CLINICAL GUIDELINES ON THE IDENTIFICATION, EVALUATION, AND TREATMENT OF OVERWEIGHT AND OBESITY IN ADULTS

The Evidence Report

Obesity in Adults

Overweight and Treatment, Evaluation, and Identification, Mortality

Blood Pressure, Behavior, Physical Activity, Trend, Dietary, Body Mass Index

Demographic, Economy, Surgery, Risks, Obesity Loss

CLINICAL GUIDELINES

Obesity Education Initiative

NA TIONAL INSTITUTES OF HEALTH
NA TIONAL HEART, LUNG, AND BLOOD INSTITUTE

BLOOD PRESSURE

OVERWEIGHT

BEHAVIOR

DIETARY

PHYSICAL ACTIVITY

PREVALENCE

BODY MASS INDEX

MORTALITY

ECONOMY

SURGERY

RISKS

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Evidence Statement: Physical activity, i.e., aerobic exercise, in overweight and obese adults results in modest weight loss independent of the effect of caloric reduction through diet. Evidence Category A.

Rationale: Twelve RCT articles examined the effects of physical activity, consisting primarily of aerobic exercise, on weight loss compared to controls. Ten of the 12 RCT articles reported a mean weight loss of 2.4 kg (5.3 lb) (or 2.4 percent of weight) or a mean reduction in BMI of 0.7 kg/m² (2.7 percent reduction) in the exercise group compared to the control group. In three of these ten studies, the weight loss was < 2 percent of body weight (< 2 kg) (4.4 lb). In contrast, two RCTs showed no benefit on weight from exercise, reporting weight gain in the exercise group compared to the control group. In one of these studies, the control group received only diet advice but nevertheless lost 9 kg (19.8 lb), whereas the exercise group lost only 7 kg (15.4 lb). In the second study, there was a total of only 10 participants, all having noninsulin-dependent diabetes mellitus, and the control group lost 3 kg (6.6 lb) whereas the exercise group lost only 2 kg (4.4 lb). A meta-analysis of 28 publications of the effect on weight loss of exercise compared to diet or control groups showed that aerobic exercise alone produces a modest weight loss of 3 kg (6.6 lb) in men and 1.4 kg (3.1 lb) in women compared to controls.

Ten articles reported on RCTs that had a diet-only group in addition to an exercise-only group. In every case except one, the exercise-only group did not experience as much weight loss as the diet-only group. The diet-only group produced approximately 3 percent, or 3 kg (6.6 lb), greater weight loss than the exercise-only group.

No single study examined the length of the intervention in relation to the weight loss outcome. Only one study compared the effect on maximum oxygen uptake of different intensities and formats of physical activity over a 1-year follow-up and 2-year follow-up period. Better adherence over 1 year was found if the exercise was performed at home rather than in a group setting, regardless of the intensity level. Subsequently, the different exercise groups were compared with each other over the longer term (2 years), and better long-term adherence was found in the higher intensity home-based exercise group compared to the lower intensity home-based or higher intensity group-based exercise groups.

The question of whether physical activity enhances long-term maintenance of weight loss has not been formally examined in RCTs. Examination of long-term weight loss maintenance produced by physical activity interventions compared with diet-only interventions cannot easily be compared between RCTs because of numerous differences between studies with respect to design, sample size, intervention content and delivery, and characteristics of the study population samples. However, a number of analyses of observational and post hoc analyses of intervention studies have examined whether physical activity has a beneficial effect on weight. Cross-sectional studies have generally shown that physical activity is inversely related to body weight and rate of weight gain with age. Longitudinal studies with 2 to 10 years of follow-up results have observed that physical activity is related to less weight gain over time, less weight gain after smoking cessation in women, and weight loss over 2 years. In
3. Combined Therapy (Diet and Physical Activity)

Twenty-three RCT articles investigated the effects on body weight of a combination of a reduced calorie diet with increased physical activity. The control groups used diet alone or physical activity alone.

Of the 15 studies deemed acceptable, each of them compared the combined intervention with diet alone, and 6 of them also compared the combined intervention to physical activity alone. The studies varied in terms of the length of the active intervention period as well as the length of the follow-up. Many of the programs lasted for more than 6 months, and five studies had intervention or follow-up data for at least 1 year.

Evidence Statement: The combination of a reduced calorie diet and increased physical activity produces greater weight loss than diet alone or physical activity alone. Evidence Category A.

Rationale: Of the 15 RCT articles, 12 observed that the combined diet and physical activity group had a mean greater weight loss of 1.9 kg (4.2 lb) and a mean greater BMI reduction of 0.4 (range of 0.3 to 0.5) than the diet-alone group.

One study compared different forms of physical activity in combination with diet and found that, compared to diet alone, the greatest weight loss occurred when the combination intervention included both aerobic and resistance training: 0.9 kg (2 lb) greater weight loss than aerobic exercise plus diet. Another study reported that participants receiving resistance training in combination with diet had 2.2 and 5.0 kg (4.9 and 11 lb) greater weight loss than the diet-alone group after 24 and 48 weeks, respectively.

Five of the six studies that compared combined intervention with physical activity alone observed that the combined intervention group had a 5.3 kg (11.7 lb) (range of 3.6 to 6.2 kg) (7.9 to 13.7 lb) greater weight loss and 0.9 change in BMI unit than the physical activity-alone group. This greater weight loss was significant in three studies.

Three RCTs compared the longer-term versus the shorter-term effects of the combination of physical activity and diet versus diet alone. All three studies found that the combination resulted in approximately 1.5 to 3 kg (3.3 to 6.6 lb) greater weight loss than diet alone over the longer term of 9 months to 2 years.

Evidence Statement: The combination of a reduced calorie diet and increased physical activity produces greater reductions in abdominal fat than either diet alone or physical activity alone, although it has not been shown to be independent of weight loss. Evidence Category B.

Rationale: Three RCTs that examined the combined effect of diet and physical activity on weight loss also had measures of abdominal fat, as measured by waist circumference. Two of the three RCTs showed that the combination intervention resulted in greater reduction in waist cir-