

# *Proper Exercise*

## **. . .and its Role in Reducing Fat**

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Proper exercise is a logical strategy to fatigue momentarily the major muscular structures of the body. Momentary fatigue appears to be the major factor required to stimulate muscular growth.

A proper exercise program involves quantity movement of the body against quality resistance of the exercise tool—barbell, dumbbell, or exercise machine. For a variety of reasons, momentary fatigue must occur within one-to-three minutes. This requires persistent recording and standardization of the movement to ensure progression of the resistance as performance demonstrably improves. For these reasons, proper exercise means strength training. The best strength training program is *Super Slow*.

To place exercise in its proper perspective with the goal of fat loss, consider the following proportion. Realize that this numerical proportion is not exactly accurate, but that the general principle it represents is correct.

Both exercise and food are essential components in either a physical conditioning program or a fat-loss program. The proportionate contributions of exercise or food, however, are different respective to the goal. The goal of physical conditioning is 90% dependent on exercise and 10% dependent on food. The goal of fat loss is 10% dependent on exercise and 90% dependent on food control. Exercise and food are essential, not optional, to either goal. Their proportionate contributions, however, are rough reciprocals for physical conditioning or for fat loss.

The proportionate importance of food and exercise (10/90) to physical conditioning underscores the nonsense often invoked to eat one's way to strength. Just as delusional is the nonsense that exercise can be used practically to burn off transgressions of caloric excess.

It remains true that the 10% dietary contribution to physical conditioning is essential. And the 10% exercise contribution to a fat-loss program is an absolute requirement. Appreciate that the following six factors comprise that latter 10 percent.

### **Six Exercise Factors**

Each of the following exercise factors contributes to fat-loss effectiveness. The relative importance of each factor is ranked beginning with the most important and proceeding to the least important:

1. Discriminated Weight Loss
  2. Increased Basal Metabolism
  3. Improved Body Shape
  4. Continued Preoccupation
  5. Depressed Appetite
  6. Increased Caloric Expenditure
- Each of these factors merits discussion.

#### **1. Discriminated Weight Loss**

Body weight, generally speaking, is not an issue of health. The real issue is body fat. Except in extreme cases of wasting or gargantuan obesity, body weight alone is an unreliable marker for health evaluation.

Any proper, ethical, fat-loss program contains two elements: a moderate, negative-net caloric intake and an exercise program. Without the negative-net caloric intake, weight will not be lost. Without the exercise program indiscriminate weight loss — from all body tissues — will occur.

The only method by which to force preservation of muscle and other lean body tissues is through an exercise program. Popular activities often incorrectly construed to be exercise do not serve this purpose. This is one reason why exercise and strength training are exclusively synonymous.

There are several possibilities for discriminate and indiscriminate weight loss. As a prelude to their discussion, it is helpful to underscore one of the body's highest priorities: muscular growth. In 1975, a landmark study was published regarding this uncelebrated discovery. The investigators were Alfred L. Goldberg, Joseph D. Etlinger, David F. Goldspink, and Charles Jablecki. Their findings are published in *Medicine and Science in Sports*, Vol.7, No.4, pp. 248-261, 1975. Following is a synopsis:

The exercise physiology community is often fixated on treadmills for testing purposes. This partly stems from their requirement in animal laboratories. It is impossible for rats and other lower animals to perform slow and controlled movements, tracking muscular function to muscular failure as is required in strict exercise. The technician's only resort is to walk or run animals on treadmills. This certainly qualifies as *movement* or *activity*, but animals are designed with biomechanical properties enabling locomotion through tremendous muscular efficiency. If not, the muscles would not propel the animal for longer than approximately one minute. Therefore, typical locomotion activity does not qualify the definition of exercise, but this qualification must be conditionally waived in animal research.

Through exercise, a momentary failure is a stimulation signal for the body to overcompensate. Momentary failure is the inability to continue an exercise movement in the prescribed form. It is believed that the muscle's strength is momentarily *inroaded* (decreased) to a level whereby a growth mechanism is turned on.

Alfred Goldberg and his colleagues attempted to effect just such an overcompensation by reducing the mechanical efficiency of muscle. Since quantity movement against quality resistance was impossible with rats, they devised a roundabout way to partially achieve an *overload* effect.

A few uninitiated exercise enthusiasts are tempted to conclude that this study proves that running on treadmills is efficient muscular work. The caveat is that such activity for rats or humans neither satisfies *The Ten Requirements of Full-Range Exercise* nor the four-point definition of exercise. These concepts are discussed in *The Nautilus Book* by Ellington Darden, PhD, and *The First Definition of Exercise* by Ken Hutchins, as well as other sources.

Dr. Goldberg and his colleagues cut the tendon of the gastrocnemius muscle of one leg of each of a group of rats. This muscle forms part of the calf and functions to extend the ankle. Ankle extension was then borne by only the soleus muscle.

The rats were then run on a treadmill and the soleus of the tenotomized legs grew dramatically compared to their contralateral controls.

Eventually, many research groups of rats underwent unilateral tenotomies of the gastrocnemius, but some groups received

simultaneous and various additional handicaps. One group was hypophysectomized—the hypophysis of their pituitary removed—so that they could not produce growth hormone. Another group received alloxan which produces a diabetic state — a lack of insulin. Another group was placed on a starvation diet of only water. Other groups had various combinations of the same procedures.

Once preparation was complete, all of the animals were run on treadmills. After an appropriate period of time they were sacrificed for analysis. The analysis revealed that the soleus muscle overcompensated. It grew, apparently at the expense of other body tissues. It grew on a starvation diet, without insulin, and without growth hormone. It grew in spite of the fact that its growth and consumption of resources meant hastened demise of the organism.

Although Dr. Goldberg received little attention for this work, it stands as one of the most important biological discoveries in recent history. He and his co-workers seemingly stumbled onto a fundamental biological priority. They found that, if stimulated, muscle will grow in spite of tremendous adversity and at the expense of the remainder of the organism. The next question to arise is: “What survival logic of nature is at work here?” If we could personify nature, we believe nature's answer might be:

Although muscular growth, if stimulated, is expensive to other organic resources and may lead to the eventual death of the animal in an impaired state; if the animal is not strong enough to move to acquire food or to move to prevent becoming someone else's food, all is lost anyway.

One of the fundamental traits of animal life is locomotion. Locomotion depends on muscular strength. Survival resources, therefore, are allocated to the muscles first. This priority allocation, however, is predicated on muscular growth stimulation. Without the stimulation, resources are stored, sloughed, or put to other uses.

## Various Modes of Discriminate Weight Loss

With a background of the work of Alfred Goldberg, consider the following four scenarios. Each scenario involves a typical American male whose daily caloric expenditure equals 2500 calories, daily caloric consumption equals 3000.

### Scenario #1

He reduces his normal daily consumption to 1500 calories. He incorporates no exercise. Result: he loses weight *indiscriminately*—*muscle, fat, bone, and organ tissue*.

### Scenario #2

His reduction is identical to scenario #1, but he also incorporates strength training. Result: he loses weight *discriminately*—*only fat*. He also builds muscle!

### Scenario #3

His reduction is drastic: to 500 calories. At this starvation level (800 calories or less) he incorporates no exercise. Result: initially, he loses weight *discriminately all tissues but fat*.

### Scenario #4

His reduction is the same as in scenario #3, but he now incorporates exercise. Result: initially, he loses weight *discriminately — all tissues but muscle*. Muscular hypertrophy or its prioritized maintenance will hasten the depletion of all other already-wasting tissues.

Reviewing scenarios #1-#4, note that *all are starvation diets* in a matter of speaking. The only proper scenario for a fat-loss program is #2, but even it cannot be applied forever. A maintenance caloric consumption must be incorporated once an acceptable level of body fat is attained. Continued negative-net caloric intake would eventually end in the same conclusion as the other scenarios, just not as quickly.

## 2. Increased Basal Metabolism

Various dietary products are available, claiming to assist *weight loss* by increasing basal metabolism. Many, perhaps all, of these products are unsafe and ineffective. There is, however, one real, significantly effective, and safe means to increase basal metabolism: exercise.

The two most calorically expensive tissues in the body are nervous tissue and muscle tissue. Of these, only skeletal muscle can be practically increased.

Elsworth Buskirk, PhD, and his colleagues at Penn State University estimated a basal metabolism increase of 50-100 calories per day for each pound of muscle added to the adult body. Based on this information: if a woman adds five pounds of muscle, her basal metabolism may increase 250-500 calories. These are calories burned regardless

of her activity level. Although important for a man on a fat-loss program, this basal-metabolism increase is critical for a woman. It promotes effectiveness of her program, allows her to better enjoy her meals with her family members, and ensures success with maintaining her enhanced figure after her initial fat loss.

Have you ever wondered why men often stay comfortable in the typical office environment while the women are always somewhat cold? This is common although the women usually possess more insulating body fat than the men. Why? Because the women lack the muscle the men possess to generate heat.

Note that very muscular men have extremely high metabolisms, everything else being equal. Ellington Darden featured Keith Whitley in his book, *Massive Muscles in 42 days*. Keith's basal metabolism was measured October 2, 1990, at the Southwestern Medical Center in Dallas. Keith expended 3,029 calories if he did nothing but rest. This is over twice the expenditure of the typically *active* woman.

## 3. Improved Body Shape

The primary determinate of the body's shape is its bones. But after the bones, the most important determinant is skeletal muscle.

If a make-believe human skeleton greeted you on the street, would you recognize it as a normal human? No.

Consider that skeleton, but also include the internal organs placed inside the chest wall and body cavities. Does it yet have normal human appearance? No.

Add skin over the bones and organs: still not human.

Return to the image of a skeleton and add the organs, a moderate amount of fat, and skin. Note that the organs and fat droop out of the skin to make the surface appear like melting glue.

Return to the image of the skeleton once more. Now add only well-developed muscles — no organs, no skin, no fat. Note that the resulting shape appears almost identical to the silhouette and contour of a human being. Add the finishing touches of some fat, skin, and organs and you have the appearance of a normal human being.

There is an important lesson to be learned from this demonstration: For improving the body's shape, only muscle and fat can be practically modified. Both are important. Most figure problems are a matter of excess fat *and* inadequate muscle.

To lose fat *and* muscle is a serious insult to a man or woman's appearance and health. Muscle is required to maintain firmness, support overlying fat and skin, flatten puckers, and control posture.

#### 4. Continued Preoccupation

Pretend that you typically arrive home from the office every afternoon and plop in front of the television at six o'clock. You eat dinner and watch television until eleven o'clock and then retire.

After several months of this habit, you begin to feel guilty that you are wasting your life when those hours could be spent productively. You correctly reason that you could spend those wasted evenings for several months to renovate a room, finish the attic, or organize your garage. You implement a moratorium on evening television and embark on a project to finish the attic. After another several months, you have not only a finished attic, but a delightful surprise. Your waistline is smaller. You then conclude that your reduction is due to the additional caloric expenditure of your increased activity. This is a natural mistake.

Although your new lifestyle did expend a few calories that otherwise you would not have burned, your negative-net caloric consumption is largely due to preoccupation. Admittedly, you can not very well poke food in your mouth if you are going to get your work done. It is difficult to hammer and saw and staple and measure and paint . . . and eat at the same time. In fact, you are so enthusiastic about what you intend to accomplish each evening that you tend to almost forget dinner. At the very least, you abbreviate it so that you can get back to your project.

In comparison, what will you do if you sit in front of the television for five hours each night? . . . eat! The thousands of calories you do not eat are more effective at decreasing your body fat than the few extra you burn due to increased activity. The same principle applies to many aerobics activities considered by some would-be experts as a *boon to weight loss*. It is difficult, even dangerous, to simultaneously eat and jog, or eat and dance, or eat and play tennis, or eat and swim, or eat and be active at many things. You are preoccupied.

Additionally, significant muscular activity poses a conflict of interest if there is food in the stomach. Blood is needed for working muscles, but also for digestion. If both are required simultaneously, nausea results.

As a youth I was taught to wait at least an hour before swimming if I had just eaten a meal. For many years, I could not understand what water had to do with eating. Answer: Just being in the water after a big meal is not problematic. Strenuous activity, whether in the water or not, causes the aforementioned competition for blood if a meal is in the stomach. Nausea and vomiting can result. And this becomes a major safety issue in the water where drowning could ensue.

#### 5. Depressed Appetite

Increased activity, especially exercise, depresses appetite. This factor, however, is of limited value.

You eat meals three times a day and may develop a craving for food more often. Since exercise should not occur at closer intervals than 48 hours, it is not often available when needed for this application.

Some individuals remark that exercise makes them hungry. It is possible to set up a Pavlovian association between exercise and eating. For instance a man performs afternoon exercise at five o'clock three days per week and eats dinner at seven o'clock nightly. He follows this schedule for several weeks. An association develops. Unexpectedly, he changes his schedule so that he exercises at 3 p.m. He then complains that he becomes hungry at 5 p.m. on those days when he exercises. This association, of course, can be broken.

Generally, moderate activity not necessarily qualifying as exercise, is a useful appetite depressant, especially if you are inactive. If you develop a craving for food, get up and clean the house, take a walk, or wash the car. These activities are not exercise, nor will they burn much in the way of extra calories. But they will depress your appetite and keep you preoccupied.

#### 6. Increased Caloric Expenditure

*Discriminated weight loss* is the most important, yet rarely mentioned or realized, exercise factor in a fat-loss program.

Ranking #2 is *increased basal metabolism*. It is *slightly* less important than #1.

*Slightly* less important than *increased basal metabolism* is the third factor — *improved body shape*. From here the exercise factors diminish in importance rather rapidly.

*Continued preoccupation* and *depressed appetite*, ranked respectively #4 and #5, are *much* less important than the first three.

Now we approach the sixth exercise factor contributing to a fat-loss program. Its relative importance is a quantum fall beneath #4 and #5. Its importance is so slight that it barely makes the list. Yet the exercise factor of *increased caloric expenditure* receives most of the attention from the lay press, exercise enthusiasts, and the exercise physiology community. *Increased activity* does burn extra calories—a few . . . damn few. It is estimated that one pound of human fat supplies enough energy to enable a thirty-year-old man to run 35-45 miles.

The basal metabolism of a 30-year-old man is approximately 1900 calories per day. If he is a desk worker for most of his waking hours—10 hours per day—he uses 200-400 more. Therefore his typical daily expenditure might be as high as 2300 calories. If he is extremely active in some form of manual labor, his daily expenditure may be 60% above basal metabolism—as high as 3100 calories.

Strength training, properly performed, burns more calories per minute than any other known activity. Even so, a half-hour workout might burn only 200 calories. Other popular activities erroneously construed as exercise would require an hour to burn the same calories. Either amounts to a mere 10% increased expenditure for the desk-job

man. It is a slight 6% increase for the manual laborer. What is more, as he becomes more skilled in the performance of his activity he burns even fewer calories. The harm such an activity does to a fat-loss program is great. Such low-intensity, construed-as-exercise activity fatigues the subject so that quality exercise is impossible. So-called aerobics *prevent* muscular strengthening and often cause muscle wasting. Aerobics programs have an exorbitant injury rate, and musculo-skeletal injuries lead to more muscle wasting, depression, overeating, and overfatness. Aerobics enthusiasts often imply that such activity will compensate for eating infractions when all that realistically occurs is guilt absolution.

Recently, the exercise physiology community admitted that steady state activities do not directly burn a significant number of calories. But they are quick to add that there is a more-important *burn off* of calories for several hours after the activity. One should ask rhetorically, “How much more? . . . another one percent?”

Do not dwell on the caloric expenditure of activity or exercise. Yes, it contributes to your fat-loss program, but raising your basal metabolism through Super Slow Exercise and restricting your caloric intake are far more important.