (Scudder, 2014) and planning skills (Van der Niet et al., 2015) than children who do not engage in any physical activity.

Thus, data from a variety of studies suggest that physical activity improves brain function and can lead to changes in executive function. However, in terms of inverse effects, data from a study in the elderly (Daly et al., 2014) that confirmed a dynamic two-way relationship between physical activity and executive function are important. Therefore, changes promoted by physical activity can improve executive function abilities, and changes in executive function over time can promote physical activity.

Social-emotional regulation

The pandemic and self-isolation have completely changed human relationships, i.e., the culture of learning, working, and communicating. Natural communication has been replaced by digital means. People spend more time at the computer both at work and in school, as well as in their free time. Communication has become “flat” or two-dimensional, because when we communicate, we see only the image of the interlocutor and hear the voice, but not the interlocutor in the space of the conversation. Such communication loses the relationship and physicality that are still common to us, which can change a person's attitude to the world. The problems of social isolation became apparent during telecommuting. The social distancing caused by the quarantine has

affected the emotional and mental health of many people. Bullying is becoming more common in cyberspace and during distance learning.

The formation of a new digital communication culture is changing the quality of traditional human communication and collaboration, which is supported by social and emotional skills. Social emotional skills can be improved, but this requires live contact and experience of being in real interaction with others. Therefore, the development of these skills is becoming increasingly important in the context of digitalisation.

The digitalization of work and education has opened access to new sources of learning and information, expanded the diversity of cognition and provided greater opportunities for choice and learning from other cultures. Culture is understood as the totality of unique human characteristics, experiences, knowledge, and values. With increasing diversity of experiences and cultures, empathy is becoming increasingly important when working and communicating between groups of people from different cultures (Meeks, 2020; Stevens et al., 2020). The period of pandemic is seen by scientists as an evolution of the concept of empathy, studying the phenomenon of empathy not only from a sociological perspective but also from a neuroscience perspective (Salandó, 2020).

Social emotional competencies are essential for successfully coping with changing conditions, communicating, and collaborating, and making socially responsible decisions. Understanding the importance of these competencies, identifying, and describing them contributes to personal well-being and growth, which strengthens relationships with others. “Emotional development involves increased ability to feel, understand and differentiate progressively more complex emotions, as well as the ability to self-regulate them in order to adapt to the social environment or to accomplish present or future goals” (p. 7) (Rueda & Paz-Alonso, 2013).

Many cognitive skills that fall under the headings of executive function have counterparts at the social and emotional levels, such as impulse suppression and problem solving. However, researchers and educational practitioners have traditionally not seen executive function as an important variable in developing social emotional abilities (Riggs et al., 2006). Empirical studies have identified relationships between brain executive function and social emotional abilities. However, the concept of social and emotional education in the education system is new. Although physical activity improves EF and the content of physical activity exercises includes many activities (e.g., various forms of play, relay, and conscious attention practices) that contribute to the

development of social emotional abilities, educational practitioners and researchers still lack these opportunities.

Participation in physical activity or sports exercises is based on people's involvement in activities and the experience of positive emotions, and therefore has a very significant educational and human identity formation effect. Leisure, play, or competition play deep emotions - from the joy of sports, the joy of new discoveries, learning and experiencing to the joy of victory or disappointment in losing. People engage in physical activity and sports activities, constantly communicating and collaborating in changing conditions, and must constantly address emerging challenges and make decisions. Therefore, physical activity is a bleak field for the manifestation and development of social skills. People engage in physical activity and sports activities, constantly communicating and collaborating in changing conditions, and must constantly address emerging challenges and make decisions. Studies (Cañabate et al., 2018) show that the promotion of cognitive activity through physical education lessons through reflection methods promotes high self-knowledge (recognition, appreciation, and perception of positive emotions) and has an impact on personal well-being and peer development. Therefore, the context of physical education is an excellent space for developing self-awareness, self-control, social awareness, communication and collaboration skills, and the ability to make responsible decisions (Ciotto & Gagnon, 2018).

Movement and future thinking

Human beings have a remarkable ability to transcend the constraints of the current environment and activities, wherein they mentally transport themselves not only into the past, but also into the future by thinking about upcoming events, tasks, hypothetical scenarios, and even impossible missions (Kvavilashvili & Rummel, 2020). People always think about the future when planning their personal and professional things (e.g., travel, leisure). The future is a place, where we will spend the rest of our lives, so people plan a lot in the present time (Thom et al., 2013).

Thinking about the future is an integral aspect of human cognition, underpinning the ability to anticipate opportunities to plan and control the relationship with the environment and other aspects in advance (Suddendorf & Corballis, 2007). The desire to understand how people think about the future has led to the emergence of a new field of research based on the discoveries of neuroscience and psychology, which is becoming a popular topic in the study of developmental psychology (Szpunar, 2010). Exploring people's future thinking and decision making

provides insight into many important real-world phenomena (Thom et al., 202ę). Meanwhile the relevance of this topic is growing in the face of a pandemic, when thinking about the future's possible new challenges, crises, and sustainable development.

Scientists have identified several taxonomies for future thinking. Szpunar with colleagues (2014) distinguish four forms of future thinking: *simulation* (construction of a detailed mental representation of the future), *prediction* (estimation of the likelihood of and/or one's reaction to a particular future outcome), *intention* (the mental act of setting a goal), and *planning* (the identification and organization of steps toward achieving a goal state). Kvavilashvili & Rummel (2020) mention these future thinking techniques: episodic future thinking, episodic simulation, episodic foresight, and autobiographical planning, among several others. The content of the representation of the idea distinguishes between episodic (specific autobiographical experiences that may occur in the future, such as a trip with friends or participation in a competition that will take place next week) and semantic (focused on community or world values) thinking. Episodic thinking research is most conducted in scientific practice (Schacter et al., 2017). Neuroscience research suggests that stimulation of future ideas activates different areas of the brain depending on the content of future events (e.g., interactions with familiar *people* (social scenarios) or *objects* (non-social scenarios) in personally familiar *locations*) (Szpunar et al., 2014). However, the hippocampus responds to entirely new events whose elements (i.e., individuals, location, and scenarios) were not simulated (Van Mulukom et al., 2013).

We are constantly imagining what will happen in the future, from the big decisions of life to everyday things. For example, when planning a holiday trip, we choose the direction of the trip, the hotel, we book tickets, we plan our leisure time. Later, already preparing for the trip, we plan in detail. This attempt to paint a picture of the future is called episodic thinking about the future (Atance & O'Neill, 2001). Episodic future thinking refers to the capacity to imagine or simulate experiences that might occur in one's personal future (Schacter et al., 2017). Engaging in episodic future thinking (projecting the self into the future to pre-experience future events) may facilitate the perception of future events as psychologically close, thereby increasing the perceived risk associated with those events.

In the field of physical activity and sports, short-term and long-term goals are constantly set, plans and strategies are developed, and in the field of health, people set goals related to weight management or strengthening physical or mental health. This makes it possible to

anticipate the future very clearly and it can become a habit of thinking about the future. It should be noted that future thinking and mental construction of the future by linking the future to the current situation (reality) can be used as a self-regulatory strategy to promote energy, depending on people's expectations to achieve the desired future (Lee et al., 2020). And from a sustainability perspective, competence for future thinking is not just about planning one's own future and regulating one's own activities. As each person's decisions and actions change the relationship with others and reality, thinking about the future is especially relevant when thinking about sustainable development. Conscious physical activity practices that shape self-regulatory skills and future thinking competencies can be a significant precondition for sustainable development.

Discussion

The COVID-19 pandemic rapidly modified the socio-ecological systems of the earth in many ways (Morse et al., 2020), instantly caused transformations in the social world and exposed social vulnerabilities in all areas of life (health, well-being, employment, ecology, economics, human rights, etc.), highlighted phenomena not visible under normal conditions (Leach et al., 2021). It was the restriction of people's movement, self-isolation that led to changes in the daily lives of most of the world's people (less physical activity, social distance, changes in work and communication cultures) and negative consequences (stress, physical, emotional, and mental health) and many people's life thoughts (past, present and future).

In emergencies, it is not possible to act effectively and successfully in the usual way. The resolution of critical situations involves changes in people's behaviour. Many of the consequences of a pandemic are precisely the change in the movement of people and the regime of physical activity and the adoption of new decisions. The ability to critically evaluate a situation and change behaviour is determined by people's ability to self-regulate and their perception of the importance of changes in personal behaviour.

A key determinant of behavioural change is a conscious practice. Therefore, physical activity is one of the best ways to form and develop self-regulatory skills. Participation in physical activity activities promotes adaptation to ever-changing conditions, critical assessment of the situation, recognition of challenges and decision-making. During physical activity all human senses are activated, a pleasure is experienced and thus an involvement in physical activities is considered a value.

Perceptions of personal progress strengthen a person's confidence in his efforts and ability to change his behaviour that is to set new goals and challenges. Experiencing pleasure in sport and perception of value encourages the development of self-regulation, future forecasting, and planning skills. The development of physical activity scenarios is an important tool for developing future thinking skills.

Conclusion

Systematic and planned physical activity is not only a significant measure of a person's physical and mental health, but a sign of health and physical literacy competencies. Health and physical literacy competencies are closely linked to the development of self-regulatory capacity and are manifested in responsible, well-being and sustainable development-oriented behaviour. Conscious physical activity develops a person's ability to self-regulate and plan for their future and can therefore be a meaningful means of shaping future thinking skills.

CRedit authorship contribution statement

S. Sabaliauskas: Conceptualization, Data collection, Systematization, Analysis, Writing - original draft, Writing - review & editing. T. Kaukėnas: Conceptualization, Supervision, Validation, Writing - review & editing. N. Žilinskienė: Supervision, Validation, Writing - review & editing. D. Gražulis: Supervision, Validation, Writing - review & editing.

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

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REVIEW PAPER

EXERCISES FOR PARENTS AND CHILDREN AS A METHOD OF RECREATIONAL ACTIVATION OF FAMILIES

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Abstract:

Physical activity in a family depends on numerous factors including attitudes of parents. It was assumed that recreational activities children participate in constitute a good model to follow to change physical activity behaviours in a family. To achieve the objective, an original model of recreational exercises for parents and children was developed and put into pedagogical practice. The participants in the classes were observed at three stages: before the classes, during them, conducted by a teacher and during the spontaneous part. Altogether, 7 families were assessed. The objective of the study was to find out what positive and negative behaviour occurs during classes. In 7 researched families, during the pre-class stage, 2 positive and 5 negative types of behaviour were noted. During the part conducted by a teacher, 3 positive and 4 negative types of behaviour were observed, during the spontaneous part – 2 positive and 5 negative ones. A preschool child may be a physical activity stimulator in a family, can be used in creating various programmes and strategies for promoting an active (healthy) lifestyle.

Keywords: *physical activity, family, children, parents, nursery school*

Introduction

Research on physical activity in a family focuses on two main directions. The first one, much more extensive in literature, concerns the impact of parents' physical activity on children's physical activity

(Atsalakis & Sleap, 1996; Bauer, 2008; Piech & Michałowska, 2012). Dempsey, Kimiecik, and Horn (1993) emphasise that the impact of parents is especially significant in early children's activity. Freedons and Evenson (1991) show that active parents may pass down their interests to children and they are going to be active too, whereas inactive parents' equal inactive children. The problem pointed out by us is also noticed by Sanchez and Estrada (2009), who indicated, while doing research in Spain, the significance of parents' past sports experiences for a family or even children activity in their adulthood. The group of respondents who engaged in physical activity was dominated by people whose parents or grandparents had played some sport in the past. Polish research into the physical activity of children and youth aged 9-17 conducted on a representative group of 3,000 students at three stages of education confirms these relationships. The children of physically active parents are more physically active than their peers whose parents did not do sport. Of special significance here is the level of physical activity of the father. Attention was also drawn to shared activity of young people with their parents and siblings. The decrease in its frequency was considered alarming. Therefore, it is called for increasing the physical activity of parents (Tabak, 2013). It is confirmed by the research by Kopeć, Przednowek and Walaszczyk (2015), which shows that in most of the cases it was parents who had enrolled their children on dance classes. Moreover, in the opinion of the parents, the children's main motive for engaging in this type of physical activity was the willingness to acquire new skills and readiness to improve their physical fitness. Further analysis revealed that, in the opinion of the parents, their children had a lot of fun dancing and were very willing to participate in this type of physical activity. The parents also noticed that dance had an impact on the development of their children, which signifies that parent are not thoughtless about the physical activity of their children.

The reasons for parents' choice of a sport played by children are pointed out by Lenartowicz (2012), who observes a family tradition and the choice of a sport for a child as a continuation of sports interests of other family members (done competitively by one of the parents or another member of the family). A family tradition in other types of sports than that chosen by the child, but following from the parents' sports experiences, in the opinion of this author also brings the willingness of introducing the child into the world of sport.

The second current deals with the phenomenon of the impact of children's physical activity on parents' physical activity (Iannotti, et al., 2005; Piech, Nowak, Birontiene & Biteniece, 2013; Birontiene, 2012; Staniszewski, 2007). It needs to be stressed that this phenomenon is much less described and mostly concerns families with small children.

According to Sas-Nowosielski (2009), this is a process of reverse socialization. Bidirectional influences between parents and children consist in parents learning from their children and this way there is transmission of feedback information from a child to parents and other adults.

Therefore, the objective of the research undertaken is an attempt at filling a publishing gap in the impact of children's physical activity on parents' physical activity.

Material and Methods

To achieve the objective, an original model of recreational exercises for parents and children was developed and put into pedagogical practice. Classes for parents and children took place once a week in a gymnasium at the Faculty of Physical Education and Health in Biała Podlaska and lasted 45 minutes. The classes consisted of 3 parts. In the first part the parents and the children performed exercises presented by an instructor. In the second, „spontaneous”, part the parents played with the children in an outlined area using various items. The third part consisted of final play and assigning homework.

An invitation to participate in the classes was extended to parents with children from the Community Nursery School No. 15 in Biała Podlaska. The participants were enrolled by the teachers of individual groups of children aged 3 and 4 and information about the aim and course of the classes was provided. The class was joined by 16 families, which resulted in the presence of 15 to 30 people at each session. The absences from classes resulted from children's illnesses or other important family occurrences. Altogether, there were 15 sessions with the attendance of about 80%. The classes were conducted from October 2019 to February 2020.

The rule of the classes for parents and children was active participation of at least one parent. In three cases the classes were attended by both mothers and fathers and in one case a grandfather exercised with a child. During the first four classes there were more mothers than fathers exercising with the children. During the subsequent classes the number of mothers and fathers became equal and later fathers predominated.

The observation method using a specially prepared observation sheet was applied during the research (Bodasińska & Piech, 2019). The parents and the children – the participants in the classes – were observed at three stages: before the classes, during the classes conducted by a teacher and during the spontaneous part. Positive and negative behaviour of the parents was marked during individual stages of the classes. Altogether, 7 families were assessed. The observation was conducted by Tourism and

Recreation students who had been specially trained by the researchers. An observation questionnaire was completed during the 14th session.

The objective of the study was to find out what positive and negative behaviour occurs during classes. It was decided to check if this proposal is accurate, whether it motivates parents and children to exercise and whether it is worth being promoted more widely.

Results

In the 7 researched families, during the pre-class stage, 2 positive and 5 negative types of behaviour were noted. During the part conducted by a teacher, 3 positive and 4 negative types of behaviour were noted and during the spontaneous part – 2 positive and 5 negative ones – Fig. 1. Negative behaviour was most often related to little contact between a parent and a child, parents sitting down on a bench during a game, parents not participating in a game – children played on their own or with other children without parents' participation. There were also parents talking on the phone or having conversations with other parents and losing contact with a child. It needs to be stressed that these types of behaviour usually occurred during the first 3-4 classes. The situation changed during subsequent classes, which probably resulted from a better understanding of the idea of shared family exercises. Parents found it difficult to get used to group activity during the first few classes – there were other parents with their children present in class. It followed from certain timidity. It was also difficult to change a stereotype brought from other classes where a parent's role was only to bring a child and then collect him/her after the class (classes in swimming, gymnastics, dancing, team games, foreign languages).

After some time, when the group got to know one another better, the relationships became more informal, and parents' involvement increased. The children were very active and willing to play. They were eager to play with the parents, other children and with the students who assisted at conducting classes. The children often encouraged they're not very active parents to play together. It happened that the parents took advantage of the presence of students during the classes and put a child in a student's care (rare cases). There were also situations when a parent came with 2 or 3 children or could not exercise due to different situations, for example pregnancy or injury.

It was also noticeable that the children were increasingly active and upon entering a gym they started running and searching for interesting games with various items and equipment. Popular activities included swinging on gymnastic rings, trampolining, swinging on a rope, playing with a hula hoop and others. The children were also seeking contact with

other children then (their friends) and invented games together. The parents observed the children, talked to one another or assisted at the games.

During the spontaneous part one could also notice moments which prove the existence of family bonds. There were circumstances under which the children revealed and expressed their feelings connected with passing down love and joy. They were hugging their parents, holding their hands. The parents picked the children up and reciprocated those feelings. Often it turned into play, for example picking children up, giving them a piggyback, rolling on mattresses together. It was spontaneous behaviour.

An interesting aspect of the classes was giving homework which was supposed to be done together (a child with parents) as well as preparing warm-up exercises by the children. This part was becoming increasingly attractive and the involvement of both the children and the parents was noticeable (for example parents would suggest what the next exercise could be to their children). During a warm-up various types of sports were presented, and the participants were supposed to imitate them by making specific movements, for example swimming breaststroke, playing basketball and others. This element was also a subject of diploma theses and at the same time introduced children to the world of sport. Other subjects of diploma theses were, for example: a family walk, doing exercises learnt during the classes.

Another analysed issue was the regularity of attending the classes, which was very high. Absences, as explained by the parents, resulted from reasons beyond their control, such as, for example, sickness. To a large degree it was the children who took care of participation in the classes. In the case of several families, those meetings became events for the whole family. Both parents took part in the classes or one of the parents arrived after work and joined in the fun.

During the first session there were instances of not knowing the binding rules of the classes. After hearing that the parents had to exercise together with the children, one of the fathers said he had not known about that and because of that he needed to call his wife. There were also excuses related to the lack of a proper exercise outfit.

During all sessions one could see the children were really pleased the moment they entered the gym. They were also happy to see their friends and be able to play with them.

After finishing the classes, the stimulators gave the families some time to leave the building at leisure. This time was used by the children to have some fun, which was also often joined in by the parents.

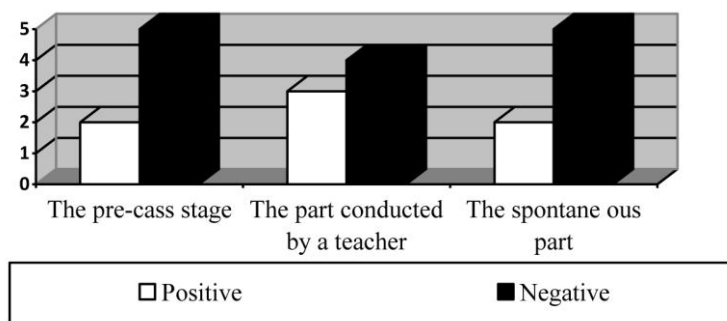


Figure 1. The positive and negative behaviours of parents during the three parts of lessons

Description of behaviour of children and their caregivers participating in the classes, based on observation.

Example 1

Inactive family (father and mother participate in the class).

Before the session – the mother talks to other mothers and the child plays. When the other mothers go to play with their children, this mother goes to talk to another friend.

The part conducted by an instructor – the mother sends the father to exercise with the daughter and she sits. The father exercises with the daughter but he is not very committed, then he walks away for a moment and the child looks back at him. The child stops exercising for a moment. The father stands by the wall and the child goes to her mother. Then the child takes her father to exercise with her but after a while he sits by the wall with the mother. Afterwards, the father approaches the son, and the mother approaches the daughter. The mother plays with the daughter but talks a lot to a friend. The father and the son do not do all exercises. After exercises with a hula hoop, the mother and the father sit down by the wall and the daughter exercises with her friend and her friend's mother, the son wanders around the parents and tries to do exercises there. The father plays with his phone.

Part three of the class – the spontaneous one – the parents keep sitting and do not engage in the exercises. The father talks on the phone and the mother talks to a friend. The mother and her friend go to trampolines, where the children play, but keep talking to each other and do not participate in the activities with the children. The son takes the mother to play with a ball, but it does not last long. The mother starts to walk and talk to a friend, who plays with her children. She disrupts her friend's activity. Subsequently, the mother puts her name on a list and the father starts to play with the son using the ball. The daughter plays on her own or with a friend.

Farewell play – the father leaves the gym, and the mother stands by the wall, the child does not play. The mother talks to a friend and both she and the father do not join in the activity with the children. The boy tries to talk the mother into playing but she is not interested.

To summarize, the parents are not very involved in the play with the children. Their participation in the classes may result from the willingness to provide their children with having fun by playing with other children and even with other parents. This is the type of parents who are very eager to shift the responsibility to develop their children's interests onto various institutions and their role consists solely in transporting the children to these activities. Participation in the activities may also result from the fact of not being charged for it.

Example 2

Active mother

Before the session – upon entering the gym, the girl runs to play and the mother puts on lipstick and begins to enhance her appearance. The child plays on her own a few metres away from the mother. Then the mother approaches the daughter, and they play together until the class starts.

The part conducted by an instructor – the mother holds the child by the hand and smiles frequently, she participates actively in the games. When the girl runs to the trampoline, the mother follows her smiling and invites her back to the rest of the group. A strong bond between the mother and the child can be noticed, they often hug each other. The mother is also physically active, she often runs, and one can see that she has fun. Both her and her daughter listen to the instructions attentively.

Part three of the class – the spontaneous one – during free time the child performs bar exercises, and the mother is by her side and protects her. They mostly play only with each other. The child does not play with other children, she prefers to play with her mother. They play using other apparatus and items, for example: a buck, ropes with rings, trampolines.

Farewell play – the mother and the daughter play together with the group. Then the mother helps the child to put on her shoes. The daughter is still by her mother's side.

Such behaviour proves a strong family bond. Probably one of the reasons for the mother's deep involvement is the girl's age (3 years) and her low self-reliance. The mother understands the child's needs and tries to satisfy them.

Example 3

Inactive mother (father joined the group)

Before the session – the mother talks to other mothers, huge interest in the conversation can be observed. The child plays on her own and is very active.

The part conducted by an instructor – the children run around the gym together with the parents. The mother does not participate in the activity. During the next activity the girl is active, whereas the mother stands and talks to another mother. She is not interested in the child. The following activity requires assistance of a parent and the mother joins in but when the child finds out what it is about the mother withdraws. The mother does not take part in the subsequent activity either and the child stands next to her withdrawing. The next activity consists in children going through „a spiderweb” and the girl enjoys it. When the children are supposed to go through the spiderweb together with a parent, the girl still does it on her own because her mother stands by the wall and talks to another mother. The following activity requires participation of two people and the girl pairs with another girl, whereas the mother sits by the wall and browses her phone talking to another mother simultaneously. Then the mother leaves the gym talking on the phone. At this point the father of the girl arrives but he does not join in the activity. He stands browsing his phone and talking to women.

Part three of the class – the spontaneous one – the girl plays with balls on her own. The parents are a few metres away. The girl calls her mother over, but she is busy talking and does not react. The girl goes trampolining and the father shows interest in the activities and starts playing with balls with the other child (the son). The woman keeps standing and talking. The girl keeps trampolining, waiting politely for her turn. The girl returns to playing with balls, but the parents still do not show interest, they keep playing with their phones. During the farewell play the parents leave the gym with the children and return only for the summary.

Unfortunately, this is an example of parents who are strongly involved in modern technological developments, which replace human contact for them, in this case contact with their own children. This may result from belonging to a virtual society, shaped in this way by the media, peer groups and most of all by different companies with huge advertising campaigns organised to make as large profits as possible. It makes young people less and less physically active and pass down this standard of behaviour to their children.

Example 4

Grandfather with grandson

Before the session – the child plays, and the grandfather observes what his grandson does.

The part conducted by an instructor – the grandson runs around a mat and the grandfather keeps standing and observing. During the next part the grandson and the grandfather listen to the instructions provided by the teacher. They hold hands currently. In the task they are supposed to perform together, the caregiver follows his grandson but in the second round the grandfather rests and the child goes alone. The grandfather stands by the wall and watches the grandson play. During the next part the grandfather keeps standing and the grandson performs the tasks given by the instructor on his own.

Part three of the class – the spontaneous one – the grandfather sits on a bench and the grandson plays on his own trying to get the grandfather involved in the activity. The child gets onto mattresses and then between them. The grandfather takes out a phone but puts it back after a moment and starts watching what his grandson does. When the grandfather finds someone to talk to, he hardly pays attention to his grandson. The child throws balls upwards and flicks them up. When all the balls have been thrown off, the child gets off the mattresses. Then he takes a mattress and pulls it together with other children around the gym. The children throw the mattress onto a pile of other mattresses and the grandfather starts to observe more closely what his grandson does. During the final meeting and summing up the class the grandfather sits on a bench whereas the child is with the rest of the group. The grandson does not know what to do.

To sum up, it needs to be said that the caregiver, in this case – the grandfather, does not demonstrate willingness to play with the grandson. He treats the classes as a responsibility and does not pay attention to the idea of these meetings, which is having fun with the family.

Discussion

Pre-schoolers and younger pupils possess natural willingness to be active. This fact can be used to promote physical activity in a family. Staniszewski's research (2007) on families with younger pupils demonstrates a strong position of children in the family, which results from them being still heavily dependent on parents. Small children are able to force their ideas upon families and their various actions. In the opinion of the researched parents, the most frequent initiators of shared exercises and games are the children. When the children succeeded in persuading the parents to exercise, most of them did it with pleasure and even enthusiasm.

In family recreation, children use knowledge acquired at school (Staniszewski, 2007). Therefore, it is important what skills they are going to learn at this stage of education, especially those relating to the quality of physical education classes.

Interesting results were obtained by Birontiene (2012), who conducted an experiment consisting in giving pre-schoolers homework in the form of specific activities to be carried out together with their parents. The experiment was conducted in a dozen or so nursery schools in Klaipėda. The children were used as physical activity stimulators in families. This turned out to be an effective method of promotion since the children talked about the contents of homework and were able to persuade their parents into doing it.

A similar experiment was also conducted in Nursery School No. 15 in Biała Podlaska (Piech, Nowak, Birontiene & Biteniece, 2013). After its completion the number of people systematically exercising with their children increased. The parents also bought new sporting equipment.

Other researchers conducted by Piech and Grad (2014) during recreational events for parents and children called „Olympics for Pre-schoolers” also indicate children as physical activity stimulators in families. The participation of parents in a recreational event turned out to be stimulated by preschool teachers and children. The research demonstrated that after the event the children encouraged their parents to play together, and the parents used the games from the fair to spend free time with the family. The parents’ feelings after the event were concentrated on the child. The facts of talking to the children about the event and having photographic documentation were emphasized (Piech & Grad, 2014).

Interesting results were obtained during classes participated by parents and children from the third form in Wrocław. Even though in the beginning the joint classes for parents and children were received somewhat cautiously, some parents discovered their big advantages resulting not only from activities and games but also from the relationships taking place between them and the children. Thanks to the classes, the families obtained a new topic to talk about at home. In the researched group all children accepted the participation of their parents in the activities. Thanks to the improvement in their physical fitness, the parents were earning much respect in their children’s eyes (Kuczyńska, & Rzepa, 2000).

Conclusions

Based on the conducted research, the following final conclusions have been drawn a preschool child may be a physical activity stimulator in a family, which can be used while creating various programmes and strategies for promoting an active (healthy) lifestyle.

Despite frequent negative behaviour during classes, parents understand their children’s need for exercise, which is confirmed by their regular participation in the classes which take place during their free time. It

is also confirmed by the previous conclusion that children may be stimulators of physical activity in families. The fewest cases of negative behaviour were observed during the part conducted by an instructor. A higher number of the cases of negative behaviour during the pre-session part and the spontaneous part may indicate similar behaviour in everyday lives of the researched families.

Circles and organisations promoting an active lifestyle should pay more attention to the preschool age of a child since during this period exercise is something natural for a child and parents show greater interest in their children than in the later periods.

A high number of cases of negative behaviour during the classes, for example talking on the phone or sitting on a bench during an activity, is worrying. This indicates that parents often try to shift the responsibility of raising their children in different spheres onto other institutions or people.

Based on the research one can distinguish the following types of parents who took part in the classes together with their children: very active parents – they are characterized by active participation in the exercises with their children and creativity in the spontaneous part – making up different tasks with various items. The second type of parents is moderately active parents, who get involved in exercising at their children's request or during the part conducted by an instructor. During the spontaneous part they look for excuses to avoid playing together with their child. They demonstrate low activity and low creativity here. The third type is parents who often use mobile phones and look for pretexts for avoiding playing with their child. However, they regularly come to classes because they are enjoyed by their children.

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SCHORT COMMUNICATION

OFFER OF OUTDOOR RECREATIONAL ACTIVITIES IN LATVIA DURING COVID-19 PANDEMIC

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Abstract

Recreational activities, which are an integral part of healthy lifestyle, decrease stress, increase productivity and facilitate physical, mental and social health. During Covid-19 pandemic, the restrictions introduced to curb the spread of coronavirus limited the offer of recreational activities to those that could take place outdoors, with a limited number of participants, and enabled keeping safe social distance (at least 2 m). Outdoor recreational activities that take place in natural settings (the so-called “nature sports”) are ideal in this context, as they combine physical and psychological aspects of recreation and can be enjoyed by individuals as well as members of a single household, including, in many cases, families with children and older citizens. This article provides an overview of the offer of three types of recreational activities – hiking on nature trails, skiing and horse riding – in Latvia. In addition to describing the offer of each activity across the regions of Latvia, the study includes interviews with people responsible for providing these services in order to ascertain the current situation in each field and the possible changes that took place during Covid-19 pandemic.

Keywords: *outdoor recreation; Covid-19; nature trails; skiing; horse riding.*

Introduction

A little more than a year has passed since the beginning of the world crisis caused by Covid-19 pandemics. Under the crisis conditions, there are limited possibilities for communication and being physically active: at certain points in time, team sports were available only for professionals, and sport clubs closed in Latvia. Our study is intended to educate about

possibilities for being physically active and mentally recreated using various types of outdoor physical activities that are available in all regions of Latvia.

Continuous tension has an adverse effect on human psychological and, hence, also physical health. Unfortunately, under the current conditions, it is impossible to avoid stress – people must endure unexpected changes, or their opposite, the *status quo*, which sometimes is even more tiring. The studies that have already been conducted across the world show that Covid-19 has exacerbated many psychological health issues. Albeit no data containing this information could be found for Latvia, specialists acknowledge that demand for psychological health care has increased during the pandemics.

One of the ways that would help avoid or relieve the stress induced by external circumstances and enforced sedentary lifestyle whilst complying with the measures imposed by the government to curb the spread of disease is active outdoor recreation in natural settings. It has been observed that the number of people engaged in outdoor recreational activities in local natural settings has increased already in the first months of Covid-19: studies of the so-called nature sports and micro-adventure have heralded these recreational approaches as both safe and beneficial during the pandemic (Mackenzie & Goodnow, 2020; Melo & van Rheehe, 2020). The aim of this article is to study the offer of nature trails, skiing tracks and recreational horse riding as recreational resources in Latvia during Covid-19 pandemic.

Materials and methods

This study combines an overview of outdoor recreational opportunities on the territory of Latvia in three types of recreational activity – hiking on nature trails, skiing and horse riding – comparing the offer and availability of these activities in five Latvian regions (Kurzeme, Zemgale, Vidzeme, Latgale and the vicinity of Riga – Pieriga) during Covid-19 pandemic, for a period of one year, from the beginning of April 2019 until the beginning of April 2020. Two of these recreational activities, hiking and horse riding, are perennial, as, theoretically, they are available all year round. Skiing is a seasonal activity, which depends on the weather and availability of tracks, which can be prepared only under certain weather conditions (temperature, availability of snow). All of these recreational activities are offered outdoors, hence they were available also during the period when restrictions imposed to curb the spread of coronavirus were in power. The restrictions, however, influenced the conditions under which the services could be provided, such as imposing a limit on the maximum number of participants, restricting or banning the use of indoor areas and

enforcing the requirement of keeping a social distance of at least 2 m for members of different households.

This study combines an overview of sources that give an insight into the range of offer for each recreational opportunity across regions (interactive maps, tourist information provided by the regional and municipal administration, etc.) with telephone interviews conducted with people engaged in the provision of the activities. First, an overall insight into the availability of nature trails, skiing tracks and horse yards providing recreational riding was gained by studying the offer in each region. Next, three to five telephone interviews were conducted with the personnel responsible for the functioning of each facility: trail guides or administrators of nature trails, officials responsible for the maintenance of skiing tracks or skiing instructors, and horse yard owners or riding instructors working at the yards.

During the telephone interviews, four questions were asked:

1. What is the current number of visitors (approximately) during working days and during the weekend?
2. What is the average percentage of children or families with children, young people (aged 16 to 26), single adults and older citizens (aged over 50)?
3. Did the number of visitors change as compared to the period before the pandemic? If yes, how did it change?
4. Was it easy to ensure compliance with Covid-related restrictions among the visitors?

The results of the telephone interviews were summarized for each type of recreational activity and for each respondent individually and are explained below. The discussion section provides an examination of each outdoor recreational activity in Latvia, explaining the context in which it takes place, outlining challenges and advantages, and describing regional differences in the offer of each activity.

Results

Nature trails. All over the territory of Latvia throughout the year it is possible to enjoy hiking on nature trails according to one's interests and capacities (Fig.1). The term "nature trail" or "nature walk" designates a circular or linear route marked in a natural setting. Nature trails are created in such a way as to preserve nature, with bridges constructed over ditches or wetlands and designated stations for rest and, sometimes, also for fireplaces. Usually, nature trails have an information board erected at the beginning, indicating the length of the path, objects to view and, occasionally, also approximate time necessary to walk the route, as well as information about

the flora and fauna representatives that can be spotted around the trail, including poisonous plants, if such exist. Before going to a nature trail, visitors should find out how to get there, where to park, or how the path can be reached by public transport (<https://www.latvia.travel/lv>).

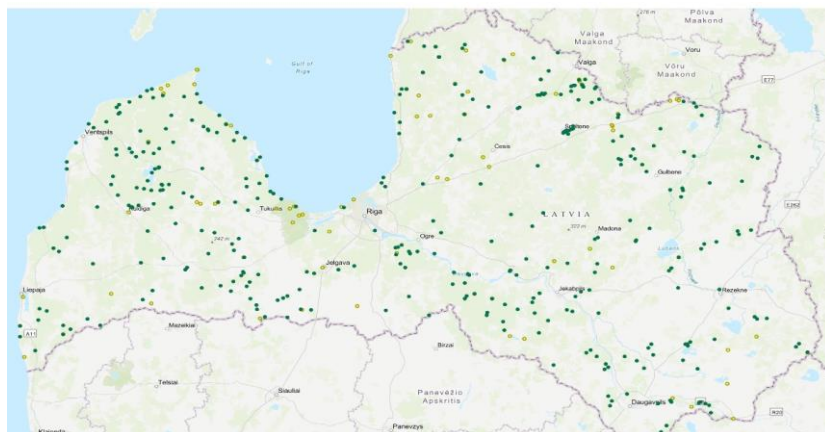


Figure 1. Nature trails in Latvia

(<https://www.delfi.lv/turismagids/kolekcijas/latvijas-skaistako-dabas-taku-karte-un-idejas-kurp-doties-brivdienas.d?id=47654879>)

Latvia offers multiple possibilities for recreation using nature trails: one has only to choose the ones that suit one's interests best (Fig. 2). The following overview introduces nature trails of various types in Latvian regions.

Nature trails in Kurzeme

(<https://www.kurzemesregions.lv/projekti/turisms/unigreen/dabas-takas/>)

One of the longest nature trails in Latvia is *Pape Lake trail* which is in Kurzeme region. The trail takes the hiker around Pape Lake, an overgrown lake of lagoon type with seawater vegetation. The lake is very shallow, with the average depth of 0.5m. The trail has various objects for watching: a platform for bird observation, a bird sanctuary, Paurupe and Līgupe rivers, beaver huts, a holy birch grove and Ezerskola sacrificial stone, Pape polder meadows, black alder, fir and spruce forests, an ornithological station and Pape lighthouse. This trail has the fourth degree of access difficulty, requiring 8 to 9 hours for hiking over trodden paths, forest, and gravel roads.

Nature trails in Zemgale (<https://www.latvia.travel/lv/raksts/10-idejas-zemgales-apcelosanai>)

One of the most popular natural trails in Latvia is *Tērvete nature trails* which are situated in the Latvian State Forest Nature Park Tērvete,

Zemgale region. They include wooden sculpture and specially created footpaths with bridges and boardwalks over the Tērvete River valley, providing an excellent family-friendly recreational route. The most popular places in the park, requiring at least three hours for visiting, include the Fairy Tale Wood, Amusement Ground and Elf Wood. The trails are accessible for wheelchair users and families with prams or strollers. The trails have a paid entry. Bicycle rent is available.

Nature trails in Vidzeme (<https://www.latvia.travel/lv>)

The most popular natural trails in Vidzeme region are *Cecīļi nature trails* and *Veczemju cliff*, which has the most spectacular and magnificent group of sandstone cliffs in Vidzeme seaside area. The waves have created a 6-m-high steep bank, where stretches of several hundred meters long show red-sand residual cliff with caves, niches, grottoes, and other structures. The cliff has a versatile colour scheme, from very light hues to dark red ones. Visitors can adapt the length and duration of the walk to their tastes and abilities from 10 to 15 km and even longer.

Nature trails in Pierīga region (<https://www.fenikssfun.com/kur-doties/idejas-pastaigam-7761>)

Natural trails in Pierīga region are situated very close to Riga. *Ragakāpas Park* is a specially protected territory situated in Buļļuciems, approximately half-an-hour drive from Riga. The visitors can enjoy a relaxing walk of 2 km, where one conveniently hikes over wooden boardwalks, bridges, and stairs. Ragakāpas Park territory offers three nature trails – Augu, Kukaiņu and Priežu trails. Each trail has a special theme and visually engaging information board. Ikšķile parish offers an opportunity to enjoy both indolent walks in conifer woods and active climbing over exciting wooden tracks. These and many other activities can be experienced in nature park called *Ogre Blue Hills*.

Nature trails in Latgale (<https://latgale.travel/idejas-aktivam-brivdienam-latgale/>)

In Latgale region also is a lot of natural trails. As a significant recreational object in Latgale region and whole Latvia should be mentioned *The Hill of Christ King (Kristus Karaļa kalns)* is found in the vicinity of Aglona (<https://www.latvia.travel/lv/apskates-vieta/kristus-karala-kalns>). The territory of the hill has a beautiful park with sculptures, representing the events that, according to the Gospel, took place from the beginning of making until this day. Currently the park comprises over 220 various sculptures and their compositions. The sculptural park takes up the territory of approximately 20 ha and includes gardens and artificial ponds. The Park is suitable for walking with prams and for people in a wheelchair.

Skiing tracks This year, skiing became the top winter recreational activity in Latvia. This is not surprising, as skiing is known for its unique effect on the human nervous system, decreasing psychological stress and eliminating psychosomatic health issues caused by stress, as well as even preventing possible depression (Laukkanen J.A. et al. 2019). The positive impact of skiing on increasing productivity after everyday fatigue caused by monotonous home and work routine, which, this winter, frequently took place in one and the same environment (distance working from home) (Duoos B.A. 2011, Duoos B.A. 2012).

This year, during the pandemic, when numerous and various restrictions have been enacted, the activity of skiing outdoors, in the open air, has attracted many followers of this sport. Thanks to stable weather and enduring snow surface over the entire territory of Latvia, it was possible to ski for over a month in the region of Kurzeme and for up to three months in the region of Vidzeme (Fig.3). This enabled skiers to practice both cross country and Alpine skiing on various tracks, ranging from 200 m to 50 km. The largest number of skiing tracks was situated in Vidzeme; therefore, the widest offer of skiing opportunities was available in this region.

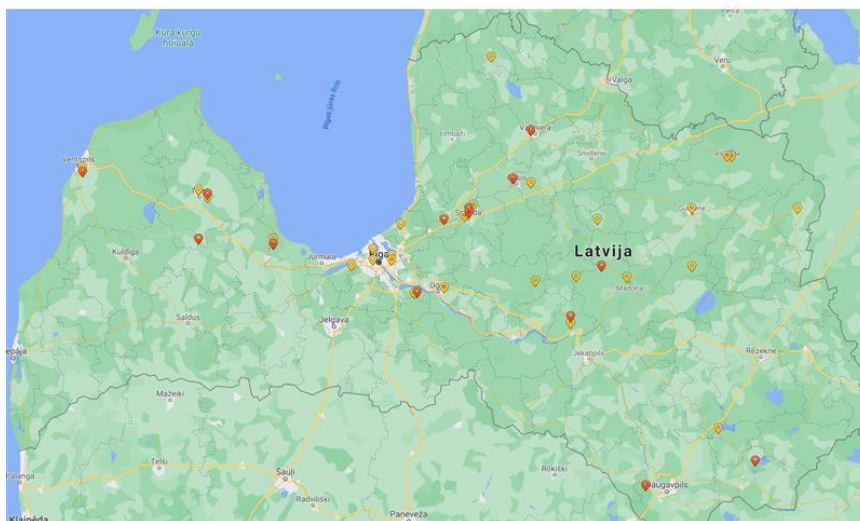


Figure 3. Skiing tracks in Latvia (author`s own work)

The territory of Latvia is divided into five regions, each of which this year offered skiing tracks of various levels. In Kurzeme region, the number of prepared tracks for crosscountry and Alpine skiing is currently the lowest, but this is likely to be related to the peculiarity of snow surface formation in the region, which this year last for approximately one month.

This year, crosscountry skiing tracks were more accessible than Alpine skiing tracks. This is caused by the regulations on the load on skiing tracks during Covid-19 pandemic, which limited the number of skiers on the slope, whereas no limit was imposed on the number of skiers on crosscountry tracks. In Kurzeme region, there were eleven most popular crosscountry tracks during this pandemic season and only four Alpine skiing tracks. Crosscountry skiing tracks were prepared for skiing in both classical and freestyle skiing styles. Albeit in many places crosscountry tracks were prepared even in parks and on the outskirts of the towns, these were not advertised to the wider audience but were reserved for the local skiing community. In many places such tracks were prepared at the outdoor stadia of schools, with the local municipal administration assuming responsibility for their maintenance. In Kurzeme region, the length of tracks varied from 300 m to 15 km. Numerous tracks had a small entry fee for day of 2 to 3 EUR (this was the case in cinema town “Cinevilla” and camping “Sveikuļi”), while entry to other tracks was free of charge (Lauku ceļotājs 2021).

This year in Zemgale crosscountry skiing was offered at five prepared tracks, which also offered the loan of equipment. Skiers could use the track for free with their own equipment. The length of tracks varied from 400 m to a lap of 3 km, with many other tracks being created locally with the support of the community (Lauku ceļotājs 2021).

In Riga and its vicinity (Pierīga region) this year entrepreneurs and municipalities provided 16 popular crosscountry tracks, 8 of them in Riga. Thanks to the continuous presence of snow surface, several municipalities provided the residents with the possibility to ski over easy, shorter and longer tracks, varying from 200 m to 15 km. All the crosscountry tracks offered an opportunity to ski for free with the skier's own equipment, and 6 tracks offered the loan of equipment for prices from 2 to 9 EUR. The most popular tracks were on the seaside, where skiers could enjoy easy and picturesque tracks prepared by the municipal administrations (Lauku ceļotājs 2021).

The richest offer of crosscountry skiing tracks was found in Vidzeme, which had 37 most popular tracks and many more municipally and privately prepared tracks. Vidzeme region also has the national level biathlon and crosscountry skiing tracks, where even international competitions take place: these are Smecersila in Madona and Cēsis tracks in Priekule. During this pandemic season, it was possible to ski in Vidzeme over the course of three months, which is longer than in the other regions. Some of the prepared tracks had a low entry fee of 2 EUR, and the largest Latvian track in Madona, “Smeceres sils” offers a yearly subscription fee of

15EUR. The variety of tracks is particularly pronounced in Vidzeme region, with the shortest distance being 200m, and the longest reaching 50km. The tracks have distances of various length, most commonly varying from 500m to 10km (Lauku ceļotājs 2021).

In Latgale region this year, 7 most popular crosscountry tracks were singled out, most of them ranging from 400m to 5km. All these tracks were available for free. Many visitors of private hotels and guest houses were offered crosscountry skiing opportunities. Equipment was available for loan only at certain tracks prepared for classical and freestyle skiing (Lauku ceļotājs 2021).

Recreational riding yards

In Latvia, riding as a recreational activity is on offer at the numerous stables and riding clubs that offer their services in all regions of the country, though the largest concentration is found around the capital (Fig. 4).

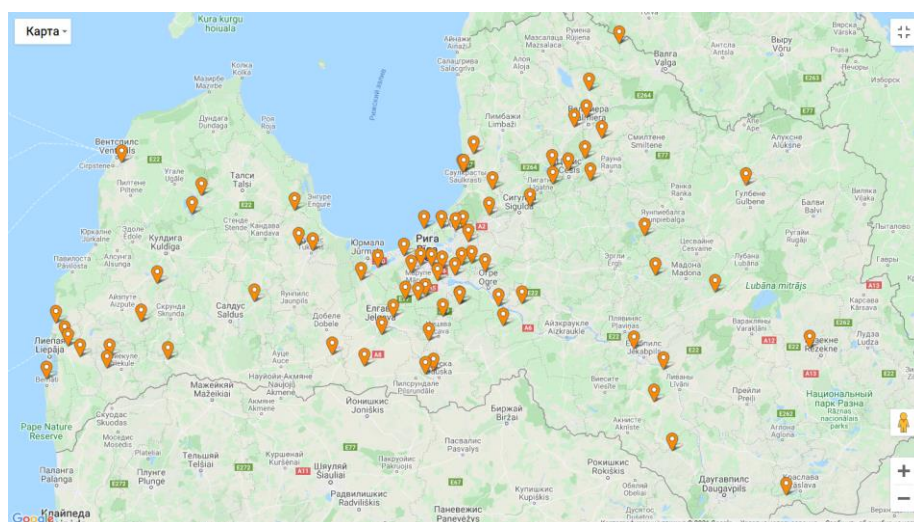


Figure 4. Interactive map of riding yards that offer hacks
(<http://horseriding.lv/lv/map/type/izjades>)

As we can see from Figure 4, the distribution of yards that offer hacks is uneven across the country. Most yards centre around Riga and in the vicinity of the capital, whereas in certain regions the number of yards is significantly lower. The municipalities with the highest number of yards are Mārupe (5 yards), Ķekava (4 yards), Jelgava (4 yards) and Ozolnieki (4 yards). The former two, Mārupe and Ķekava, are very close to Riga, with many residents of the municipalities commuting to the capital for work. It is also easy and convenient for the residents of Riga to go these municipalities. Jelgava and Ozolnieki are somewhat more distant, but they can also be

reached from Riga conveniently by car or by public transport. In all, the municipalities around Riga account for a significant proportion of yards that offer hacks: in addition to Mārupe (5 yards), Ķekava (4 yards), Jelgava (4 yards) and Ozolnieki (4 yards) municipalities, there are Ķegums and Salaspils municipalities, each with 2 yards that offer hacks.

Another popular location for yards offering hacks is, unsurprisingly, along the seashore: Saulkrasti, Ādaži and Kraslava municipalities have 2 yards each, and there are yards near the seaports Liepāja (1) and Ventspils (2) as well. Areas that have rich cultural history and natural resources, promoted as primary destinations for cultural tourism, likewise have larger concentration of yards offering hacks: there are 2 in Sigulda municipality, but the historical towns of Sigulda and Cesis have clusters of, respectively, 3 and 4 yards around them. Further away from the capital, another historical city, Valmiera, also has four yards that offer hacks. Valmiera also has a tradition of equestrian sports, as it is home to the important equestrian and breeding centre Burtnieki, founded in the Soviet time and boasting one of the largest covering arenas in Latvia.

Whereas other Latvian regions are characterized by clusters of riding yards, typically centring around a historical town (Cesis, Sigulda), a place attractive for tourists, such as the sea, or a bigger riding centre, as is the case in Valmiera, Latgale is one region where single yards are spread evenly over the area. There are also no yards in the central area surrounding Vecpiebalga (which has one yard), except for one yard halfway between Ergli and Madona, which, as we can see by comparing it with the map showing yards that offer trainings, apparently only offers hacking out services. The yard in question, “Betini,” positions itself as a small yard offering hacks that would enable the riders enjoy the natural attractions of the place, the hill Gaizinkalns and the beautiful landscape surrounding it, as well as offering driving in a carriage or sleigh, depending on the season.

Overall, looking at the location of yards offering hacks by administrative region, we can see that most of these yards are located in the Riga region: 5 in Marupe municipality, 4 in Kekava municipality, 2 in Adazi municipality, 2 in Kegums municipality, 2 in Saulkrasti municipality (an area along the seaside, thus attractive for tourism and leisure activities) and, finally, 2 in Salaspils municipality (Salaspils being a satellite of Riga, its border almost merging with the capital).

Zemgale region, despite its small size, accounts for a significant number of yards: 3 in Jelgava municipality (Jelgava being a large regional city relatively close to the capital, with several residents from the city and its suburbia commuting to the capital for work), 3 in Ozolnieki municipality

(which is close to Jelgava and has a number of commuters to the capital), 3 in Tukums municipality.

Vidzeme region has 3 yards in Madona municipality, 3 in Beverinas municipality, 3 in Babite municipality, 2 in Koceni municipality, 2 in Sigulda municipality (Sigulda being a place famous for its cultural, historical and natural heritage objects), 2 in Valka municipality and 2 in Priekuli municipality.

In Latgale region, the only municipality marked on the map is Kraslava with its 2 yards, although horse breeding and training are developed in the region. This may be due to the fact that the breeding and training yards are not involved in recreational riding or do not advertise their services on the website.

In the western part of Latvia, Kurzeme region includes 3 yards in Grobina municipality, 2 in Kuldiga municipality and 2 in Priekule municipality.

Results of telephone interviews

Nature trails Five telephone interviews have been carried out to ascertain the situation at the nature trails that are located in different regions of Latvia, contacting the guides or the persons responsible for maintaining order at the trails. The common tendency for all the five trails was to have fewer visitors during the working days than during the weekend. Thus, the number of visitors at nature trails in Latgale as compared with the time before the pandemics has doubled.

A similar situation is observed in the vicinity of Riga (Pieriga region). The majority of the visitors are families with children, who make up approximately 70% of all visitors. Young people rarely come to this nature trail, amounting to approximately 10% of all visitors, while older citizens come mainly with families, making up approximately 20% of all visitors.

At nature trails in Vidzeme there are some trails which have a daily attendance of about 100 people during working days, but during the weekends the number of visitors varies from 600 to 700 people a day. The trail complex includes trails of various length and degree of difficulty, which offer additional recreational services, thanks to which young people make up 50%-70% of visitors. Families with children (approximately 30%) usually choose the shorter trails, and older citizens make up 10%-15% of all visitors. The total number of visitors have doubled as compared to the period before the pandemic. A similar situation was reported at Kurzeme nature trail.

The guides and personnel interviewed stated that they did not encounter any problems in ensuring compliance with Covid-19 related restrictions at the nature trails under their supervision.

Skiing tracks Three telephone interviews were conducted with people in charge of skiing tracks in Riga, Madona and Talsi.

Answering the question whether the number of people who are interested in skiing during weekdays and weekends, as compared to previous years similar in terms of snow, has changed, the person responsible for the crosscountry skiing track in Riga said that the number of skiers has grown by about 30%. Although no exact numbers are available, this conclusion can be reached by observing the activity at the points where renting equipment was offered. The number of skiers has grown both on the evenings of working days and during the weekends. On the demographic division of the tracks, in Riga, it was observed that families mostly came during the weekends, whereas on working days most skiers were individuals, many of them beginners. In terms of age groups, older citizens constituted 10%, adults – 60% and young people and children 30%. The fewest skiers came from the age group of 20-30 years old. Answering the question about the readiness of the skiers to conform to Covid-related restrictions introduced for public spaces, the answer was that the management ensured compliance with the restrictions, but, due to queues to the renting points, it was necessary to remind the clients about social distancing.

In Madona, the person responsible for the skiing track answered that the number of skiers has grown by about 50%, with the greatest influx of visitors being observed on weekends and the evenings of working days. Demographically speaking, in Madona, most families came on weekends, and most individuals – on the evenings of work days, same as in the previous years. In terms of age groups, older citizens constituted 10%, adults 45% and young people and children also 45%. The restrictions were fully observed, and the skiers themselves were careful to observe social distancing, making it unnecessary to remind them of the rules.

The person responsible for the skiing track in Talsi answered that the local skiers and biathletes were very active this year: during weekdays, both the disciples of sport schools and individual skiers (on evenings) would make use of the tracks, with the average increase in the number of skiers being approximately 20-30%. During the weekends, the tracks were visited by families. The demographics of skiers in Talsi shows that families and couples came on Saturdays and Sundays mostly, whereas weekdays had the largest number of individual skiers and those training in groups. In terms of

age, older citizens made up 5-10% of skiers, adults 40%, and young people and children at least 50%. The management of the skiing tracks noted that the skiers observed social distancing and other requirements.

Riding yards Three telephone interviews have been conducted with the owners or responsible persons of the riding yards that offer outdoor recreational riding and training. All the three yards are situated in the vicinity of Riga (Pieriga region): two in Baldone municipality and one in Iecava municipality.

The owner of the first yard in Baldone said that the number of riders on working days is 8-10 riders, and the same number of riders on Saturdays. The yard does not offer riding services on Sundays (it is a day-off for the trainers and the horses). Answering the question about the demographics of the riders, the owner stated that 80% of the riders are children (under 16), and 20% are adults; the yard had no senior clients. Most riders come individually, but there are also a few families who come to ride. During the pandemic, the number of clients have increased by over a half, necessitating the purchase of a new horse.

The owner of the second yard in Baldone stated that they have approximately the same number of riders on working days and Saturdays, about 10 people overall, and that they did not work on Sundays. They had the same number of children and adults, about 50% each, as well as 5 senior riders (over 50), who were either horse owners or volunteered to do work at the yard and could ride for free (these owners and volunteers could come on any days, including Sundays). The number of clients did not change during the pandemics.

The owner of the third yard, located in Iecava municipality, explained they have a stable clientele, so that the number of clients did not change substantially during the pandemic. Somewhat more riders came during the weekends than on working days (2 riders and 3 riders a day, respectively). In terms of demographics, underage riders (under 18) made up 80% of the visitors, whereas adults and families with children about 20%. Usually, they had few or no senior riders.

All representatives of the riding yards stated that they did not encounter any substantial difficulties in ensuring compliance with restrictions introduced due to Covid-19 pandemic.

Discussion

In this study, we show that the regions of Latvia have various nature trails, skiing tracks and riding yards that offer recreational riding. It helps people maintain psychological health, overcome stress, at least partially maintain physical activity and working ability.

Different regions of Latvia have a wide offer of nature trails, with varying degree of difficulty and access. There are nature trails that can be visited together with children and senior citizens, who have difficulties walking; alternatively, one can choose hiking over wetland boardwalks or along the seashore using a bicycle and watch birds, or even go for a walk accompanied by huskies. The wide offer of nature trails has attracted numerous visitors, mostly families with children and senior citizens, as found by conducting telephone interviews and viewing statistic data from registration cameras installed at Roja beach.

Analysing the variety and availability of tracks in Latvian regions it was found that Vidzeme had the widest offer of crosscountry tracks in Latvia, whereas the offer in Latgale region was the least varied. Overall, the most popular tracks ranged from approximately 500m to 5km, and most crosscountry skiing tracks had no entry fee. It is possible that these circumstances enabled many skiers to use this opportunity to enjoy crosscountry skiing as one of the safest nature sports and outdoor recreational activities during the pandemic.

Recreating horse riding is offered in all Latvian regions, but most riding yards that offer recreational riding concentrate, unsurprisingly, on the outskirts of Riga and in its vicinity (Pieriga region). Analysing the data on workload and recreational riding offer collected by conducting interviews with three yards situated in Pieriga region, it was found that the yards had a stable number of clients as compared to the period before the pandemic. Only one yard reported an increase of visitors. However, it was found that, in difference from nature trails and skiing tracks, where the number of visitors can be increased substantially, recreational riding is different in that the offer is limited by the availability of horses that can be used for riding.

Conclusion

This study reveals an increase in demand for outdoor recreational activities in various regions: families are particularly active, and young people are also involved in visiting natural tracks, skiing trails and riding yards that offer recreational riding services. This activity took place in the context of Covid-19 restrictions, when opportunities to practice sport were available mostly (and sometimes exclusively) to adult, professional athletes only.

The overview provided in this article shows that nature trails, riding yards and skiing tracks can be found in all regions of Latvia and cater for a variety of people of different ages, physical abilities, times and financial resources. All of these recreational options are nature- and family-friendly and facilitate physical, mental and social health. At the same time, the

distribution of offer in each sector varies by region: for instance, most yards that offer recreational riding concentrate in Pierīga region, whereas Latgale has the lowest number of yards offering recreational riding. In turn, most of the skiing tracks opened this winter were found in Vidzeme, where the skiing season was the longest this year (up to three months), and fewest were found in Kurzeme, where the skiing season was the shortest (one month). Meanwhile, an attractive offer of a wide range of nature trails is available in all Latvian regions.

The data provided by qualitative research that entailed conducting three to five telephone interviews with the official representatives in charge of nature trails, skiing tracks and riding yards has revealed an increase in the level of demand. In the case of nature trails, the flow of people has increased up to three times on separate trails, such as Roja nature trail. In the case of riding yard, the existing offer could not accommodate the increased demand, as more families and children came to be interested in recreational riding. Thus, whereas the capacity of nature trails and crosscountry skiing tracks could be increased significantly, the capacity of riding yards is limited by concern for animal welfare.

In all, the research found that Latvia has a wide and varied offer of outdoor recreational activities in the sectors of walking on nature trails, crosscountry skiing and recreational riding. The offer is varied and adopted to different demographic groups, but its distribution over the five regions of Latvia is uneven. The research has also demonstrated an increased interest among all age and demographic groups of the Latvian population in outdoor recreational activities during Covid-19 pandemic.

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SCHORT COMMUNICATION

MULTIGENERATIONAL PHYSICAL ACTIVITY DURING COVID-19 PANDEMIC - GOOD PRACTICES OF BIAŁA PODLASKA

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Abstract

During the Covid-19 pandemic, the importance of physical activity is increasingly emphasized. The basis of the following report is to present ways to promote active lifestyles in various environments and settings. The models introduced in Biala Podlaska have been used here. It should be emphasized that these models are a proposal for family physical activity with the potential to integrate and involve different generations, which can also be implemented in the times of a pandemic. Through the organization of the project, they engage many entities and partners, who, by joining in and cooperating in achieving common goals, can also better adapt their own activities to the changes taking place in the current times. The proposed activities may be seen as a sort of "medicine" or a health prophylaxis for contemporary problems related to the decline in physical activity levels and deterioration of health and well-being in the local communities. Their common goal should be to encourage active spending of leisure time with the family in the times of the Covid-19 pandemic, which allows to better adapt to the hardships of the current situation. So every move counts, especially now as we face the restrictions of the Covid-19 pandemic. Thus, the promotion of physical activity based on simple forms of movement, conducted among family, certainly deserves to be appreciated and should be seen as a key component of educational activities, encouraging a return to an active life in the post-pandemic conditions. The motto of these activities could be: "safety and creativity".

Key words: *Covid-19 pandemic, physical activity, family physical activity.*

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 we are exposed to every day, all have a negative impact on our physical and mental health and well-being. Experts point out that how much we move in general, is essential to our health. Undertaking physical activity during the ongoing pandemic should therefore be considered from two important perspectives: as a preventative measure – we know that physically active people go through the disease more smoothly, and that regular exercise is able to stimulate the body's immune response and reduce the risk of upper respiratory tract infections; and as a rehabilitative (restorative) measure - counteracting both the effects of hypokinesia and social isolation, resulting from the pandemic situation, and the post-Covid-19 complications, which are increasingly diagnosed consequences of past coronavirus infection (both symptomatic and asymptomatic).

Many researchers acknowledge the indications for a two-pronged approach to undertaking systematic physical activity (as an anti-Covid-19 prophylaxis or treatment of the effects of post-Covid-19 disease), 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. On the other hand, the implementation of physical activity into daily health behaviors requires awareness to create a habit of active lifestyle, which is a long-term and pattern-based process.

From many years of experience of academic teachers dealing with the promotion of physical activity in families, we know how difficult it may be nowadays to convince young people to stay physically active, especially in families where regular physical activity is not modelled by adults. We are also aware that the current pandemic situation has reinforced these unfavorable sedentary behaviors even more. Hence, in this article we want to show a slightly different perspective on physical activity. This difference manifests itself primarily in its diversity and availability for everyone, regardless of sex, age, level of fitness or body weight, and the possibility of practicing even in times of a pandemic, among people living in a common household.

Another factor that we have considered in this article, is a great change in the physical activity levels of various age groups in general.

Until recently, children in Poland spent practically every free moment running around outdoors, for instance playing football, and sledging or ice skating in the Winter. They played games like baseball type games, dodge ball, hide-and-seek, hopscotch, games using elastic band or bottle tops. Moreover, spontaneous physical activity and spontaneous physical play was an important part of everyday life. Physical education was the most popular subject in school. Students who excelled in sports often had great authority among their peers and were often admired and even envied. At the same time however, the parents were often not very active in the past. Parental physical activity, if there was any, was often not related to practicing sports, but rather to other recreational and practical activities, such as gardening, working on the allotment or foraging for mushrooms or berries. They were shaped more as spectators and witnesses of sports, rather than participants. Parents were most often fans of their children sporting activities, unlike their offspring, who often spent every free moment, regardless of the season, playing outdoors (Krawczyk, 1997).

Currently, we observe quite the opposite tendency. Children are becoming more and more passive and inactive, often with the approval of their parents, who allow them not to participate in Physical Education (PE) classes. It is reported that about 30% of Polish children skip/ miss PE lessons (Wojnarowska, Mazur, & Oblacińska, 2015). However, the change concerns also parents and grandparents, who are interestingly becoming more active than their children and grandchildren. This can be seen by the high portion of adults and older adults participating in activities like long-distance running, Nordic Walking competitions and other types of sports. Nowadays, it is often grandparents and parents who are increasingly starting to engage in physical activity. Therefore, it is to be hoped that the lifestyles of parents will also model changes for their children. It is also necessary to consider where the proper principles of upbringing for physical activity for the young generation have been lost. Changing these sedentary behaviors should be a challenge for both educators and parents.

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. Therefore, the basis of the following report is to present ways to promote active lifestyles in various environments and settings. The models introduced in Biala Podlaska on behalf of the Jozef Pilsudski University of Physical Education in Warsaw (Biala Podlaska branch) have been used here.

Family as a nurturing environment for physical activity during the COVID pandemic. The value of participation in sport can be seen especially in ways in which physical activity is undertaken in the family. Children raised in families that participate in sports and recreational activities have a good chance for an active lifestyle in the future, because the basic patterns adopted in the family will never be given up by the child, even if they are modified or changed when the child grows up (Hurlock, 1960). Parents quite clearly influence and shape children's patterns of physical activity, and their own activity has a greater impact than verbal encouragements alone (Sadowska, 1992, Piech, Nowak, Birontiene, & Biteniece, 2013).

The literature on the subject shows that research on family physical activity has focused on two main issues.

The first, much broader one, concerns the influence of parental physical activity on their children's physical activity. The second trend, in turn, deals with the phenomenon of the impact of children's physical activity onto their parents' physical activity (Staniszewski, 2007, Birontiene, 2012, Piech, Nowak, Birontiene, & Biteniece, 2013, Piech & Grad, 2014). It should be emphasized that this second trend is much less described and usually concerns families with younger children.

It should also be considered how important a role the family plays in initiation to sport (Pawlak, 1998). It is the family that is the first environment for a child's contact with physical activity and parents are the first physical education teachers of their children, as they are the ones who pass on the family's patterns of spending free time and sporting traditions.

Considering the importance of this issue, Biala University staff made attempts to develop models of family physical activity, which were then evaluated by participating families and recommended for practice (Piech, 2004). The research focused on families with preschool age and younger primary school children. Such age selection was purposeful, considering such issues as ease of contact with parents, educators, school and school or kindergarten's management. It was also pointed out that for a child this age, movement is still something very natural and that physical play integrates the family, creates an atmosphere of joy and trust, and builds the authority of the parent.

The activities offered to parents and children were mostly recurrent and their common feature is the active involvement of parents or grandparents, in both the exercises and their organization.

Preschooler Family Olympics. Since 1993, the Preschoolers Family Olympics has been hosted in Biala Podlaska. The program of the Olympics has evolved from form a competitive format (in 1993) to a family festival without competition between families and children. The developed model

includes the cooperation between the physical education community of our University with teachers and parents. The model also includes the students of the University as the future promoters of physical activity, who develop about 200 competitions, which are then consulted with the teaching staff in particular kindergartens and are designed so that they can be examples of games that can be used in everyday play with children. The props used are simple and have the potential to prompt parents how they can be used to involve the whole family in play. Before participating in each activity, families receive participation cards, on which judges acknowledge participation in the competitions. Also, each child, regardless of the outcome, receives a prize.

A similar system has also been adopted by other towns in Eastern Poland and works very well there. It has also generated interest in other countries (e.g., in Latvia – students of Latvijas Sporta Pedagogijas Akadēmija in Riga organize a similar event, and in Lithuania it is reflected in the publication of Dr. Zina Birontiene and Asta Budreikaite, published by Lithuanian Olympic Committee (Birontiene & Budreikaite 2014).

During the pandemic, games and play presented during the Olympics can be perfectly adapted to home or backyard conditions. Parents, who have acquired knowledge during the festival, can use it to play with their children. The competitions of the Preschooler Family Olympics do not require specialist equipment and may inspire parents' own ideas for active family leisure time.

Recreational activities for parents with children aged 3-7. Another proposal is recreational activities for parents with children aged 3-7. From the organizational point of view, the activities were divided into two parts. The first one is dominated by parent-child exercises with the use of various equipment, such as balls, skipping ropes, bags, or cloths. The exercises focus on learning correct positions used in them. Group-integrating games are also used in this part of the class. It is usually led by the student-teacher, who presents subsequent exercises and explains how to perform them appropriately.

During the second part of the class, parents take the lead and practice with their children at designated stations. In this part, the teacher does not impose the order of the exercises, their performance or duration, allowing for more spontaneous movement activity. The parent acts as a co-exerciser, prompting and helping. The classes end with having fun together and setting a movement “homework”. Parent education during these classes focus on natural physical play with the child, which can also be carried out at home. Parents, equipped with the knowledge acquired during the classes, may supplement it with their own ideas and engage their children in

play. During the pandemic, it is extremely important to provide the necessary dose of exercise among loved ones.

Recreational activities for preschool children with homework tasks. The activities presented below were conducted in Kindergarten No. 15 in Biala Podlaska for a group of 6-year-old children. Games with elements of korfbal were used. After each class, children received a list of exercises to be done together with their parents at home. Positive results obtained in this way encouraged the introduction of further program, named "Child as an animator of physical activity in the family" (Piech, Nowak, Birontiene, & Biteniece, 2013).

Homework consisted of simple sets of exercises aimed at the whole family and were designed to be completed by the child with at least one family member. In the assigned homework, it was suggested to repeat the exercises at least three times a week.

Great interest in the project resulted in the introduction of these type of classes in Lithuania in Klaipeda and in Latvia in Riga (Birontiene, 2012).

As with the proposals presented earlier, homework exercises provide an excellent model for spending time actively with the family during the pandemic. All sets of exercises can be used by parents to activate their children at home.

Nordic Walking: Multi-generational trek with sticks. In recent years, we have observed a very dynamic development of forms of physical activity. Some of them are perhaps only a temporary fashion, others retain the attention of recipients for a longer time and, thanks to certain modifications, become part of life of various social groups. One of such forms is Nordic Walking. This is a versatile physical activity, which can be practiced by various age groups, and has already gained many supporters in Poland. Walking dynamically with sticks is particularly favored by middle-aged and older people (Piech, Piech, & Grants, 2014). It can be said that thanks to this activity, grandparents are often more active than their grandchildren, who often avoid movement and spend most of their time playing computer games or with a smartphone. Grandparents have therefore become experts in this form of physical activity. They often participate in competitions, rallies, stand on the podium, win medals, and enjoy their successes. It is then often passed on to other family members, including grandchildren. This very fact was used when organizing the Family Nordic Walking March. The idea was taken from the Lublin *Regional Cup in Nordic Walking*. Nordic walking is already so popular in our country that even in smaller towns and villages one can find people who know and demonstrate the correct technique and can even help choose the right equipment. In the case of families, it may be the grandparents who often

participate in regular activities under the supervision of an instructor. In this study, we propose classes for grandparents and grandchildren as well as for parents and children. Classes can take place outdoors, for instance in parks or forests. In such a way it is possible to create an active multi-generational family. Patterns of activity can be passed down from generation to generation, and individual family members can learn from each other.

Observations conducted during the Covid-19 pandemic show that people who practiced Nordic walking before the pandemic are still active. They participate in activities in the form of individual Nordic walks or in small groups. This is especially true for people who have previously participated in the competition.

Cross-country skiing. Cross-country skiing is another great proposition for families. Unfortunately, cultivating this form by the whole family may involve costs. In case of parents and grandparents it is a one-off cost. On the other hand, children need to change the length of the skis and the size of the boots from time to time. The unquestionable advantages of this form are contact with nature, being outdoors, and strengthening the body. Activity based on moderate endurance work is undoubtedly very advisable for people of all ages. The versatility of movements and the involvement of many muscle groups provide many variants that will make ski marching more attractive. Cross-country skiing is becoming more and more popular, equipment rentals are being established, and even ski runs are being prepared in places where there are no such traditions. More and more rallies, competitions, night marches, and orienteering marches are organized even in times of a pandemic, with the indicated sanitary restrictions.

Bicycle tours. Every parent or grandparent has taught their children or grandchildren to ride a bicycle. It is worthwhile for this skill to be used in the family leisure time. There are many ways of practicing it, from short trips to multi-day family trips or participation in rallies organized by an increasing number of cycling clubs. Currently, thanks to the possibility of using various equipment, cycling has become available even for families with small children, who cannot yet ride a bicycle by themselves. Special strollers are then used, which make even longer trips possible. Safety is very important when cycling, and especially during bicycle tours. For family groups, it is advisable to follow specially designated bicycle routes, which are becoming more and more numerous both in cities and in other rural areas. Here are some recommendations for family groups (Godlewski, 2018):

1. The pace of the ride should be even, but adjusted to the weakest person,
2. The route should be selected to suit the skills, endurance and fitness of the participants,

3. Before setting off on the route, the order of individual people in the column should be determined,
4. Before leaving, one should always check the technical condition of the bicycles,
5. The provisions of the Road Traffic Act should be known (when driving on roads with car traffic),
6. When riding in a row of cyclists, the distance between the participants should be 3-5 m and these distances should be increased when riding downhill, when overtaking maneuver should be performed,
7. Avoid riding in the rain, night cycling is prohibited,
8. While riding, one must not remove their hands from the steering wheel and keep their feet on the pedals,
9. It is not allowed to cling to other bicycle or carry other people on the bike.

During the period of the ongoing pandemic the city of Biala Podlaska joined the nationwide competition for the “Cup of the Cycling Capital of Poland”. The main aim of the project was primarily the promotion of active recreation, cycling tourism, cycling as an alternative means of transport, implementing the “smart city” idea in local areas. The rules of this competition are very simple – the cyclists download a specifically designed free application that records their tracks and their lengths. Participants themselves decided which city they are “rolling the kilometers” (riding) for. The event motivated the citizens to compete in a healthy way and to have fun together to promote active lifestyle. The added value for the city’s governors was the complete, detailed statistics of the cycle rides, the so-called “heat-map”. The collected data on the most frequently used routes provided a useful tool in the planning and designing of bicycle paths and infrastructure. Participation in the event was also completely free for the participants.

Festival of Traditional Games and Play. The festival is an event for the residents of the city of Biala Podlaska, which was proposed during the 10th Jubilee Summer School. Summer School was initiated in 2010 by Latvijas Sporta Pedagogijas Akademija in Riga LSPA and our University, with the first leading topic of traditional games and play. In Biala Podlaska representatives of several universities from different countries presented traditional games and play popular in their regions. The program was supplemented by cultural presentations from Southern Podlasie region. The aims of the festival are firstly, to support and promote active, family, and creative leisure activities among children. Secondly, it is the intergenerational integration of the local community through reminding, presenting, and creating an opportunity to participate in traditional games

and play from the old days. It is extremely important to pass on the traditions of games and play from generation to generation. This may contribute to the recognition of some activities as regional sports, which will involve different generations in regular physical activity.

In our version of the festival, we propose to include different generations (children, parents, and grandparents) who can propose and present their favorite games, trying to awaken interest of the other age groups whilst playing them. For instance, one can choose a game that the grandparents used to play, and then discuss the rules and ways of playing this game with their grandchildren.

In the case of the Biala Podlaska festival, very positive results were obtained. In some schools, the presented games were afterward included in the activities during breaks in lessons, and the presented grandparents' activities, such as playing using an elastic band, hopscotch, or pebbles for instance, really gained children's interest. Most of the games presented during the festival can also be performed with the family or individually during the COVID pandemic. In this time, the festival was realized online, in the form of a film, which consisted of a collection of ideas for playing with children at home. Currently, we are also planning to create an application catering for the needs of urban games.

Active playgrounds. Active playgrounds are a great addition to the playgrounds that are located around the housing estates. Hence, we want to provide fun to everyone who wants to spend their free time actively and is looking for a way to get rid of boredom and appreciates educational values. The active playgrounds host classic backyard games for children. Each game provides many fun options that never get boring. At the same time, children can train their observational, motor, and coordination skills, as well as learn to play and cooperate in a group. Each playground is equipped with the so-called "educational box", with accessories for playing different games and activities. The classes are conducted once a week in the period between March-June and September-October (on Saturdays, 9AM till noon) by students at the University of Physical Education.

Municipal Park of Fun and Traditional Games. It may seem that the prospect of opening a park of traditional games and play is associated with high costs related to its establishment and maintenance. Nothing could be further from the truth. Games and activities that used to entertain our parents and grandparents did not require complicated equipment or a specialized place. Such a park can be a place composed of several smaller squares adapted to various games, activities, and spontaneous play i.e., those that were still popular in the seventies and eighties of the twentieth century. For instance, the first square can be a space where you can climb trees, jump

over obstacles, or play with boxes or crates. Of course, this space must be safe, and all activities should take place under the supervision of parents or instructors. Another idea is to create a "little jungle" through which children must go through while experiencing numerous challenges. This sort of activity is about spontaneously overcoming various obstacles in a small area. The next square can be a place where each family can participate in different activities with the use of various equipment, after reading the rules at each station. It is also a small space where a lot of ideas for active play can be used. Another square can be a place for group games. Equipment for these games and activities, also with descriptions of the rules, is placed in special boxes or bags. These games are facilitated by an instructor or an animator. The bag or box should contain accessories used in traditional games and play, so they should not be expensive or complicated. All you need is things like elastic bands, bottle caps, plastic cups, or any other small objects, for example balls, pebbles, hooks, hoops, sticks, rings, handkerchiefs, spinning tops etc. After the fun is over, these tools can be folded back into a bag or a box. The Park should be intended for families, school groups, tourists, and people with disabilities.

In this way, playing in the park can be an interesting way to spend free time with the family. Such a place could be made available for parents with children to be used during the pandemic, and the prepared descriptions of games and activities can be an inspiration to perform exercises with children at home.

Summary

The presented models of family physical activity implemented into practice in Biala Podlaska by the academic community of the University of Physical Education, whose main goal was to indicate the family as an important educational environment for recreational activity, certainly gained the approval of participating families, especially during the pandemic, when interpersonal contacts and organized physical activities are limited. The undeniable success of the proposed models lies in their diversity, multi-generationality and the fact that it is built upon past traditions. Many of the activities can take place outdoors, which gives them an additional advantage in the opinions of families who participated in them. The proposed activities involve all family members, only the roles of individual participants or organizers change. An important factor in the success of such undertakings is the extensive organizational cooperation of many environments and communities, like city governors, universities, schools, kindergartens, schools, and families. Such a model seems to be effective in obtaining positive effects on promoting physical activity.

It should be emphasized that these models are a proposal for family physical activity with the potential to integrate and involve different generations (children, parents, and grandparents), which can also be implemented in the times of a pandemic. They concern several specialist areas: physical culture, history, tradition, and education. Through the organization of the project, they engage many entities and partners, who, by joining in and cooperating in achieving common goals, can also better adapt their own activities to the changes taking place in the current times. The proposed activities may be seen as a sort of "medicine" or a health prophylaxis for contemporary problems related to the decline in physical activity levels and deterioration of health and well-being in the local communities. Their common goal should be to encourage active spending of leisure time with the family in the times of the Covid-19 pandemic, which allows to better adapt to the hardships of the current situation. As mentioned at the beginning of the report, being physically active is crucial to people's health and well-being. So, every move count, especially now as we face the restrictions of the Covid-19 pandemic. Thus, the promotion of physical activity based on simple forms of movement, conducted among family, certainly deserves to be appreciated and should be seen as a key component of educational activities, encouraging a return to an active life in the post-pandemic conditions. The motto of these activities could be: "safety and creativity".

Conclusions

The presented models of physical activity gained a lot of interest from the participating families. Parental involvement, especially in the case of younger children, prove necessary to achieve the intended goals. The family should be considered as the basis of success in promoting active lifestyle, especially in the times of pandemic.

A strong foundation of the sense of security of every child is the bond that connects them with their family members. Any activities strengthening family ties, especially those based on physical activity, have the potential to protect the child from the effects of stress and help him develop mental resilience.

Undertaking physical activity is especially important during the coronavirus pandemic, because of the effects of social isolation (anxiety, depression) and hypokinesia (weight gain, obesity), which are associated with an increased risk of severe illness and hospitalization due to COVID-19. Movement and physical effort improve mood, can help one to relax, or reduce stress levels.

It is important to create an infrastructure for practicing physical activity that can be used by parents with children.

It would be worth considering creating a platform where parents who take up the challenge of an active lifestyle, could exchange good practices and ideas, discuss methods and interesting ways of playing, or making activities more attractive. New technologies, such as applications, could be used to activate the local communities.

We can clearly see that during the pandemic, people who were previously active continue to stay active. They practice sports both individually and in small groups, maintaining a sanitary regime, therefore it is extremely important to create various programs that involve as many people as possible in recreational activities.

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