

## CAN RELAXATION BE USED TO ACHIEVE WEIGHT CONTROL IN YOUTHS?

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### Abstract

**INTRODUCTION:** Childhood obesity is a cultural and medical problem and is usually a refractory to treatment. The objective of this study was to assess the effects of parental therapy behavior and relaxation methods on children in controlling childhood obesity.

**METHODS:** In this randomized controlled clinical trial, 90 obese children aged 10-17 years were randomly divided into three groups of equal number. All three groups received similar diet and exercise recommendations. The first group of children attended 15 relaxation sessions. Parents of the second group participated in 15 behavior therapy sessions. The third group was considered as control. Data were analyzed by SPSS 13. Mean changes of weight, BMI and WC were calculated.

**RESULTS:** Mean BMI decreased in all three groups after the intervention. This decrease was more remarkable, but not significant in the first group. Mean weight decreased in the first group but increased in the second group. Mean WC decreased in all three groups. This decrease was more obvious, but not significant in the first group.

**CONCLUSIONS:** Stress leads to sympathetic system arousal which it associated with many pathologic conditions. Elicitation of relaxation response can help individuals embrace healthy lifestyle choices. Relaxation and parent behavior therapy can be considered as useful methods of controlling childhood obesity.

**Keywords:** Obesity, children and adolescents, relaxation, behavior therapy, parents.

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### Introduction

Childhood obesity is a cultural and medical problem. Although its prevalence is higher in developed countries, it is rapidly increasing in developing, and even in the third world countries.<sup>1-5</sup> Recent studies in the Iranian society have shown a rapid increase in the childhood obesity rate.<sup>6,7</sup>

The early and late complications of childhood obesity confirm the importance of weight control from childhood. Lifestyle change is a very effective method to this end, but requires good training and support. In addition, it is difficult to maintain ideal weight after weight loss. In many cases, it is very difficult to draw the children's and adolescents' cooperation in weight-loss programs, so many families look for safe medications to control the weight of their children.

Pharmacologic therapy might have side effects and our previous study on the effects of herbal mixtures on controlling childhood obesity suggested that using placebo and herbal mixtures decreased the compliance of children and their families in following diet and exercise recommendations.<sup>8</sup> Relaxation can be effective as an adjunct therapy with other treatments. Parent behavior therapy might also have a positive effect on weight control of children and adolescents.<sup>9,10</sup>

An association between stress and diseases has been examined in recent studies.<sup>11-13</sup>

Such an association apparently exists, however, it is complex and specific clinical implications should be further investigated. In general, stress impacts on the immune, circulatory, and nervous systems, hence it

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may play a role in immunological, cardiovascular and neurodegenerative diseases, as well as mental disorders.<sup>12,13</sup>

Stress can exert either ameliorating or deleterious effects, depending on a multitude of factors (e.g. individual, endogenous, or exogenous elements).<sup>11-13</sup>

However, in the clinical and actual medical setting, the negative influences of stress on health seem to predominate.<sup>12,13</sup>

Therapeutic use of the relaxation response has been documented in several studies.<sup>14,15</sup> Mind/body practices that elicit the relaxation response (RR) have been practiced for thousands of years to promote health and wellbeing.<sup>16</sup> Numerous mind/body approaches can elicit the RR.<sup>16,17</sup> The RR can be elicited as individuals repeat a word, sound, phrase, or prayer, or as they focus on their breathing and disregard everyday intrusive thoughts.<sup>18</sup> RR is described as a coordinated physiological response that is characterized by decreased arousal, diminished heart rate, respiratory rate and blood pressure, associated with a state of "wellbeing".<sup>18-20</sup>

The physiological responses of relaxation occur in the opposite direction to those of the stress response, described as the "fight or flight" response and the "general adaptation response" to stress.<sup>21</sup>

Clinically, the RR has been shown to counteract the negative effects of long-term stress. The RR is often used as an adjunct to medical treatment, in conditions that are caused or exacerbated by stress.<sup>23</sup>

Stress is implicated in a broad range of physiological conditions such as hypertension,<sup>24</sup> myocardial ischemia,<sup>24</sup> anxiety,<sup>26</sup> psychosomatic complaints,<sup>26,27</sup> insomnia,<sup>29-31</sup> headache,<sup>32,33</sup> back/neck pain,<sup>34</sup> chronic pain,<sup>35-36</sup> musculoskeletal disorders,<sup>37</sup> etc.

The clinical effects of the RR have been shown to improve the outcomes of medical and surgical treatment.<sup>38-40</sup>

Despite these clear physiological and clinical observations, the underlying mechanisms of the RR remain undefined. Relaxation therapy may also be of benefit in improving weight loss. The majority of studies have assessed behavioral and cognitive behavioral weight reduction strategies.

Cognitive therapy, psychotherapy, relaxation therapy and hypnotherapy have been assessed in a small number of studies. The objective of this study was to evaluate the effects of parental therapy behavior and relaxation methods on children in controlling childhood obesity.

## Materials and methods

This randomized controlled clinical trial was carried out in 2005 on 90 children and adolescents aged 10-17 years who had been diagnosed as obese [body mass index (BMI) > age- and gender-specific 95<sup>th</sup> percentile] and referred by schools and/or physicians to the Metabolic Syndrome Clinic of preventive Pediatric Cardiology Department, Isfahan Cardiovascular Research Center (a WHO collaborating Center).

The subjects were randomly divided into three equal groups of 30 by using the table of randomized numbers and the simple random method.

The Ethics Committee of Isfahan Cardiovascular Research Center approved the study. Verbal assent was obtained from children and informed written consent from their patients.

All subjects were examined by the same physician. Eligibility criteria were age 10-17 years and a BMI greater than age- and gender-specific 95<sup>th</sup> percentile, no physical disorders leading to exercise inability, and living with biological parents. Height (Ht) and weight (Wt) were measured twice to  $\pm 0.2$  cm and to  $\pm 0.2$  kg, respectively, with subjects being barefoot and lightly dressed; the averages of these measurements were recorded. BMI (weight in kilograms divided by the square of height in meters) was calculated.

Waist circumference (WC) was measured with non-elastic tape at a point midway between the lower border of the rib cage and the iliac crest at the end of normal expiration. All groups received similar diet and exercise recommendations. Children and adolescents in the first group participated in 15 sessions of relaxation. In the second group, parents of obese children participated in 15 sessions of behavior therapy. The third group was considered as control. Techniques and methods employed in the first and second groups were as follows:

1. Relaxation techniques, consisting of body imaging (negative minds were converted to positive ones)
2. Self imaging for organization of mind/body
3. Methods for decreasing anxiety
4. Yoga techniques for activation of muscles and repairing body structure
5. Breathing techniques

The following two components necessary to elicit the relaxation response were considered as well-focused awareness on a thought, work, sound, or muscular movement, and passive disregard of distracting thoughts.

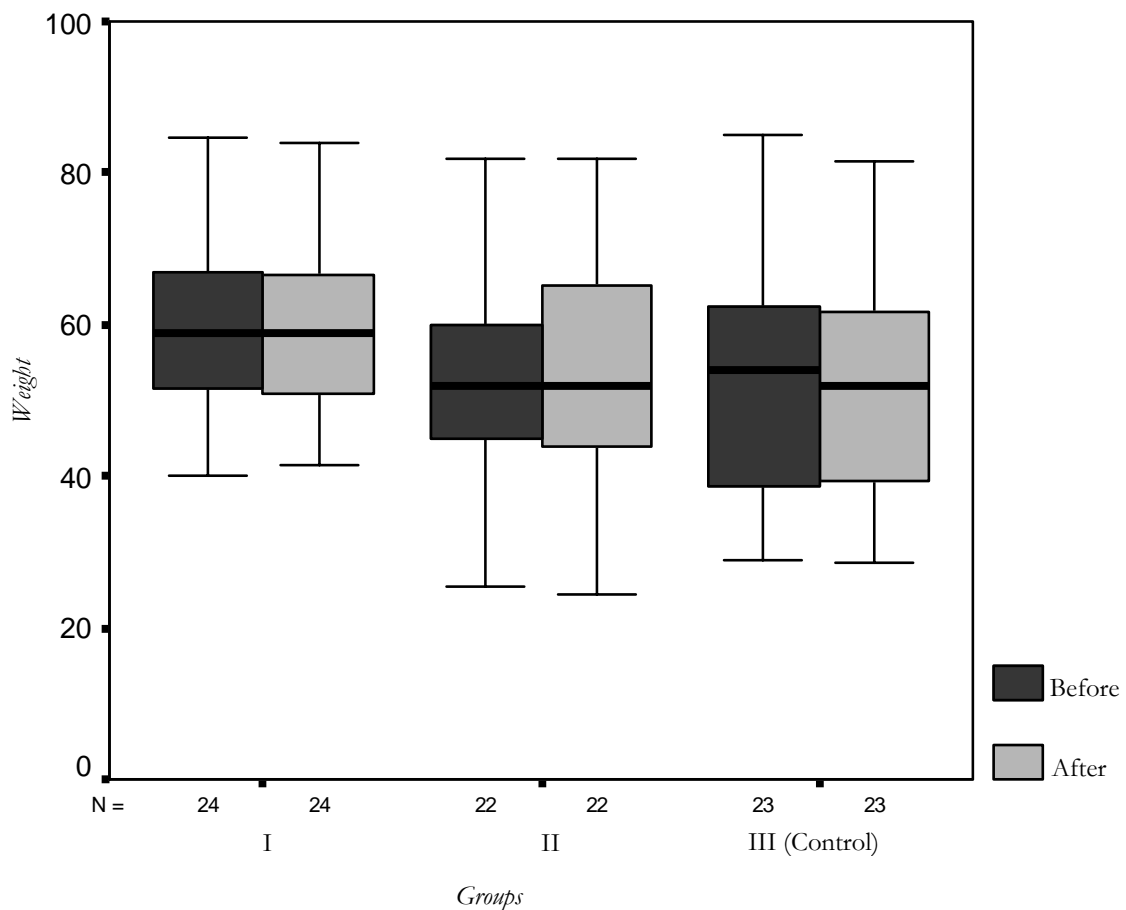
Overweight or obese individuals may benefit from psychological interventions, particularly behavioral and cognitive-behavioral strategies to enhance weight reduction. These strategies are particularly useful when combined with dietary and exercise strategies. Behavioral therapy was found to result in significantly greater weight reduction than placebo when assessed as a stand-alone weight loss strategy. When behavioral therapy was combined with a diet/exercise approach and compared with diet/exercise alone, the combined intervention resulted in greater weight reduction.<sup>39</sup> The mean changes of weight, BMI and WC were compared between the three groups. Data were analyzed by SPSS13. Changes in mean difference were analyzed by Pearson Correlation method; changes in

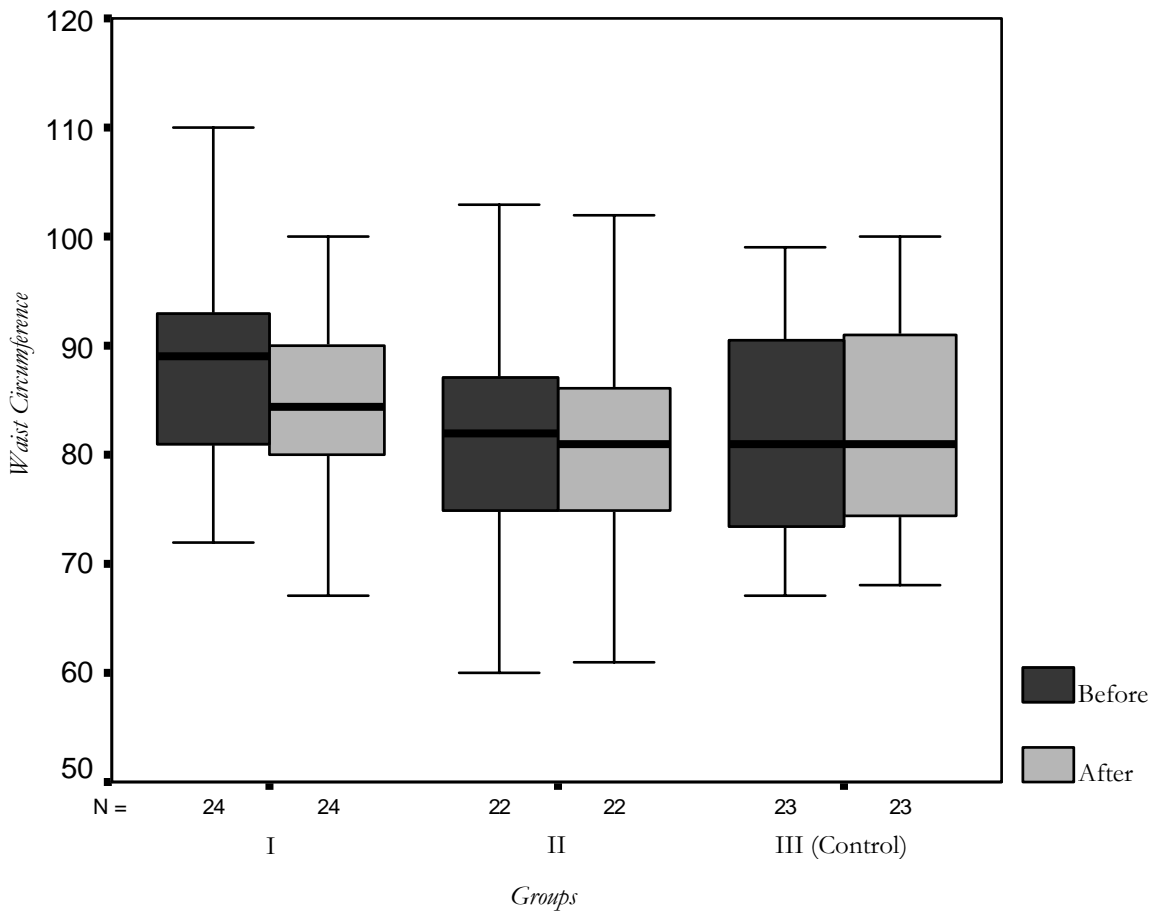
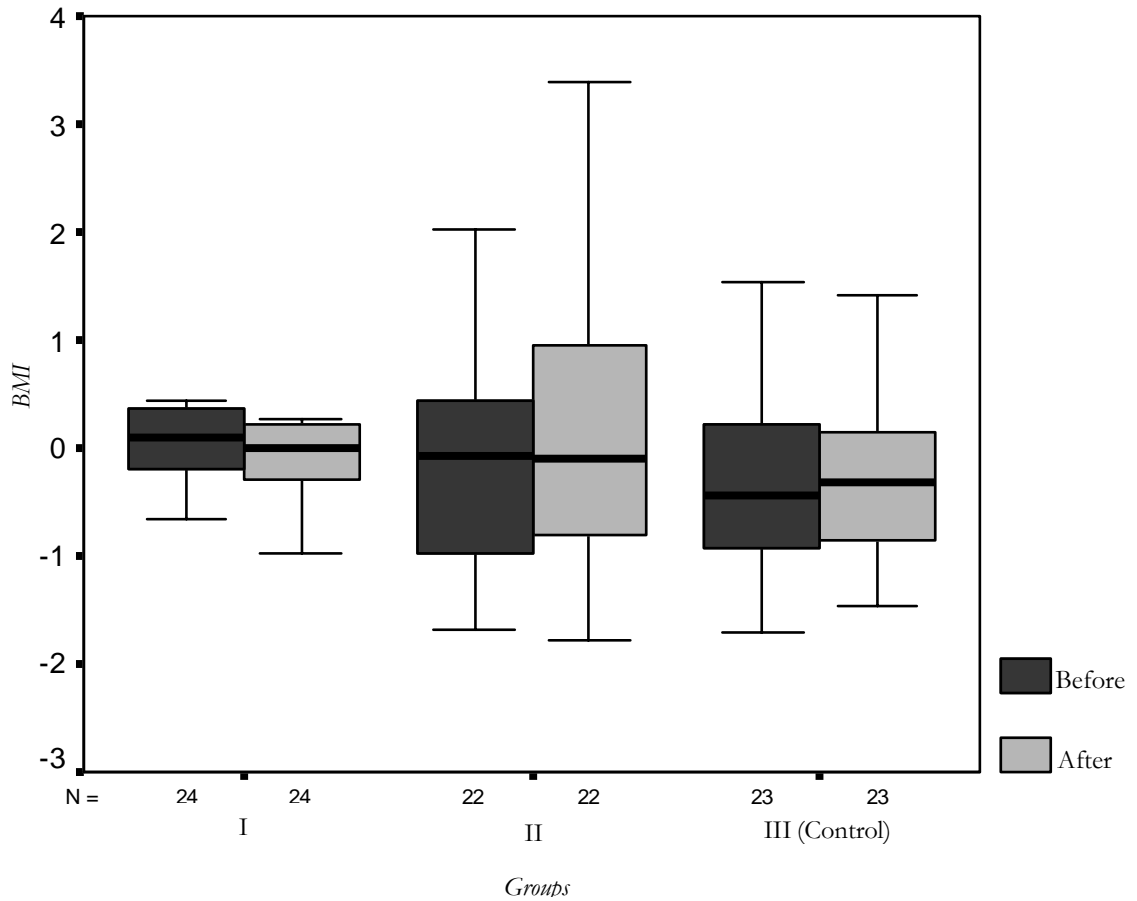
all groups were assessed by analysis of variance (ANOVA).

### Results

In this study, the mean BMI decreased in all groups after intervention, but those who practiced relaxation methods as an adjunct therapy to diet and exercise displayed more notable, yet insignificant decrease in BMI (Figure 1).

After the intervention, mean weight decreased in the first group (relaxation) but increased in the second group (Figure 2). Mean WC decreased after intervention in all three groups; although the decrease in WC was greater in the relaxation group, the difference was not significant (Figure 3).





## Discussion

Our findings show that adjunct methods such as relaxation and parent behavior therapy can help decrease BMI in obese children and adolescents. This decrease was more remarkable, but not significant in the group attending relaxation sessions. There was also a decrease in WC in all three groups and was most notable in the first group, however, it was not significant. This group reported peace of mind and greater tendency towards well-being, which apparently helped decrease body weight.

Although stress is a well known phenomenon, it is an elusive concept to define. Stress varies from individual to individual and within the same individual, stress triggers vary from day to day. It is also important to acknowledge that not all stress is bad. A certain amount of stress creates interest and challenge in life. Too much stress, however, leads to negative consequences and adversely affects health.<sup>40</sup> Sympathetic nervous system (SNS) arousal in response to stress has been linked to increase in cardiovascular diseases and their risk factors.<sup>41,42</sup>

Our intervention included an integrated psychosocial, non-pharmacologic approach to stress management as part of a multiple risk factor reduction approach.<sup>43</sup> Benson et al. first described the physiology of relaxation response. Elicitation of relaxation response is associated with decreased SNS activity acutely, and in the longer term has been shown to decrease end-organ responsiveness.<sup>18</sup>

In addition to these physiological changes, physiological and behavioral changes may also occur as a result of relaxation response (RR).

Patients who regularly elicit the relaxation response report that they can focus attention more easily, and appraise attitudes in a more conscious, objective way. They experience an opportunity to test new possibilities and embrace healthy lifestyle choices. This process of behavioral changes begins when the patient clarifies core values and makes a behavioral plan that is aligned with his or her core values.

Many techniques can be used to elicit the RR. It is best to teach a variety of techniques so that the patients will be able to identify the technique(s) that work best for them. We advised patients to elicit the RR, once a day for 20 minutes.<sup>43</sup>

In a previous study on the effect of relaxation on anxiety and learning improvement, the groups practicing relaxation methods with or without imagery, experienced a more peaceful state while studying or during exams.<sup>9</sup> Other studies have also shown that parent behavior therapy positively helps obese children and adolescents lose weight.<sup>10</sup>

Our study shows that parent behavior therapy contributes to decreased BMI and WC. All mothers who received behavior therapy stated that their behavior modification and relaxed attitude led to better control and decrease in their children's weight.

Our limitations were the short duration of relaxation and behavior therapy sessions (3 months) and the small sample size (30 subjects in each group).

In general, our results indicate that relaxation practices, as an adjunct to diet and exercise, are useful in controlling generalized and abdominal obesity.

Thus, more prolonged studies (6-12 months) with larger sample size are warranted to obtain more conclusive results.

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