

# Obesity: How can Interventions Ensure Treatment Success?

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**Received date:** 06 October 2015; **Accepted date:** 31 October 2015; **Published date:** 5 Nov 2015.

**Citation:** Paes ST, Bianchini RM (2015) Obesity: How can Interventions Ensure Treatment Success? *Int J Endocrinol Metab Disord* 1(4): doi <http://dx.doi.org/10.16966/2380-548X.116>

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## Abstract

Obesity is a disease of multifactorial etiology, which is associated with metabolic, hormonal and inflammatory dysfunctions. Several studies have suggested that physical exercise is able to prevent or attenuate factors linked to obesity. Additionally, it is known that childhood obesity plays an important metabolic role on maintenance of obesity development throughout life. However, considering the multifaceted and chronic aspect of obesity, which can lead to the development of cardiometabolic diseases, it is necessary that health professionals, especially those working with behavior and lifestyle changes, understand that aspects such as motivation, self-esteem and satisfaction increase adherence of the obese to program with treatment and also increase the chances of positive outcomes, health status and quality of life.

**Keywords:** Body composition; Metabolism; Weight loss; Nutrition; Exercise

## Introduction

The etiology of obesity is associated with numerous factors, such as genetic polymorphisms, hormonal dysfunctions, central and peripheral (i.e. ghrelin, leptin, insulin, cortisol), pro-inflammatory adipokines, epigenetic factors, positive energy balance, and others [1].

The development of obesity in the early stages of life is associated with the maintenance of the physiopathological state during adulthood. Childhood obesity can be defined as a condition of excessive accumulation of body fat in adipose tissue during childhood, with negative implications for health. For example, obesity in childhood is the most important known risk factor for cardiovascular disease in adulthood, and these factors, when present in childhood, increase later in life. Thus, it is necessary to address them since the early stages of life, especially in relation to the life habits observed during this period. Therefore, it is important to know and identify the many etiologic factors related to obesity development as soon as possible [2].

The regular practice of exercise increases energy expenditure promoting benefic metabolic adaptations such as increase of lean mass, oxidative capacity of lipolysis and hormonal responsivity. The increase in energy expenditure secondary to physical exercise occurs by stimulating the metabolic reactions and the enhancement of energy substrate use by active muscles [3].

Thus, an adaptive morphological change of energy systems allows that the energy and functional demands required by muscular work stimulate energy biochemical framework and structurally enable the body constantly encouraged to support the oxidative, neuromuscular and cardiovascular requirement by exercise independently of stages of life and nutritional status of the individual [4].

The main physiological and metabolic effects provided by exercise, both acute and chronic, are generally: increase of free fat muscle mass, strength, proprioception, caloric expenditure, resting metabolic rate, tolerance to the use of glucose as energy substrate, improving insulin sensitivity, reduction of inflammatory status, decreased fat stores, among others [4].

Therefore, physical exercise is considered the main obesity treatment tool to be able to modulate the metabolic capacity of the individual. However, it is necessary that this intervention is balanced by the diet, since the association along with healthy eating habits enhances the benefits caused by regular physical exercise being also the key factor to restore energy substrates required by metabolic systems [5,6].

However, few studies have evaluated the role of adherence of obese individuals daily routine associated with exercise. It is known that a change in behavior and /or healthy life habits are essential factors to promote initial attitudes to decrease body mass index and obesity, so there are fundamental metabolic restoration and therefore mitigating the risk factors for the emergence of cardiometabolic diseases [6].

On the other hand, it is important to remember that the hormonal response of an obese individual is different, which affects metabolic functioning [3,4]. This interferes directly on the magnitude of the physiological effects of physical activity. Due to this fact, it is necessary that the professional understands this reality and guides the patient so that he is able to see that the benefits obtained differ from a non-obese subject. This is an important condition to ensure that the individual engages in the program and feels able to promote behavioral changes [5,6].

Psychological factors are closely associated with motivation, assimilation and necessary attitudes to reach the modification of body composition through exercise. It is known that obesity socially exposes the obese individual in environments such as gyms, parks and clubs, and that this can lead to shame, low self-esteem, disparaging attitudes and other factors that can cause disruption and abandonment of non-medicated treatment [7].

In addition, it is known that few studies have evaluated interventions of physical exercise over the years and that regardless of the control of training loads (i. e. frequency, intensity, volume), the most important aspect is being overlooked by professionals related to the physical training, adhesion capacity of obese individuals to the exercise program [8].

Interventions should initially analyze the profile of the individual and evaluate the best professional action strategies to ensure adherence of the

subject and the daily practice of aspects related to diet, physical activity, medications and therapy. Interventions should be face-to-face with individual and / or group feedback at least twice a week, besides emails and phone calls [5,8].

In the case of lifestyle change, it is recommended that the professional understands that significant gains of exercise may arise within 12 weeks; however, with regard to development and consolidation of these habits, the follow up should be at least 24 may range up to 48 weeks [8].

Another important aspect is related to gender. Studies show that women are more prominently participatory interventions. In this way, it is necessary that the professional conducts a sex-specific planning. This can be a major factor in the effectiveness of interventions concerning lifestyle [9].

Regarding the characteristics of non-drug lifestyle interventions, they should include: 150-210 minutes of aerobic exercise of moderate intensity (3-5 times per week; 40% -60% of heart rate reserve, or about 4 6 metabolic equivalents), 60-120 minutes of resistance training, hypertrophic type is preferable (2-3 times per week; i.e. Start with 1 set of 10-15 repetitions at moderate weight; Progress to 2 sets of 10-15 repetitions; Progress to 3 sets of 8 repetitions at heavier weight), flexibility exercises should be added in separate sessions in order to avoid muscle and joint injuries [5].

For the nutritional value, it is recommended a specific diet profile of macronutrients and micronutrients, evaluation of energy restriction for loss of 5-10% of body weight and gradual adjustment over time [5].

Training loads must often be adjusted in order to ensure the constant progressive chronic metabolic stimuli. On the other hand, the lack of recurring adjustment of charges could be a demotivating factor which increases the chances of abandonment. Moreover, the variation in types of training (i.e. circuit, spinning, sports, and dance) is extremely important and recommended to enhance motivation and adherence to established program and to support long-term results.

In conclusion, healthcare professional should identify the etiology factors associated with obesity, in order to prescribe appropriate exercise and behavior change interventions (i.e. diet and psychological factors). Besides the patience individualities, other essential factors are adherence and motivation to the new lifestyle, therefore progression in training loads and variations in the type of training is recommended.

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