

## Exercise Addiction in British Sport Science Students

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**Abstract** The aim of the current research was to compare the prevalence of self-reported symptoms of exercise addiction in sports sciences students with those of the general exercising population. A total of 455 participants (261 sports science students; 194 controls) completed the Exercise Addiction Inventory. Sport science students had significantly higher mean scores on the Exercise Addiction Inventory than exercisers from the general population. It was also found that 6.9% (18 out of 261) sport science students were possibly addicted to exercise compared to only 3.6% (7 out of 194) of the general exercising population, a result that approached statistical significance ( $p=0.09$ ). These findings raise the possibility that sports science students may be more susceptible to some components of exercise addiction than exercisers more generally.

**Keywords** Exercise · Addiction · Exercise dependence · Exercise addiction inventory

Although universally acknowledged as a healthy habit, exercise behaviour has also been recognised as having the potential to become a damaging obsession for a small minority of people. The most popular viewpoint has been that extreme or obsessive exercising is a form of addiction (Garman, Hayduk, Crider, & Hodel, 2004; Griffiths, 1997). Based on Brown's (1993) general components of addictions, Terry, Szabo and Griffiths (2004) designed a brief six-item exercise addiction screening tool, the *Exercise Addiction Inventory* (EAI). The EAI has good internal consistency (Cronbach alpha=0.84). Its concurrent validity with the *Obligatory Exercise Inventory* (Pasman & Thompson, 1988) was  $r=0.80$ , and with the *Exercise Dependence Scale* (Hausenblas & Symons Downs, 2001) was  $r=0.81$ . (see Table 1 for questionnaire item statement; each statement had a five-point Likert response option. The statements were coded so that high scores reflected attributes of addictive

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exercise behaviour: 1=“Strongly disagree”, 2=“Disagree”, 3=“Neither agree nor Disagree”, 4=“Agree”, 5=“Strongly Agree”).

The aim of the current study was to compare the prevalence of self-reported symptoms of exercise addiction in sports sciences with those of the general exercising population using the EAI. It was hypothesized that both physical and mental (i.e., academic) involvement with sports and exercise, for the majority of the time among sport science students, might translate into greater risk of exercise addiction in comparison with the general exercising population.

## Materials and Methods

A total of 455 male and female participants completed the EAI. The first group were recruited from two-year cohorts of sport science students at Nottingham Trent University ( $n=261$ ) representing the sport science student group (age range 19–23 years). The second group were recruited from several community fitness centres ( $n=194$ ) representing the general exercising population group (age range 17–74 years). Sport science students completed the EAI in the classroom, whereas participants from the fitness centres completed the EAI on an individual basis immediately upon arrival to the centre. As a consequence, all questionnaires were completed before exercise to avoid possible bias due to affective changes post-exercise.

## Results

Following spreadsheet processing and computerised rating of the EAI, the data were analysed with a  $t$  test. This analysis yielded a statistically significant difference between the two groups ( $t=18.02$ ,  $p<0.001$ ). Sport science students scored higher when summing up the six items on the EAI (mean=18.6, SD=3.8) than exercisers from the general population (mean=17.1, SD=3.8). The effect size (Cohen’s  $d$ ) was found to be moderate ( $d=0.40$ ). Since the six questions of the EAI represent six components of addiction, each of the individual components was compared (using Bonferroni corrected  $t$  tests) between the two groups. The mean scores on the first three questions (salience, conflict, and mood change) were significantly different between the two groups (see Table 1). There were no significant differences between the groups on the remaining three questions. Terry et al. (2004) proposed that individuals scoring above 24 on the EAI may be classified as “at risk” of exercise addiction. In the current study, cross-tabulations were used to determine the incidence of scores above 24 in the two groups. Results showed that 6.9% (18 out of 261) sport science students were at risk of exercise addiction compared to only 3.6% (7 out of 194) of the general exercising population, although this difference did not reach the usual conservative level (0.05) of statistical significance ( $X^2=2.32$ ,  $p<0.09$ ).

## Conclusions

The present study shows that sport science students have higher scores on the EAI than the general exercising population. The overall higher scores on the EAI were due to the higher scores reported by the students on the first three questions of the EAI, representing salience,

**Table 1** The table illustrates the means and standard deviations (SD) for the six questions of the EAI, and the six components of addiction for the two groups studied (Sport Science Students (SSS) and General Exercising Population (GEP)) along with the *t*-values of the mean differences, probability levels (*p*), and effect sizes (*d*) where statistically significant group-differences were found

Statement Items on the EAI (Component of Addiction)	Mean/SD SSS ( <i>n</i> =261)	Mean/SD GEP ( <i>n</i> =194)	<i>t</i>	<i>p</i>	<i>d</i>
(1) Exercise is the most important thing in my life. (SALIENCE)	2.85 (0.90)	2.59 (1.03)	2.84	0.005	0.27
(2) Conflicts have arisen between me and my family and/or my partner about the amount of exercise I do. (CONFLICT)	2.34 (1.24)	1.87 (1.06)	4.37	0.001	0.41
(3) I use exercise as a way of changing my mood (e.g. to get a buzz, to escape etc.). (MOOD MODIFICATION)	3.85 (0.84)	3.24 (1.06)	6.68	0.001	0.64
(4) Over time I have increased the amount of exercise I do in a day.(TOLERANCE)	3.48 (1.07)	3.48 (1.07)	0.00	NS	–
(5) If I have to miss an exercise session I feel moody and irritable. (WITHDRAWAL SYMPTOMS)	2.77 (1.08)	2.68 (1.14)	0.90	NS	–
(6) 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. (RELAPSE)	3.32 (0.95)	3.24 (1.01)	0.87	NS	–

conflict, and mood modification. Accordingly, exercise is more important for sport science students than to the general exerciser, albeit the effect size for salience was relatively low. Rather than an addiction, it may have been the case that the students were simply committed to their sports studies both personally and professionally. However, there were indicators that suggested that their behaviour was beyond commitment. For instance, sport science students tended to report more conflict related to their exercise than the comparison group. Furthermore, the strongest finding in terms of effect size (see Table 1) was seen in relation to the third component suggesting that sport science students use exercise more for mood modification than the general exercising population. Other research by the authors (Terry et al., 2004) suggests that mood modification is a coping response rather than commitment.

However, there could be other explanations, from the professional sports point of view. The higher score on the first three items may be indicative of the fact that for the students, doing exercise was a professional commitment, i.e., salience, not a leisure activity. Hence their higher score on mood modification and conflict may be reflective of their commitment to their studies. The fact that only three of the scores on the core addiction items were significantly different suggests non-addiction explanations. The findings also raise questions about the validity of using the total score of the questionnaire as a measure of addiction. This is one of the reasons why individual components of addiction in this context need to be analysed too. High total score in this study is treated as a 'warning sign', not a diagnosis of addiction.

The finding the prevalence of risk of exercise addiction was almost twice as high (6.9 versus 3.6%) in sport science students than in the general exercising population is a surprising outcome of this study although did not quite reach statistical significance. This figure is higher than three percent (3%) figure reported by Terry et al. (2004). Consequently,

it is possible that the cohort examined in the current investigation had greater affiliation with and/or affinity for exercise than the students examined by Terry et al. In the latter study only half of the sample consisted of sport science students ( $n=102$ ) in contrast to a substantially larger sample examined in the current study ( $n=261$ ). Further, the results obtained here are not surprising in light of recent reports of high incidence of exercise addiction among students in health and physical education (Garman et al., 2004). It is also possible that the wide age disparity between the two groups under study is a confounding factor and may have contributed to the differences in results.

The prevalence of exercise addiction is unknown because only a few clinical cases surface in (de Coverly Veale, 1995; Szabo, 2000) the scientific literature. Some scholars conjecture that exercise addiction is rare. Indeed, it was speculated that about 3% of the exercising population is affected. The results of this study agree with those figures in the general exercising population but reveal that the expected figure is nearly twice as high in students studying sport sciences. These students, in general, also reported more symptoms of exercise addiction, especially on salience, conflict, and mood modification, than the general exercising population, although it could perhaps be argued that these are not core addiction symptoms with regards to sporting behaviour. The reason beyond the differences may be linked to greater daily personal, social, theoretical, and practical involvement with sports and exercise. The findings also raise the possibility that sports science students may be more susceptible to exercise addiction than exercisers more generally.

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