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PERFORMANCE MOTIVATION OF HOBBY  
ATHLETES, FROM THE FLOW EXPERIENCE TO  
EXERCISE ADDICTION

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## 1. INTRODUCTION

In the case of elite athletes, it is completely clear to everyone why they fight, why they live the way they do, why they get up at dawn, why they train tirelessly and persistently for years, every blessed day, for hours. There are no questions about what starts and what keeps motivation up. However, in the case of hobby athletes, this question is not so clear. In many cases, extrinsic motivation can be ruled out, because neither financial recognition, fame, nor any tangible external reward can be behind the sports motivation of amateur athletes. I am also an amateur or hobby athlete and with more than 450 performance tours and more than 140 half-marathons behind me, I have often been asked the question „why do I do it?“. I searched for the answer to this question several times during my research. He was interested in what drives amateur athletes, why they start, how they feel at the finish line, to whom and what they want to prove.

This book contains four chapters. In the first chapter, I discuss the motivation of performance hikers and present their particular world. In the second chapter, I describe the changes in the sporting habits of amateur runners caused by the first wave of the coronavirus. In the third chapter, I explain the phenomenon of virtual running, which is a specific motivating factor for amateur runners in the period without running competitions during the coronavirus. In the last chapter, I also present research related to amateur runners, but mainly from the aspect of exercise addiction. I also list the literature used separately for each chapter.





## **2. MOTIVATION AND PSYCHOLOGICAL WELL-BEING OF LONG-DISTANCE: A QUANTITATIVE AND QUALITATIVE APPROACH**

The popularity of hiking has steadily increased in recent decades due to the developed trail networks and other tourism support services. It is one of the most popular outdoor recreational activities that encourage both younger and elder people to participate (Pomfret, 2006; Fredman & Tyrväinen, 2010). Over the years 340 national volunteer hiking clubs were established to keep the trail marks in order, and organize shorter and longer distance hiking all around the year on 12 795 km trails in Hungary. The hiking trails can be used for recreational purposes, for both short and long term physical activity with different exertion and physiological adaptations (Manning, 2015). Although the majority of people go hiking regularly, there is a subset of hikers who get up every Saturday morning around 4-5 o'clock, travel to the start of the trail, and after paying some register fees, embark on a long hike. They go several tens of kms at a time without stopping, often in cold, wind, rain, snow, ice, huge mud, or even extreme heat on a hot day. They hike from early morning to late evening, or often for longer distances from morning to next morning, possibly the next day until noon all the time, without a break, rest, sleep. (The time limit of a 100 km track is 24 hours, of a 200 km track is 55 hours.) After completing the distance within a given time, they get a small badge, or badge and diploma, and they happily return to their destination, and in a day's time plan their next track's/hike's/trail's location and distance. There are some hikers who, after an 80-100 km hike on Saturday, also set to hike 30-50 kms on Sunday and do so every weekend, a total of 52 times out of the 52 weeks. And there are those who keep

this performance for several years. There are 4880 registered hikers nationwide who regularly perform hikes, and 300 hikers of them perform 1000 or more kms a year (Hungarian Hiking Association). Some authors argue that people likesetting distance goalsand challenging their physical ability and self-esteem (Mueser, 1998; Kil, Stein, & Holland, 2014). A set of literature mentions the physical, mental and physiological benefits of hiking that are linked to other outdoor benefits in natural environments (Hill, Goldenberg, & Freidt, 2008; Svarstad, 2010). Janke et al. (2006) pointed out that health is more important than age when it comes to leisure activities. However, it has to be mentioned that long-distance hiking is associated with frequent exhaustion, physical and mental stress as well as possibility for injury (Gardner, & Hill, 2002). The question arises as to why people continue their hike despite the pain and many inconveniences? What motivates these individuals to participate in such a demanding activity? Studies highlight motivation as a key factor for maintaining the physically active behavior and adherence to regular exercise (Hagger, & Chatzisarantis, 2008; Aaltonen et al., 2012). Based on previous studies, an important motivation factor for younger and older is maintaining health (Caglar, Canlan, & Demir, 2009; Dacey, Baltzell, & Zaichkowsky, 2008). However this type of activities is already beyond the ordinary recreation and it raises the assumption of some other motivating factors. Taking into account a new phenomenon, the exercise addiction (EA), that has detrimental impacts on individuals who are engaged excessively in physical activities (Hausenblas, H. A., & Downs, D. S. (2002a), we presume thatlong-distance hikers can border on it. Individuals with this behavioral addiction usually lose control over their physical habits and doing physical activity regardless of injury, weather, time demands that leads to deterioration of health (Szabo, A. 2010). As yet, there is a lack of literature investigating long-distances hikers

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on a regular basis and their motivation to perform long distances for years, this study aimed to explore the motivations for participating in long-distance hikes, completing at least 1000 kms a year, and to investigate psychological well-being and exercise addiction in the context of distances performed, gender and age.

## 2.1. EXAMINATION

### *Study design, participants and procedure*

A mixed-method study design was applied involving quantitative questionnaires and semi-structured interviews (Neuman, 2014). First we sent an online questionnaire for hikers via social networking („Hiking society”, „Free hike”, „Hungarian Hikers”, „Kinizsi 100” and „Hike addict”) for quantitative analysis. Secondly, we visited two organised long-distance trails where in-depth, semi-structured interviews were conducted with 15-15 individuals on both spots. Inclusion criteria were to be at least 18 years of age and being physically active for at least two years in long-distance hiking. In this study hikers were analyzed if they have completed at least 1000 kms in the previous 12 months.

### *Ethics*

Participants were informed about the purpose of the study, its anonymity and the voluntary nature of the participation at the beginning of the questionnaire and interviews. No incentive was given for the participation. The study was approved by the Regional Ethic Committee and the Institutional Review Board.

### ***Measures***

*Demographics.* Participants gave information about their sex, age, residence, financial situation and educational attainment.

*Anthropometry.* BMI was calculated from self-reported height and weight according to the Adolphe Quetelet formula: body weight (kg)/height (m<sup>2</sup>).

*Physical activity.* Participants reported how long they have been hiking and how many kms did they perform during the previous 12 months. They also gave information about their childhood physical activity.

*Well-being.* WHO-5 Well-Being Index was used to measure the participants' subjective psychological well-being. Each of the 5 items is scored from 5 (all of the time) to 0 (none of the time). The raw score is multiplied by 4, so the higher scores represent better well-being (Topp, Østergaard, Søndergaard, & Bech, 2015; Susánszky, Konkoly Thege, Stauder, & Kopp, 2006).

*Emotional profile.* DASS-21 measured distress along the dimensions of depression, anxiety and stress (Lovibond & Lovibond, 1995). A respondent indicated on a 4-point scale the extent to which each of 21 statements applied over the previous week with 0 (did not apply at all) to 3 (applied very much, or most of the time). Higher scores indicate increasing distress. The questionnaire has shown good internal reliability in the hiker sample ( $\alpha=0.853$ ).

*Loneliness.* The UCLA 3-item Loneliness Scale was applied to evaluate the hikers' loneliness (Hughes, Waite, Hawkey, & Cacioppo, 2004). The scale uses three response categories: hardly ever (1), some

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of the time (2) and often (3). Scores are summed and higher scores indicate more loneliness. There is a cut-off point of 6 and above indicating loneliness of individuals. Internal consistency of the scale in our sample was ( $\alpha=0.849$ ).

*Overall life satisfaction* was evaluated on a scale of 1 to 10 where 1 represents the worst possible life satisfaction, and 10 describes the best (Cantril, 1965). It measures how satisfied the individuals are with their life as a whole these days.

*Perceived health status.* Visual Analogue Scale (0-100) was used to evaluate the hikers' perceived health status (Hayes, & Patterson, 1921). Higher scores indicate better health status.

*Exercise addiction* was measured using Exercise Dependence Scale-Revised (Hausenblas, & Downs, 2002b; Mónok et al., 2012). Hikers responded on a 6-point Likert scale ranging from 1 (never) to 6 (always), a higher score indicates more exercise dependent symptoms. The scale allows both interval data and nominal categorization. The scale is based on DSM-IV criteria for substance dependence: tolerance, withdrawal effects, intention, lack of control, reduction in other activities, time, and continuance. Hikers scoring 5 or 6 out of the seven DSM-IV criteria were classified as at risk for EA while those scoring in the range of 3–4 were classified as non-dependent symptomatic, and scores of 1–2 are categorized as non-dependent asymptomatic.

*Motivation.* In-depth, semi-structured interviews with open-ended questions were conducted for exploring the motivation for starting hiking and continuing long-distance hiking week by week all over the year (Wengraf, 2001). Constraints and difficulties of long-dis-

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tance hiking were also explored. A face-to-face interview was carried out at the exit of two popular long-distance hiking trails (Kinizsi-100 and Mátra-125). The interview lasted approximately 15-20 minutes for each participant. All the interviews were audio-recorded and transcribed verbatim with the permission of the participants. All the transcripts were checked via e-mail that the transcription was correct and accurate.

### ***Statistical analysis***

For data analyses, Statistical Package for the Social Sciences (SPSS, Version 26, IBM Corporation, Armonk, NY) was used. Descriptive statistics (percentages, means and standard deviations) were calculated for all variables. Significance level was set up at  $p \leq 0.05$ . Relationship between variables was assessed using t-test, ANOVA,  $\chi^2$  test and Fisher's exact test as appropriate. Multiple regression analysis with stepwise selection was used for finding the explanatory variables of higher symptoms of EA.

## **2.2. RESULTS**

### ***Participants***

This sampling procedure yielded 112 fully completed questionnaires. Hikers represented all the geographical regions of Hungary (19 counties), the largest proportion was from the capital. Description statistics of the participants is displayed in Table 1.

*Table 1.: Descriptive statistics of the participants*

Mean (SD) and frequency	Participants
Sample size	112
Age (years)	40.28 (8.77)
35 and younger : 36 and older	32.1 : 67.9
BMI (kg/m <sup>2</sup> )	23.74 (3.45)
Sex ratio (%) Male : Female	57.1 : 42.9
Socioeconomic background (%) below average : average : above average	8.9 : 72.3 : 18.8
Educational attainment (%) elementary : high school : higher education : M/D*	0 : 33.6 : 66.4 : 1.8
Physical activity in hiking (years)	13.49 (12.02)
Distance performed a year (km)	1983.48 (1068.05)
Childhood physical activity** (%) Yes : No	48.2 : 51.8

\*M/D: missing data

\*\*Childhood physical activity: to be engaged (yes) or not to be engaged in regular sports (no)

### ***Relationship of distance performed a year to demographics, health and psychological status***

Regarding the distance, there were no differences either between males and females, or between younger and older participants. Distance performed a year had relationship with the perceived health status ( $r = 0.278$ ;  $p = 0.003$ ) and education attainment ( $F=4.682$ ;  $p=0.033$ ). Hikers with higher education ( $n=73$ ) ( $M = 1803.42$   $SD=913.34$ ) performed shorter distance a year than hikers with high school education ( $n=37$ ) ( $M = 2256.76$   $SD=913.34$ ). Although distance performed a year did not correlate with loneliness, 33.3% of

hikers indicated symptoms of loneliness. Loneliness had significant relationship with distress ( $r=0.509$ ;  $p<0.001$ ), life satisfaction ( $r=-0.454$ ;  $p<0.001$ ), perceived health status ( $r=-0.292$ ;  $p=0.002$ ), and higher EA symptoms ( $r=0.225$ ;  $p=0.018$ ). Subjective psychological well-being was  $M = 62.18$ ,  $SD = 17.50$ , life satisfaction  $M = 7.48$ ,  $SD = 1.56$ , and perceived health status  $M = 83.86$ ,  $SD = 12.68$ .

### ***Prevalence of risk for exercise addiction***

The prevalence of risk for EA in hikers was 4.5%, whereas 52.7% of them were non-dependent symptomatic, and 42.9% non-dependent asymptomatic. The highest score (3.25) was on the Tolerance subscale that means hikers need increased amounts of physical activity to achieve the desired effect. There was no difference between male and female hikers or between younger and older groups regarding the Exercise Dependence Scale categories. The only significant explanatory variable of higher symptoms of EA was distress ( $t=5.292$ ,  $p < 0.001$ ;  $R=0.504$ ,  $R^2=0.254$ ).

### ***Motivations***

Thirty long-distance hikers were interviewed of whom 40% were females. Hikers ranged from 30 to 68 years old, distance performed a year ranged between 1200 and 5500 kms. Table 2 provides information on interviewee demographics, hiking activity and distance performed in the previous 12 months.



*Table 2.: Hikers profile taking part in the interviews*

Mean (SD) and frequency	Participants
Sample size	30
Age (years)	48.86 (10.58)
Male : female ratio (%)	60 : 40
Physical activity in hiking (years)	15.20 (9.21)
Distance performed in the previous year (years)	2695.24 (1187.02)

***Initial inspiration to hike***

Hikers had different inspirations to start this type of outdoor recreational activities. First, love of nature was mentioned, however, only two referred to childhood family experience in this field. An increased free time was also reported with different reasons.

*„I was lonely after my husband had died and I needed something to bring a system into my life.“* (F58)

*„My kids are adults, I think I can do now what I love, for my own pleasure.“* (F56)

Exclusive inspiration of another person or partner was also a rationale or visual experience that launched them to join a hiking club or hiking team.

*„It was my partner who invited me. I just wanted to keep up with her.“* (M47)

*„One of my friends invited me to go for a 40 km hike. Why not, I thought. It was the start and I fell in love with this sport. I've been doing it for 17 years.“* (F40)

„One of my friends asked me whether I like hiking. I like nature from my childhood, so I answered ‘yes’. Since then I already completed 233 trails over 100 km.” (M33)

„When the weather was nice, we always were somewhere outside in my childhood. Much later I saw a lot of people hiking in the mountains and I joined that group. ... For many years, I performed only 20 km long distances until I read an ad about other long-distance hikes. I increased the distances pretty slowly” (M65)

„I first saw the hikers of the Kinizsi-100 trail... I didn't know where these people were going for hours. Some of them were talking to each other, some of them were silent and tired, but all of them seemed to be connected by something invisible. I felt like I should go with them, too. In two years I also have performed the Kinizsi-100 trail.” (M53)

### ***Motivation to go on long-distance hikes***

Several diverse motivations were mentioned, however, one of them applied to everyone. Hikers were motivated by the challenge and the feeling of success, as well as the desire to know the boundaries and getting to know themselves.

„Get to know your own body, your thinking, your attitude, your perseverance, your reactions to a given situation which evolves with each accomplishment... Every time I get to know something new about my body, my soul on the verge of total exhaustion on a long-distance hike. I want to experience many more of these.” (F40)

„Hikes above 50 km are already a kind of challenge. So far, I've had nine 100 km hikes. Each has a separate story and I lived through it in different ways. I think it all concerns us how resilient we are, where our

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*performance limits are, how we react in non-everyday situations. You can also learn surprising things about yourself.” (F56)*

*„After shorter hikes, a longer distance is a challenge. After completing the distance, I am proud of myself.” (F44)*

*„It’s a challenge in my everyday life. After my 100 km trails, I realized that I have more in me, I can go beyond my own limits, so the 120 km Lake Neusiedl circle came in 24 hours. I also have a sense of success, I am proud of myself. To be okay, we need the little crumbs of success.” (F58)*

*„I love long distances (100 kms or more) because I need challenges to assess my ability to perform what I’m capable of at the age of 68.” (M68)*

*„... I can ‘push mylimits,’ that is, get to know my own limits, can sometimes experience a whole series of depths and peaks within a hike. It’s a fantastic feeling when one comes back from a downturn and is capable of something he didn’t even think of.” (M47)*

*„It’s the real gauging for me, it’s a race with myself, a capitalized measure of where I am in my adaptability/competence of conformity. Long distance is a test beyond the comfort zone.” (M48)*

*„You start to get to know yourself on a long-distance hike. You think you know yourselves the best. I think you can say that if you really put your body to trial/test. Multiple times.” (F41)*

In addition to this, there were individuals to whom long-distance hike gave identity and meaning to their lives.

„The motivation for completing the series of ultra-distances is the great awareness that I can belong to a narrow group within the hiking society.” (M48)

„It’s almost unbelievable that my body lets me do all these, and so I know even more who I really am.” (F40)

„I know it sounds commonplace, but that’s right: hiking has given a meaning to my life.” (F34)

The vast majority of hikers who were interviewed mentioned the flow experience, even if it wasn’t called that. This is a mental state, when individuals completely immersed in an activity, they have been experiencing. The ego falls away. They focus on the movement of their body, the breathing and the power of muscles; the ultimate goal is to complete the distance. No matter how tired and sore their legs are, they barely notice. They feel joy and freedom. It occurs when the individuals are engaged in an activity they love and in which they are skilled (Csíkszentmihályi, 1996).

„I feel like I’m in the perfect place here and now in the world, everything I’ve been looking for is here in me today.” (F40)

„It’s an amazing feeling to be able to focus one hundred percent on the task, the performance and so I can forget about my worries. It is a state of mind created by severe physical exertion,...I can really relax, forget troubles and be at home out somewhere.” (M47)

„... it’s a kind of lifestyle that I’m becoming through.” (M48)

„This completes my life. This gives balance.” (M48)

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Desire to break away from daily reality also appears in hikers' reports.

*„Get out of the urban environment, leaving behind the everyday hustle and bustle.” (M33)*

*„I have been sitting for 12 hours at my workplace, accompanied by 8 monitors, 3 keyboards, 5 mice, with a phone continuously ringing. I have to move out for my health and it's very good to go out into nature.” (F56)*

*„I like to break out of monotonous everyday life, recharged by walking.” (F57)*

*„Breaking out of the grey everyday life is what motivates me.” (M33)*

The experience of discovery, getting to know nature and love of nature also emerged among the motivations of the interviewees.

*„I get to wonderful landscapes, I often try to go to places I haven't been to before.” (M47)*

*„Getting to know our country or another one if we go abroad, with the miracles there.” (M31)*

*„Motivated by the landscape, the beauties of the environment, walking in new places, new landscapes.” (M47)*

*„I've always loved being in nature, surrounded by loved ancient nature.” (M65)*

*„The main motivating force is the love of nature, the thousands of stimuli that come there, the landscape that always shows a different face, the variety, the sincere beauty... no matter how many times, I like to go, I don't get bored of them.” (M47)*

Health protection as a motivational factor can be found not only in starting, but in the continuation of activity.

*„Hiking is important for maintaining my health, both physically and mentally.” (F53)*

*„I have to move out of my daily stress for my health.” (F56)*

*„I feel like I'm doing something for my healthier life with hiking.” (F57)*

*„Hiking is a part of my daily life, an activity that is essential for my mental health.” (M47)*

The last motive that was discovered is the social affiliation that is characterized by a desire to interact and by pleasure in being with others (McClelland, 1987).

*„I got a lot of experience and company through the tracks, even if I don't have close friends, I never had, but since I hike, I finally feel like I'm not alone.” (F34)*

*„I often met people in the company of whom it is much more pleasant to move and relax than to be alone, with whom it is always good to meet or just meet again after a long time.” (M61)*

*„You know it's a community experience... my circle of friends is mostly from this company, I can hike with people who have the same “craze” as me.” (M47)*

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*„Hiking is a special way of life. ... These people are connected by a common passion, a way of life with common experiences.” (M48)*

Although it was not a clinical interview, it seemed that some interviewees have already touched the boundaries of addiction.

*„Hiking is an addiction, a way of life, a basic need for me.” (M47)*

*„Hiking is specifically a way of life for me.” (M48)*

*„If I can't go on a weekend hike for some reason, I feel like I missed something important. I don't miss it often.” (M65)*

*„The long-distance hike became a necessity, practically an essential part of my life.” (M38)*

### ***Constraints and difficulties of long-distance hike***

Long-distance hiking are often associated with physical pain. The backpack easily rubs against the shoulder and blisters or blood blister can form on the foot. Although less common, muscle aches or cramps can also occur.

*„Sometimes I get blisters on my leg during the hike, sometimes my skin is completely off my heels, yet I don't give up the hike, I push my limits.” (F58)*

*„It can hurt a lot when my backpack rubs my back or my thighs rub against each other. If my underwear is only a little uncomfortable, after 12-15 hours it causes almost unbearable pain.” (M47)*

*„Tracks help you get to know the physical pain you can't even imagine.” (F41)*

Some mentioned “starvation” as well as dehydration or lack of salt during long track.

*„It’s common on summer hikes that I can’t get as much water and salt back into my body as I sweat, even though I always have salt tablets with me.” (M53)*

*„On long hikes, when I’ve been going for 15-16 hours, nothing goes well anymore. Even energy gels often come out of me.” (M48)*

Interestingly, the weather causes difficulties in every season and everybody reacts on it in different ways.

*„Prolonged rain is very unpleasant, everything is wet, your feet, your hands get cold and your feet slip in your shoes, you will have a blister much sooner because your soles are completely spread out. On the other hand, you can’t see anything from the hood, barely hear each other from the rattling of rain jackets. I can hardly wait for it to end. Plus, it’s much easier to fall and slip.” (F40)*

*„For me, ice is the biggest enemy, no matter how much I put on the crampons or carry a stick, I’m often more insecure, moving slower, I don’t like it... In deep mud, every step is harder, it takes strength out of people, and the time as well...” (M65)*

*„I have a hard time withstanding the heat, ... I suffer a lot on summer, sometimes I can barely breathe.” (M68)*

*„I have a harder time in summer, and then a lot of ticks, beetles and mosquitoes bother me, in winter I have no problems.” (M48)*

Several participants mentioned hitting the wall, which comes around 60-80 km. In such cases, many people do not suffer so much phys-

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ically, but lose motivation, questioning why they are here, why they do it, what the point of it is.

*„It's my spiritual anguish that overwrites all pain. Because it feels really good to be really proud of myself! In vain I explain it, if you haven't tried it you won't understand... experience what it's like to argue with yourself in the middle of the night, at the 80th km. ... Fight to stop or move on.” (F41)*

*„Sure, you go through dead ends and many times wishes it all hell, but there's less joy than when you arrive triumphant at the finish line and in a few days you'll break and you head on the next challenge. It's a lot harder mentally than physically, but a lot of friends, a few good words, and nostalgia about places you've been to, ... and with that feeling you can do it further and regain strength from somewhere every weekend.” (M33)*

### 2.3. DISCUSSION AND CONCLUSIONS

Long-distance hikers form a unique community of individuals who perform many kms a year and most of them keep this performance for years. They are not considered athletes, although their physical performances are astounding. Using quantitative and qualitative methods, this study provides a comprehensive picture about hikers performing 1000-5500 kms in a year. To our knowledge, no other investigations have yet been designed to assess long-distance hikers from the perspectives of demographics and psychological well-being, or to determine the prevalence of exercise addiction. In addition, interviews were conducted in order to hear the most appropriate people on the most appropriate spot about their motives for starting hiking, keeping up strenuous exertion week by week through-

out a year and their possible constraints and difficulties regarding long-distance hike. In this study, we focused on the long-distance hikers themselves.

Hiking is popular among young and old, however, in our sample the middle-aged and older adults are overrepresented with similar gender ratio. Physical abilities of even older people can be manifested in this lifelong physical activity that makes this type of activities particularly valuable. (Dionigi, & Flynn, 2007; Atalay, & Cavlak, 2012). Walking is a biomechanically simple form of movement that does not require special acquisition. It can be started almost at any age without a childhood history in hiking or other sport activities. It seems both men and women do this activity in a similar way; no gender difference was observed in distance performed. Distance performed is associated with perceived health status that is understandable; people embark on long distance when they feel to be able to perform it. A possible explanation for the difference in the education attainment is that most of the graduated individuals work in an office and are less active physically than their high school educated peers. There is a greater need for more intense physical exercise. Manning et al. (2015) found that prolonged strenuous trail can provide sufficient cardiovascular stimulation to induce beneficial physiological adaptations and health benefits such as aerobic exercise.

An interesting finding of our study is that more than one third of participants presented the symptoms of loneliness that correlated with inadequate distress, life satisfaction and perceived health status, as well as higher symptoms of exercise addiction in our sample. During the interviews we also met hikers who felt lonely. Hiking groups in particular offer unique opportunities for lonely individuals that can enhance their psychological state. On the trails, they can meet companions, or just get 1-2 nice words from someone that they would not get in other environments. We also believe that the

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successful accomplishments of distances, diplomas, badges awarded for the performances, reports on social media interfaces also contribute to reducing the feeling of loneliness. When feedback comes in, likes, kind congratulatory comments, even for days, this alleviates loneliness and gives the illusion of being in company, even if the company is only virtual. The dopamine release caused by the messages, on the other hand, generates a real feeling of joy as well as a successful experience of the moment of reaching the finish line for days.

Prevalence of risk for EA in hikers was low (4.5%), however it is much higher than in general population (Mónok et al., 2012). No literature has yet been found in which the addictive hikers would be analyzed in detail. Corazza et al. (2019) evaluated EA in fitness setting including hikers (12.8%), however the hikers were not analyzed separately from the other types of activities. In their study, EA was identified in 11.7% of the overall sample. Lukács et al. (2019) evaluated Hungarian amateur runners using the same inventory with a prevalence rate of 8.9%. Other studies presented a broad range of prevalence depending on types of forms of physical activity and population studied. In our study, EA was regressed by distress. The more stressful a person's life is, the more endangered someone's sense of well-being, whether physical or mental, the more they need a handrail, a coping strategy, and a coping mechanism. It can also be a form of physical activity, which is really helpful at first, but over time, more and more amounts of it may be needed to provide the same feeling of well-being as the lower dose used to provide. Thus, it slides into a dependent state. In this study, only 5 individuals were detected and 3 interviewees were supposed to have this problem. Based on such a small number of samples, it would not be appropriate to draw a far-reaching conclusion regarding EA of long-distance hikers.

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When interviewing individuals about their motives to start hiking, psychological needs, wish to escape from everyday life and being in natural environment were found as the main push factors. Natural environment means a sense of peace, stillness, intimacy and health protection as well as the beauty of the nature. Dominantly, they respect nature and follow its rules („...*harmony between nature and human being*” „*I learned soon that without sufficient humility and respect [to nature] you can never go on a hike.*” M33) Kim et al. (2015) conducted exploratory factor analysis based on a survey of 430 nature-based hiking-tourists and found similar motivation factors.

Our interviewees started with short distances and slowly slipped into getting longer. To synthesize the reports of respondents about the motivations of going on long distances, we can conclude that the motives were mainly intrinsic. The hikers get a small badge and a personalized diploma after completing of the trail, however, this is not such kind of external rewards that would motivate them; they do it rather for enjoyment (for personal reward) (Lee Reeve, Xue, & Xiong, 2012). Essentially, the activity along with its physical and mental aspects is the reward on its own. Hikers want to have the sense of accomplishment, want to know their own limits or even push the limit, go beyond their comfort zone, and all of these help them to enhance self-esteem. They are not affected by the weather, it doesn't even occur to them to miss the hike. Health protection and social interaction was also mentioned as motivation factors, but it was rather enthusiasm and determination that was expressed and completion of the distance at all cost rather than the importance of pleasure hiking, or physical activity to maintain health. Every hike hides something unpleasant that needs to be overcome, including injury of different quantities, insect bites, nutritional problems, hitting the wall. Overcoming all these embodies in a flow experience that takes them further to perform the new long-distance trails.

Based on Csíkszentmihályi's theory (1990), individuals instinctively feel even bursting joy while solving a particular task. They don't care about themselves; they don't care about their problems. In this case, self-consciousness temporarily disappears; sense of time is distorted. The reward value of an activity that provides such an experience is so high that people do it for the activity itself, even if it is difficult or dangerous. It is a state where the individuals are completely immersed in what they are doing, do not deal with themselves, and focus solely and exclusively on the activity, mobilizes their resources to do so, and maximizes their performance.

### *Study Strengths and Weaknesses*

The strengths of this study come from the mix method the study was conducted with. Statistical analyses and in-depth interviews were combined as to get multidimensional characteristics about the hikers competing long-distances. Participants represented the long-distance hikers of Hungary, more than one-third of them were reached. There were a few limitations while conducting the study. There is no information about the interviewees' and survey participants' similarities. However, the information we got from the same person with the quantitative and qualitative method did not interfere with the study outcomes. Another limitation is the cross-sectional design that may cause limited generalizability from these data. Despite this, we believe that our findings are novel and add to the body of knowledge about the long-distance hikers' community.

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### **3. CHANGES IN RUNNING HABITS DURING THE COVID-19 CONFINEMENT IN AMATEUR DISTANCE RUNNERS**

For runners, running means freedom. Leaving the apartment, the runner experiences endless freedom, whether it is an „asphalt” or „off-road” runner. Overcoming the distance, increasing the speed, the view of the landscape and in many cases the company all contribute to the experience of running. Running has many beneficial physiological effects. Regular running is not only good for our body, but also for our soul. It also helps with the proper allocation of time, teaches perseverance, increases frustration tolerance and in many cases gives us the opportunity to defeat ourselves or others, to live out the competitive spirit that lives within us. In addition, it is important to note that running increases endorphin synthesis, i.e. happiness hormones are released in the brain, as a result of which the feeling of pain and tension decreases – thus it also participates in stress relief – and provides a sense of well-being. We can also observe that those who do sports view the world and themselves with more satisfaction, and thus make their own lives easier and more harmonious. After running, one’s head is cleared, problems are reassessed. In addition to all this, sport also has a social function, it can bring people together, the joint sports experience can be a source of friendships, love, or perhaps a solution to family conflicts. For lonely older people, the running community may be the only place where the person feels comfortable and can belong. In the case of running, the environment, i.e. the beauty of nature, contributes greatly to the experience.

Running is the most popular leisure-time physical activity worldwide, Hungary is no exception. It is widely acknowledged and ac-

cepted that running in a healthy manner has been associated with numerous beneficial effects on quality of life, physical and mental health. It improves the cardiorespiratory system and endurance, increases bone density and thus, it can reduce the risk of developing osteoporosis (Lee et al, 2017). Leisure-time running reduces the risk of incident type 2 diabetes (Wang et al, 2019). Even running 5-10 minutes a day at low speed can reduce the risk of death from cardiovascular diseases (Lee et al, 2017; Pedisic et al, 2020). Running on a regular basis can improve psychological well-being (Szabó, & Ábrahám, 2013) and help coping with addiction. It is an efficient way to reduce depression, anxiety and stress (Nezlek et al, 2018). Running also enhances immune activity and life expectancy (Lee et al, 2017; Pedisic et al, 2020). and it has improved psychological and social impact on participants. Numerous running events are organized nationwide with a vast number of participants. Taking part in these events is a motivating factor for maintaining the habit of running, and building up social interactions. Runners can integrate into a special society, where they feel content and that they find fulfillment (Bauman et al, 2009). For older, lonely people, the running community may even be the only place where they feel good and can create a sense of belonging. In the case of running, the environment, the beauty of nature, also contribute greatly to the experience. The presence of the coronavirus and the measures taken to slow it down have almost completely upset the way we used to live. On March 11, 2020, a state of emergency was declared in Hungary, together with special government decrees coming into effect. Educational institutions were closed, border controls were reinstated, an entry ban was imposed, shopping time was restricted, and the elderly were urged to stay at home. Various epidemiological measures have been put in place and curfew restrictions have been introduced. Indoor events and then outdoor ones were banned. According to a governmental

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decree, one can only leave their home for compelling reasons (to work, to buy food and medicine, to provide health services, to maintain one's physical and mental health). Fitness clubs were closed and all sports events were cancelled. Everyone has to keep social contact to a minimum (EMMI, 2020). The appearance of the coronavirus and the restrictive measures suddenly changed the life we had been used to until then. Uncontrollable and unpredictable life events can be considered a significant stressor (Atkinson, 2005). People can react to increased stress in different ways. The most common stress reaction is the physiological stress reaction (fight or flight state), which makes the body more resilient, but can also exhaust it if it persists for a long time. Anxiety, fatigue, depression, anger and aggression are also common reactions to stress. Positive responses to stress include coping (emotionally and problem-focused coping strategies). Different leisure activities can be considered an emotionally focused coping strategy. There was also a change in the amount of time spent on leisure activities in the spring of 2020. The time spent watching TV, watching movies, listening to music and playing Internet games has increased (Gósi, & Magyar, 2020). Running is also an emotionally focused coping strategy that helps you deal with stress. Based on all this, I assumed that the time spent on running also increased during the first wave of the coronavirus compared to the period before it.

### 3.1. EXAMINATION

#### *Study planning, study subjects, ethical approval*

I started data collection one month after the declaration of the state of emergency in the spring of 2020 and approx. It lasted for 2 weeks. I recruited the test persons in several running groups and running communities of the most popular social networking site. (Running

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buddies, Runners' Friends Circle, Collect kilometers, etc.) Participation in the study was voluntary and anonymous, to which the runners gave their consent by ticking the consent form described at the beginning of the questionnaire. The research was approved by the Borsod-Abaúj-Zemplén County Regional Research Ethics Committee.

### ***Research tools***

#### *Demography*

The demographic factors were: gender, age, education and financial situation.

#### *Emotional profile*

*Depression, Anxiety, Stress Questionnaire-21* (Depression, Anxiety Stress Scale-21 (DASS-21) The 21-item version of the Depression, Anxiety Stress Scale-21 (DASS-21) was used to measure stress, where higher values indicate a greater degree of anxiety and stress (Lovibond, & Lovibond 1995).

The WHO-5 Well-being Index (*WHO-5, Well-being Index*) was used to measure the feeling of well-being. In the case of the WHO well-being scale, higher scores mean a better feeling of well-being (Susánszky et al., 2006).

#### *Physical activity*

I asked the amateur runners to provide information about their running habits in the period before and during the restrictive measures due to the outbreak of COVID-19 within the framework of a semi-structured interview. (How many km did you run on average

in a month, how much do you run now, what did running mean before, what does it mean now, where can you run now, etc.)

### ***Statistical methods***

The obtained results were processed with the SPSS 26.0 statistical software. The data were presented in mean and standard deviation as well as frequency. The significance level is  $p \leq 0.05$ . I used a Chi-square test of independence for the differences between men's and women's responses. Using analysis of variance, I determined whether there was a statistically significant difference between the three groups (change, no change, and partial change) in terms of kilometers traveled, well-being, and anxiety. I used the T test to check the difference between the amount of running before and during the quarantine. I used multiple linear regression to explore the reasons for the extra running during the quarantine.

## **3.2. RESULTS**

### ***Participants***

A total of 323 runners took part in the study (average age:  $41.72 \pm 8.78$ , 41.8% men, 58.2% women), who have been running regularly for  $10.17 \pm 9.60$  years. The descriptive statistics of the participants are presented in the following table.

## Descriptive statistical characteristics of participants

Mean (standard deviation) percent	Research subjects
Sample size	323
Age (years)	41.72(8.78)
Sex ratio (%) Male: Female	41.8:58.2
Socioeconomic background (%) below average:average:above average: M/D*	6.9:73.2:17.3:2.6
Educational attainment (%) elementary : high school : higher education : M/D*	0:41.6:56.0:1.8
Residence (%) city : countryside	62.3:38.7
Running experience (years)	10.17(9.60)

\*M/D: missing data

### *Physical activity*

Almost half of the runners (46.9%) changed their running habits during the pandemic, 20.4% partially changed, and 32.2% did not change their running habits. More women changed their running habits than men. I experienced the worst psychological well-being in the group that changed their running habits. Only 9 people indicated that they did not run at all, and 10 people exercised on a treadmill instead of running outside. Overall, the subjects ran significantly more in the first month of the restrictions than in the previous month. The biggest increase was observed in those who changed their habits, but overall they ran less than those who did not change their habits. The extra mileage is explained on the one hand by the changed working conditions.



„I have more free time, I go when I feel like it. Working hours are not limited.” – Woman, 45

„Now I can run anytime, even during the day.” – Woman, 47

„I can't travel, so I have more time, and many other good things are prohibited, so I'd rather run.” – Man, 46

„With online education, I have more free time to run.” – Woman, 24

Another factor explaining the extra running is increased stress. I found a significant correlation between the increased amount of running and the higher stress value.

„All day I am between 4 walks, in Home Office and with 2 children. Every day at 5 pm I go out into nature for an hour or two to clear my head. I would go crazy without it.” – Man, 39

„I run every day. I want to release the tension. I need to move.” – Woman, 57

„I have to do sports on a daily basis to reduce stress.” – Woman, 33

„Greater accumulated stress now needs to be relieved, which cannot be done in any other way.” – Woman, 39

For runners, the meaning and role of running changed during the first wave of the coronavirus and the accompanying restrictive measures.

„Before, running meant a social event, a circle I could belong to, a goal where I could fulfill myself. Now: the key to my health and mental balance, the reason why I don't fall into depression and my anxiety caused by the situation decreases.” – Woman, 33

„Running used to be a hobby, now that I've lost my job, running is a lifesaver.” – Woman, 25

„It has meant a lot up until now, but now it means more. It helps to stay mentally healthy.” – Man, 39

„It was important until now, but now it's almost the only area of my life that hasn't changed. Its regularity and consistency helps a lot.” – Man, 44

„Running used to mean training, now it means relaxation and tranquility.” – Woman, 31

„Running means everything now, freedom, healthy lifestyle, rest, psychotherapy.” – Woman, 57

During the first wave of the coronavirus, running gained value for runners and became a means of experiencing freedom.

„For me, running has been the embodiment of freedom before, but now even more so. It gives me a safe handhold in the uncertain.” – Woman, 29

„Previously recreation and sports, now the only opportunity for freedom.” – Woman, 39

*„It used to be a means of maintaining stamina, now it means freedom.”*

– Woman, 42

*„Right now it means freedom, before running was more of a compulsion.”* – Woman, 35

*„It used to mean pushing the boundaries, now it’s an opportunity to experience freedom in times of restrictions.”* – Woman, 44

The majority of runners (48.5%) missed running competitions the most. This was followed (21.3%) by the lack of previously run places, and finally (20.7%) by running together with friends.

### 3.3. DISCUSSION AND CONCLUSIONS

During my research, I was looking for the answer to the impact of the restrictive measures taken in order to slow down the spread of the new type of coronavirus on the sports habits of amateur long-distance runners, and I was also interested in whether the meaning of running changed for runners after the appearance of the coronavirus in the spring of 2020. The runners I studied ran more during the restrictions than before. Many explained this with the changed working conditions. These results are consistent with the results of Gósi’s research (Gósi, 2020a; Gósi, 2020b). 78.5% of the people he examined had their working conditions changed during the first wave of the coronavirus, and he found that the number of people running in their free time increased (Gósi, 2020a; Gósi, 2020b). The research results lead to the conclusion that running is suitable for relieving the accumulated stress and giving runners a sense of

freedom. The responses of the runners showed that running during this period is much more than a simple hobby for them, rather it represents the opportunity to experience freedom and a means of mental health protection. For us, running is an opportunity to cope with life situations full of stress and anxiety. In addition, it is a constant factor in the changed life circumstances, a sure point in everyday life, which provides a framework, a handhold, and enhances the feeling of security.

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## **4. THE PHENOMENON OF VIRTUAL RUNNING AS A SPECIFIC MOTIVATION FACTOR**

Measures to slow the spread of the coronavirus have limited training opportunities and competitions during the first wave of the coronavirus. This affected those who wanted to do sports not only in Hungary, but also in many European countries the same way. Runners were left without races, and organizers without revenue. It was then that „virtual runs” appeared, these were previously unknown to runners. By the spring of 2020, runners were able to choose from hundreds of virtual running races, suggesting that this service is built on and meets consumer demand. The name virtual running is not accurate because running itself is not virtual, only racing is virtual. During a virtual run, the runner pays an entry fee for a specific „race” that they can then complete anywhere, within a given time interval. The runner can run the distance of their choice at their place of residence, where they also do their daily workouts, but they can also complete it in other geographical locations. The entry fee for virtual runs is lower than the entry fee for real running races, as in this case there is no cost to close the city or provide refreshment stations. After the run, the runner will certify the performance through the appropriate app on their sports watch or phone and will eventually receive the reward in the mail.

Many countries around the world offer virtual racing opportunities for runners. Participants in the virtual run can run in New York, Malta, Italy, Croatia, anywhere in the world without having to travel there. But why is this option attractive to runners? What motivates them to participate in virtual runs when they don't actually travel, they don't see the world, they don't run on the beach, in historic Rome, or on the Danube Bend, but only where they usually run

during their daily workouts? It seems that these „races” are not really different from the usual trainings, but still the recognition, confirmation, finishing medal received for them makes these runs unforgettable for the runners. Its popularity is growing among runners. The question arises as to what motivates participants and why they are willing to pay for a non-real running race. The present research seeks to answer these questions. The following assumptions were made.

H<sub>1</sub>: Runners who start virtual runs have more dysfunctional attitudes than runners who do not participate in it.

H<sub>2</sub>: Runners who participate in virtual runs have lower self-esteem than those who do not.

H<sub>3</sub>: Virtual runs maintain motivation in the period without real competitions and thus athletes do not miss workouts, „competitions”.

## 4.1. EXAMINATION

### *Study design, study subjects*

Participants were recruited in the following groups of a popular community site: „Circle of Friends for Running”, „Runner Companions”, „Collect Kilometres!”. The study included individuals who were at least 18 years of age and ran on a weekly basis. Participation in the study was voluntary and anonymous, runners agreed to this by filling in the consent form at the beginning of the questionnaire. The study compared two groups, one with runners who participated in virtual runs (study group) and the other with those who did not (control group).



A total of 151 questionnaires were returned and data from 144 runners were suitable for statistical analysis. ( $M_{age}$ :  $42.92 \pm 8.34$ , 26.9% male). The respondents came from a total of 16 counties.

### ***Questionnaires***

The link to the online questionnaire was available between May 7-21, 2020. Participants provided information on their age, gender, place of residence, education, financial situation, and marital status. The questionnaire package included standardized questionnaires in the one hand and an open-ended question on the other hand, that allowed runners to express their opinions on what motivated them to participate in the virtual run or why they did not participate.

### ***Physical activity***

Subjects indicated how many kilometers they ran in the month before the virus appeared (in February) and how many in the 1 month prior to the time of the survey (April), as well as for how long they have been running regularly.

### ***Dysfunctional Attitude Scale (DAS)***

The Hungarian version of the Weismann Dysfunctional Attitude Scale was used. The scale includes 5-5 items in relation to the seven attitudes examined (need for recognition, need for love, need for performance, perfectionism, legitimate expectations, omnipotence, external / internal control). The scale, with a total of 35 items, is an attitude measuring tool, with a 7-point Likert scale. These attitudes can become dysfunctional if they appear as an excessive expectation.

### *Rosenberg Self-Assessment Scale (RSE)*

The Self-Assessment Scale developed by Rosenberg (1965) is used in many studies worldwide to measure the construct of self-assessment. The factor structure of different versions of the questionnaire was examined on Hungarian samples by Urbán et al. (2014) and Rózsa and Komlósi (2014). The present research used the Hungarian version of the 10-item Rosenberg's Self-Esteem Scale. The scale measures overall self-esteem with statements about self-acceptance and self-worth. The answers are on a 4-point Likert scale (1 = strongly disagree, ... 4 = strongly agree).

### ***Statistical analysis***

The data were processed using the statistical program SPSS 24.0. Descriptive statistics were presented as mean and standard deviation, as well as a percentage. The different variables were compared between the 2 groups using an independent t-test and a Chi-square test. The change in physical activity of the groups was analyzed by paired t-test. The significance level was  $p \leq 0.05$ .

## **4.2. RESULTS**

### *Study groups*

The majority of the runners examined (87 people) participated in virtual runs. The only significant difference between the two groups was in the proportion of genders, i.e., there were more women among the virtual runners.

*Physical activity*

The group participating in the virtual races ( $7.72 \pm 8.21$  years) did not differ significantly from the control group ( $8.93 \pm 8.81$  years) in the time since they started running regularly. The number of kms done per month before and after the coronavirus was similar in the two groups. (The study group covered  $111.84 \pm 84.73$  kms in the month before the coronavirus outbreak, the control group covered  $131.98 \pm 94.17$  kms. In April, the study group covered  $126.69 \pm 98.39$  kms and the control group  $132.02 \pm 95.45$  kms.) But when I looked at the groups longitudinally, I already found a difference in the number of kms covered. Participants in the virtual runner group ran significantly more in April than in February (Feb:  $111.84 \pm 84.73$  vs. Apr:  $126.69 \pm 98.39$ ;  $p = 0.025$ ). This difference was not detected in the group not participating in virtual runs (Feb.:  $131.98 \pm 94.17$  vs. Apr.:  $132.02 \pm 95.45$ ;  $p = 0.997$ ), although the control group ran more in both months.

*Dysfunctional attitude and self-esteem*

There was no significant difference between the two groups in either dysfunctional attitude or self-esteem. Runners participating in virtual running are therefore not motivated to participate in virtual running races by the increased demand for recognition, love, performance, or perfectionism. Participants in virtual running races are not characterized by a lower self-esteem than the control group, i.e., there is no feeling of inferiority or attempt to compensate for this in their preference for racing.

*Intrinsic motivation behind virtual runs*

Based on the answers to the open-ended questions, there were several factors that motivated runners to participate in the virtual races. One important motivating factor was the medal, many people took

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part in such „running races” specifically because of the appealing medal. It was primarily women who preferred the medals. A medal is an external reward, an object that certifies performance. If this was the only reason behind taking part in the running race, we could talk about extrinsic motivation. The medals are very special, colorful, decorated, and varied, thus also aiming to satisfy a kind of aesthetic need. Recently, a whole industry has been developed that produces more and more beautiful medals, this is how running races are trying to lure runners to their own event. In almost all cases, the competition organizers present the medal of the race in advance, thus advertising the event.

*„I went running to get my well-deserved medal miracles.”* – Woman, 43

*„I took part in one virtual run in total, because the medal is in the shape of a mask, I should have a memory from this period.”* – Woman, 51

*„A nice medal motivates me.”* – Man, 48

A significant portion of virtual runs are charity runs. (About half of the entry fee goes to the medal and half to some charity such as supporting the Red Cross, health workers, hospice services etc.) Many runners are motivated by the fact that they are supporting some good cause with their running and their money. Altruism, according to evolutionary psychology, is an innate predisposition, but it is realized primarily towards one’s relatives. According to Higgins’ theory of self-discrepancy, helping others contributes to our own emotional well-being. We get closer to both the ideal self (as we want to be) and the expected self (as we feel we should be).

*„I mostly start a virtual run if I can support a noble cause with it.”* – Woman, 39

„What motivated me to participate in the competition was that I could help others with it.” – Woman, 32

„I especially liked the charity part.” – Man, 47

„I took part in a virtual run because of the support of a civil organization.” – Man, 60

„I was attracted by the fact that I was helping the work of a foundation with my entry.” – Woman, 49

Some of the test subjects want to prove themselves by running races, experience a sense of success, and maintain motivation to run. In their case, competition is the main means of satisfying the high need for self-esteem experienced in sports, and the means of maintaining the high level of performance and need.

„I want to prove it to myself.” – Woman, 49

„The goal is to feel successful and to stay in shape.” – Woman, 44

„I take part in virtual running so that I don't stop running, to have the motivation to go out alone despite the danger.” – Woman, 37

„The deadline gives me a compulsion to go out for a run, so I'm not comfortable.” – Woman, 53

„I was looking for motivation so that I wouldn't get lazy, to have something that drives me to go to training even if I don't feel like leaving home because of the changed and very worrying circumstances. I found it in the virtual run.” – Woman, 25

Some runners participate in a virtual run as a kind of substitute activity, a „replacement action” due to the lack of normal races. Such is the case with the „Olympic Pentathlon” scoring, where one scores points in various sports events to obtain various items with an Olympic Pentathlon logo on it (hat, backpack, trainers). And it is appealing to many runners to complete a four-season series of races, the „half marathon mania”. During a „half marathon mania”, a half marathon announced by a given race organizer must be completed in four consecutive seasons, and thus the runner can obtain the half marathon mania medal. So for many runners, virtual running is just a tool to reach some more distant goal.

*„The goal was to score points in a competitive series.”* – Woman, 64

*„Virtual running was part of a series of competitions.”* – Man, 43

*„I want a half-marathon mania medal, that’s why I started the spring virtual half-marathon.”* – Woman, 39

*„I definitely wanted to start, because I’ve been to the real competition every year so far, now I’m left with the virtual one, which is better than nothing.”* – Man, 51

Many runners run in order to belong to a community. Each person belongs to a large number of groups, if they want to define themselves, they list these groups. An individual can be a member of several such bonds at the same time, in which they live their daily lives. Belonging to groups can be important to the individual in many ways, it can be a stage for achieving life goals, meeting personal needs, various leisure activities, and personal development or even defining an identity.

„There’s something magical about it. It’s magic, because there are many of us participating, yet we run alone.” – Woman, 49

„This makes me part of an imaginary community.” – Woman, 50

„Knowing I’m part of something, I’m not running alone.” – Woman, 41

„It kind of feels like you belong somewhere. I thought that in these minutes others are also struggling with the kilometers.” – Man, 60

„Knowing that even though I’m running alone right now, I’m not alone.” – Woman, 28

„That even though you run alone, you still do it in a community.” – Woman, 23

Virtual running can also be appealing because of the experience of freedom. The virtual run can be performed anywhere, anytime. A real running race has to be run on a specific day, at a specific time and location, mostly on a Sunday. In contrast, for a virtual run, there are usually several days, a week, or even a month available to the runner, they are free to allocate their time to when they want to run the distance. They can select the day, time of day, location. They can also choose the pace at which they want to run, as virtual runs do not have a time limit. In running races, distances often need to be completed in a specific time limit (e.g. 2 hours 30 minutes for a half marathon) because the city or a particular route is being closed for that time. Adherence to the time limit is ensured with the help of the closing bus. The runners are followed by a closing bus at the slowest set pace and whoever it catches up, it will pick up and that runner cannot continue running, enter the finish zone and receive

a running medal. Many runners feel stressed by the presence of the closing bus, especially if they have already been disqualified from the race due to their slower pace. And for some runners, the lack of huge crowds is one of the attractions of virtual runs.

„*The best thing is that you can run anywhere and there are no crowds.*”  
– Woman, 44

„*I like to run the distance when I want to.*” – Woman, 49

„*I choose when and where I run, it gives me freedom.*” – Woman, 25

„*I can run in my usual surroundings and not have to stress about the closing bus.*” – Woman, 39

„*It can be completed anywhere, easily adapted to my own circumstances.*” – Woman, 34

„*It feels good that I don't have to run in front of others, but alone, calmly, without feeling ashamed.*” – Woman, 24

„*There is no minimum time, there is no closing bus, and I run at the time of the day when it is good for me and on my usual course, these are the things I like best about it.*” – Woman, 52

„*I also motivated myself to exercise with this, it was a coping strategy against being alone and stressful, as well as charity and the beautiful medal. Apart from my work (healthcare), I barely moved, I felt that this would not be good.*” – Woman, 39



### 4.3. DISCUSSION AND CONCLUSIONS

In the course of the study, I was looking for the answer to what kind of internal motivation made this new phenomenon caused by the virus epidemic, the „virtual” run, popular among runners. My results suggest that, contrary to my prior suggestion, participants in virtual running races are not characterized by an increased need for recognition, love, performance, or perfectionism. The preference of objects and medals that prove one’s performance cannot be explained by the increased need for recognition or the lower self-esteem. Kopp et al. (1997) concluded that among dysfunctional attitudes, increased need for love, recognition, and performance is a characteristic of depression. Based on these, it is likely that participation in virtual runs is not associated with a predisposition to depression, low self-esteem, or a „performance constraint” to overcompensate for it. The runners involved in virtual runs ran more after the outbreak than before. For runners who did not participate in virtual runs, this extra run was not observed. Based on this, it is right to think that virtual running is a special stimulating, motivating phenomenon for runners during an epidemic. Overall, the control group ran more before and after the outbreak than the study group. In their case, the difference between the two months was not significant. There were more men in the control group than in the study group and on average they run more kilometres per month than female runners. The runners’ responses confirmed the hypothesis that what makes virtual runs appealing is that it maintains motivation to run and provides a sense of success. In addition to participating in virtual runs, the opportunity for charity, the medal and the experience of freedom is also attractive for the runners. These virtual runs helped runners experience a reassuring sense of belonging to a community.

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The need to belong somewhere, to someone, is very strong in people and in these perilous times, when many people have spent their daily lives in isolation, alone, experiencing this belonging can be especially helpful and adaptive.

Women prefer virtual running more than men and it is also a motivational opportunity for them to run more. Some of the runners referred to the beautiful medal as the reason they participated in the virtual run. The medals are placed on ribbons of different colors and materials and are most often reminiscent of some cute animal or charming little figure (snowman, Santa Claus, heart, penguin, seal, etc.). Their beauty, variety and uniqueness are most attractive to women, they represent value to them. Collecting these cute but „useless” items is not an incentive for most men to run.

The other important factor that resulted in participating in virtual runs among runners was helping others, charity. Altruism, or selflessness, is a form of social support that can range from helping out to even self-sacrificing. Those who are more likely to adopt the point of view of others, i.e., have increased empathy, are generally more prone to selfless assistance. Women are more empathetic. Assistance and charity are also likely to attract more women to virtual runs than men.

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## 5. STUDY OF EXERCISE ADDICTION IN AMATEUR RUNNERS

Running is the most convenient way to exercise intensely. People can improve their mental and physical health, as well as their physical fitness. Running even a few minutes per day is associated with reduced risks of cardiovascular disease (Lee et al., 2014). To attain beneficial physiological adaptation, exercisers have to practice regularly. It appears that higher amounts of physical activity provide greater health benefits (O'Donovan et al., 2010); however, there is no consensus on the upper limits of intensity, frequency, and duration to exercise in an optimal way. In recent decades, a new behavioral addiction called „Exercise Addiction” (EA) has been observed when exercisers overtrain and consequently suffer severe withdrawal symptoms if they cannot exercise (Landolfi, 2013). Increasing workout or training times often ignores fatigue and also increases the risk of sometimes irreversible physical injuries. Although evidence of EA exists, it is not referenced in the latest (fifth) edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association [APA], 2013). Its criteria are not well established, appropriate studies in the field are lacking, and incidence of EA is currently understood to be rare (Szabo, Griffiths, de La Vega Marcos, Merv' o, & Demetrovics, 2015). The number of amateur exercisers is increasing year by year. Some become so involved with the sports activity they are doing that the exercise slowly becomes compulsive; they feel an irresistible impulse to continue exercising, despite personal affects like fatigue, injury, or illness (Hausenblas & Downs, 2002a; Johnson, 2000). It is not fully evident how to distinguish normal amounts of exercise from excessive exercise. Hausenblas and Downs (2002b) developed a screening scale based on a modification of the criteria for substance dependence. If an individu-

al shows three or more of the indicators (such as tolerance, withdrawal, lack of control, intention effect, time, reduction in other activities, and continuance), there is cause for concern. This psychometric instrument is widely used in research studies and has been validated in several countries. In this study, we use the term addiction instead of terms such as „dependence,” „compulsive,” „excessive,” „obligatory,” or „exercise abuse,” as they elude to the same phenomenon (Berczik et al., 2012; Szabo, 2010; Szabo et al., 2015). EA is very complex and its emergence is still not yet clearly determined. It can manifest as a primary symptom (when EA is the main problem) or it can be a secondary symptom where EA develops as a consequence of the primary problem of an individual, for example, eating disorders, body image disorders, or weight control dysfunction (Freimuth, Moniz, & Kim, 2011; Zmijewski & Howard, 2003). Generally, regular exercise has a positive impact on an individual’s mental health, but in its addictive form, it is often associated with psychological distress (Lichtenstein, Nielsen, Gudex, Hinze, & Jørgensen, 2018) and sociocultural factors (Adams & Kirkby, 2002; Demetrovics & Kurimay, 2008). Kotbahi, Morvan, Romo, and Kern (2017) indicated that EA can serve as a short-term coping strategy to relieve negative affective states or to avoid negative emotions. We assume that people who are feeling isolated and lonely are looking for activities that can give them pleasure. Running is a sport activity that can be executed alone or in groups, but individuals suffering from loneliness (perceived social isolation or possibly lack of social reward) are more prone to unhealthy behaviors, presumably including unhealthy exercise behavior. When evaluating the risk of EA, it is essential to measure the exercise characteristics. To date, there are still insufficient studies that assess the association between being at risk of EA in amateur runners and key parameters, such as number of years spent running activity, time spent training a week, workout distance, historical sports activity (past positive experience with exercise),

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and demographic and psychological factors. Therefore, studying risk of EA and its related factors from a multidimensional perspective in amateur runners can provide more insights to this behavioral problem. Amateur runners are considered as those who engage in running as a recreational activity and are not involved in international professional sports (although taking part in competitions was not an excluding factor). The main objective of this study is to find the prevalence of risk of EA and the effect of exercise characteristics, demographics, and psychological features on the probability of being at risk of EA.

## 5.1. EXAMINATION

### *Study planning, study subjects, ethical approval*

Participants were recruited in the running communities of a social website („Runners’ Friends Circle”, „Running Buddies”, „Tereputók!”). Participation requirements were: (a) at least 18 years of age, (b) at least two years of running at the amateur level, and (c) not being an active member of the Hungarian National Sports Federation. Filling out the questionnaire takes approx. It took 25-30 minutes. Participation in the study was voluntary and anonymous, to which the runners agreed by ticking the consent form described at the beginning of the questionnaire. The research was approved by the Borsod-Abaúj-Zemplén County Regional Research Ethics Committee. The data of a total of 257 runners (average age: 40.49±8.99 years; 51.1% men and 48.9% women) were used.

## ***Research tools***

### *Demography*

The demographic factors were: gender, age, education and financial situation.

### *Sports activity*

Participants reported how long they had been running and how much time they spent running each week. The time categories for determining the weekly summation were available to the examinees: 1-2, 3-4, 5-7, 8-10 and >10 hours.

### *Exercise addiction*

#### *Exercise Addiction Inventory*

The Exercise Addiction Scale interprets exercise addiction based on the substance addiction criteria of the DSM-IV (American Psychiatric Association, 1994). The measuring device can differentiate between (a) exercise addicts, (b) athletes with symptoms but not addicts, and (c) asymptomatic athletes. The questionnaire uses seven subscales based on the DSM-IV, which are: 1. tolerance, 2. withdrawal symptoms, 3. urge (the person exercises more and longer than planned) 4. loss of control, 5. time, 6 .the reduction of other activities (work, family, friends, etc.) 7. the continuation of the activity despite the perceived negative effects. The 21-item exercise addiction questionnaire was used to measure exercise addiction (Hausenblas & Downs, 2002b; Downs et al., 2004). Test subjects have to judge how typical the given statement is for them on a 6-point Likert scale. A higher score indicates a greater dependence on exercise. Individuals with a score of 5 or 6 out of the seven DSM-IV characteristics were classified as „at risk” for exercise addiction, those with a score of 3-4 were classified as „with symptoms but not addicted”, and those with a score of 1-2 can be considered „asymptomatic”.



*Life satisfaction*

The examined persons indicated how much they did on the Cantril scale, a 10-point scale they are satisfied with their lives. The top of the ladder (step 10) represents the best possible satisfaction, the bottom of the ladder the worst possible (Cantril, 1965).

*Eating disorders*

*SCOFF Eating Disorder Questionnaire*

I examined the signs of an eating disorder with the SCOFF questionnaire. (S=sick patient C=control, O=onestone scale, F = fat, F = food) The questionnaire consists of 5 items. There are two possible answers: yes, no. If 2 yes answers are given, the existence of an eating disorder (anorexia nervosa, bulimia nervosa) can be assumed (Morgan, Reid, & Lacey, 1999). The questionnaire was validated for use in Hungary (Dukay-Szabó et al., 2016).

*Loneliness*

I used the 3-item UCLA Loneliness Scale to examine the loneliness of runners. This scale contained three questions that measured three dimensions of loneliness: human relationships, social relationships, and perceived isolation. The scale used three response categories: (a) almost never, (b) sometimes, and (c) often. Scores were summed and higher scores indicated greater loneliness (Hughes, Waite, Hawkey, & Cacioppo, 2004).

*Body image disorders*

*Body Investment Scale*

Body image subscale I used the Body Image Subscale of the Body-Related Investment Scale to measure the participants' feelings and attitudes about their own body using a 5-point Likert scale method (Orbach & Mikulincer, 1998). The scale contains six items. I calcu-

lated average values and higher point values indicated a more positive body image. The scale was validated for Hungarian use (Czeglédi et al., 2010).

### *Emotional profile*

#### *Depression, Anxiety, Stress Questionnaire-21 (Depression, Anxiety Stress Scale-21 (DASS-21))*

I used the DASS-21 to measure the severity of depression, anxiety and stress using 7-7-7 items (Lovibond, & Lovibond, 1995). The scale consists of three parts, with 7 questions each measuring the negative emotional states of depression, anxiety and stress. The respondents answered on a 4-point Likert scale (0 = never, ... 3 = almost always). The answers must be added and a higher value indicates a worse emotional state.

### *Anthropometry*

Based on the given height and weight, I calculated the body mass index (BMI) (weight (kg)/height (m)).

### *Statistical methods*

The data were processed using the SPSS 24.0 statistical program. Descriptive statistical data were presented in average and standard deviation, as well as percentage. The significance level was accepted at  $p \leq .05$ . I used multiple linear regression to explore the causes of exercise addiction.

## 5.2. RESULTS

### *Participants*

A total of 285 runners filled out the questionnaire. Five questionnaires were not complete, so they were deleted and 16 runners did not meet the requirement of having been playing sports for at least two years or did not provide information about it. Two were under the age of 18, and I deleted the data of another five runners because of a BMI below 17.5 (which is the diagnostic characteristic of anorexia, APA, 2013). If an eating disorder is detected, exercise addiction may be a secondary disease. Demographic data is presented in the following table.

Descriptive statistical characteristics of participants

Mean (SD) and frequency	Participants
Sample size	257
Age (years)	40,49 (8,99)
BMI	23,89 (3,28)
Sex ratio (%) Male : female	51,1:48,9
Socioeconomic background (%) below average : average : above average	5,2:77,7:17,2
Educational attainment (%) elementary : high school : higher education	0:38,2:61,8
Weekly training time (%) 1–2:3–4:5–7:8–10:10+óra	6,3:37,9:34,0:12,1:9,8
Years spent running	13,18(12,42)
Other sports activities other than running (%) Yes : No	70,8:29,2
Childhood physical activity (%) Yes : No	50,2:49,8

*Prevalence of the risk of exercise dependence in amateur runners*

Based on the exercise addiction questionnaire, 37.8% of the examined runners were symptom-free, 53.6% showed symptoms, and 8.6% were characterized by a high risk of addiction.

*Predicting the Probability of Exercise Dependence*

Multiple linear regression revealed five variables that significantly predicted the risk of exercise addiction: (a) anxiety, (b) loneliness, (c) time spent running per week, (d) childhood physical activity, and (e) education level.

*The relationship of the test subjects with running*

Based on the Exercise Addiction Questionnaire, it was important for the runners in all three groups to continuously increase the intensity, frequency and duration of the sport [Tolerance subscale (3.71. SD=1.28,.95%CI=3.55–3.87)] and spending a significant amount of time doing sports. [Time subscale (3.09.SD = 1.11. 95% CI = 2.96–3.23)]. It can be observed that the exercise dependent group scored higher on the Loss of Control subscale (4.90.SD = 0.76. 95% CI =4.57–5.23) and these runners were less able to control their desire to play sports or to stop the run for a longer time. All three examined groups showed fewer problems in the subscale of Exercise (sports performed for longer than predetermined, expected or planned; (2.39.SD = 1.10. 95% CI = 2.25–2.52)) and Decrease in Other Activities subscale (they prefer to play sports instead of spending time with family and friends, or instead of focusing on school or work; (1.90.SD = 0.82. 95% CI = 1.80–2.00). All three group differed significantly from each other on all subscales and almost all items. (Except for item 2 „I do sports, despite the fact that I have recurring physical problems” and item 19: „I prefer to do sports, in order to avoid family/ spent time with friends.”)

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### 5.3. DISCUSSION AND CONCLUSIONS

In this research, I evaluated the amateur runners based on the group assignment of the widely used Exercise Dependence Scale. The risk of exercise dependence was slight (8.6%) in the case of the examined runners. The result proves that this problem exists, but is currently not as widespread as other behavioral addictions (Sussman et al., 2011). The incidence rate is very different in the different studies (Egorov, & Szabó, 2013) and this difference could be due to the different questionnaires (Weik, & Hale, 2009) and the different sample, e.g. students (Sicilia et al., 2013) competitive athletes (Blaydon, & Lindner, 2002) or recreational athletes (Mayolas-Pi et al., 2017). Studies based on representative samples have shown a very low prevalence (0.09%–0.30%) in the population (Mónok et al., 2012; Müller et al., 2013). This study focused on the physically active, amateur sports adult population who have been running for at least 2 years. The results show that psychological aspects (anxiety and loneliness), sports characteristics (training time and childhood physical activity) and demographic factors (level of education) also influenced exercise addiction. It is well known that exercise addiction can cause psychological problems. Athletes often experience anxiety when they are unable to play sports for whatever reason. In addition to anxiety, I also found loneliness as a predisposing factor for exercise addiction. Lonely individuals try to reduce their anxiety through sports (Phillips et al., 2003). It is not surprising that athletes usually run alone and experience this aloneness as pleasant, but being alone does not necessarily mean loneliness. Since there is little sports psychology literature on loneliness, future research is needed to understand the effect of loneliness on the risk of developing exercise addiction. Menczel (2016) observed that solo athletes show

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more symptoms of exercise addiction than participants in group sports. This is contradicted by the fact that another study failed to reveal differences in exercise addiction between individual and group athletes (Kovacsik et al., 2018). The results of this research support the assumption that lonely athletes use sports as a source of joy and happiness. In order to overcome anxiety and loneliness, athletes increase the amount of time spent in sports or the amount of training. However, it is important that too much training time is not necessarily maladaptive. Professional athletes train a lot, with high intensity, but are not exposed to the risk of exercise addiction. If it weren't for that, they wouldn't be able to achieve serious results in the world competitions. It can be considered an interesting and new result that participation in childhood sports activities can be a predictor of later exercise addiction. Regular physical activity in childhood predicts sports activities in adulthood (Telama et al., 2005). Downs, Savage and Di Nallo (2013) concluded that the majority of physically active young people were in the „non-addicted but symptomatic” group, which could lead to the development of exercise addiction later in life. My results also allow us to conclude that a lower level of education can also be associated with exercise addiction. It is likely that people with higher education have more developed coping strategies and more tools to deal with emotional problems and stress and anxiety.

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## 6. SUMMARY

The above researches show that long-distance performance hiking and long-distance running can provide relaxation and a flow experience for amateur athletes. Furthermore, my research results allow us to conclude that these leisure sports activities are suitable for overcoming loneliness, for treating stress and anxiety, and are able to provide the experience of freedom in difficult life circumstances. These long-term sports activities represent a kind of mental health protection, „psychotherapy” for amateur athletes. Experiencing the flow experience and striving for it appeared most prominently as motivation in the community of performance hikers. The flow experience, i.e. the perfect experience, is associated with a feeling that enables people to cope with the task in front of them in a system of action bound by rules, where they receive continuous feedback. At this time, people are so focused on what they are doing that they cannot think about anything else. They don't take care of themselves, they don't care about their problems. In such cases, the self-consciousness temporarily disappears, the sense of time is distorted. The reward value of an activity that provides such an experience is so high that people do it just for the sake of the activity, even if the activity is difficult or dangerous. This is a state where the individual is completely immersed in what he is doing, does not concern himself with his own self, concentrates only and exclusively on the activity, mobilizes his resources for it, and his capacity for performance is maximum. The loss of Self-consciousness does not mean the absence of the Self, only the knowledge of the Self is temporarily missing. Having an experience that makes us forget who we are for a while is a very pleasant feeling. When we are not concerned with our own self, we are able to expand the boundaries of our self-concept. The loss of

self-consciousness leads to self-transcendence, the feeling that the boundaries of our self have been pushed outward. In relation to the current or flow experience, the abilities are in line with the goals, and there is also a balance between the individual's abilities and the difficulty of the task. The flow experience is characterized by conscious focus, distortion of the sense of time, and a sense of control over the situation. The activity is fully intrinsically motivated. The flow experience is not „good” in an absolute sense. It is good only in so far as it can help enrich life and increase the power and complexity of the Self. In addition to striving for a flow experience, performance hikers have other intrinsic motivations for completing long distances, such as the search for new challenges, the need to know their physical limits, experiencing a state outside their comfort zone, and experiencing belonging to a community of people with similar interests. The attractiveness of nature and the health-preserving effect of time spent outdoors were also prominent factors. During the pandemic, long-distance running helped runners cope with stress. Running has become a prized tool for mental health protection, and the meaning of running has undergone a significant change for runners during the first wave of the pandemic. While in the period before the epidemic, running was a hobby, a sports activity, a means of achieving endurance and fitness, a kind of „task”, during the first wave of the epidemic, running meant much more freedom, relaxation, and the possibility of relaxation for runners. Parallel to the global epidemic, „virtual running opportunities” appeared, which represented a special motivation for amateur runners. The popularity of virtual runs lies primarily in the feeling of success they provide, charity, freedom (you can run anywhere, anytime) and the nice finishing medals. In addition to all of this, it provides an opportunity for runners to experience that they are not alone, that they belong to a community, even if at the moment it is only „virtual”. Due to the positive experi-

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ences and feelings provided by hiking and running, sports activities can in extreme cases displace other sources of pleasure and activities from the life of amateur athletes. For some athletes, long-distance running and performance hiking can become an exclusive source of pleasure and addiction. Although only a small part of the people I examined were affected by this risk, its importance is still great. On the one hand, early recognition of exercise addiction can help prevent injuries resulting from overuse (e.g. fatigue fractures, strains, cartilage wear, etc.) and on the other hand, it can help avoid the psychological symptoms associated with addiction. The color of joy is an important part of sports activity and sports motivation, but it is important to avoid it becoming an exclusive source of joy and to keep the measure and follow the „golden mean”.

