

EXERCISE DEPENDENCE AMONG HUNGARIAN FITNESS CENTER USERS – PRELIMINARY RESULTS

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Summary

Regular physical activity plays an important role in the healthy life. However, excessive exercising might lead to addictive behavior. Exercise dependence (ED) is an extreme commitment to sports that was identified as a behavioral addiction. The objective of the present study is to explore the prevalence of ED in a sample of fitness center users ($n = 1743$) recruited from 17 fitness and wellness centers in Budapest. A questionnaire-based survey was carried out to measure ED. Two standardized scales, the Exercise Dependence Scale (EDS) and the Exercise Addiction Inventory were used. Results revealed that 2.2% (on EDS) and 7% (on EAI) of subjects belonged to the dependent group and 69.3% (on EDS) and 76.5% (on EAI) showed ED-related symptoms. It is surmised that due to their sport activities, these groups are at elevated risk for ED. Moreover, younger people with decreased self-esteem tend to have higher likelihood and to have problems with excessive sport behaviour. Therefore it is important to raise the awareness of the harmful and risky patterns of exercise behaviour. The here adopted two instruments, EDS and EAI, might be utilized for to early detection of ED and prevention of the disorder.

Key words: exercise dependence, fitness centre users, physical activity, self-esteem, well-being

INTRODUCTION

The amount of physical activity in our daily lives has been reduced to an unhealthy minimum over the last decades due to the amendment of labour characteristics, e.g., sedentary work.. Several studies have shown that mental and physiological benefits of physical activity are almost undisputed. Scholars concluded previously several times that integrating physical activity in one's regular lifestyle is crucial in protecting health (1). The importance of body shape gets wider attention in European cultures. The consumer society has a crucial influence on people's values shaped by the media. People's attention to regular exercise is strongly linked to physical appearance and the pressure of being slim. The message of "solely thin, young and good looking people can be successful" (2) may be addressed with sports, which can help in reaching this goal. The society needs to pay attention to adolescents, who are vulnerable to such a social pressure during the identity and personality formation life phase. Therefore, the changes of cultural ideals of body images may have a stronger influence on youth than adults. The risk of development of unhealthy sporting habits may be higher among them (3).

THE PHENOMENON OF EXERCISE DEPENDENCE

Although regular exercise has been shown to have beneficial effects on one's well-being, researchers found that exercise may lead to a form of dependence or abuse in some individuals (4).

In general, this category describes a condition in which the practice of a moderate or intense exercise becomes a compulsive behavior. Specifically, exercise dependence (ED) manifests as a strong desire to perform physical activity in one's leisure time, becoming uncontrollable and expressed in the forms of physiological symptoms (e.g., tolerance, abstinence) and/or psychological symptoms (e.g., anxiety, depression; 4). Nevertheless, research on exercise dependence has been ambiguous, as yet, the terminology of the constructs that surround this phenomenon, its definition is rather vague, and the measures to assess it were not well operationalized yet. This ambiguity about of ED highlights a challenge for basic and applied research, because the factors that predominate, concur, and perpetuate it are still unclear or indefinite, thus making its prevention and treatment more problematic (5).

PREVALENCE OF EXERCISE DEPENDENCE

Based on the various samples and investigations on the prevalence of exercise addiction varies in a wide range.

Hausenblas and Symons Downs (6) found that 2.5% of their university student sample, – by using EDS – could be classified as exercise dependent. Also, Terry, Szabo and Griffiths (7), reported that 3.0% of the sample – university students – could be identified as at risk of exercise addiction. The two questionnaires, the EDS and the EAI, have a strong relationship, as they highly correlate ($r = 0.81$; $p < 0.001$) with each other (7). In Hungary solely one research shed light on this population; Menczel, Kovacs and Vingender (8) referred about 2% of students belonging to “at risk group” of exercise dependence and 45.3% were detected as non-dependent, symptomatic group. Other study has examined the prevalence ED between athletes (elite category) and also between recreational sportsman, for instance people using fitness and wellness facilities. One of the first of these studies was conducted by Blaydon and Lindner, in 2002 (9). They found that 52% of triathletes are in risk of ED. Additionally, Youngman (10) said that 20% of people doing Ironman (long distance triathlon) are in high risk, and 79% of the sample showing symptoms of ED. Other studies and research monitoring people from fitness centers showed that 7% to 42% of people are linking to risk group (11, 12). From Hungary one study (13), – besides Menczel, Kovacs and Vingender (8) – investigated the phenomenon among fitness users. Their results showed, – that 6,7% of people are in the at risk category, and further 64% showed ED-related symptoms, which means the significant part of the sample are likely to become addict to exercise.

THE LINK BETWEEN AGE AND EXERCISE DEPENDENCE AND THE PERCEPTION OF QUALITY OF LIFE

Some studies demonstrated the link between age and ED. This relation means that the younger the person is the higher the chance is to become exercise dependent (3). Parallely with the findings of Edmunds (3), Urban and Hann (14) stated that the prevalence of doing sport reduces in elderly (14). The reduction of exercise might be resulted by to several factors, for instance older people have more duties to deal with, e.g. work, family, etc. Also older people have better and more widespread coping strategies and stress managing ability. Younger people may lack these, so they probably can build stronger upon their body, which can also provide them support in their self-esteem.

Based on the previous studies, the objective of the present paper is to investigate the phenomenon of ED and to explore how age, self-esteem and the quality of life might determine the presence of ED. We also consider important to investigate a special sample, namely the fitness users in Hungary that might show higher risk for ED.

METHODS

Procedure

The present study was conducted in 2010 among fitness center users. We chose our sample from 17 fitness and wellness centers in Budapest. The participation was voluntary, selection criteria were people under 18 years of age and exercising more than once in two weeks. Our participants yield consent to take part in filling in our questionnaire with providing their contact details. In 24 hours they received an e-mail with a password to enter the online survey. It took approximately 20 minutes to complete the survey. Our final sample consisted of 1743 people, 58.6% of them were female, the mean age was 31.7 (SD = 8.491). For data analyzes SPSS 18.0 was used.

Instruments

Our questionnaire consisted of different parts, namely, demographic questions, e.g. age, gender, residency, weight and height. In the second part we assessed the sporting habits, such as the frequency, the kind of sport they practise. We also measured the existence of eating disorders. The existence of eating disorders could indicate the so called primary or secondary exercise dependence (8). If no eating disorders could be detected, the subject was included in the analysis.

As the final part of the survey, fitness users were asked to fill in two standardized questionnaires, the Exercise Dependence Scale-21 (EDS) (6) and the Exercise Addiction Inventory (EAI) (7) in the Hungarian context, translated by Demetrovics & Kurimay (15). Besides these scales self-esteem and well-being were also measured.

Exercise Dependence Scale (EDS)

EDS 21-items questionnaire contain seven subscales, which are rated on a 6-point Likert scale (6). The scales are the following 1) tolerance (e.g., „continually increase my exercise intensity to achieve the desired effects/benefits”), 2) withdrawal (e.g., “I exercise to avoid feeling tense”), 3) intention effect (e.g., “I exercise longer than I plan”), 4) lack of control (e.g., “I am unable to reduce how often I exercise”), 5) time (e.g., “I spend most of my free time exercising.”), 6) reduction in other activities (e.g., “I think about exercise when I should be concentrating on school/work”), and 7) continuance (e.g., “I exercise when injured.”). Following the instructions the test can divide between dependent, symptomatic and asymptomatic group. The scale has excellent psychometric properties, it's internal reliability was Cronbach $\alpha = 0.90$.

The Exercise Addiction Inventory (EAI)

EAI consists of six statements, evaluated on the model of addiction (7). The statements are rated on a five-point Likert scale. The six statements of the EAI are the

following: 1) salience (“Exercise is the most important thing in my life”), 2) conflict (“Conflicts have arisen between me and my family and/or my partner about the amount of exercise I do”), 3) mood modification (“I use exercise as a way of changing in my mood”), 4) tolerance (“Over time I have increased the amount of exercise I do in a day”), 5) withdrawal symptoms (“If I have to miss an exercise session I feel moody and irritable”, 6) relapse (“If I cut down the amount of exercise I do, and then start again, I always end up exercising as often as I did before”). (7) The higher scores on the scale indicate higher likelihood of exercise addiction. The EAI’s reliability index – in our research resulted Cronbach value $\alpha = 0.62$.

Rosenberg Self-esteem Scale (RSES)

For measuring the global self-esteem, the widely known and utilized test, the Rosenberg Self-esteem scale. It has ten items, with a four – point Likert scale, regarding on perceived preciousness and the acceptance of ourselves (16). According to the research of Rozsa at el. (16) people having higher self-esteem having also better coping mechanisms and act better in stress management. The maximum score on the scale is 30, the higher the scores indicate higher self-esteem. The reliability value of the scale in the present study was Cronbach $\alpha = 0.86$.

WHO – Well-Being Index (WBI)

The WBI focuses on the positive aspects of the quality of life (17). The original test contained 28 questions. The short version was elaborated by Beck with five items in 1996. The higher scores on the scale mean the better belief on life quality of one’s life. Susánszky and colleges (17) validated the Hungarian version with satisfactory statistical values. In the present research sample the reliability of the WBI was Cronbach $\alpha = 0.78$.

Participants

The present research was conducted among fitness centre users (N = 1743) from 17 fitness centre in Budapest. After excluding people suffering from eating disorders our final sample included 1439 people¹. The mean age of the respondents was 32 (SD = 8.443), and 54.6% of them were females. For further analyses five – and later two – age groups were distinguished (fig. 1).

Regarding marital status 38.2 % of our sample has a relationship, and 24.3% is married, while 32% were single. In terms of education 65% of the sample has a university or college degree and 31.8% had high school graduation.

Height, weight, and BMI were also measured. The mean BMI was 23.6 (SD = 3.63) meaning the noteworthy

¹SCOFF test was used to decide weather someone has an eating disorder.

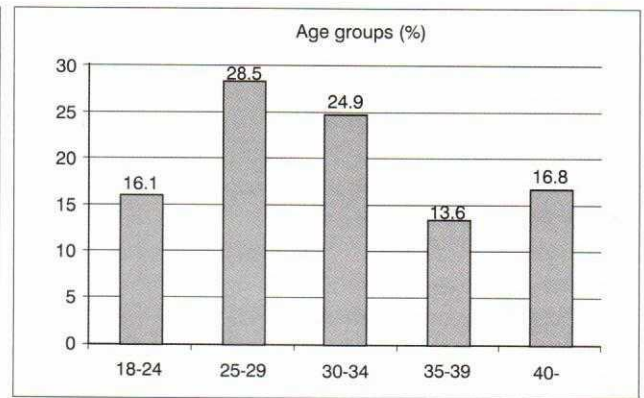


Fig. 1. Age groups.

part of the sample belongs to the normal BMI category. The data of descriptive statistics with the anthropometric data can be seen in table 1.

In the next step, the frequency of weekly exercising was measured (tab. 2).

Our sample reported to practise 65 kinds of sports; most frequently fitness – type of activities – (29.5%) were mentioned – e.g., bodybuilding. The second most frequent sport was aerobics, 25.5% (fig. 2).

RESULTS

Exercise dependence

Two tests focusing on ED, that is – EDS and EAI – were analysed. Table 3 shows the descriptive statistics and the reliability of the scales. The reliability of EDS was quite high in the sample, while the EAI had moderate results.

Based on the EDS and EAI scores three groups were separated: dependent, symptomatic and non-dependent/asymptomatic. Figure 3-4 show the pro-

Table 1. Descriptive statistics of the sample.

		Mean	SD
Age		32	8.443
School (%)			
Graduate	65.4		
Finished high-school	31.8		
Pre high-school	2.7		
Marital status (%)			
Single	37.5		
In a relationship	62.5		
Anthropometric data			
Height		173.6	9.011
Weight		71.9	15.335
BMI		23.6	3.629

Table 2. Frequency of weekly exercising.

	Frequency	Percent (%)
Less than once a week	35	2.4
1 time a week	228	15.9
2 time a week	437	30.5
3 time a week	380	26.5
4 time a week	200	13.9
5 time a week	91	6.3
More than 5 time a week	63	4.4
Total	1434	100

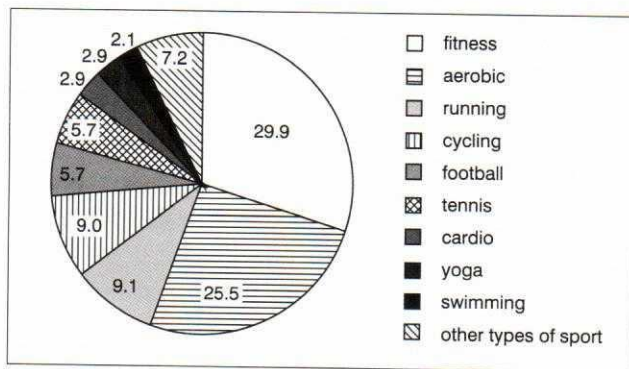


Fig. 2. Types of sports.

portions of the dependent groups based on the two scales. On EDS scale the results showed 2.2% of the sample belonged to dependent group, 69.3% to the symptomatic and 28.5% to the non-dependent group.

On the other hand, on EAI scale showed similar rates 7% of the people showed exercise dependence (dependent group), 76.5% scored into the symptomatic range and 16.5% into the asymptomatic group. EDS and EAI groups showed similar distribution, therefore, a strong correlation was found between the two scales ($r = 0.606, p = 0.000$).

In the next step of the analysis the relationship between age and exercise dependence were explored. Using chi square test we can state (EDS: $\chi^2 = 31.833,$

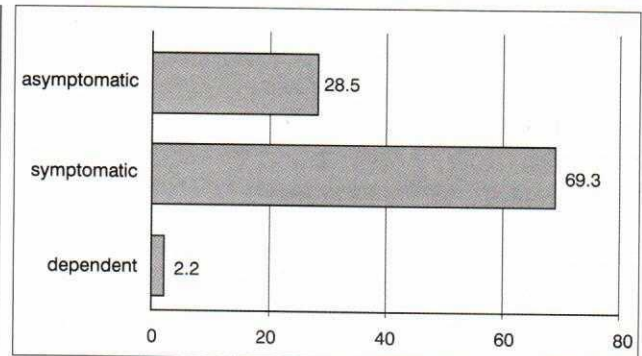


Fig. 3. Exercise dependence on EDS.

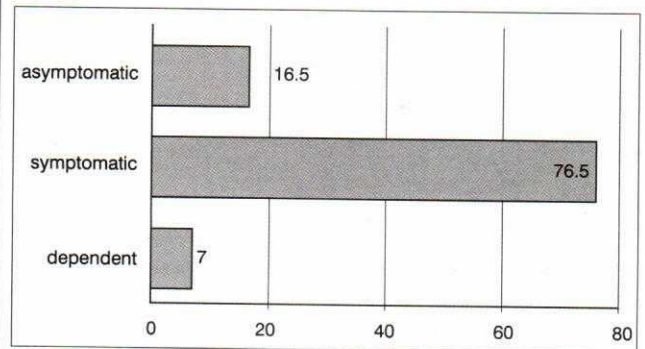


Fig. 4. Exercise dependence on EAI.

$p = 0.000$) younger people – aged between 18-24 years – are in higher risk for ED. People aged 25-29 were higher represented in the symptomatic group, while people over 40 have the lowest risk for ED. Surprisingly, no significant link of age was found when using EAI ($\chi^2 = 8.849, p = 0.355$).

General perceived well-being and self-esteem was measured by WBI and RSES scales. The correlation coefficient of the two scales was examined, resulting in a moderate positive link between the two scales ($r = 0.407, p = 0.000$). Significant differences were found between age groups in WBI scores. When using dichotomous age categories with cut-off point 30, younger people under 29 achieved significantly higher scores on WBI ($t = 2.024, p = 0.043$), that is younger people rated their perceived well-being better. Regards to the link between WBI and EDS we found significant difference in the dependent and symptomatic groups.

Table 3. Descriptive statistics of EDS, EAI, RSES and WBI.

	N	Mean	SD	Cronbach α	Range
EDS	1431	54.23	16.404	0.90	21-114
EAI	1431	17.7	4.103	0.62	6-30
RSES	1434	21.11	4.906	0.86	3-30
WBI	1439	8.708	2.683	0.78	0-15

Dependent people tends to have more positive impressions about their life than people in the symptomatic group (EAI: $F = 3.536$, $p = 0.029$). This difference was not detected by using EDS ($F = 0.633$, $p = 0.849$).

Using RSES we can state that people under 29 have significantly lower self-esteem than older people ($t = 3.476$, $p = 0.001$). We used one way ANOVA to explore if there is a link between ED and self-esteem scores. No significant link was found with EAI groups, however using EDS groups statistically significant relation could be detected between the groups (EDS: $F = 13.211$, $p = 0.000$). It means that the asymptomatic group showed higher self-esteem than the symptomatic group.

In the next step we used logistic regression analysis to explore the relationship between ED and background factors (tab. 4). The results of the analysis showed that EDS scale have several significant predictors: age, frequency of sports, self-esteem showed significant influence on ED. Younger people aged between 25-29 indicated strong influence on ED (OR = 1.564 $p = 0.025$). Frequency of sports resulted to act significant predictor (OR = 0.229, $p = 0.005$ and OR = 0.343, $p = 0.009$).

We also found that self-esteem was a significant predictor, RSES indicated inverse influence on ED (OR = 0.940, $p = 0.000$). The same analysis on EAI scale did not show significant relationship with the same background factors.

DISCUSSION

Exercise dependence is a new disorder and researchers have started getting familiar with it for a few years in Hungary. Thus, the aim of the present paper was to draw attention to this new phenomenon and conduct research in connection with age and people's well-being. Two standardized questionnaires were used to reveal this phenomenon of ED – Exercise Dependence Scale (EDS) and Exercise Addiction Scale (EAI). Both tools are well-known in the field of international research (6, 7).

Table 4. Logistic regression for EDS.

Predictor variables	OR	Sig
Age groups		0.128
25-29 years	1.564	0.025
Frequency of sport		0.000
Rare than once in two weeks	0.229	0.005
Once a week	0.343	0.009
Self-esteem	0.940	0.000

Our goal in this research was to measure the prevalence of exercise dependence among fitness facility users and to reveal the proportion of the "at-risk group" in this special sample. The survey was conducted in 17 fitness centres in Budapest. These people are doing exercises at least once a week as a leisure time activity. In general, sport is advantageous and it supports healthy life (1), getting and/or staying healthy. Sport also contributes to changing one's body shape, which is a two-fold problem in our society. In one hand, more and more people weight problems, for them exercising would be beneficial and could lead to longer and healthier life. On the other hand, the consumer society pushes the expectation to look pretty, thin and young, where excessive sporting could result in a negative health outcome, particularly among young people.

Concerning the prevalence of ED, in our sample we found 2.2% (EDS) and 7% (EAI) of the people using fitness facilities, which is quite similar to previous research results, (6, 7). In our sample the risk of having ED in the symptomatic group varied between 69.3-76.5%. It means people showing some symptoms of exercise dependence – but not dependent – so they also have a higher chance to get into the dependent category, to become addicted. It is crucial to focus on this group, and to intervene, prevent and support them. The present research showed higher risk of having symptoms among people aged between 25-29 years; and higher likelihood of having dependence in a younger age group; finally, the lowest risk could be detected in older age groups. It may means with increasing age people tend to have better coping mechanisms, while for the under 25 years group, we should to provide them more skills to prevent the release of addiction.

The explanation for the high proportion of exercise dependence might be that younger people have lower stress managing skills and have trouble with advanced coping mechanisms. As we could see elderly have lower risk for ED, in line with their higher self-esteem. Interestingly younger people have higher rates on well-being index, but it can also mean that they do not worry about adult life-related issues, e.g. cost of living, renting flat, work-life balance etc. Although older people have these duties, they also have improved skills on stress management. It is important to underline the significance of age features, since exercise dependence might be considered as a false coping strategy with the troubles in life. Naturally further research is needed, for instance longitudinal investigations, to gain a deeper understanding of this phenomenon and to prove this assumption.

It is important to stress the result that the prevalence of ED could be detected in the present sample of fitness goers. Due to their habits and activities, these groups of people are in elevated risk for ED, thus it is highly important to raise their awareness of this phenomenon of ED, and its negative impact on physical and mental health.

EDS and EAI tools might contribute to the early detection of ED and support the prevention and intervention processes.

In schools, sport and leisure facilities, these tools are useful for screening, but sometimes many addicted exercisers may perform their activity in informal settings, e.g. simply going out for a run on their own, thus this part of the population could remain hidden. Assuming that only about one to three percent of the exercising population may be affected by exercise addiction (6) and that the majority of exercisers addicts are "lone wolves", the use of the questionnaires may have further limited value in assessment. Introducing these screening tools to the GPs could also support to reveal this hidden disease. Frequently, people suffering from exercise dependence rarely met with specialists or psychologists, maybe only with their GPs. GPs could serve as a gate-keepers, thus, educating general practitioners to use these screening tools could be beneficial to find hidden groups, to reveal hidden problems leading to more complex physical and mental illnesses. □

References

1. Warburton DE, Nicol CW, Bredin SS: Health benefits of physical activity: the evidence. *Canadian Medical Association Journal* 2006; 174(6): 801-809.
2. Featherstone M, Hepworth M, Turner BS: A test. *Társadalmi fejlődés, kulturális teória. József Műhely Kiadó* 1995.
3. Edmunds J, Ntoumanis N, Duda JL: Examining exercise dependence symptomatology from a self-determination perspective. *Journal of Health Psychology* 2006; 11: 887-903.
4. Adams JA, Miller TW, Kraus RF: Exercise Dependence: Diagnostic and Therapeutic Issues for Patients in Psychotherapy. *Journal of Contemporary Psychotherapy* 2003; 33(2): 93-107.
5. Hausenblas AH, Symons Downs D: Exercise dependence: a systematic review. *Psychology of Sport and Exercise* 2002a; 3: 89-123.
6. Hausenblas HA, Symons Downs D: How much is too much? The development and validation of the exercise dependence scale. *Psychology and Health* 2002b; 17: 355-369.
7. Terry A, Szabo A, Griffith MD: The Exercise Addiction Inventory: a new brief screening tool. *Addiction Research and Theory* 2004; 12(5): 489-499.
8. Menczel Zs, Kovács E, Vingender I: A testedzésfüggőség: egy újabb viselkedéses addikció a modern evés- és testképzavarok sorában. *Addiktológia* 2011; 10 (4): 301-317.
9. Blaydon MJ, Lindner KJ: Eating disorders and exercise dependence in triathletes. *Eating Disorders* 2002; 10(1): 49-60.
10. Youngman JD: Risk for Exercise Addiction: A Comparison os Triathletes Training for Sprint-, Olympic-, Half-Ironman-, and Ironman – Distance Trathlons. *Open Access Dissertations. Paper 12. http://scholarlyrepository.miami.edu/cgi/viewcontent.cgi?article=1011&context=oa_dissertations* 2014.09.08.
11. Lejoyeux M, Avril M, Richoux C, Embouazza H, Nivelio F: Prevalence of exercise dependence and other behavioral addictions among clients of a Parisian fitness room. *Comprehensive psychiatry* 2008; 49(4): 353-358.
12. Costa S, Oliva P: Examining relationship between personality characteristics and exercise dependence. *Review of Psychology* 2012; 19(1): 5-12.
13. Béres A, Czeglédi E, Babusa B: A testedzésfüggőség és a testkép vizsgálata fitnesszedzést végző nők körében. *Mentálhigiéné és Pszichoszomatika* 2013; 14(2): 91-114.
14. Urbán R, Hann E: Rendszeres testedzés és a szocioökonómiai státusz összefüggései magyar reprezentatív mintában. *Mentálhigiéné és Pszichoszomatika* 2003; 4: 11-16.
15. Demetrovics Zs, Kurimay T: Testedzésfüggőség: a sportolás, mint addikció. *Psychiatria Hungarica* 2008; 23(2): 129-141.
16. Rózsa SV, Komlósi A: A rosenberg önbecsülés skála pszichometriai jellemzői: a pozitívan és negatívan megfogalmazott tételek működésének sajátosságai. *Pszichológia* 2014; 34(2): 149-174.
17. Susánszky É, Konkoly Thege B, Stauder A, Kopp M: A WHO jól-lét kérdőív rövidített (WBI-5) magyar változatának validálása a Hungarostudy 2002 országos lakossági egészségfelmérés alapján. *Mentálhigiéné és Pszichoszomatika* 2006; 7(3): 247-255.

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