

## The role of fear of physical movement and activity in chronic fatigue syndrome

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### Abstract

**Objective:** To examine beliefs in relation to avoidance of activity in chronic fatigue syndrome (CFS) patients. **Methods:** The first phase consisted of modifying an existing chronic pain measure of kinesiophobia—fear of physical movement and activity—and validating it on the CFS population [Tampa Scale of Kinesiophobia-Fatigue (TSK-F);  $n=129$ ; test–retest:  $r=.89$ ,  $P<.001$ ;  $\alpha=.68$ ]. Subscales of Illness Beliefs ( $\alpha=.78$ ) and Beliefs about Activity ( $\alpha=.70$ ) were identified. The second phase consisted of evaluating whether behavioural persistence was predicted by the TSK-F ( $n=33$ ). Participants were asked to ride an exercise bike for as long as they felt able. **Results:** Analyses indicated that behavioural persistence did not correlate with maximal heart rate or resting heart rate, level of tiredness,

symptom severity, illness identity or emotional distress. However, the TSK-F did correlate highly with distance travelled and added a significant 15% of the variance in distance after adjustments for gender and physical functioning (PF). The TSK-F Beliefs about Activity subscale appears to be the predictive factor, explaining 12% of the variance in exercise performance or rather 12% of the avoidance of exercise. **Conclusion:** Beliefs about Activity appear to be an important variable in predicting behaviour and avoidance of exercise. As avoidance has been suggested as a key to the maintenance of symptoms, disability and distress in CFS patients, this research has important theoretical, clinical and research implications. © 2002 Elsevier Science Inc. All rights reserved.

**Keywords:** Avoidance; Beliefs; Chronic fatigue syndrome; Prediction of exercise performance

### Introduction

Patients with chronic fatigue syndrome (CFS) have been shown to be less active and have longer rest periods after exercise than healthy controls [1]. Such behaviour has been hypothesised as central to both chronic pain and chronic fatigue [2–9]. Rest/avoidance of activity, while effective in the short-term, are maladaptive in the long-term, associated with deconditioning and a poorer outcome in both CFS [10–12] and chronic pain [4].

In chronic pain, studies have examined such behaviour in terms of fear [2,11,12]. The term “kinesiophobia” (kinesis = movement) describes “excessive, irrational and debilitating fear of physical movement and activity resulting from a feeling of vulnerability to painful injury or reinjury” [3]. These authors created the Tampa Scale of Kinesiophobia (TSK).

Studies have shown that in pain patients the TSK is a main predictor of distress, disability [4,6] and persistence with behavioural tasks such as lifting weights and cardiovascular exercises [6]. It appears that pain-related fear is more disabling than pain itself [6]. A cognitive model has been developed using fear of movement as the determinant of the maintenance of pain (see Fig. 1) [4,6].

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Fig. 1. Cognitive-behavioural model of fear of movement/(re)injury in pain [4].

CFS cognitive-behavioural models state that illness beliefs determine cognitions, which in turn determine behaviour, e.g. “I must rest to get better” would lead to avoidance of activity as a coping mechanism, whereas cognitions such as “I should try harder” will lead to a burst of activity [13]. It is argued that bursts of activity will lead to rest periods and that rest or avoidance of activity ultimately leads to an increase in fatigue. It has been suggested that CFS patients’ level of fatigue is influenced independently by beliefs and behaviour [1]. This model suggests that patients’ causal attributions determine their level of physical activity and that this in turn influences the level of fatigue experienced.

While studies have shown links between beliefs and behaviour, unlike in the field of pain, in CFS research, there is no experimental support. It is also unclear the exact nature of the beliefs postulated to be important in predicting behaviour [10,14,15]. Exploration of these beliefs would enable a more specific and clinically useful cognitive model.

The first study modifies the original TSK in order to make it appropriate for CFS patients. The literature in both pain and CFS suggests that illness identity (patients’ perceptions of the symptoms believed to define their illness) will correlate with fears of activity and movement [4,10,15,16]. Such fears are thought to habituate with chronicity [5,17].

The second study uses the modified TSK [TSK-Fatigue (TSK-F)] to predict behavioural persistence.

**Study 1— validation of a measure**

The TSK was constructed to measure excessive fear of (re)injury in pain patients [3]. There are 17 items and each is provided with a four-point Likert scale with scoring alternatives ranging from “strongly disagree” to “strongly agree.” A total score is calculated (1–4 for each item) after reversal of the individual scores of items 4, 8, 12 and 16. The possible range of scores is 17–68 with a normal distribution of scores. A factor analysis of the Dutch version

Table 1  
Component structure of TSK-F

| Component   | $\alpha$ | TSK-F total $r$ | Items               | Label                  |
|-------------|----------|-----------------|---------------------|------------------------|
| 1           | .78      | .88**           | 3, 5–7, 9–11, 13    | Illness Beliefs        |
| 2           | .70      | .74**           | 1, 2, 4, 12, 15, 17 | Beliefs about Activity |
| TSK-F total | .68      |                 |                     |                        |

\*\* Correlation is significant at the .01 level (two-tailed).

of the TSK ( $n = 129$ ) using principal components analysis with oblique rotation extracted four factors: harm ( $\alpha = .71$ ), fear of (re)injury ( $\alpha = .63$ ), importance of exercise ( $\alpha = .53$ ) and avoidance of activity ( $\alpha = .61$ ). These four factors accounted for 36.2% of the variance (15.5%, 5.6%, 8.6%

Table 2  
Results from components analyses of TSK-F

| Item number    | Item content   | Factor 1 | Factor 2 |
|----------------|--|----------|----------|
| 1 <sup>a</sup> | I am afraid that I might make my symptoms worse if I exercise.   | 0.40     | 0.73     |
| 2              | If I were to try to overcome it, my fatigue would increase.  | 0.31     | 0.74     |
| 3              | My body is telling me I have something dangerously wrong.  | 0.76     | 0.24     |
| 4              | My fatigue would probably be relieved if I were to exercise.   | 0.18     | 0.58     |
| 5              | People are not taking my medical condition seriously enough.   | 0.45     | 0.14     |
| 6              | My illness has put my body at risk for the rest of my life.  | 0.74     | 0.18     |
| 7              | Fatigue always means I have harmed my body.  | 0.77     | 0.01     |
| 8              | Just because something increases my fatigue, it does not mean it is dangerous.   | 0.32     | 0.14     |
| 9              | I am afraid that I might make my symptoms worse accidentally.  | 0.56     | 0.28     |
| 10             | Simply being careful that I do not make any unnecessary movements is the safest thing I can do to prevent my fatigue from worsening. | 0.45     | 0.31     |
| 11             | I would not have this much fatigue if there was not something potentially dangerous going on in my body.                             | 0.77     | 0.25     |
| 12             | Although I am fatigued, I would be better off if I were physically active.   | 0.11     | 0.58     |
| 13             | Fatigue lets me know when to stop exercising so that I do not harm myself.   | 0.45     | 0.30     |
| 14             | It is really not safe for a person with a condition like mine to be physically active.   | 0.59     | 0.61     |
| 15             | I cannot do all the things normal people do because its too easy for me to get tired.  | 0.26     | 0.59     |
| 16             | Even though something makes me fatigued, I do not think it is actually harming me.   | 0.24     | 0.31     |
| 17             | No one should have to exercise when he/she is fatigued.  | 0.21     | 0.47     |

<sup>a</sup> Item in original TSK-F.

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