

Prevalence of Exercise Addiction Symptomology and Disordered Eating in Australian Students Studying Nutrition and Dietetics



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ABSTRACT

Background Previous research has reported the existence of disordered eating in students studying nutrition and dietetics. However, the occurrence of exercise addiction, previously linked to disordered eating, is poorly understood in this group.

Objective The main objective of this study was to explore the prevalence of self-reported symptoms of exercise addiction and the association with disordered eating in a sample of students studying nutrition and dietetics. A secondary objective was to compare the prevalence of exercise addiction to students enrolled in another health-related degree.

Design We conducted a cross-sectional study in 165 undergraduate students.

Participants/setting Participants were students of both sexes enrolled in nutrition and dietetics and occupational therapy degree programs at an Australian university in August 2013.

Main outcome measures Participants completed four validated questionnaires for assessment of exercise- and eating-related attitudes and behaviors measuring scores for exercise addiction, weekly volume of physical activity (PA), eating disorder symptoms, and cognitive restraint. Stretch stature and body mass were measured and body composition was assessed using dual energy x-ray absorptiometry.

Statistical analyses performed Independent *t* test, Mann-Whitney U test, and χ^2 test were completed to compare groups of students based on sex, degree, or eating attitudes. Spearman's correlation was performed to explore associations between continuous variables (exercise addiction scores, PA volume, and scores for eating attitudes and cognitive restraint).

Results Approximately 23% of nutrition and dietetics students were found to be at risk of exercise addiction (20% females and 35% males; $P=0.205$), while the majority demonstrated some symptoms of exercise addiction. A similar proportion of at risk individuals was found in the female occupational therapy group (19%; $P=1.000$). In females (nutrition and dietetics and occupational therapy combined), the exercise addiction scores were associated with three other outcome measures: PA volume ($r_s=0.41$; $P<0.001$), eating attitudes scores ($r_s=0.24$; $P=0.008$), and cognitive restraint ($r_s=0.32$; $P<0.001$). Comparative analysis indicated that female students with high cognitive restraint had greater exercise addiction scores than those with low cognitive restraint (20.3 [4.8] compared to 17.8 [4.2]; $P=0.003$).

Conclusions Results suggest high prevalence of exercise addiction in this sample of undergraduate health-related degree students and its link to amount of PA and disordered eating in females. Future research should include larger samples of both sexes to build the existing understanding on these maladaptive behaviors.

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REGULAR PHYSICAL ACTIVITY (PA) AND EXERCISE has been recognized as being effective in improving physical and psychological health.^{1,2} However, excessive exercise that is associated with compulsive attitudes and behaviors can lead to exercise addiction or exercise dependency.³ Exercise addiction or dependency is characterized by obsessive preoccupation with exercise, maintenance of exercise despite injury or fatigue, and

interference of exercise with personal or professional life.⁴⁻⁷ Individuals with this type of addiction feel obligated to exercise, rather than to carry out regular PA for health benefits or social enjoyment. Due to its dysfunctional nature, this form of addictive behavior could result in physical issues, such as stress fractures or other overuse injuries, and in emotional and social impairments.^{5,6,8,9} There are two distinguished types of exercise addiction: primary and

secondary. In primary exercise addiction, exercise is performed for inner satisfaction and not to change physical appearance.¹⁰ Secondary exercise addiction has been reported in individuals with disordered eating attitudes and symptoms of an eating disorder.¹¹ In these groups, exercise addiction may be secondary to an eating disorder and weight dissatisfaction, where an increase in PA is undertaken to achieve and maintain a certain body weight or shape.^{5,12} In primary exercise addiction, exercise is not usually directly linked to weight dissatisfaction.^{6,10} The reported prevalence of exercise addiction and exercise dependency varies from <1% in a population-wide study¹³ to almost 30% in a study focused on recreationally exercising adults.¹⁴ Previous research has shown a general tendency for a greater occurrence of exercise addiction and dependency in individuals with an increased body shape or weight preoccupation,¹⁵ in those who are involved in image-focused recreational or professional activities,¹⁶ and in students studying a sport-related degree.¹⁷ The majority of studies that have been conducted to date in exercise addiction have been limited to screening investigations and not diagnostic procedures, thus providing only primary assessment of this pathological behavior.

Undergraduate students studying nutrition and dietetic degrees have been previously reported as having a high drive for thinness and dissatisfaction with body weight.¹⁸⁻²¹ In addition, a perceived pressure to fit a certain image that is congruent with the profession of a nutritionist or dietitian has been reported in these individuals,²² as well as an increased risk of disordered eating, including eating disorder symptomology and a high cognitive restraint, compared to students enrolled in other degrees.^{18,20,23} Disordered eating attitudes and cognitive restraint have been associated with a number of maladaptive behaviors, including extreme measures of weight control, such as dieting or purging.^{20,24,25} Furthermore, an obsessive desire to achieve and maintain a certain body weight or shape may result in increased PA, loss of control over an exercise behavior, or exercise addiction.^{5,12} Currently, there is little known about exercise attitudes or the prevalence of exercise addiction in the nutrition and dietetics student population. It is also unclear if exercise addiction relates to disordered eating or body composition in this population. Therefore, the main objective of this study was to explore the prevalence of self-reported symptoms of exercise addiction in a sample of students studying nutrition and dietetics and the association with disordered eating in this group. The secondary objective was to compare the prevalence of exercise addiction in students studying nutrition and dietetics to students enrolled in another health-related degree.

METHODS

Study Design, Participants, and Procedure

This cross-sectional observational study included data collection using a range of survey instruments and physical measures. The study sample was recruited from a mid-sized regional Australian university and included students studying undergraduate nutrition degrees (combined as the nutrition and dietetics cohort) and a comparator group of students from another health degree, occupational therapy (OT). The OT cohort was chosen due to similarity to the

nutrition and dietetics cohort in sex, age and study of a health-related degree. The study was promoted to potential participants through inter-disciplinary announcements, e-mails, posters, and presentations at the start of classes. Any undergraduate student enrolled in nutrition and dietetics and OT degree programs across all years of study were invited to participate. As incentive, participants were eligible to enter a raffle to win one of six gift cards.

Data were collected online via six self-reported questionnaires administered on three separate occasions over a 6-week period to minimize participant burden. First, students completed a demographic questionnaire, followed by the Exercise Addiction Inventory (EAI)^{4,26} and the International Physical Activity Questionnaire (short form, IPAQ).^{27,28} The third set of questionnaires consisted of the Eating Attitudes Test-26 (EAT-26)²⁹ and the Three-Factor Eating Questionnaire (revised version, TFEQ-R18).³⁰ This was followed by in-person body composition assessment (ie, height and body mass, plus a dual-energy x-ray absorptiometry scan). Body composition assessment was conducted within 4 weeks after completion of the last questionnaire. All data were collected at the beginning of a standard second semester in August through October 2013. Participant completion of the first questionnaire indicated consent. Additional written consent was obtained before body composition assessment. The protocol for the study was approved by the University of the Sunshine Coast Human Research Ethics Committee (S/13/525).

Measures

Demographic Characteristics. Demographic characteristics (eg, age, sex, degree, and year of enrollment) were collected via a purposefully designed and piloted questionnaire described elsewhere.³¹

EAI. The EAI was used to assess symptomology of exercise addiction and to identify those at risk.^{4,26} The inventory is a validated tool that examines individual's beliefs and experiences based on the perceived importance of exercise. The inventory consisted of six statements, such as "Exercise is the most important thing in my life," that represent different components of addiction: salience, conflict, mood modification, tolerance, withdrawal symptoms, and relapse. The responses to the statements were based on a 5-point Likert scale ranging from strongly disagree (1 point) to strongly agree (5 points). Responses for each point were summed with score ≥ 24 corresponding to those who could be considered at risk of exercise addiction. A score within 13 to 23 points is suggestive of a symptomatic individual, while score ≤ 12 points indicates those without symptoms. Variables obtained from the EAI included continuous (ie, scores for each of the six statements and the overall score) and categorical (ie, three category based on the cutoff points: "asymptomatic," "symptomatic," and "at risk"). In this sample, the Cronbach's α coefficient for the EAI was 0.72.

IPAQ. Physical activity level was assessed using the IPAQ. This validated questionnaire contains seven questions that measure the time spent walking, practicing moderate- and high-intensity activities and the time of physical inactivity over a period of 7 days. The results were calculated via

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