



# A randomized controlled trial of combined exercise and psycho-education for low-SES women: Short- and long-term outcomes in the reduction of stress and depressive symptoms



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## ABSTRACT

Exercise may have both a preventive and a therapeutic impact on mental health problems. The Exercise without Worries intervention aims to reduce stress and depressive symptoms in low-SES women by means of a group-based program combining physical exercise and psycho-education. Between September 2005 and May 2008, 161 Dutch low-SES women with elevated stress or depressive symptom levels were randomly assigned to the combined exercise/psycho-education intervention (EP), exercise only (E) or a waiting list control condition (WLC). The E condition provided low to moderate intensity stretching, strength, flexibility, and body focused training as well as relaxation, while the EP program integrated the exercise with cognitive-behavioral techniques. Depressive symptoms (CES-D) and perceived stress (PSS) were measured before and immediately after the intervention and at 2, 6 and 12 month follow-up. Multilevel linear mixed-effects models revealed no differential patterns in reduction of CES-D or PSS scores between the EP, E and WLC groups on the short (post-test and 2 month follow-up) or long term (6 and 12 months follow-up). Depressive symptom outcomes were moderated by initial depressive symptom scores: women from the EP and E groups with fewer initial symptoms benefited from participation on the short term. Further, women in the EP and E groups with the lowest educational level reported more stress reduction at post-test than women with higher educational levels. In the overall target population of low-SES women, no indications were found that the Exercise without Worries course reduced depressive symptom and stress levels on the short or long term. The findings do suggest, however, that exercise alone or in combination with psycho-education may be a viable prevention option for certain groups of disadvantaged women. Especially those low-SES women with less severe initial problems or those with low educational attainment should be targeted for future depression prevention practice.

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## Introduction

Compared to women with higher socio-economic status (SES), low-SES women have a high risk (ORs between 2.7 and 5.4) for depressive symptoms, which in turn considerably increases their

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likelihood of developing major depression (Cuijpers & Smit, 2004; Kahn, Wise, Kennedy, & Kawachi, 2000). Chronic stress and daily hassles are considered strong predictors of depressive symptoms and episodes in this group (Falconnier & Elkin, 2008; McConagle & Kessler, 1990). One commonly used psychological intervention for the indicated prevention of depression is the Coping with Depression course (CWD) (Brown & Lewinsohn, 1984). Several studies have shown that the CWD course is effective in the prevention of new cases of major depressive disorders (Cuijpers, Munoz, Clarke, & Lewinsohn, 2009). Nevertheless, it appears that low-SES participants have more difficulties with the cognitive

orientation of the CWD course, due to the high level of required verbal skills and the execution of homework assignments. This results in low-SES participants dropping out of the intervention more often (Allart-van Dam & Hosman, 2002). Based on the observation that low-SES women do often not engage in depression prevention, innovative ways to offer them preventive activities need to be found.

Exercise may have both a preventive and a therapeutic impact on mental health problems and stress and has been found to be effective in reducing depressive symptoms (Alderman, Rogers, Johnson, & Landers, 2003; Stathopoulou, Powers, Berry, Smits, & Otto, 2006). Meta-analyses on the effect of exercise on depressive symptoms report effect sizes ranging between 0.35 and 0.59 (Conn, 2010). In addition to its application as a monotherapy, exercise is increasingly accepted as an adjunct intervention in the management of depressive symptoms and depression (Stathopoulou et al., 2006). The underlying assumption in offering these multidisciplinary interventions is that combining different types of effective interventions will increase and prolong their positive effects (Jané-Llopis, Hosman, Jenkins, & Anderson, 2003). However, research on the combination of exercise with empirically supported psychosocial approaches for depression has been limited (Stathopoulou et al., 2006) and the effects of an exercise regimen in combination with a psychosocial intervention component have not yet been tested within a low-SES population.

To address this evidence gap, the Exercise without Worries (EWW) course was developed and evaluated in the Netherlands combining an exercise regimen with a CBT-approach. The development of the intervention was guided by the Stress Process Model of mental health disparities first proposed by Pearlin and colleagues (Pearlin, 1989, 1999; Pearlin, Menaghan, Lieberman, & Mullan, 1981). In short, this model proposes that ongoing stress may diminish the availability of women's psychosocial protective resources to cope with stressful circumstances, thus creating both increased psychological distress and diminished resilience. EWW was developed as a multi-component intervention to counter the negative effects of stressful events and increase psychosocial resources. The intervention has been tailored to the specific needs of adult low-SES women by way of its focus on risk factors for stress and depression relevant for this group. The exercise component has been included because of its potential impact on depressive symptoms. Further, it offers a solution for the low perceived attractiveness of exclusively cognitive-oriented programs among low-SES women. Experience from community programs suggests that exercise-based interventions might also appeal to this study population (Craft, Freund, Culpepper, & Perna, 2007; Lowther, Mutrie, & Scott, 2002).

Barriers to participation in mental health interventions by low-SES women are often related to financial costs, transportation and time (Beeber et al., 2007; Weinreb, Perloff, Goldberg, Lessard, & Hosmer, 2006). Even though financial barriers form no, or at most a minor, impediment for disadvantaged populations to access mental health care in the Netherlands (Sareen et al., 2007), the EWW course is offered free of charge, and additional expenses related to child care and public transport are reimbursed. In addition, because the intervention is presented and executed as a course rather than as therapy, it is non-stigmatizing. This is of special importance in low-SES groups since this population is more likely to report stigma concerns for mental health issues, which generally inhibit their use of mental health services (Grote, Zuckoff, Swartz, Bledsoe, & Geibel, 2007).

The objective of the current study was to evaluate the effects of this multidisciplinary preventive intervention aimed at reducing stress and depressive symptoms among low-SES women. We directly looked at whether the combination of exercise and psycho-education led to synergetic effects on participants' mental

wellbeing in comparison to participants receiving exercise only and to a waiting list condition. Since previous research has shown differential intervention effects relating to socio-economic status (Cuijpers, Van Straten, Warmerdam, & Smits, 2008), baseline symptom levels (Allart-van Dam, Hosman, Hoogduin, & Schaap, 2003), current depression treatment and intervention adherence (Stuart, Perry, Le, & Ialongo, 2008), we further explored whether the intervention itself would lead to differential effects among the groups based on these moderators.

## Methods

### *Study design and participants*

The efficacy of the EWW course was tested in a randomized control trial. The target population of the EWW intervention were Dutch low-SES women (20–55 years) with depressive symptoms or who suffered from stress-related complaints. Participants were recruited through referral by general practitioners active in or near socioeconomically deprived neighborhoods and intermediaries working in social work, debt reform, a community mental health centre and public health services. Women could also self-refer in response to local media-campaigns. Women who were referred to the EWW course completed a 10-min telephone interview conducted by trained lay interviewers to screen for the presence of stress and depressive complaints. Women who satisfied low-SES criteria, had stress or depression levels above the cut-off scores (see Measures), and were interested in participating in EWW were invited to an intake session during which course objectives were explained and study eligibility was further determined. Information on the women's psychological complaints and functional status were collected by an intervention staff member by means of a semi-structured interview.

Women were excluded from participation in the course if their Dutch was limited, if they had cognitive disturbances or emotional instability that might impede participation in a group intervention or physical problems that might hinder their participation in the exercise component of the course. Those women suitable and willing to participate in the RCT signed a written informed consent form for participation and were subsequently randomly assigned using a randomization list. Participants were assigned to one of three intervention conditions: the full EWW intervention with exercise and psycho-education (EP) component, the intervention with the exercise only (E) or a waiting-list control (WLC) condition with postponed intervention four months later. Baseline measurements for all conditions were completed after randomization and before the start of the first session. Until the start of the first session, all participants were blinded to the treatment group to which they were assigned to, including those in the control condition.

Further measurements in the EP and E conditions were a post-test directly after the 8-week intervention, and 2 months, 6 months and 12 months follow-up (FU). Participants in the control condition completed a post-test and a 2 month follow-up at the same time as the EP and E conditions. After this measurement, they were given the opportunity to participate in the intervention. Between September 2005 and May 2008, a total of 161 eligible women gave informed consent and were randomly allocated to the EP, E and control conditions (Fig. 1). Approval for conducting this study was granted by the Medical Review Ethics Committee of Maastricht University in the Netherlands.

### *Intervention and comparison group activities*

Exercise without Worries (EWW) is a new preventive course that has been tailored to the specific needs of low-SES women. The

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