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The Non-Medicated Life: The Role of Exercise

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This is the ninth in a series on optimal diet and lifestyle to help prevent disease and responsibly avoid an over reliance on medications. This complementary approach is based in the medical evidence of the most successful research trials and the best science available. Any planned change in diet, exercise or treatment should be discussed with and approved by your personal physician before implementation. Consultation with a registered dietitian is strongly advised.

Medicines are a mainstay of American life and the healthcare system not only because they are perceived to work by the individual taking them, but also because they can be shown to work by the objective assessment of scientific study. Clinical research trials have shown that some of the medicines of Western science may reduce heart attacks, strokes, and cardiovascular death. It is not always appreciated that informed diet and lifestyle may accomplish naturally for the majority of individuals, many, if not most of the benefits of medication. This is especially true of exercise, which has wide ranging beneficial effects on cholesterol, blood pressure, blood sugar and weight control. Indeed, exercise probably is the single most important factor to successfully living the non-medicated life.

Exercise may be broadly categorized into three basic types: aerobic, anaerobic or resistance training, and flexibility training. This column will address the first two.

Aerobic exercise involves using the large muscles in a sustained, rhythmic effort that elevates the heart rate and utilizes oxygen. Examples of aerobic exercise are walking, running, cycling, swimming and cross-country skiing. The father of aerobic exercise, Ken Cooper, M.D. coined the term aerobics, and did much of the seminal work scientifically documenting its medical benefits. Indeed, his books *Aerobics* and *The Aerobics Way* remain

valid and useful references today. In a study done at the Institute for Aerobics Research in Dallas, Cooper showed that even moderate aerobic exercise was associated with a significantly lower death rate than inactivity. Moreover, Cooper showed that while increasing exercise above a modest level conferred additional benefit, the greatest drop in an individual's risk occurred with the decision to get off the couch and start walking.

Multiple long-term prospective clinical studies as well as observational cohort studies have shown aerobic exercise as compared to inactivity protects against heart disease and heart disease death. Assuming an active lifestyle has been shown to reduce the mortality from heart disease even if one has been sedentary for most of one's life. Aerobic activity such as brisk walking has been shown to reduce the risk for heart disease and diabetes in men and woman and reduce the risk for stroke in men. Moreover, the benefits of aerobic exercise apply to those with established heart disease as well. Pooled data from clinical trials of individuals in cardiac rehabilitation programs suggest a reduction of 25 percent in total and cardiovascular mortality.

The mechanism of how exercise reduces cardiovascular risk is not completely understood and may involve multiple effects. Aerobic exercise has been shown to raise the good

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cholesterol or HDL (for a discussion of HDL see *The Non-Medicated Life: Implementation Strategies*), although it is not as efficient in doing so as one would think. For a healthy individual, a fairly intensive aerobic activity such as jogging or running will raise the HDL about 2 milligrams per deciliter (mg/dl) for every 10 kilometers covered per week. (As a rule raising HDL 1 mg/dl will reduce cardiovascular risk about 3 percent.) To the extent that more modest aerobic activities contribute to weight loss, a weight loss of 20 pounds will raise HDL by 4-6 mg/dl.

Daily aerobic exercise, even in the absence of associated weight loss, will also lower triglycerides significantly. This in turn will increase the actual size of the particles of “bad cholesterol” or LDL. LDL particle size has been shown to be important to cardiovascular risk, the smaller the LDL the more easily it enters the artery wall to cause a cholesterol plaque (for a full discussion of LDL particle size see *CDPHP Medical Messenger*). To the extent that daily aerobic exercise contributes to weight loss, a weight loss of 20 pounds in an overweight individual with high triglycerides may decrease them by 30-60 percent. Aerobic exercise also modestly lowers blood pressure, and lowers blood sugar both in patients with diabetes and those with the metabolic syndrome (see *The Non-Medicated Life: Natural Cure for the Metabolic Syndrome*). Finally, it is important to note that despite the proven efficacy of caloric restriction for weight reduction, no scientific study of diet has ever shown long term weight maintenance (greater than 12 months) in the absence of exercise.

Despite such proven benefits, the optimal intensity, frequency and duration of physical aerobic activity have not yet been determined by rigorous scientific study. Most health authorities have recommended a minimum of 30 minutes of a moderately intense aerobic activity such as brisk walking on a daily or near daily basis. Otherwise, healthy individuals over the age of 35 should consult their physician before engaging in more intensive exercise. It is relatively simple to have a history and physical exam done which could identify potentially life threatening

problems and an exercise treadmill stress test may be ordered to further gauge possible risk. Those with known or suspected heart disease should consult their physician or cardiologist before engaging in any program of aerobic exercise.

Anaerobic exercise is literally exercise in the absence of oxygen. This, of course, refers only to the transient oxygen debt which one sees in a muscle exercised to exhaustion. Such anaerobic exercise occurs most typically in resistance training with barbells, dumbbells, and elastic bands or straps. There is less scientific evidence on the cardiovascular benefits of resistance training when compared to aerobic exercise, but a growing body of evidence suggests significant benefit. The most likely mechanism is the improved ability to increase lean body mass and reduce adipose tissue or fat. Muscle is very metabolically active and burns calories even while we sleep. After age 30, there is a progressive loss of muscle in most individuals who do not engage in some form of resistance training. Yo-yo dieting also will further decrease lean body mass making it extremely difficult for overweight and obese individuals to lose weight even with significant caloric restrictions. The overweight or obese individual who cannot lose weight and insists that they eat very little many times is correct primarily because of general inactivity and a low body muscle mass.

Resistance training may increase muscle mass and lower adipose stores and increase HDL, lower triglycerides and improve blood sugar. Moreover, resistance training is the perfect complement to aerobic training. After a session of resistance training which breaks down some muscle, most individuals will require one to three days to rest the muscle which was trained to allow repair and an increase in size. Aerobic training between resistance training sessions allows one the best of both forms of exercise. Such an approach minimizes the risk of overuse and thus injury, and more easily allows formation of the habit of daily physical activity. Older individuals or those with known or suspected heart disease should discuss any
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plans for resistance training with their physician or cardiologist to get parameters on the amount of weight that is safe to use. Exercise trainers may be helpful in ensuring proper technique and frequency to obtain maximal benefit.

In summary, exercise makes the single most important contribution of any lifestyle change to successfully living the non-medicated life. Prudent regular exercise has consistently been shown to lower cardiovascular risk, lower weight, increase HDL, lower triglycerides, lower blood pressure and in those with diabetes or metabolic syndrome to lower blood sugar. As such, exercise may be viewed as a prudent and viable alternative to the proverbial bottle of pills to solve one's most important health care problems.

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