Journal of Affective Disorders 168 (2014) 98–106

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research report

Exercise or basic body awareness therapy as add-on treatment for major depression: A controlled study

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ARTICLE INFO

Article history:
Received 14 May 2014
Received in revised form
27 June 2014
Accepted 28 June 2014
Available online 5 July 2014

Keywords:
Randomized controlled trial
Person-centred care
Physical therapy
Major depression

ABSTRACT

Background: While physical exercise as adjunctive treatment for major depression has received considerable attention in recent years, the evidence is conflicting. This study evaluates the effects of two different add-on treatments: exercise and basic body awareness therapy.
Methods: Randomized controlled trial with two intervention groups and one control, including 62 adults on antidepressant medication, who fulfilled criteria for current major depression as determined by the Mini International Neuropsychiatric Interview. Interventions (10 weeks) were aerobic exercise or basic body awareness therapy (BBAT), compared to a single consultation with advice on physical activity. Primary outcome was depression severity, rated by a blinded assessor using the Montgomery Asberg Rating Scale (MADRS). Secondary outcomes were global function, cardiovascular fitness, self-rated depression, anxiety and body awareness.
Results: Improvements in MADRS score (mean change = −10.3, 95% CI (−13.5 to −7.1), $p=0.038$) and cardiovascular fitness (mean change = 2.4 ml oxygen/kg/min, 95% CI (1.5 to 3.3), $p=0.017$) were observed in the exercise group. Per-protocol analysis confirmed the effects of exercise, and indicated that BBAT has an effect on self-rated depression.
Limitations: The small sample size and the challenge of missing data. Participants' positive expectations regarding the exercise intervention need to be considered.
Conclusions: Exercise in a physical therapy setting seems to have effect on depression severity and fitness, in major depression. Our findings suggest that physical therapy can be a viable clinical strategy to inspire and guide persons with major depression to exercise. More research is needed to clarify the effects of basic body awareness therapy.

1. Introduction

The complexity of managing major depression, demonstrated by a rate of about one third of patients responding insufficiently to available treatments, calls for the development and refinement of alternative and adjunctive treatment options (Rush et al., 2006; Trivedi et al., 2005; Malhi et al., 2013). As such, physical exercise has gained considerable attention, although recent findings from systematic reviews point to few methodologically robust studies and small or at best, moderate effect sizes (Krogh et al., 2011; Cooney et al., 2014; Danielsson et al., 2013). Working mechanisms are unclear, but theories are proposed on regulation of neurotransmitters, hippocampal cell growth and neuroimmunological mechanisms as well as psychological mediators such as increased self-efficacy and behavioral activation (Trivedi and Greer, 2009). Exercise is now suggested as adjuvant treatment in guidelines for depression, for example in Great Britain (Pilling et al., 2009) and in the United States (Rethorst and Trivedi, 2013).

Exercise for depression generally refers to aerobic exercise of a moderate to high intensity such as cycling, jogging, brisk walking or other cardiovascular training (Perraton et al., 2010). Parallel to

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http://dx.doi.org/10.1016/j.jad.2014.06.049
0165-0327/

this line of research, studies investigating meditative movement practices such as yoga, Tai chi or mindfulness meditation suggest beneficial effects (Tsang et al., 2013; Payne and Crane-Godreau, 2013; Cramer et al., 2013; Ravindran and Da Silva, 2013). In such lower intensity training, focus is on the body-mind interaction and an accepting attitude to one's experiences.

Exercise and basic body awareness therapy (BBAT) are two treatment methods commonly employed by physical therapists in Scandinavian mental health settings (Mattsson, 1998). Whereas exercise means structured physical activity to maintain or increase physical fitness (Caspersen et al., 1985), BBAT addresses the interplay of body and mind by exploring slow movements with awareness of postural stability, breathing and flow of movements (Catalan-Matamoros et al., 2011; Mattsson, 1998). Several studies show promising results for BBAT interventions for persons with eating disorders, schizophrenia, chronic fatigue and long-term musculoskeletal pain (Mannerkorpi and Arndorw, 2004; Malmgren-Olsson et al., 2001; Johnsen and Råheim, 2010; Hedlund and Gyllensten, 2010; Gyllensten et al., 2003, 2009; Catalan-Matamoros et al., 2011), and in psychiatric patients with mixed diagnoses (Mattsson et al., 1995; Gyllensten et al., 2003, 2009). Further, depressive symptomatology was shown to decrease in patients with irritable bowel syndrome following BBAT (Eriksson et al., 2007). However, BBAT has not yet been evaluated in a study sample of patients with major depression.

Drawing on previous research on exercise and meditative movement practices as well as clinical experiences from physical therapy practice, our objectives were to conduct a study evaluating 1) exercise and 2) basic body awareness therapy, as add-on treatments for persons with major depression.

2. Methods

2.1. Study design

A single-site, three-armed randomized controlled design was used.

2.2. Study population

Participants, presented in Table 1, were 62 adults aged 18–65, with major depression according to DSM-IV criteria, diagnosed by a psychiatric trainee using the Mini International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998). To take part in the study,

Table 1
Demographic and baseline data of study participants in a randomized controlled trial of exercise and basic body awareness therapy (BBAT) as augmentation treatment for major depression.

	Exercise group ($n=22$)	BBAT group ($n=20$)	Advice group ($n=20$)	p-value[a]
Age, mean (SD)	44.7 (12.5)	45.4 (13.5)	46.3 (13.9)	0.93
Sex, *n* (%)				0.82
Women	16 (73)	16 (80)	16 (80)	
Men	6 (27)	4 (20)	4 (20)	
Marital status, *n* (%)				0.86
Married or co-habiting	11 (50)	11 (55)	9 (45)	
Single	11 (50)	9 (45)	11 (55)	
Occupational status, *n* (%)				0.76
Full-time	7 (32)	8 (40)	10 (50)	
Part-time	4 (18)	4 (20)	2 (10)	
Full sick leave/disability pension	11 (50)	8 (40)	8 (40)	
Any anxiety disorder [b] , *n (%)*	11 (50)	9 (45)	11 (55)	0.56
Panic disorder with or without agoraphobia	6 (27)	2 (10)	6 (30)	
Agoraphobia without panic disorder	5 (23)	4 (20)	5 (25)	
Social phobia	4 (18)	4 (20)	6 (30)	
Generalized anxiety disorder	2 (9)	3 (15)	2 (10)	
Antidepressants, duration, *n* (%)				0.66
6 w–3 months	3 (14)	1 (5)	1 (5)	
3–9 months	7 (32)	7 (35)	8 (40)	
> 9 months	12 (54)	12 (60)	11 (55)	
Antidepressant drug, type, *n* (%)				0.65
Tricyclics (clomipramine)	1	0	0	
SSRIs (e.g sertraline, fluoxetine)	16	13	17	
SNRI (venlafaxine)	4	5	2	
Other agents (e.g mirtazapine, bupropion)	1	2	1	
Imipramine equivalent dose, mean g/day (SD)	149.4 (70.7)	145.3 (56.0)	129.4 (56.1)	0.45
Prescription for sedatives/hypnotics (*n*)	4	5	4	0.86
Depression severity				
MADRS, mean (SD)	24.6 (4.1)	23.9 (5.0)	23.4 (5.0)	0.68
MADRS-S, mean (SD)	24.1 (6.2)	25.3 (6.2)	23.7 (6.7)	0.71
Anxiety symptoms				
BAI, mean (SD)	19.1 (12.8)	20.8 (6.9)	20.8 (10.1)	0.82
Functional capacity				
GAF symptom, mean (SD)	53.7 (3.5)	54.6 (3.5)	55.3 (3.9)	0.38
GAF function, mean (SD)	57.3 (4.2)	56.8 (5.6)	58.4 (4.6)	0.71
Body awareness				
SBC, mean (SD)	21.6 (8.4)	22.8 (7.5)	20.0 (6.0)	0.30
Cardiovascular fitness				
Maximal oxygen uptake ml/min/kg, mean (SD)	23.4 (5.1)	23.5 (3.4)	24.4 (5.8)	0.77
Body mass index				
Kg/m^2 (SD)	24.2 (4.6)	25.9 (4.8)	25.1 (3.8)	0.48

Abbreviations: SD=Standard Deviation, SSRI=Selective Serotonin Reuptake Inhibitors, SNRI=Serotonin Norepinephrine Reuptake Inhibitors, MADRS=Montgomery Asberg Rating Scale, GAF=Global Assessment of Functioning, BAI=Beck's Anxiety Inventory, SBC=Scale of Body Connection.

[a] Analysis of variances (ANOVA) was used for comparison of continuous variables, chi-square test was used for categorical variables. Significance level was 0.05.
[b] Some subjects fulfill criteria for several anxiety diagnoses.