



Original article

Efficacy of ‘Tailored Physical Activity’ on reducing sickness absence among health care workers: A 3-months randomised controlled trial[☆]

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ABSTRACT

Aim: The aim was to evaluate efficacy of “Tailored Physical Activity” (TPA) versus a reference group (REF) in reducing the number of self-reported days of sickness absence for health care workers in the Sønderborg Municipality.

Methods: In this randomised controlled trial, all participants ($n = 54$) received health guidance for 1.5 h and were randomised to TPA or REF. The primary aim was to make a comparison of participants' self-reported sickness absence due to musculoskeletal troubles measured three months after baseline. Secondary outcomes included anthropometric, health-related and physical capacity measures.

Results: A TPA intervention was not significantly more effective than REF in reducing sickness absence caused by musculoskeletal troubles. However, there were significant improvements for TPA participants compared to REF in reducing pain intensity from 47.9 mm to 21.8 mm ($p < .01$), increasing work ability from 7.3 to 8.1 ($p = .04$) and decreasing kinesiophobia from 26.7 to 22.5 ($p < .01$). A trend towards a significant improvement was seen for aerobic capacity while no effect of the intervention was found on productivity, BMI or grip strength.

Conclusion: This physical activity intervention is a promising initiative for health care workers since participants achieved a substantial effect on their experience of pain, on their work ability and on their fear of physical movement relating to pain. Moreover, a difference in aerobic capacity was apparent between the sample groups. TPA however, had no significant effect in reducing sickness absence days.

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1. Introduction

Health care workers frequently complain of musculoskeletal disorders (National Institute of Public Health, 2007; Danish Working Environment Authority, 2012; Souza and Alexandre, 2012) and make up one of the seven occupations in Denmark

with the highest risk of long-term sick leave and early retirement (Danish Working Environment Authority, 2010).

Health care workers are at high risk of long-term sick leave, as they are subject to considerable physical work demands that involve patient handling and manual tasks. Their work is also characterized by having prolonged periods of standing and walking and by requiring awkward postures that are potentially harmful for their musculoskeletal system (Torgén et al., 1995; Waters et al., 2006). Moreover, the demographic increase in age in the population as a whole can lead to an increased pressure on the nursing sector and may result in a parallel development of increased musculoskeletal stress among health care workers (Danish Working Environment Authority, 2010).

Musculoskeletal disorders are often recurrent: they can result in chronic pain and can affect employees' functional capacity. In a

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physically demanding job it is particularly important to maintain good musculoskeletal health, not least to ensure the workers' continuing ability to perform their task (Pohjonen, 2001). Alongside depression, pain-related work interruption and work-related pain had the largest total effect on the duration of absences from work (Franche et al., 2011). This means that focussing on pain to prevent or reduce work absence is important in any intervention aimed at preserving or enhancing work ability (Andersen et al., 2012a).

Physical activity interventions involving exercises to strengthen muscles have been tested among various occupational groups and have proved to be effective in reducing pain and improving muscular strength (Andersen et al., 2008; Zebis et al., 2011). However, there is a lack of evidence on preventive activities among employees whose work demands heavy physical work, and this study will contribute knowledge on preventive activities for a specific employment group with high physical work demands. The strategy we pursue is to improve the physical capacity of the health care worker in order to prevent musculoskeletal disorders and preserve or enhance work ability (Torgén et al., 1995, 1999).

The aim of this study was to evaluate "Tailored Physical Activity" (TPA) against a reference group (REF) with regard to its efficacy in reducing the number of self-reported days with sick leave and improving secondary outcomes related to pain, physical capacity, work ability and kinesiophobia. The intervention in the study arm was carefully chosen based on the results in previous evidence-based studies that have shown themselves to be effective in corresponding occupational groups (Andersen et al., 2008, 2010; Jorgensen et al., 2011; Zebis et al., 2011; Andersen et al., 2012b) and takes the participants' pain history into consideration (Horneij et al., 2004; Andersen et al., 2013).

2. Methods and design

2.1. Study design

The study is a parallel, randomised, single-blind controlled trial designed to evaluate the efficacy of TPA, including general aerobic training and specific strength training, against REF in relation to the participants' self-reported number of days of sick-leave after three months. Secondary outcomes related to pain, physical capacity, work ability, productivity and kinesiophobia.

The study was conducted in Sønderborg Municipality, Denmark, between January 2012 and April 2014. In addition to the interventions, pre- and post-intervention tests and assessments were performed at the Health Care Centre in Sønderborg meaning that participants may have up to 30 min transport time from their different work places.

Outcome evaluations will be performed three months after baseline and 12 months after baseline. In the present paper three months results are reported.

The protocol was approved by The Regional Scientific Ethics Committee for Southern Denmark (project-ID S-20110040), The Danish Data Protection Agency, registered in the ClinicalTrials.gov, number NCT01356784 and was also published (Andersen et al., 2013).

2.2. Study population

The study population consisted of health care workers e.g. nurses and nurses' aids with varying levels of health care education. They were all employed by the Social and Health Affairs Department of the Municipality of Sønderborg and included participants working in municipal health care, e.g. nursing homes or home care (n = 560).

The inclusion criteria were that they should: (1) be health care workers performing manual work and (2) have a history of self-reported work-related musculoskeletal pain in back or upper body.

Participants who were excluded or eligible participants who did not wish to participate were registered as is recommended by the CONSORT statement (Schulz et al., 2011).

2.3. Procedure for recruitment, randomisation and allocation

Workers from the Social and Health Affairs Department of Sønderborg Municipality were informed about the project through internal correspondence. Eligible participants who volunteered received written information including an invitation to an information meeting. After the meeting, written informed consent for participation in the study was provided by those participants who fulfilled inclusion criteria.

The participants who were recruited were randomised in permuted blocks of 2 and 4 according to computer-generated random numbers, to participate in either TPA or REF.

The study utilised an allocation concealment procedure ensuring that group allocation was not known until the participant was enrolled in the study. Concealment of the assigned intervention was ensured by having a secretary in the administration of Social and Health Affairs in Sønderborg Municipality obtain the opaque, sealed envelope containing the participant's assigned intervention in the period after the participants received health guidance and just before the intervention was initiated. Neither the investigator nor health personnel at the Health Care Centre had any other role in the sequence generation or subsequent allocation concealment.

Health care professionals and participants were aware of the allocation arm but blinded to the results of baseline assessment. Health care professionals who were outcome assessors were blinded to participants' allocation.

2.4. Interventions

All randomised participants received health guidance for 1.5 h from a trained supervisor. While the REF group received the health guidance only, the intervention group was offered TPA as an add-on health promotion activity. TPA started within one week of baseline measurements, health guidance and randomisation and was additional to any existing life style activity.

Health guidance was a 1.5 h dialogue between the participant and health supervisor, based on the participant's lifestyle, motivation, resources and power to act. During the conversation participants had the opportunity to prepare a goal-oriented health plan identifying the means at their disposal to achieve the changes that they wanted and needed. The health supervisor provided input and encouraged participants to take an active part in optimising their own lives by focussing on well-being in everyday life, physical activity and weight loss.

2.5. Tailored physical activity-group (TPA)

TPA sessions were performed in teams of up to 10 participants, were supervised by physiotherapists and included a standardised combination of aerobic fitness and strength training for 50 min three times per week over ten weeks during work hours. The participants were referred to one of three training programmes based on their primary region of musculoskeletal problems (neck and shoulder pain, arm and/or hand pain, lower back pain).

The three standardised training programmes all started with a 5 min warm-up, during which the participants gradually increased their heart rate (HR) followed by aerobic fitness training for 20 min,

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