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Introduction. Most studies have described how the weight loss is when different treatments are compared (1-3), while others have also compared the weight loss by sex (4), or have taken into account psychosocial (5) and lifestyle (6, 7) variables. However, no studies have examined the interaction of different variables and the importance of them in the weight loss.

Objective. Create a model to discriminate the range of weight loss, determining the importance of each variable.

Methods. 89 overweight people (BMI: 25-29.9 $kg \cdot m^{-2}$), aged from 18 to 50 years, participated in the study (36 males, 53 females) during 6 months. Four types of treatments were randomly assigned: strength training (S, n=22), endurance training (E, n=25), strength and endurance training (SE, n=23), and control group (C, n=19). All participants followed a 25% calorie restriction diet. A multivariate discriminant model including the variables age, sex, height, daily energy expenditure (EE), type of treatment (T), caloric restriction (CR), initial body weight (BW), initial fat mass (FM), initial muscle mass (MM) and initial bone mineral density (BMD) was performed having into account the four quartiles of the % of weight loss. The discriminant model was built using the inclusion method in SPSS allowing us to find a function that could predict the body weight loss range that an overweight person could achieve in a 6 months weight loss intervention.

Results. The discriminant analysis predicted that a combination of the studied variables would discriminate among the four ranges of body weight loss with a 55.8 % of correct classification. The model obtained three

discriminant functions although only the first was significant (Wilks' Lambda=0.473, p=0.001):
Discriminant score = - 12.758 - (0.46 x age) – (0.970 x sex [0=female; 1=male]) + (11.631 x height) + (0.001 x EE) – (0.192 x T [1=S; 2=E; 3=SE; 4=C]) – (0.038 x CR) – (0.547 x BW) + (0.481 x FM) + (0.429 x MM) + (2.325 x BMD)

Conclusion. The developed model could predict the percentage of weight loss in the following way: if the discriminant score is close to 1.063 the range of weight loss will be from 7.44 to -4.64%, close to 0.038 the range will be from -4.64 to -7.90%, close to -0.193 the range will be from -7.90 to -11.03%, and if it is close to -0.857 the range will be from -11.03 to -25,00% of the initial body weight.

References.

1. Brochu M, et al. Resistance training does not contribute to improving the metabolic profile after a 6-month weight loss program in overweight and obese postmenopausal women. J Clin Endocrinol Metab. 2009 Sep;94(9):3226-33.
2. Del Corral P, et al. Effect of dietary adherence with or without exercise on weight loss: a mechanistic approach to a global problem. J Clin Endocrinol Metab. 2009 May;94(5):1602-7.
3. Larson-Meyer DE, et al. Caloric Restriction with or without Exercise: The Fitness vs. Fatness Debate. Med Sci Sports Exerc. 2010;42(1):152-9.
4. Hagan RD, et al. The effects of aerobic conditioning and/or caloric restriction in overweight men and women. Medicine & Science in Sports & Exercise. 1986;18(1):87-94.
5. Teixeira PJ, et al. Mediators of weight loss and weight loss maintenance in middle-aged women. Obesity (Silver Spring). 2010 Apr;18(4):725-35.
6. Bautista-Castano I, et al. Variables predictive of adherence to diet and physical activity recommendations in the treatment of obesity and overweight, in a group of Spanish subjects. Int J Obes Relat Metab Disord. 2004 May;28(5):697-705.
7. Worthy SL, et al. Demographic and lifestyle variables associated with obesity. Health Education Journal. 2010;69(4):372-80.

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