High-Intensity Training and Weight Control

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Strength training has long been recommended to normal and underweight individuals as a means of increasing muscular mass, enhancing fitness, and vitality. Indeed, organizations such as the American College of Sports Medicine (1995) have advocated strength training consisting of single sets of 8 to 12 repetitions on 8 to 10 exercises per workout for healthy persons. However, it is not as clear whether strength training should be recommended for overweight persons whose goal is weight (more specifically fat) loss rather than the acquisition of lean muscle mass.

In this article we will describe the potential role that a rationally-derived program of strength training can play in weight loss efforts, and outline some broad recommendations to enhance its effectiveness.

In order to lose body fat, you must create an energy deficit (i.e., expend more calories than your body needs to function). Unfortunately, when you create such a caloric deficit you do not lose just body fat. That is, the body takes energy from body tissue indiscriminately. In fact, any diet produces not only fat loss, but lean tissue loss as well. A recent analysis by Ballor and Poehlman (1994) indicated that an average of 28% of the weight lost among dieters who do not exercise is actually fat-free mass (i.e., lean tissue) compared to 13% among dieters who performed primarily aerobic exercise. Indeed, if the caloric deficit is severe enough (e.g., very low calorie "fasting" diets) even organ tissue and bone is lost. Moreover, since dieting is an unnatural act, the body begins to adapt by reducing resting metabolic rate (RMR).

This means that you have to create progressively greater caloric deficits to continue to lose body fat at a consistent rate. Given this, the primary goal for utilizing strength training in conjunction with weight reduction activities is to preserve fat-free mass while losing body fat. The preservation of fat-free mass also serves to keep the metabolic rate as high as possible so that fat loss can be promoted even with a relatively modest level of caloric restriction. In addition, strength training may be a useful strategy for maintaining the fat loss (i.e., keeping the weight off) once the person has reached their goal.

That is, developing as little as one pound of muscle tissue after dieting will allow a moderately active person to consume an additional 50-100 calories per day. In fact, adding three pounds of muscle increases metabolic rate by about 7%. The bottom line is that gaining lean muscle is highly desirable because muscle is metabolically active (i.e., it needs a modest amount of calories to survive) while fat is not.

When fitness professionals develop exercise programs for overweight persons, they sometimes do not advocate strength training. One major reason for this is that many overweight persons are reluctant to engage in strenuous anaerobic activity. It is far easier to convince the overweight person to engage in low intensity aerobic activity ("to burn fat") than to workout with weights in a high intensity fashion. Indeed, it is quite common for us to be told by an overweight person seeking treatment "I want to lose weight, not gain it." Again, they are confusing weight loss with fat loss. Moreover, it is very unlikely to gain a significant amount of muscular bodyweight when one is on a strict diet. Individuals who endorse this view need to be rationally convinced that, in the long run, a program of high intensity strength training will be of substantial benefit to them. It will not only help them lose fat more efficiently during dieting, but it will also help them to maintain the fat loss once they return to a less restricted "maintenance" diet.

Let us look at how overweight adults can use a HIT approach to maximize the short- and long-term effectiveness of their weight loss/weight control efforts. Note that our broad suggestions will need to be modified somewhat given the unique circumstances of a given overweight individual.

Intensity

Intensity is the name of the game in strength training. You have to work hard enough to set the growth machinery into motion. However, with the overweight individual you cannot simply launch right into training to momentary positive failure. It is possible, even likely, that the person has no history of intense physical activity of any kind. As such, you need to slowly and gradually increase the intensity of the workouts (perhaps over several weeks) until the person is physically and mentally capable of working an exercise with the required intensity.

Remember, training to positive failure is a skill that takes time to learn. You must also consider that, with a caloric deficit, the person is not likely to be able to train at the same level of intensity as someone who is not dieting. So you want the person to train as hard as they can, but within the context of an deficient caloric intake. We would not suggest intensity generating techniques (e.g., static contractions, negatives etc.) while the person is dieting. These techniques make such a profound inroad on recovery that they could be detrimental to someone who is dieting. It should go without saying but any overweight individual (irrespective of whether or not they have existing health problems) should consult a physician before engaging in this, or any other, type of training.

Brief

The anaerobic workout for an overweight individual should only be as long as required to stimulate the growth, or in this case, the maintenance of fat-free mass. Most often, individuals that are overweight mention that time constraints make it difficult to participate in a regular strength training routine or that they have no interest in spending hours in a gym . Making workouts short and intense should provide necessary stimulation of muscles without producing disinterest or boredom. We suggest single work sets of 3 to 5 multi-joint exercises which focus on the larger muscle groups (legs, hips, back). Weights can usually be lifted using approximately 60 to 80% of their initial 1RM and slowly progressing from there. Workouts should be conducted at a rather brisk pace and should be kept to less than 30 minutes. We would not necessarily discourage low intensity aerobic activity after the weight training, but if the weight training was of sufficient intensity, it is unlikely that the overweight person would want, or be capable of performing, a great deal of aerobic exercise.

Infrequent

Overweight persons are usually making major life changes to fit in strength training. Interestingly, a lack of time is the most cited excuse for not exercising among overweight and non-overweight people.

Indeed, one reason many overweight people are anti-strength training is the belief (propagated in the popular muscle media) that you must train very long and frequently (1-2 hours, up to 6 days a week) in order to make progress. The brevity and relative infrequency of HIT training may be very appealing to the overweight trainee. We would suggest training two to three times a week initially in order to develop the motor skill necessary to adequately and safely perform the movements. As the intensity increases, the frequency of training should be reduced to ensure proper rest and recovery. It is likely that the a dieting trainee will require even more time between workouts to adequately recover as a reduced calorie deficit diet is likely to delay repair and growth.

Safety

As mentioned before, these individuals may have major health risks that will be of concern to the fitness trainer. HIT, being a high intensity low-force training protocol, is very safe, provided proper exercise technique is used. Make sure these individuals acquire the skill to perform each exercise properly before having them train alone.

Stressing slow controlled movements with good form will lessen the chance of injury. Obviously, the use of machines would be preferred because they require less skill to execute the movement.

Apart from general instruction regarding proper exercise technique, a great deal of emphasis should be placed upon educating the overweight person with respect to muscular soreness, correct breathing, and any other factor which may be relevant to their training. It has been our experience that many overweight persons are particularly sensitive to, and sometimes fearful of, the sensations that go along with intense exercise (e.g., heavy breathing, elevated heart rate etc.). Any information that can alleviate fear in this regard would be of great benefit to the overweight trainee.

Conclusion

The benefits of HIT are not restricted to those who simply want to increase their strength and muscular body weight. In conjunction with reduced caloric intake, verweight persons can use the HIT approach to attempt to maintain their existing muscle mass. By preserving fat-free mass, their dieting effort will likely be more time-limited and effective. It needs to be made clear to the overweight person that the goal is fat loss, not weight loss per se. Indeed, the ability to maintain their fat loss will be enhanced greatly by using HIT principles to increase their muscular bulk once the period of caloric restriction has ended. In sum, brief, intense and infrequent HIT training can be a valuable component of a comprehensive fat loss regimen.

References

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