

## A COMPARISON OF COGNITIVE-BEHAVIORAL GROUP THERAPY AND AEROBIC EXERCISE FOR THE TREATMENT OF DEPRESSION IN ADULTS

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### ABSTRACT

**Different etiology and severity of depressions symptoms and associated medical and psychological conditions caused that, no single treatment be effective for each patient. Exercise is a complementary therapy with the most evidence for beneficial effects in treatment of people with depression. Comparing the efficiency of cognitive behavioral group therapy and aerobic exercise on the depression symptoms is the main aim of this study.Both Cognitive-Behavioral Group therapy (CBGT) and Aerobic Exercise (AE) groups were rated as more lower ( $P < .0001$ ) than the Control (C) group on the BDI-II. However, ATQ and DAS scores showed no significant different in AE and C group; CBGT group significantly improve automatic thought ( $P = 0.001$ ) and dysfunctional attitude ( $P = 0.001$ ).Comparisons showed that GCBT provides a supportive atmosphere and concentrates on negative automatic thoughts and dysfunctional attitudes is more effective than aerobic exercise that increase physical activity and reduces depression physical symptom. So aerobic exercises can be considered as supplementary treatment not alternative.**

**KEYWORDS :** Cognitive Behavioral Group Therapy, Aerobic Exercise, Depression

Depression is a common mental disorder that now more than %12.7 of men and %21 of women are suffering from it throughout the world (Clark & Beck, 1999). It is often associated with such diseases and medical conditions include cancer (25% of cancer patients), strokes (10-27% of post-stroke patients), heart attacks ( 1 in 3 heart attack survivors), HIV (1 in 3 HIV patients), Parkinson's disease (50% of Parkinson's disease patients), eating disorders (50-75% of eating disorder patients), substance abuse (27% of individuals with substance abuse disorders) and diabetes (8.5-27% of persons with diabetes) (Depression and Bipolar support Alliance, 1999; World Health Organization). Depression can be long lasting or recrudescient, substantially impairing person's social ability and function (World Health Organization) and characterized by various syndromes such as sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness and poor concentration (American Psychiatric Association, 1994).

The interaction of multiple biological, mental and environmental factors causes different type of depression with varying severity of symptoms (Hyde, Mezulis, & Abramson, 2008; U.S. Department of Health and Human Services, 1999). Psychotherapy and pharmacological interventions are basically known as traditional treatment of

clinical depression (Johnson & Miller, 1994), but in order to different etiology and severity of depressions and associated medical and psychological conditions, no single treatment is effective for every patient (Fava et al., 2003)(Panel, 1993),so there is great tendency for the development of alternative therapies for depression (Brosse, Sheets, Lett, & Blumenthal, 2002).

Exercise is a complementary therapy with the most evidence for beneficial effects (Ernst, Rand, & Stevinson, 1998) and it can be as effective as antidepressants in treating depression (J.A. Blumenthal et al., 1999). The mood improving effect of exercise, especially acute bout of it on nonclinical sample was defined in numerous studies (Yeung, 1996) and although the less tendency of depressive persons to physical activity, aerobic exercise can reduce symptoms, especially in people with mild or moderate symptoms (Paluska & Schwenk, 2000). Many studies compared exercise with others therapy to investigate the capability of exercise to introduce it as alternative therapy in treatment of depression in different groups.

This experiment was, therefore, designed to compare the efficiency of cognitive behavioral group therapy and aerobic exercise on the depression symptoms of mild to moderate depressive patients. The main aim of this study was to investigate aerobic exercise capability to be an

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alternative therapy of cognitive behavioral group therapy in treatment of people with depression.

**MATERIALS AND METHODS**

In a pre & post clinical trial design, 48 patients who suffering from mild to moderate depression took part. All participants provided written informed consent.

**Participants**

Participants consisted of 48 adult who referred to Ayatollah Taleghani with depression symptoms. Two of the 48 participants in our sample did not complete treatment period so the final sample was made up 44 patients. The participants ranged in age from 20 to 40 years. Demographic information of the subjects is presented in table 1.

**Procedures**

Participants were interviewed using the DSM-IV Structured Clinical Interview for Depression (SCID) and They obtained 14 to 28 scores in Beck Depression Inventory (BDI- II) diagnosed as mild to moderate MDD were opted. They were evaluated by Dysfunctional attitude scale (DAS) and Automatic Thought Questionnaire (ATQ).The participants were recruited randomly in three groups, group cognitive- behavioral therapy (GCBT), aerobics exercises and control. The first group was treated by GCBT for eight weeks (2 sessions in per week, in the first half of treatment, and 1 session in per week for the second half).The treatment plan was presented in five sections: Changing beliefs and surface processes, explore the negative belief systems, examine their beliefs, the beliefs and dysfunctional behavior.

The second group was done aerobic exercises for eight weeks (3 an hour sessions per week, with intensity 50-

70% HRR that is equivalent to 50-70% of vo2max), the exercises started With 50% heart rate reserve and fifth sessions of 5% is added to the exercises intensity to reach a maximum of 70% vo2max. The aerobic exercises started with stretching softness movements for 10 minutes and continued with treadmill, bicycles and Alptykal devices. The exercises fitted with physical fitness and heart rate of each patient's baseline.

When the treatment finished all participants completed BDI-II, DAS and ATQ.

**Measures**

**Beck Depression Inventory- II**

The BDI, the most widely used measure of depression in published treatment-outcome studies for effectiveness of all trails (A. T. Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI contains 21 questions and score ranges 0-63. Beck et al. (1988) defined the cut-offs of the scale; 10: no depression, 10-18: mild depression 19-29: moderate depression, 30 and more: severe depression (A. T. Beck, Steer, & Garbin, 1988). Test-retest reliability for the scores on the BDI is stable for nonclinical populations, ranging from .70 to .90 for periods of 1 to 2 weeks (A. Beck & Steer, 1987). For psychiatric patients, test-retest reliability has been reported to range from .48 to .86 over various treatment periods (Katz, Katz, & Shaw, 1999). BDI psychometric properties for Iranian patients include retest correlation 0.94 and the correlation coefficient between the two halves of the test 0.89 ( $\alpha=0.91$ ).

**Negative Automatic Thoughts Questionnaire**

The ATQ was designed by Hollon and Kendal (1980) is a 30-item structured questionnaire designed to assess the frequency of depressive cognitions. Respondents

	Sex (%)		Marital Status (%)		Educational State (%)		
	Male	Female	Married	Single	Diploma	Bachelor	Master
<b>Cognitive behavioral group-therapy</b>	14.28	85.71	42.85	57.14	28.57	42.85	28.57
<b>Aerobic Exercise</b>	25	75	68.75	31.25	43.75	43.75	12.5
<b>Control</b>	25	75	56.25	43.75	12.5	56.25	31.25
<b>Total</b>	21.73	78.26	56.52	43.47	28.24	47.82	23.91

read each statement precisely and to determine how frequently each thought occurred over the past week (Hollon & Kendall, 1980). The ATQ is considered as a valid measure, able to differentiate between adjusted and maladjusted groups, and is significantly correlated with corresponding affective states. Scores between 38 and 48 fall within the non-depressed range, whereas scores 80 or higher indicate the depressed range (Clark, 1988).

**Dysfunctional Attitude Scale**

The DAS is a frequently used 40 item self-report inventory requiring the respondent to rate the level of agreement with each statement from “totally agree to totally disagree”. The aim of this questionnaire is to measure the presence of more permanent dysfunctional attitudes to life, which predispose an individual to depression (Clak & Beck, 1999). The DAS has shown to be moderately correlated with depression (r=0.57) (Hill, Oei, & Hill, 1989) and has shown to have good internal reliability (α=0.88 to 0.90) (Dobson & Breiter, 1983).

**Data Analysis**

For the data analysis, descriptive statistics (mean, standard deviation and variance) and inferential statistics (for quantitative variables among the three groups), post hoc tests (follow-up), analysis of variance for quantitative data with normalization Kolmogorov-Smirnov test (ks), and to compare result, before and after treatment, the paired t test or (Wilcoxon test, if necessary) will be used.

**RESULTS**

Group means for the depression, dysfunctional attitude and automatic thought scales are presented in Table 2. Covariate analysis results showed that the scores of depression in the post-test between three groups: cognitive behavioral group therapy, aerobic exercise and control is significantly different (P=0.001).

Benferony method has shown a significant difference between depression level of CBGT and control group (mean difference 17.998 and P= 0.001); Also AE and control group has significant difference (mean difference - 8.569 and P = 0.001) in depression scores. Depression in both CBGT and AE groups was significantly different (mean difference = -9.429 and P= 0.001).Figure1 shows pre and post-test depression levels in the three groups, cognitive behavioral group therapy, aerobic exercise and control.

In order to the analyses reported above, there was no difference between aerobic exercise and control group on two of the three scales (Dysfunctional Attitude: mean difference = -6.016 and P = 0.35; Automatic Thought:mean difference = 05.802 P = 0.961); However CBGT group showed significant different from AE and Control group in automatic thought (P = 0.001) and dysfunctional attitude (P = 0.001).

**DISCUSSION**

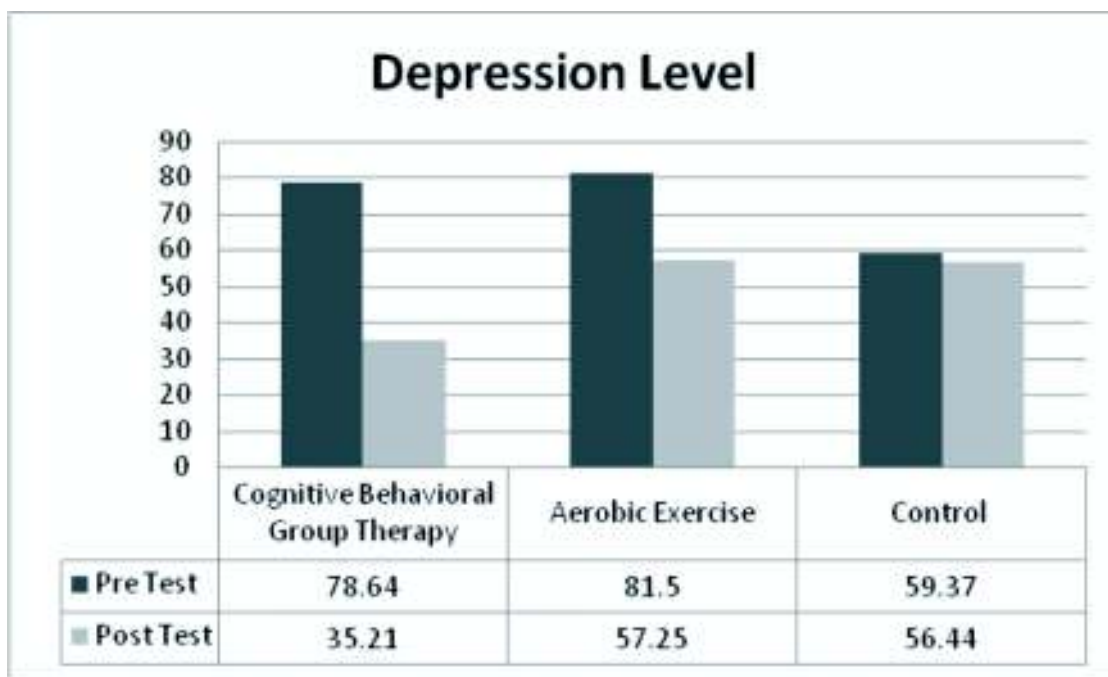
The main purpose of this study was the comparison of group cognitive- behavioral therapy (GCBT) and aerobic exercise on mild to moderate depression. Based on results GCBT and aerobic exercise reduced depression symptom, align to other studies (James A Blumenthal et al., 1999; Comas-Diaz, 1981; Dobson, 1989; Duarte, Miyazaki, Blay, & Sesso, 2009; Kohn, Oden, Muñoz, Robinson, & Leavitt, 2002; Rosselló & Bernal, 1999; Steuer et al., 1984). The rationale of cognitive- behavioral therapy is to break the vicious circle between cognitive distortions and depression symptom and increase patient's knowledge about how negative automatic thoughts, irrational thoughts and dysfunctional attitudes work (Kohn, et al., 2002) as well treatment in group form plays a supportive role. Reduction in negative automatic thoughts and dysfunctional attitudes of patients received GCBT is consistent with other studies

**Table 2. Group Differences on the BDI-II, DAS & ATQ**

	CBGT <sup>a</sup>		AET <sup>b</sup>		C <sup>c</sup>	
	M.	S. D.	M.	S. D.	M.	S. D.
<b>Depression</b>	2.86 <sup>d</sup>	2.41	12.94 <sup>d</sup>	6.84	19.12 <sup>d</sup>	7.74
<b>Dysfunctional Attitude</b>	35.21	4.82	57.25	22.06	56.44	15.4
<b>Automatic Thought</b>	115.64	43.144	155.25	25.8	160.06	30.62

Abbreviations: (a) Cognitive- Behavioral Group Therapy;

(b) Aerobic Exercise Therapy; (c) Control <sup>d</sup>CBGT & AET < C, P < .01



**Figure 1 : Comparison of Depression Scores in CBGT, AE & Control Groups**

(Kwon & Oei, 2003).

Sectional and longitudinal studies indicate that aerobic exercises have antidepressant and anxiolytic effects against of stressful life events (Salmon, 2001). Noted that effect of exercise on depression is dose-dependent and low levels of physical activity will have an effect similar to placebo (Dunn, Trivedi, Kampert, Clark, & Chambliss, 2005).

Comparisons showed that GCBT provides a supportive atmosphere and concentrates on negative automatic thoughts and dysfunctional attitudes is more effective than aerobic exercise that increase physical activity and reduces depression physical symptom. So aerobic exercises can be considered as supplementary treatment not alternative.

The main limitation of this study is disability to generalize results to society because of sampling method (accessible) and ignoring the effects of gender, age and ethnicity of people. So suggested to investigate the effects of gender role on effectiveness of aerobic exercise alone and in combination with other treatments on depression in future studies.

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