It is widely accepted in the medical community that aerobic exercise is superior to weight training in terms of body-fat reduction due to the metabolic fuel used <u>during</u> the activity (fat).

Physiologists use the term *Beta Oxidation* to refer to the state in which fat is used for energy. So, aerobic exercise is an activity that promotes beta oxidation and for this reason it is the preferred choice for weight loss programs.

Weight training (or resistive exercise) has become popular in recent years as an adjunct for weight loss but it is not by itself, a legitimate tool for weight loss, many believe. With this in mind, I asked the question, "What if one was to follow a low-calorie diet and the only activity was weight training,?" "Would this be a better means of preserving muscle mass while on a restricted diet?"

I ask this question, not because I'm against aerobics but due to the fact that many overweight beginners do not have a lot of time and prefer weights over aerobic activity. This was the beginning of my search for the truth on this topic. It seems only logical that if one decreases energy input (calories) in conjunction with weight training, the fat should come off. Is this indeed true?

Any investigation should prove that this is indeed true due to the magnitude of the caloric restriction not so much the type of exercise performed. Let me explain. Many unconditioned beginners have a low exercise tolerance and therefore the energy expenditure is minimal making the diet a more powerful tool to <u>induce</u> weight loss. The importance of exercise cannot be emphasized enough for the long term chronic adaptations that contribute to permanent weight control.

This is where the controversy exists—is an individual better off, on a weight control standpoint, to engage in strength training or aerobic activity. On one hand, strength

training promotes fat-free mass (muscle). Fat-free mass is a powerful influence on the amount of calories an individual burns throughout the day—what physiologists refer to as the *resting metabolic rate (RMR).* But on the other hand, aerobic activity increases enzymatic function on a cellular level which ultimately allows more fat to be burned throughout the day. Aerobic activity done regularly also increases stamina (or the technical term $V0_{2MAX}$.), which in turn increases your RMR, independent of increases in muscle. Which adaptation influences an individual's metabolism the most? This was my reason for doing my literature search and unfortunately came up empty handed, due to the limited research on strength training (at the time).

The few studies that I found, did, in part, support my claim. Although no consensus, to date, has been made, many believe, it could be a viable option. Here is the bottom line:

> Dietary restriction has been shown to be a superior tool (compared to exercise alone) to induce weight loss. There are, however, deleterious consequences from this approach—loss of muscle, decreased metabolic rate, etc. Weight training has been shown to counteract these negative consequences (while on a moderate caloric restricted diet—1,200-1,500 calories/day). The studies indicate that resistance training may help prevent an attenuation of RMR while on a moderate caloric restricted diet. This means that weight training could help prevent the usual diet induced decline in RMR during underfeeding.
> Studies also indicate that resistance training results in maintenance of muscle and, even regional increases in muscle during moderate caloric restriction which is important since dieting tends to result in muscle loss.

In summary, more studies need to be performed on this topic in order to make any definitive conclusion regarding this hypothesis. At the present time (June 1994), there are no specific or concrete explanations as to what the proper caloric restriction

and the optimal exercise prescription that promote effective body-mass alterations (i.e., maintain muscle mass and decrease body-fat).

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