

Effect of aerobic exercise on postmenopausal women with major depression

Soheir M. El-Kosery,¹ Fayiz F. El-Shamy,^{1*} and Adel F. El-Bigawy²

¹Department of Physical Therapy for Gynecology and Obstetrics, Faculty of Physical Therapy, Cairo University, Egypt.

² Department of Gynecology and Obstetrics, Faculty of Medicine, Cairo University, Egypt.

ABSTRACT

Objective; this study was done to investigate the effect of aerobic exercise on postmenopausal women with major depression. **Methods;** 30 postmenopausal women were selected randomly from Department of Neuropsychiatry from Polaq Hospital in Cairo, clinically diagnosed with major depression and divided into 2 equal groups (A&B). Patients in group A were treated by aerobic exercise and anti depressive drug (paroxetine), patients in group B were treated by anti depressive drug (paroxetine). The rate of depression was measured by Hamilton depression scale before and after the treatment program. **Results;** Patients in group A showed highly significant changes in depression intensity ($P = 0.0001$) after the treatment program with percentage of improvement was 6.27%. Patients in group B showed highly significant changes in depression intensity ($P = 0.001$) with percentage of improvement was 5.35%. There were highly significant changes between both groups ($P < 0.0002$). **Conclusions;** Aerobic exercise is important to improve depression in postmenopausal women.

Keywords: Menopause; Aerobic exercise; Major depression.

1. INTRODUCTION

Menopause is a natural process, not a medical illness and it is manifested by the cessation

***Corresponding author: E-mail:ff_elshamy@yahoo.com.**

of menstrual flow lasting at least 12 months. Even so, the physical and emotional symptoms of menopause can disrupt woman's sleep, sap her energy and at least indirectly trigger feelings of sadness and loss (Chatth et al., 2008).

The signs and symptoms of menopause however, often appear long before the one year anniversary of the final period. They include irregular periods, decreased fertility, vaginal dryness, hot flashes, sleep disturbance, mood swings, increased abdominal fat, thinning hair and loss of breast fullness (Col et al., 2009).

Menopause can trigger feelings of sadness and episodes of depression in a number of women. It is thought that somewhere between 8% and 15% of menopausal women experience some form of depression (Sores, 2004).

Depression is categorized as a syndrome, which is a combination of various signs and symptoms. The signs and symptoms of depression are as follows; thought and feelings of worthlessness, inappropriate guilt or regret, helplessness, hopelessness, and self hatred, poor concentration and memory, difficulty remembering and making decisions, withdrawal from social situations and activities, reduced sex drive, insomnia, decrease in appetite, fatigue, headaches, chronic pain, lack of energy and thoughts of death or suicide(Weissman, 2008).

Depression is a medical illness that involves the mind and body. Also called major depression, major depressive disorder and clinical depression, it affects feeling, thinking and behaving. Depression can lead to a variety of emotional and physical problems. Women may have trouble

48 doing normal day to day activities and depression may make them feel as if life is not worth
49 living (Mischoulon, 2009).

50 Causes of menopausal depression are under debate, but a variety of theories have been
51 suggested as to why so many menopausal women experience mood disorders. One theory
52 asserts that the stress of menopause symptoms leads to depression, another theory links
53 menopause depression with fluctuating levels of hormones in the body. Throughout
54 menopause, levels of estrogen, progesterone and androgen are constantly changing. These
55 hormones are thought to be linked with the mood centers in the brain. As hormones drop,
56 especially estrogen, women can experience periods of sadness and hopelessness. Some women
57 experience a severe drop in mood, resulting in depression (Bromberger et al .,2000).

58 A person having a major depressive episode usually exhibits a very low mood, which pervades
59 all aspects of life, an inability to experience pleasure in activities that formerly were enjoyed.
60 Depressed people may be preoccupied with, or ruminate over, thoughts and feelings of
61 worthlessness, inappropriate guilt regret, helplessness, hopelessness and self-hatred
62 (Washington, 2000). A depressed individual is 4.5 times more likely to suffer a heart attack, 2
63 to 3 times more likely to develop hypertension as depression affects heart rhythm and the
64 platelets in the blood have an increased risk of clumping together to form blood clots.
65 Depressed individuals are 88% more likely to develop cancer because depression can cause
66 damage to T- cells that help to fight disease. Depressed people are also more susceptible to
67 developing Type 2 diabetes (Woolston, 2009).

68 An antidepressant is a psychiatric medication used to alleviate mood disorders, such as major
69 depression and dysthymia and anxiety disorders such as social anxiety disorder . Most

70 mental health experts agree that when depression is severe, medication can be helpful-even
71 life-saving. However, research shows that antidepressants fall short for many people. A major
72 U.S. government study released in 2006 showed that fewer than 50 percent of people become
73 symptom-free on antidepressants, even after trying two different medications. Furthermore,
74 many who do respond to medication slip back into depression within a short while, despite
75 sticking with drug treatment (Mineur and Piccioto 2010).

76 Antidepressant medication have several side effects as nausea , insomnia , anxiety ,
77 restlessness , decreased sex drive , dizziness , weight gain tremors , sweating , fatigue, dry
78 mouth , diarrhea, constipation and headaches (Glenmullen, 2000).

79 Because of the higher incidence of depressed post menopausal, it has a profound psychosocial
80 impact not only on women but also, on their families, resulting in loss of self esteem and
81 withdrawal from society which may threat women's general health, well being and decrease her
82 ability to maintain an independent life style, so it adversely affect all aspect of a woman's
83 quality of life and general health, and the several side effects of antidepressant drugs.
84 Accordingly, it seems to be important to find out a conservative method for alleviating the post
85 menopausal depression. The aim of the study was to investigate the effect of aerobic exercise
86 on post menopausal depression.

87 **2- PATIENTS AND METHODS**

88 A total of 30 postmenopausal women diagnosed as having major depression according to
89 Hamilton Depression Scale, were selected randomly from department of neuropsychiatry from
90 Polaq Hospital in Cairo, divided into 2 equal groups(A&B). Patients in group (A) were treated
91 by aerobic exercise and paroxetine (paxil) as antidepressive drug , patients in group (B) were

treated by paroxetine (paxil) as antidepressive drug. Their age was ranged from 45 to 50 years old. Their body mass index was less 30 kg/m². The menstruation stopped since at least 12 months ago. Patients were excluded who exhibited chronic musculoskeletal problems such as knee joint osteoarthritis, ankle joint deformities, or lower back pain in the previous 6 months, had undergone cardiovascular and neurological disorders. The design of this study was one-group pre- test post-test design. Informed consent form had been signed from each patient before participating in the study. The study was done from July 2011 to April 2012. We measured the severity of depression by Hamilton Depression Scale, it is a multiple choice questionnaire that clinicians may use to rate the severity of a patient's major depression. The rate of depression was measured for each women before and after the treatment program by asking her some of questions which found in the scale and according to her answers the rate of depression was assessed as follow, mild depression(scores between 7-17), moderate depression (scores between 18-24) and severe depression (scores of 25 or more) . The treatment program consisted of aerobic exercises in the form of treadmill exercise for 9 weeks, three sessions per week, each session 30 min. divided into 5 min. warming up, 20 min. walking on treadmill and 5 min. cooling down.

The collected data was statistically analyzed by using Mann-Witney, Wilcoxon matched pairs test and descriptive statistics: mean, standard deviation and percentage. Statistical significance level of 0.05 would be used within this study.

3- RESULTS

All data had been collected and statistically analyzed and presented under the following headings;

1-3. Physical characteristics of the patients:

In this study, 30 women with major depression were divided randomly into two equal groups (A&B). Group (A): 15 women were included in this group; the mean age was (49.33±2.69) years, mean weight (75.4±10.74) (Kg), mean height (167.66±9.21) (cm), and mean BMI (26.78±1.49) Kg/m². Group (B): 15 women were included in this group; the mean age was (49.6±3.01) years, mean weight (73.46±8.25) (Kg) , mean height (166.66±8.59) (cm), and mean BMI (26.73±1.45) Kg. There was no significant difference (p- values (0.8) , (0.58) , (0.76) and (0.93) between both groups (A&B) regarding their ages, weights, heights and BMI respectively .

2-3. Rate of depression by Hamilton depression Scale:

Group (A): Table 1, shows the highly significant differences found in patient's depression intensity (P = 0.0001) between mean values of patient's depression before (18±2.1) and after (16.86±2.06) the treatment program with percentage of improvement was 6.27%.

Table 1, Mean values of patient's depression intensity pre and post treatment in group (A).

	Patient's depression intensity by Hamilton Depression Scale in group(A)	
	Pre treatment	Post treatment
Mean	18.0	16.86
±SD	±2.1	±2.06
Percentage of improvement	6.27 %	
P-value	0.0001	
S	HS	

SD: standard deviation, P: probability, S: significance, HS: highly significant

Group (B): Table 2, shows the highly significant differences found in patient's depression intensity (P = 0.001) between mean values of patient's depression before (18.66±2.58) and after (19.66±2.16) the treatment program with percentage of improvement was 5.35%.

132

133 Table 2, Mean values of patient's depression intensity pre and post treatment in group (B).

	Patient's depression intensity by Hamilton Depression Scale in group (B)	
	Pre treatment	Post treatment
Mean	18.66	19.66
±SD	±2.58	±2.16
Percentage of improvement	5.35 %	
P-value	0.001	
S	HS	

134 SD: standard deviation, P: probability, S: significance, HS: highly significant

135 When comparing between the mean values of Patient's depression intensity between both
 136 groups (A&B), there were no significant difference (p -values < 0.44) at the beginning of the
 137 study. While there were a highly statistical significant difference ($p < 0.002$) at the end of the
 138 treatment program.

139 4- DISCUSSION

140 Menopause refers to cessation of ovarian follicular activity and is manifest by the cessation of
 141 menstrual flow lasting at least 12 months. The transition from reproductive to non-reproductive
 142 years in women (here referred to as the menopausal transition) is characterized by increased
 143 reporting of psychological, somatic, vasomotor and urogenital symptoms (Innes et al.,2010). It
 144 is unclear why psychological symptoms occur at the menopause, and they may well have little
 145 to do with hormonal fluctuations. Life stresses at this age, as well as past problems, are an
 146 obvious causative factor (Rees and Purdie, 2002).

Depression is a state of low mood and aversion to activity that can affect a person's thoughts, behavior, and feelings. Depressed people may feel sad, anxious, empty, hopeless, helpless, worthless, guilty, irritable or restless. They may lose interest in activities that once were pleasurable, experience loss of appetite or overeating, or problems concentrating, remembering details or making decisions; and may contemplate or attempt suicide. Insomnia, excessive sleeping, fatigue, loss of energy, or aches, pains or digestive problems that are resistant to treatment may be present (Eisendrath et al., 2012). Antidepressants such as paroxetine, Fluoxetine hydrochloride, and Venlafaxine hydrochloride have been used with some success in the treatment of hot flashes, improving sleep, mood and quality of life. But it has several side effects as nausea, insomnia, anxiety, restlessness, decreased sex drive, dizziness, weight gain tremors, sweating, fatigue, dry mouth, diarrhea, constipation and headaches (Glenmullen, 2000).

The psychological and physical benefits of regular physical activity are well established. Two studies examined the impact of menopausal status on the ability of women to derive psychological benefits from exercise; regular exercise assessed immediately following an exercise class scored significantly lower on negative mood dimensions and higher on positive mood than did non exercise. The results suggest that the acute mood enhancing effects of exercises are maintained despite the endocrine changes associated with menopause. It is argued that encouraging menopausal women to adopt appropriate exercise patterns may assist in the alleviation of psychological distress as well as providing physical benefits (Knubben et al., 2007).

Vasomotor, somatic, and psychological symptoms associated with menopause are often treated with hormone replacement therapy (HRT), but the role of non pharmacological interventions

has received little attention. . Two studies used the Profile of Mood States (POMS) and Women's Health Questionnaire (WHQ) to examine the effects of exercise among postmenopausal women Study 1, a comparison of exercisers and non exercisers, showed that exercisers' moods were significantly more positive than sedentary women's moods, regardless of menopausal state. Exercising women also scored lower on somatic symptoms and memory-concentration difficulties. Study 2 examined the acute effects of aerobic exercise postmenopausal with HRT and found significant enhancements in mood and reductions in reported somatic and vasomotor symptoms immediately following an aerobic class. Exercise may assist in the alleviation of some menopausal symptoms (Dale et al ., 2008).

Knubben et al (2007) who found that the psychological and physical benefits of regular physical activity are well established. Two studies examined the impact of menopausal status on the ability of women to derive psychological benefits from exercise. Regular exercisers assessed immediately following an exercise class. Scored significantly lower on negative mood dimensions and higher on positive mood than did non-exercisers, regardless of menopausal status. Regular exercisers also showed significant improvements in mood state when assessed before and after a single exercise session; again this effect was independent of menopausal status. The results suggest that the acute mood-enhancing effects of exercise are maintained despite the endocrine changes associated with menopause. It is argued that encouraging menopausal women to adopt appropriate exercise patterns may assist in the alleviation of psychological distress as well as providing physical benefits.

Regular exercises increase levels of serotonin in the brain. Serotonin is a neurotransmitter involved in mood, sleep, libido, appetite and other functions. Exercise may also increase endorphins, which are chemicals in the brain with 'mood lifting' properties. Regular exercise

also helps depression by: Increasing energy levels, helping to get a good night's sleep, providing distraction from worries and rumination, providing social support and reducing loneliness if exercise is done with other people. Increasing a sense of control and self-esteem, by taking an active role in the individual's own recovery (Blumenthal et al., 1999).

5- CONCLUSION

It could be concluded that aerobic exercise produced substantial improvement in mood of post menopausal women with major depressive disorders.

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