

Scientific Fat Loss

Training

Prioritize strength training.

In order to maximize calorie expenditure it is necessary to perform high-intensity exercise. Resistance exercise causes a continued higher utilization of calories for up to 24 hours after each session as the body recovers and adapts. Aerobic exercise allows your metabolic rate to return to normal almost as soon as the activity is concluded. Put simply: "fat-burning" exercise is *not* the best for losing body fat. If you are trying to improve your body composition, weight training should be the basis of your efforts and should always come first in the workout, while you are fresh.

Melby C, Scholl C, Edwards G, Bullough R. Effect of acute resistance exercise on postexercise energy expenditure and resting metabolic rate. *J Appl Physiol* 1993; 75(4): 1847-1853.

Reps, sets, rest

Base your weight training program on complex, multi-joint exercises. In general, train in the range of 6-12 reps per set. Limit your rest between sets to 30 to 90 seconds. Higher lactic acid levels produced by this type of training cause great increases in circulating growth hormone (GH) levels. GH is an important hormone involved in long-term regulation of body composition.

Kraemer WJ, et al. Hormonal and growth factor responses to heavy resistance exercise. *J Appl Physiol* 1990; 69: 1442-1450.

Perform low intensity cardio after weight training.

Steady-state aerobic exercise is best performed after resistance training has used most of your available blood glucose. At that point the utilization of fatty acids for energy is optimal. A recommendation for this type of aerobics is to perform no more than 30 minutes of low to moderate intensity activity after each strength training session. Longer duration or higher intensity activity after lifting may compromise your ability to recover.

Perform high intensity cardio on non-weight training days.

Interval training or alternating periods of very high and lesser intensity is a far better tool to remove fat than the conventional "fat-burning" moderate cardio. It is more uncomfortable, but also much faster. Consult a trainer for details on how to set up an interval workout based on your heart rate, or use the interval program selection on many cardio machines.

Nevill ME, et al. Growth hormone responses to treadmill sprinting in sprint- and endurance-trained runners. *Eur J Appl Physiol* 1996; 72: 460-467.

Keep total workout time to less than 75 minutes.

There are several good reasons for this guideline. The first is that in training as in life, there is an inverse relationship between quality and quantity. It is possible to train hard or train long, but not both. Since research clearly indicates that high-intensity exercise is required to dramatically affect body composition, it makes sense to limit your workouts' duration. In addition to "diluting" your energy, longer workouts compromise your anabolic (muscle-building) hormones. Especially while dieting, it is vital to safeguard every ounce of muscle tissue, and therefore to stop training sooner rather than later.

Exercise Guidelines for Rapid Fat Loss

In order to lose body fat and reduce weight, it is important to follow these guidelines. If these seem excessively harsh, keep in mind what role exercise plays in fat loss. In one hour or less per day, you are attempting to use all of the energy that a physically demanding job would require. Exercise is an attempt to bridge the gap between a sedentary lifestyle and the amount of vigorous activity that human beings are meant for.

Exercise for *at least* one hour per day, five to seven days per week

Your metabolism will return to normal minutes after cardio and 24-48 hours after weight training. In order for exercise to improve weight loss results, you must activate your metabolism and continue to stimulate it daily. Treat exercise like a job.

Always strength train first, cardio second *if energy permits*

Resistance exercise is more physically and mentally demanding than pedaling a stationary bike. Lift first while you are fresh. Since cardio does relatively little to change appearance, don't worry if you use all of your energy on the weights.

Exercise of any type *must be progressive*

Lifting the same weights and reps, just like walking the same distance and speed, quickly becomes easy for your body. Once the task is normal, your body is no longer challenged and will not change further. You must strive to become stronger, as well as continually increasing the difficulty of your aerobic workouts.

Long duration, moderate intensity cardiovascular exercise is *worthless*

Decades of aerobics, treadmill exercise, and walking have shown that very few people achieve desired results with easy exercise. Simply put, if training of any type is not uncomfortable, it is not productive.

Prioritize training based on the size of the muscle groups involved

Spend time and energy on weight exercises according to the following hierarchy: Legs>=Back>=Core>=Chest and Shoulders>=Arms. You should do the most sets and exercises for your lower body as this is the largest set of muscles and thus results in the greatest calorie expenditure.

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Nutrition

Eliminate simple sugars.

The single change that makes the greatest impact on body fat is the elimination of sugars. Even before the popularity of low-carb diets, this process was a staple of every bodybuilder's preparation. Simple sugars cause a large, fast rise in blood glucose that favors both fat storage and subsequent hunger. If you are serious about being lean, resolve today to *eliminate all* sweetened beverages immediately. Then remove all "white" products from your diet--white flour and white sugar containing products, and substitute high-fiber, unprocessed carb sources.

Reduce starchy carbohydrate intake.

The results of this study, originally designed to discredit Atkins' Induction Diet, should speak for themselves:

"Note that body fat losses on the average increased progressively with less carbohydrate. The same is true for the percent of weight loss that is fat. Over the 9-week period close to 100% of the weight lost by group C, the lowest carbohydrate group, was fat."

Young CM, Scanlan SS, Im HS, Lutwak L. Effect on body composition and other parameters in obese young men of carbohydrate level of reduction diet. *Am J Clin Nutr* 1971; 24: 290-296.

Eat more fiber.

The average American consumes less than 10 grams of fiber per day. Our ancestral diet may have contained 40 grams or more; optimal digestive health requires 25 grams or more. Fiber slows food absorption, blunts rises in blood sugar, increases fullness, and helps process digestive waste. Always select unprocessed foods that are generally higher in fiber (for example, an apple vs. apple juice). If you are still short of the 25 gram goal, consider using a fiber supplement between meals.

Yudkin J. Evolutionary and historical changes in dietary carbohydrates. *Am J Clin Nutr* 1967; 20: 108-115.

Supplement essential nutrients.

Even the pitiful RDA levels of vitamins and minerals cannot be obtained from any whole food diet. Many food cravings are a result of nutrient deficiencies, as the body is forced to process too many "empty calories" in order to obtain vital substances. In addition, exercise causes an increased loss of minerals in sweat and requires more vitamins for proper growth and recovery. A good recommendation is to use at minimum a high-quality, potent multi-vitamin. Due to the very high benefit to cost ratio, consider adding an antioxidant as well as a mineral supplement to maximize health.

Maximize thermogenesis.

Thermogenesis means the creation of heat. In the body this is accomplished by burning *calories*, which are a unit of heat. Any stimulus that increases heat production therefore increases calorie burning and hence total energy expenditure. Finding ways to "lose" calories as heat is an advanced strategy to speed up fat loss.

Astrup A, Toubro S. Thermogenic, metabolic, and cardiovascular responses to ephedrine and caffeine in man. *Int J of Obesity* 1993; 17: S41-S43.

Dulloo AG, Geissler CA, Horton T, Collins A, Miller DS. Normal caffeine consumption: influence on thermogenesis and daily energy expenditure in lean and post-obese human volunteers. *Am J Clin Nutr* 1989; 49: 44-50.

Timmons BA, Araujo J, Thomas TR. Fat utilization enhanced by exercise in a cold environment. *Med Sci Sports Exer* 1985; 17: 673-678.

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Nutritional Supplements to Support Weight Management

The most important use of supplements is to ensure an optimal amount of *essential* nutrients. All of the necessary micro- and macro-nutrients must be present in order for your body to achieve peak function. By supplying the correct nutrients at specific times, it is possible to greatly magnify the results of your efforts in the gym. The following recommended items are listed in priority order; be sure that you are building a sound base before moving further down the list.

Use a protein supplement.

Protein drinks and powders should be used to bridge any remaining gap in total protein intake. *Soy protein* is the ideal supplemental protein for those attempting to control their body weight. The FDA has recently approved a claim for soy reducing the risk of heart disease. Research has shown soy to raise thyroid levels, lower cholesterol, improve bone density and reduce some of the negative effects of excess estrogen levels.

If you need to increase your protein intake and choose a powder, use soy protein. Look for the *Supro™* name on the label. NOW Foods sells *Supro™* in 1- and 2-lb containers; Twinlab markets *Supro™* as *Vege Fuel*, which is slightly more expensive. Use a mixture of soy and whey protein mixed with flax oil, ideally after exercise.

Add supplemental oils and other fats.

In order to achieve optimal body fat levels you must concern yourself with the quality and type of fats in your diet. An increased intake of omega-3 fatty acids positively affects *every structure and function of your body*. Omega-3s have been shown to decrease weight and body fat directly (especially in the abdominal region), lower triglyceride levels and blood pressure, modulate hormone and inflammation levels, and combat insulin resistance. Basically, *omega-3s support every single health improvement targeted by diet and exercise*.

The catch is that omega-3 fatty acids are not stable at room temperature and so food manufacturers have largely removed them from our “convenient” food supply. Remedying a long-term shortage of omega-3s requires levels above that eventually needed for maintenance. It is therefore necessary to include supplemental as well as dietary sources.

Include a source of omega-3s with every meal for optimal fat loss. The two major dietary sources are cold-water fish and high omega-3 eggs (from chickens fed fish meal). At meals without one of these, use either flax oil or fish oil.

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I recommend *Barlean's flax oil* products exclusively. Each tablespoon provides between 6 and 8 grams of the omega-3 fatty acid ALA.

Fish oil is most economically obtained from *NOW Foods as Super EPA*. Each soft gel contains 600mg of the omega-3 fatty acids EPA and DHA. The cost is approximately \$15 per 120 soft gels at Body Zone.

A high-quality multiple vitamin/mineral formula is essential.

The best whole food diet simply cannot contain optimal levels of *micro-nutrients* (vitamins and minerals, which are present in smaller amounts than fat or protein in the body). The prevalence of empty calories in the standard diet is due to causes from depleted soil to processing and storage methods.

Fortunately adding these nutrients in supplemental form is inexpensive and convenient. This is the category of supplements most familiar to all of us, from the Flintstones on. Because basic vitamins are so important to every aspect of health and training, do not cut corners here. Use a high-quality vitamin and mineral pack. A single pill "one-a-day" formula truly does not exist, so the best option is a product which contains several different products (B-complex, minerals, antioxidants, Vitamin C, etc.) in single packets designed to be taken all at once.

Use targeted non-essential nutrients to support fat loss.

There are several natural products which can enhance the expected results of your diet and exercise program. Certain herbs, amino acids, and hormones have been proven to be safe and effective in helping to improve body composition. Of course it is important that your basic nutrition is sound (follow your prescribed diet!) before adding these accessory nutrients.

7-keto™ is a metabolite of the well-known anti-aging hormone DHEA. When the body creates DHEA in the adrenal glands, it is converted into 7-keto in order to be effective. 7-keto™ has no known side effects; it will *not* convert to other hormones. The following benefits are attributed to 7-keto use:

- **Anti-aging and longevity**--levels normally decline in the body after age 30.
- **Body composition**--7-keto™ supports fat loss and lean tissue gain. 7-keto™ may increase metabolic rate and lower cortisol, a "stress hormone" that destroys muscle.
- **Immunity**--7-keto™ strengthens the immune system, especially against viruses (including HIV).
- **Memory**--7-keto™ has been used to treat the memory decline of aging and even Alzheimer's disease. Many users say they feel "sharper" when taking it.

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Bobyleva V, Bellei M, Kneer N, Lardy H. The effects of the ergosteroid 7-oxo-dehydroepiandrosterone on mitochondrial membrane potential: possible relationship to thermogenesis. *Archives of Biochemistry and Biophysics* 1997; 341: 122-128.

Colker CM, et al. Double-blind study evaluating the effects of exercise plus 3-acetyl-7-oxo-dehydroepiandrosterone on body composition and the endocrine system in overweight adults. *J Exercise Physiology Online* 1999; 2(4).

Several patents have been granted for various uses of 7-Keto™. These include:

#4,897,390—Novel anti-obesity compounds and method of use.

#5,296,481—Treatment process for promoting weight loss employing a substituted delta5-androstene.

#5,424,463—Delta5-androstenes useful for promoting weight maintenance or weight loss and treatment process.

#5,506,223—Delta5-Androstenes useful for promoting weight maintenance or weight loss and treatment process.

7-keto DHEA 100mg--7-keto™ is a metabolite of the well-known anti-aging hormone DHEA. When the body creates DHEA in the adrenal glands, it is converted into 7-keto™ in order to be effective. 7-keto™ supports fat loss and lean tissue gain. 7-keto™ may increase metabolic rate and lower cortisol, a "stress hormone" that destroys muscle. 7-keto™ has no known side effects; it will *not* convert to other hormones. 60 capsules (30-day supply) are \$25.19 at Body Zone.

Recommendation #2: Use the insulin-lowering herb sold as Glucosol™. Glucosol™ is a trademarked herbal extract from the leaf of *lagerstroemia speciosa L.*, a tree native to southern Asia. The product is standardized to contain a certain percentage of the active ingredient to ensure uniform effectiveness. Glucosol™ is the strongest blood glucose-lowering agent that I have ever observed in use. The standard dose is one 24mg soft gel with food twice per day.

Glucosol™ is supplied singly by **NOW Foods**. Sixty (60) 24mg gel caps, usually a one-month supply, should retail for about \$10 at Body Zone.

CLA--conjugated linoleic acid. CLA is a group of fatty acids that have widespread positive effects on human physiology. These fatty acids may become part of the cell membrane and affect "nutrient locks" which control entry of raw materials into your cells. The effect is known as *nutrient partitioning*, meaning that CLA changes how nutrients are disposed of in the body.

Under the influence of CLA the nutrients you ingest are "pushed" towards lean mass while your ability to form fat is crippled. In addition, research shows that CLA may increase metabolism, decrease appetite, decrease abdominal fat, act as an antioxidant, and protect against certain forms of cancer. I recommend the NOW foods brand, which costs \$25.19 per 180 caps at Body Zone. This is approximately a 30-day supply based on a recommended dose of one soft gel per meal, a total of four to six per day.

Ginseng--Korean or Panax ginseng is well known as a tonic herb. All types of ginseng are considered adaptogens. An adaptogen strengthens natural resistance to stress. Ginseng is commonly used to support optimum health and energy levels. Medicinally ginseng tends to normalize body functions--raising low blood pressure or energy, for

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example, while easing agitation and high blood pressure in another subject. Research has shown that standard doses also lower elevated blood sugar.

The standard dose is two capsules containing 100mg of an extract standardized for 4-7% ginsenosides. **Ginsana**[™] brand contains a proprietary extract called G118[™], the subject of considerable published research. **Ginsana**[™] is also reasonably priced; knock-offs and store brands are available but not recommended; the few dollars you save will not be worth it.

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Nutritional Supplements to Support Weight Management

Summary

1. If you need a protein supplement, use a product that contains **Supro™** brand soy protein. Whey protein may also be included.
2. Use Barlean's flax oil and NOW Foods **Super EPA** soft gels to increase your intake of omega-3 fatty acids.
3. Once per day after a meal take the **Super Pak** by Beverly Nutrition to provide nutritional insurance.
4. Take **Glucosol™** twice per day to lower insulin levels.
5. Take **7-keto™ DHEA** twice per day to help create a more youthful hormonal environment in your body.

Sample Daily Schedule that provides omega-3 at every meal:

- Meal #1: Shake or smoothie with **soy** protein and **flax** oil.
One 100mg capsule **7-keto™ DHEA**.
One 24mg soft gel **Glucosol™**
- Meal #2: One or more **omega-3 eggs**.
- Meal #3: One soft gel **Super EPA**.
- Meal #4: Cold-water **fish**.
One 100mg capsule **7-keto™ DHEA**.
One 24mg soft gel **Glucosol™**.
- Meal #5: One soft gel **Super EPA**.
Multiple vitamin-mineral pack.
- Meal #6: Small amount of **flax** oil.