Strength Index

Differential Effects of Our Exercise and Nutrition Program on Weight Loss Participants and Arthritis Patients

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Approximately 70 percent of American adults are overweight or obese,[6] even though almost the same percentage of men and women report that they are following reduced calorie diet plans.[12] It would, therefore, appear that dieting alone is not an effective lifestyle intervention for attaining and maintaining a desirable body weight, let alone for achieving an ideal body composition. Following an extensive review of weight loss research studies, Mann and associates[9] concluded that diet programs rarely lead to sustained improvement in body weight or health parameters, and that very few dieters maintained their weight loss.

The primary reason dieting results in only temporary reduction in body weight is that about 25 percent of the weight loss associated with typical diet programs is lean (muscle) weight.[1] Muscle loss leads to resting metabolic rate reduction,[16] which facilitates fat gain when normal eating patterns are resumed. Because most diet programs reduce caloric intake from all food groups, many dieters accelerate lean weight loss by consuming too little protein.[8]

On the other hand, several research studies show that resistance exercise can concurrently increase lean weight, increase resting metabolic rate, and decrease fat weight.[2,7,10] Likewise, research reveals that higher daily protein intake can further enhance lean weight gain and fat weight loss.[3,4,13,15] In a recent 6-month weight loss study our participants increased their lean weight by almost 4 pounds and decreased their fat weight by 14 pounds, for a 10-pound reduction in body weight and an 18-pound

improvement in body composition.[14] How did they achieve this beneficial result? The participants performed regular resistance exercise, consumed 2 daily meal-substitute protein-rich shakes, and ate between 1,200-1,500 calories per day (women) or 1,500-1,800 calories per day (men). Even more impressive, the participants in our follow-up 6-month weight maintenance study sustained their weight loss while continuing to increase lean weight and decrease fat weight. Although these subjects no longer restricted their caloric intake, they continued to do regular resistance exercise and drink 1 daily meal-substitute protein-rich shake.

Based on these findings, we decided to do a 3-month study with two groups of older adults who typically experience relatively high levels of muscle loss and fat gain, namely, obese/overweight individuals and arthritis patients. By 2020, approximately 60 million Americans will suffer from arthritis[5], which is associated with and exacerbated by muscle loss and fat gain.[11] We placed both groups of study subjects on the same strength training program (10 resistance machine exercises; 1 set; 8-12 repetitions; 2-3 days/week). We also encouraged all of the program participants to follow the higher-protein diet plan used in our previous studies.

As shown in table 1, the obese/overweight subjects were successful in attaining their objectives of improved body weight and body composition. Similarly, as presented in Table 2, the arthritis patients' experienced desirable reductions in general body pain and general body fatigue.

We actually gained some valuable and practical information from this relatively small and simple study. First, we confirmed the results of two previous 3-month weight loss research studies,[13,14] in which the subjects attained essentially the same improvement in percent fat (-2.6%; -2.9%; -3.0%), approximately the same amount of fat weight decrease (-7.0 lbs.; -7.1 lbs.; -7.6 lbs.), and similar amounts of lean weight increase (+0.8 lbs.; +1.7 lbs.; +1.1 lbs.) as in our present study. These relatively consistent program outcomes indicate that the combination of reasonable caloric restriction, higher protein intake, and basic

resistance exercise is effective for reducing body weight and improving body composition with concurrent fat loss and muscle gain. Second, we discovered that older adults who have arthritic conditions may prefer to make smaller dietary modifications and to perform resistance exercise at more moderate effort levels. The fact that our older arthritic patients took a more cautious approach to these lifestyle changes is certainly understandable. In fact, their more gradual adoption of and adaptation to our recommended resistance exercise and nutrition program may have been a major factor in their improved general body pain and fatigue scores.

Conclusion

We conclude that: (1) the resistance exercise and nutrition program incorporated in this and our previous studies is highly effective for reducing body weight and improving body composition (with concurrent fat loss and muscle gain) in older adults; and (2) this resistance and nutrition program is beneficial for reducing general body pain and fatigue in older arthritic patients, while eliciting modest improvements in body weight and body composition.

Table 1. Three-month changes in selected assessments for obese/overweight participants in the exercise and nutrition program (N=10; Average age 69 years).

Body Weight	-6.5 lbs.
Percent Fat	-3.0 lbs.
Fat Weight	-7.6 lbs.
Lean Weight	+1.1 lbs.

Table 2. Three-month changes in selected assessments for arthritis patients in the exercise and nutrition program (N=6; average age 71 years).

Body Weight	-3.1 lbs.
Percent Fat	-1.1 lbs.
Fat Weight	-2.8 lbs.
Lean Weight	-0.3 lbs.
General Body Pain	-2.2 points (5.2 to 3.0)
General Body Fatigue	-1.2 points (4.0 to 2.8)

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