

Is the chronic fatigue syndrome an exercise phobia? A case control study[☆]

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Abstract

Objective: The aim of this study was to test whether patients with chronic fatigue syndrome (CFS) have an exercise phobia, by measuring anxiety-related physiological and psychological reactions to ordinary activity and exercise. **Methods:** Patients and healthy but sedentary controls were assessed over 8 h of an ordinary day, and before, during and after an incremental exercise test on a motorised treadmill. To avoid confounding effects, those with a comorbid psychiatric disorder were excluded. Heart rate, galvanic skin resistance (GSR) and the amount of activity undertaken were measured, along with state and trait measures

of anxiety. **Results:** Patients with CFS were more fatigued and sleep disturbed than were the controls and noted greater effort during the exercise test. No statistically significant differences were found in either heart rate or GSR both during a normal day and before, during and after the exercise test. Patients with CFS were more symptomatically anxious at all times, but this did not increase with exercise. **Conclusion:** The data suggest that CFS patients without a comorbid psychiatric disorder do not have an exercise phobia.

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Introduction

The cognitive-behavioural model for chronic fatigue syndrome (CFS) suggests that patients become trapped in a vicious cycle perpetuated by maladaptive behaviours, cognitive misinterpretations and illness beliefs that maintain symptoms and disability [1].

Graded exercise therapy (GET) has been advocated for CFS, on the basis that CFS is maintained by both the avoidance of activity and deconditioning [2,3]. Two systematic reviews have concluded that there is high quality evidence of efficacy of GET in adult outpatients [4]. Yet, many patients can drop out of GET or not even start it, and

this may be related to a fear of exercise, which is reported by the majority of CFS patients [5]. Fifty percent of 2338 members of an ME self-help charity held the belief that GET was “damaging” [6]. Of 105 patients reporting their experience of exercise, 55% believed that their recovery would be facilitated by limiting their physical activity [7]. Even some doctors have “. . . deep concerns over the current application of graded exercise programmes. . .” [8].

Kinesiophobia is the fear of physical movement or activity [9], and the concept is derived from studies of patients with chronic pain syndromes [10,11]. The Tampa Scale of Kinesiophobia (TSK) has been developed in pain patients as a valid and reliable measure of the fear of exercise and has been found to be a predictor of distress and disability [10]. It has been adapted by both Silver et al. [9] and Nijs et al. [12] for use in CFS patients. Using the new TSK-F scale, Silver et al. found that fear of exercise was linked to reduced exercise performance on a bicycle ergometer and explained 15% of the variance in distance cycled. They also found that preexercise anxiety was much

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higher than postexercise anxiety. Nijs et al. found that 47 of 64 CFS patients (72%) had a TSK score for fatigue of over 37, in their view, indicating kinesiophobia [12].

A phobia is a “marked and persistent fear that is excessive or unreasonable, cued by the presence or anticipation of a specific object or situation” [13]. Exposure to the stimulus provokes an immediate anxiety response, with consequent avoidance or intense anxiety [13]. We tested the hypothesis that CFS patients have a phobic avoidance of exercise (kinesiophobia) [9] that related both to the activities of everyday living and to a specific exercise challenge. We expected that if these patients do suffer from such a phobia, then they would show an associated abnormal physiological arousal in anticipation of and/or during exposure to their feared stimulus: an exercise challenge [14,15]. We also expected the CFS patients to be less active (more avoidant) than the controls and to have higher anxiety scores, both before and after the exercise [9,13].

To test for the presence of an exercise phobia, we hypothesized the following concerning CFS in comparison to controls: (a) they would be generally more anxious; (b) they would have an increase in state anxiety in both anticipation and response to exercise; (c) they would have physiological evidence of greater arousal, as measured by a greater increased heart rate, and a greater decrease in galvanic skin resistance (GSR) during routine daily activities and in response to exercise; and (d) they would be more likely to avoid physical activity in general and exercise in particular. If a phobia of either exercise or activity were present, then we would expect to see both increased symptomatic anxiety in anticipation of the feared stimulus and a physiological reaction in the face of the stimulus [13–15].

Method

Participants

Forty-two CFS patients were selected from consecutive attenders at two secondary care teaching hospital chronic fatigue clinics, one a psychiatry clinic and the other an infectious diseases (ID) clinic. All of the patients met the Oxford criteria for CFS [16]; 24 patients (57%) met the international criteria for CFS and a further 16 patients (38%) met the criteria for idiopathic chronic fatigue (ICF) [17]. Two cases (5%) had missing data for this variable. Each patient had a psychiatric screening interview [Structured Clinical Interview for DSM-IV (SCID) patient edition with psychotic screening; [18,19]]. Patients with a current comorbid psychiatric disorder (such as mood disorders and somatisation disorder) were excluded from the study, because comorbid psychiatric disorders could have confounded the measures of anxiety and arousal [20,21]. By excluding these patients, we can conclude that any differences found are not due to comorbid psychiatric disorders. We did not exclude participants if they had a phobia,

because by excluding such patients, we might be excluding just those patients who also had kinesiophobia [22]. Other exclusions were those aged under 18, those on psychoactive or cardiac drugs and those unable to walk.

The 42 healthy controls were matched to the CFS patients by age, sex, social class and body mass index (BMI). Because pair matching on so many variables was very difficult, group matching was undertaken in batches of approximately five. The controls were healthy but sedentary hospital staff responding to advertisements about the study. The criteria for sedentary controls were that they thought they ought to take more exercise, they performed moderate exercise of 20 min less often than once per week, and they never/rarely engaged in exercise long enough to work up a sweat, get the heart pumping or get out of breath [23].

Study design

All participants were studied on two separate days. Day 1 provided baseline measures and ambulatory physiological measures on an ordinary day. On the next day (Day 2), all participants attended for a treadmill exercise test. Physiological measures were continuously taken before, during and after the exercise test. The state measure of anxiety was measured before and immediately after the exercise test. The study was considered ethically satisfactory by the research ethics committees of both St. Bartholomew’s and the Royal Free hospitals.

Measures

To describe the samples, the following measures were taken. Details on occupation were used to assign socioeconomic class [24]. The physical function subscale of the short form Health Status Survey (SF-36) was used to self-rate physical function [25]. Fatigue was measured using the Chalder Fatigue Scale [26]. This is an 11-item questionnaire using categorical (0, 0, 1, 1) scoring. Sleep disturbance was self-rated with the Pittsburgh Sleep Quality Index (PSQI; [27]). Measures of symptomatic anxiety included the Hospital Anxiety and Depression Scale (HADS; [28]). Spielberger’s State-Trait anxiety questionnaire was used to measure the level of anxiety at the time of assessment (state) and the general tendency to respond to events with anxiety (trait) [29]. The somatic amplification questionnaire measured perceptual amplification of bodily symptoms, in case anxiety was perceived somatically [30].

An ambulatory monitor was used to collect physiological measures of arousal over time [31]. The monitor recorded heart rate and GSR. Heart rate was measured from an electrocardiograph, using three chest electrodes. GSR was measured using disposable paediatric silver/silver chloride electrodes attached to the middle phalanx of the second and third fingers of the nondominant hand. An increase in arousal was indicated by a decrease in skin resistance as the electrical current between the two points was conducted

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