



Is exercise addiction in fitness centers a socially accepted behavior?



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A B S T R A C T

Background: Fitness exercise is popular and associated with improved health and social status. Taken to extremes, however, exercise can become an addiction. One suggested symptom of exercise addiction is “conflicts” with family and friends. However, it may be difficult to recognize excessive exercise patterns if they are accepted and encouraged by relatives. The aim of this study was to explore if fitness exercisers with a high risk of addiction experienced the same level of exercise support as exercisers with a low risk of addiction. Furthermore, we wanted to examine if social support affected the subjective reporting of “conflicts”.

Method: A total of 577 fitness exercisers completed the Exercise Addiction Inventory (EAI) and two questions asking about “exercise support from family and friends” and “present eating disorder”.

Results: Exercisers at high risk of exercise addiction reported the same level of support from relatives as those at low risk. Exercisers with high levels of exercise support reported significantly fewer conflicts, even if they were at high risk of addiction. If an eating disorder was present, the level of exercise support was significantly reduced.

Conclusion: Exercise addiction might be difficult to identify with the general behavioral addiction symptom “conflict”, since exercise is socially accepted even in subjects with high risk of exercise addiction. If an eating disorder is present, the exercise routines seem to be interpreted as socially undesirable. Screening for exercise addiction with the EAI should take into account that fitness exercisers rarely report conflicts, which could result in false negative cases.

1. Introduction

The number of adults who perform regular exercise has increased significantly during the last few decades (Overgaard et al., 2014). In particular, exercise in fitness centers is popular (Fester & Gottlieb, 2017; Kirkegaard, 2007). A simple Google search on ‘fitness’ plus ‘exercise’ gives 281.000.000 results of fitness trends, fitness programs, workout videos and guides. Fitness centers aim to engage people in regular exercise, and instructors are educated in motivating fitness members to push themselves to their physical limits.

However, there may be a downside to striving for physical fitness and bodily recognition. Addiction to exercise has been described as excessive and obsessive exercise patterns that may result in physical injury and overload (Hausenblas & Downs, 2002). Prevalence proportions of exercise addiction in fitness center attendees have been found to range from 2% in Hungary (Menczel et al., 2013), 5–6% in Denmark (Lichtenstein, Christiansen, Bilenberg, & Stoving, 2014; Lichtenstein & Jensen, 2016) and 30% to 42% in France (Lejoyeux,

Avril, Richoux, Embouazza, & Nivoli, 2008; Lejoyeux, Guillot, Chalvin, Petit, & Lequen, 2012). The different prevalences reported probably reflect differences in samples and operationalizations of fitness exercise addiction.

Based on Brown's theory of behavioral addictions (Brown, 1997), the following six components have been suggested to define exercise addiction (Griffiths, 1997): *Salience* (exercise is the most important thing in life), *conflicts* (interpersonal conflicts about the harm the excessive activity may be doing and/or intrapsychic conflicts), *mood modification* (a coping strategy to regulate emotions), *tolerance* (an increasing amount of exercise is needed to achieve a psychological effect), *withdrawal symptoms* (e.g. irritability when exercise is reduced or when missing a workout) and *relapse* (reversion to earlier exercise patterns in spite of attempts to reduce exercise).

The Exercise Addiction Inventory (EAI; Terry, Szabo, & Griffiths, 2004) was developed to include these six components. The EAI-item measuring conflict was phrased to only include interpersonal problems: “Conflicts have arisen between me and my family and/or my partner

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about the amount of exercise I do". All items are rated on a 5-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). The cut-off score indicating a high risk of addiction is ≤ 24 . The EAI has shown good psychometric properties in Danish fitness exercisers (Lichtenstein, Christiansen et al., 2014; Lichtenstein, Andries, Hansen, Frystyk, & Stoving, 2014) and across countries (Griffiths et al., 2015). Testing the internal structure of the scale, results reveal a one-factor solution in these studies. However, the EAI item measuring "conflicts with family and partner about exercise" was found to have poorer psychometric value compared to the other items in three Danish EAI studies (Lichtenstein, Christiansen et al., 2014; Lichtenstein & Jensen, 2016; Lichtenstein, Larsen, Christiansen, Stoving, & Bredahl, 2014), even though the differences in factor loadings were very small.

In comparison with other addictive conducts (e.g. alcohol, gambling, or binge eating), exercise is a socially accepted behavior, possibly even when taken to extremes. The striving for a lean and fit body is usually perceived as a sign of a healthy lifestyle and personal success, and family and friends may accept and encourage fitness exercisers to maintain excessive exercise habits. Thus no conflicts arise, which may affect the predictive value of the EAI item measuring "conflicts".

The distinction between a healthy commitment to fitness versus a harmful exercise addiction is difficult to conceptualize if current screening instruments (e.g. EAI) are not sensitive to the specific nature of the phenomenon. Yet no studies have explored whether self-reported exercise support from relatives and friends affects the responses to the EAI-conflict item.

Similarities have been found between exercise addiction and eating disorders in terms of obsessive exercise patterns, controlling body shape, and perfectionist personality traits (Bamber, Cockerill, & Carroll, 2000; Bamber, Cockerill, Rodgers, & Carroll, 2003; Lichtenstein, Christiansen et al., 2014; Veale, 1987). Muscle dysmorphia is a variant of body dysmorphic disorder characterized by beliefs of insufficient muscularity, and engagement in excessive muscle-building activities such as weightlifting and using anabolic steroids (Tod, Edwards, & Cranswick, 2016). Athletes with muscle dysmorphia often have low body fat and disordered eating habits. The syndrome can be thought to have commonalities with compulsive exercise due to the extreme focus on achieving fitness goals, but the relationship has not yet been investigated.

Eating disorders and body dysmorphic disorder are recognized as psychiatric disorders in the diagnostic manuals (American Psychiatric Association, 2013; World Health Organization, 1992), whereas exercise addiction is not. However, the two conditions often appear simultaneously, and Davis and Claridge proposed that eating disorders should be understood as addictions or that addictions have high comorbidity with eating disorders (Davis & Claridge, 1998). They found that addictive and obsessive-compulsive traits were associated with weight preoccupation and excessive exercise in patients with eating disorders.

It could be hypothesized that excessive exercise patterns connected with disturbed eating are perceived more undesirable and thus lead to less exercise support from family and friends.

This study contributes with a preliminary examination of possible differences in perceived exercise support between a group of fitness exercisers with a high risk of exercise addiction (EAI score ≤ 24) and low risk of exercise addiction (EAI score > 24). We explored whether perceived exercise support affected the ratings on the EAI-conflict item, and if the co-occurrence of an eating disorder affected exercise support.

2. Material and methods

Data for this cross-sectional study were collected through a questionnaire survey among fitness members at two large fitness centers in Denmark. Paper questionnaires were available in the reception areas of the centers, and an online version of the survey was accessible on each center's Facebook Group. All responses were anonymous as no personal identification information was requested. A total of 577 fitness

exercisers completed the survey. The gender distribution was 71% females, and the mean age was 26.7 years (range 15–73 years).

We used the Danish version of the EAI to identify participants at risk of exercise addiction.

An EAI score of 24–30 points indicates a high risk of exercise addiction, while scores of 6–23 indicate low risk. The conflict-item was phrased as: "Conflicts have arisen between me and those around me (e.g. family, partner, friends, colleagues) about the amount of exercise I do".

In addition, we collected information on age, gender and weekly exercise amounts rated in categories of: 0–3, 4–7, 8–11, 12–15, and ≥ 16 hours per week.

Participants were asked to rate their perceived feeling of social support in their current exercise routines, phrased as: "Those around me (e.g. family, partner, friends, colleagues) supports me 100% in my exercise routines", and to rate their perceived addiction to exercise, phrased as: "I see myself as addicted to exercise". These statements were rated on a 5-point Likert scale from totally disagree (1) to totally agree (5). We further asked the participants to indicate if they continued to exercise despite injury or illness (yes/no), and if he/she suffered from an eating disorder, e.g. anorexia nervosa or bulimia nervosa (yes/no).

2.1. Statistical analyses

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 24. To examine potential differences between the groups of fitness members with high versus low risk of exercise addiction, we used *t*-test for continuous data (amount of weekly exercise, perceived exercise addiction, and perceived exercise support) and a chi-square test for dichotomous data (exercising despite injury/illness and self-reported eating disorder).

To explore an association between "exercise support" and "conflicts", two groups were created based on the scores on the exercise support item: one group with high levels of exercise support (Likert ratings 4–5) and one group with low levels of exercise support (Likert ratings 1–3). The two groups were compared in their ratings on the EAI-conflict item, risk of exercise addiction, and self-reported eating disorder. A *t*-test was used for continuous data (conflict-item) and a chi-square test for dichotomous data (risk of exercise addiction and self-reported eating disorder).

3. Results

3.1. High or low risk of exercise addiction

Descriptive characteristics of the two addiction groups are presented in Table 1. In total, 6.8% ($n = 39$) of the participants were categorized as being at high risk of exercise addiction (total EAI score 24–30).

As shown in Table 1, high risk of exercise addiction was associated with more weekly exercise, as 80.6% of those with high risk of addiction exercised 8 h/week or more compared to 35.3% of those with low risk of addiction. A higher proportion of those with high risk of addiction reported exercise despite injury/illness (61%), reported having an eating disorder, and had higher scores on self-perceived exercise addiction. However, our results showed no difference between the addiction groups regarding perceived exercise support from family and friends. Even when we removed the 16 cases with self-reported eating disorder, we found that the group with high risk of exercise addiction reported the same level of exercise support as the group with low risk of addiction.

3.2. Self-perceived exercise support and rating at the EAI items

In the total sample, 60% ($n = 323$) reported high levels of exercise support from family and friends compared to 40% ($n = 215$) reporting low levels of exercise support. No significant differences were found in

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