were lower in the intervention group ($P \leq 0.03$ for all comparisons). More patients in the intervention group reported starting a regular walking program since discharge compared with the usual care group (69% versus 44%; $P < 0.001$). Smoking cessation rates were similar in both groups.

Conclusions. Having a nurse or dietitian coach patients using repeated telephone calls followed by written reports led to significant improvement in several cardiovascular risk factors following hospital discharge among patients with CAD.

Commentary

Poor control of cardiovascular risk factors is still a major problem for many patients with established CAD. Additional systematic approaches beyond routine clinical care are needed to ensure that all eligible patients benefit from existing therapies. The best approach to this problem has not been established. As the authors of this study point out, several studies of disease management programs have been attempted with varying success. In general, interventions that use nonphysician clinical personnel with the power to prescribe lipid-lowering medication have been more successful than interventions that use other providers who cannot prescribe medication. Vale et al's findings are important because they show that clinical personnel outside the usual system of care can have a positive impact on patients' pursuit of risk factor control and on lifestyle improvements.

Programs like the one used in this study may become increasingly relevant for health care in the United States. As the quality of care received by individuals at different referral centers or health plans comes under closer scrutiny by purchasers and consumers, centers that perform cardiac procedures or health insurers who are interested in demonstrating high quality care may seek ways to improve cardiovascular risk factor reduction.

A limitation of this study is that it does not report the total time and effort required on behalf of the coaches to deliver the interventions. Widespread adoption of any disease management activity is likely to depend on its cost. Also the coaches were affiliated with the medical center where patients had their cardiac hospitalization and may have been more effective at motivating patients than coaches affiliated with a third party would be. Last, it should be acknowledged that while patients in the intervention group did have clinically meaningful improvements in several cardiac risk factors compared with the control group, even the intervention group had a mean total cholesterol level that was above the target at the end of the study.

Applications for Clinical Practice

Having nurse or nutritionist coaches contact patients at 6-week intervals following hospital discharge can improve the control of cardiac risk factors and motivate patients to seek more intensive care from their regular doctors for hypercholesterolemia in the short term. Health care systems should consider implementing this type of program. Even with this intervention, however, many patients did not achieve target cholesterol levels at 6 months.

–Review by Stephen D. Persell, MD, MPH

Prescribing Exercise for Weight Loss: Less Is Not More, but It's Not Bad

Slentz CA, Duscha BD, Johnson JL, et al. Effects of the amount of exercise on body weight, body composition, and measures of central obesity: STRRIDE–a randomized controlled study. Arch Intern Med 2004;164:31–9.

Study Overview

Objective. To determine the effects of different durations and intensities of physical activity on body weight, body composition, and waist circumference.

Design. Randomized controlled trial with an intention-to-treat analysis.

Setting and participants. Patients were recruited from Durham, NC, and the surrounding areas. Inclusion criteria included age 40 to 65 years; sedentary lifestyle (defined as engaging in exercise less than once weekly); overweight or mildly obese (defined as a body mass index of 25–35 kg/m^2); no prior diagnosis of diabetes or hypertension; and mild to moderate lipid abnormalities (defined as low-density lipoprotein cholesterol of 130–190 mg/dL or high-density lipoprotein cholesterol < 40 mg/dL for men and < 45 mg/dL for women). Exclusion criteria included current dieting or intent to diet, any

musculoskeletal or metabolic disease, use of confounding medications, or known coronary artery disease.

Intervention. The intervention consisted of 3 different exercise regimens followed over an 8-month period: (1) high amount/vigorous intensity (caloric equivalent of approximately 20 miles/week at 65%–85% peak oxygen consumption); (2) low amount/vigorous intensity (caloric equivalent of approximately 12 miles/week at 65%–85% peak oxygen consumption); and (3) low amount/moderate intensity (caloric equivalent of 12 miles/week at 40%–55% peak oxygen consumption). All exercise sessions were verified by direct supervision or the use of a heart rate monitor. A fourth group, with no exercise intervention, served as the control group.

Main outcome measures. The primary outcome measures were body weight, body composition, and waist circumference. Body weight was measured on digital scales using the average of 2 measurements. Body composition was determined using the sum of 4 skinfold thickness measures using Lange calipers. Body circumferences were measured at the abdominal waist, minimal waist, hips, and thighs.

Main results. Of 302 initial patients, 182 met inclusion criteria, and 120 completed the trial. There were no statistically significant differences in baseline characteristics between the 4 groups after randomization. No differences were found in caloric intake over the study period between the groups, as measured by 24-hour dietary recall and 3-day food diary. After accounting for adherence to the exercise prescription within the 3 groups, both low-amount groups averaged an exercise amount equivalent to approximately 11 miles/week, and the high-amount group averaged an exercise amount equivalent to about 17 miles/week. The low-amount/moderate-intensity group averaged about 179 minutes of exercise/week compared with 114 min/week and 175 min/week for the low-amount/vigorous-intensity and high-amount/vigorous-intensity groups, respectively. A significant dose-response relationship was seen between the amount of exercise and the degree of weight loss and fat mass loss. Changes in baseline weights were –3.5 kg ($P < 0.01$, postvalue compared with prevalue) for the high-amount/vigorous-intensity group, –1.1 kg (nonsignificant) for the low-amount/vigorous-intensity group, –1.3 kg ($P < 0.05$) for the low-amount/moderate-intensity group, and +1.1 ($P < 0.01$) for the control group. There were statistically significant decreases in body fat mass and skinfold measures for all 3 exercise groups and statistically significant improvements in lean body mass when compared with the control group. The greatest effect was seen in the high-amount/vigorous-activity group. Measures of abdominal, minimal waist, and hip circumferences also were significantly reduced within all 3 exercise groups when compared with controls.

Conclusion. In nondieting obese adults, weight and fat loss can be achieved through both low-amount/moderate-intensity and high-amount/vigorous-intensity exercise. Weight loss appears to respond to exercise in a dose-dependent manner.

Commentary

Obesity has become a national epidemic with soaring prevalence rates [1,2]. Significant morbidity and mortality is associated with obesity and exercise, and dieting remains the cornerstone of therapy [3,4]. Despite guidelines urging clinicians to recommend exercise to their patients, little data exists that quantifies the effects of physical activity on weight loss. The purpose of the STRRIDE (Studies of Targeted Risk Reduction Interventions through Defined Exercise) study was to evaluate how increasing amounts and intensities of exercise would effect body composition, weight, and measures of central obesity.

The results are somewhat encouraging. Lower levels of exercise seemed to be effective for weight maintenance and were responsible for some marginal weight loss when compared with controls. These results could serve to question recent guidelines that have suggested increasing the amount of recommended daily exercise for adults from 30 minutes to 60 minutes. As seen in prior studies [4], individuals who exercised at the highest intensity had the greatest weight reduction, suggesting a strong dose-response effect of exercise. These changes appeared to be independent of dietary factors. However, the study was small. Due to the resource requirements necessary to conduct a target exercise intervention, it is unlikely larger trials will be conducted. This brings us to the question of how best to implement an exercise intervention for our patients. As our understanding of exercise's effects on weight loss broadens, more "real world" studies will be necessary to determine the most effective way to implement this knowledge in clinical practice.

Applications for Clinical Practice

Even moderate amounts of exercise, such as walking 30 minutes daily, can result in weight maintenance and should be recommended for moderately obese patients. Higher levels of exercise can result in greater weight and fat loss.

–Review by Harvey J. Murff, MD, MPH

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