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**The Development and Efficacy of Cognitive
Behaviour Therapy for Multiple Sclerosis
Fatigue: A Randomised Controlled Trial**

Volume I

Kirsten van Kessel

A thesis submitted in partial fulfilment of the requirements
for the degree of Doctor of Philosophy in Health Psychology

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Abstract

Aim

Multiple Sclerosis (MS) is an unpredictable demyelinating disease of the central nervous system (CNS), with fatigue being one of the least understood symptoms. Based on a systematic review of the literature, a cognitive behavioural model of MS fatigue was developed and used to design a manualised eight session cognitive behaviour therapy (CBT) intervention to treat MS fatigue. The purpose of the randomised controlled trial (RCT) was to investigate the efficacy of CBT compared to relaxation training (RT) to treat fatigue in MS.

Methods

Seventy-two patients with MS fatigue were randomly assigned to either eight sessions of CBT or eight sessions of RT, designed to control for therapist time and attention. Participants were assessed before and after treatment, and at three and six months follow-up. Primary outcomes included the Fatigue Questionnaire (FQ) and the Clinical Global Impression Scale (CGIS). Secondary outcomes included measures of fatigue related impairment, mood, stress, sleep problems and daytime sleepiness. Seventy of the 72 participants completed all therapy sessions and 69 participants completed all assessments.

Results

Analyses were carried out by intention-to-treat. There was a significant group by time interaction for fatigue, indicating that the CBT group had significantly greater reductions in fatigue severity than the RT group ($p < .02$). A-priori contrasts showed that this significant effect was largely accounted for by changes between baseline and end of treatment ($p < .00$). By six month follow-up improvement in fatigue was equivalent in both groups. The key mechanism of improvement in fatigue severity during CBT was a positive change in schematic beliefs about fatigue. At the end of treatment 88.6% of the

CBT group rated themselves as improved compared to 73% of the RT group, but this difference was not significant ($p < .09$). Both groups improved on almost all secondary outcomes, with the CBT participants improving more significantly on depression, anxiety and stress between baseline and end of treatment ($p < .05$).

Conclusions

CBT appears to be an effective treatment for MS fatigue, with CBT participants improving significantly more on fatigue than RT participants between baseline and end of treatment. Obtained effect sizes for fatigue in both CBT and RT were considerably larger than those in previous controlled trials of pharmacological and non-pharmacological interventions. Both groups improved on almost all of the secondary outcomes. Findings support the relevance of a cognitive behavioural model for MS fatigue.

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List of Abbreviations

ANOVA	analysis of variance
B-IPQ	Brief Illness Perceptions Questionnaire
CBSQ	Cognitive and Behavioral Responses to Symptoms Questionnaire
CBT	cognitive behaviour therapy
CFS	chronic fatigue syndrome
CGIS	Clinical Global Impression Scale
CI	confidence interval
CNS	central nervous system
DV	dependent variable
EDSS	Expanded Disability Status Scale
ESS	Epworth Sleepiness Scale
FSS	Fatigue Severity Scale
FQ	Fatigue Questionnaire
HADS	Hospital Anxiety and Depression Scale
HPA	hypothalamic-pituitary-adrenal
IV	independent variable
MV	mediating variable
MS	multiple sclerosis
PMR	progressive muscle relaxation
PSS	Perceived Stress Scale
PTRC	Primary Therapy Rating Scale
SPQ	Sleep Problem Questionnaire
WSAS	Work and Social Adjustment Scale