

Kettlebells for Optimum Health

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“Hearts and kidneys are just tinker toys! I am talking about the central nervous system!”
-- Gene Wilder in *Young Frankenstein*

Make no mistake, all the body's other systems and organs answer to the central nervous system (CNS). Based on data gathered by the peripheral nervous system regarding internal and external environmental conditions, the CNS determines how and when to stimulate the body to adapt and survive. Presented with kettlebells or other high-tension weightlifting techniques, for example, the CNS adapts by activating more motor units to generate more tension. But what impact does strength-training have on other body systems and on long-term, overall health?

It is critical to remember that when using kettlebells or other high-tension training methods, there are two mechanisms by which the body grows stronger: *skill development* and *increasing muscle mass*. For example, when you execute a proper high-tension press, you are not only improving your skill in hyper-activating your nervous system and recruiting more motor units, but you are also triggering the development of more lean tissue. The first of these mechanisms, skill development, can be improved at an almost reckless pace, as evidenced by Pavel's "Grease the Groove" (GTG) training method. The second mechanism, however, must be approached more cautiously, because the same internal mechanisms that cause muscle development also have a profound impact on many other systems. While it's tempting to judge our strength-training results based solely on strength gains, there are other forces at work we must be aware of.

Kettlebells and the endocrine system

The human endocrine system consists of glands including the pituitary, hypothalamus, thyroid, adrenals, pancreas, testicles and ovaries. These glands secrete hormones that control aging, immune response, metabolism, sexual function, and of course muscle growth. Boosting immunity, slowing aging, decreasing body fat and increasing lean tissue require optimum functioning of the endocrine system, and we'll focus here on the secretion and function of human growth hormone (HGH), and cortisol. While proper exercise, and particularly optimum strength-training, can help maintain optimum levels of HGH and cortisol as we age, a lack of weight-bearing exercise or chronic overtraining can disturb the critical balance between these hormones. Thus while overtraining can lead to seemingly endless gains in strength due to increasing *skill* – a very rapid, visible, measurable change – overtraining can have virtually undetectable but still devastating long-term consequences on overall health. Let's look more closely at HGH and cortisol, and how age and exercise affect them.

HGH

Human Growth Hormone is the body's most powerful anabolic hormone. It regulates growth and tissue development during childhood and adolescence. HGH is secreted

primarily at night, partially explaining why children require so much sleep. In adults, HGH no longer causes growth per se. It's more apt to think of HGH as "human recycling hormone." In adults, HGH causes worn-out tissues to be broken down, eliminated and replaced with newer, stronger, healthier tissues – skin, bones, internal organs, and muscles. Optimum HGH production in adults is also associated with strong immunity, increased insulin sensitivity, and even enhanced sex-drive. HGH is thus a powerful anti-aging, anti-cancer, and overall health-promoting agent. Unfortunately, HGH levels begin to decrease as we age, and thus our bodies gradually lose the ability to recover from everyday stress and damage.

Cortisol

HGH alone is not sufficient to maintain healthy tissues and organs. HGH relies on its catabolic counterpart, cortisol, to break down old, spent tissues, making way for the newer, healthier tissues HGH builds. Cortisol is the body's most powerful catabolic hormone, and is often referred to as a *stress hormone*, meaning that physical or emotional stress causes cortisol levels to rise, usually immediately. As we age, cortisol levels remain relatively stable or increase. Thus to a degree, aging results from decreasing HGH combined with steady or increasing levels of cortisol. As cortisol begins to predominate over HGH, the body becomes catabolic and starts to break down.

A Critical Balance

When functioning together properly, cortisol and HGH cause old, degraded tissues to breakdown during the day, and new, healthier tissue growth and renewal at night during sleep. The result is a continuous anabolic state in which the body remains young, healthy, and resilient. As noted above, however, advancing age is often associated with decreasing HGH and steady or increasing cortisol levels which ultimately result in a catabolic state. While no one has found a way to arrest this process indefinitely, proper strength training can help maintain this balance much longer than would normally be the case. Strength training, whether done properly or not, increases production of both HGH and cortisol, and, to a point, this is precisely what you want to accomplish through exercise – maintaining the breakdown/rebuild cycle. We must resist the temptation, however, to conclude that if some training is good, more must be better. It is precisely when the body is overstressed, either emotionally or physically, that the desired hormonal balance is disturbed and cortisol overtakes HGH, leading to a catabolic state and premature aging.

It is critical to understand that as a stress-related hormone, cortisol production increases rapidly in response to exercise. After all, the idea behind any form of exercise is to stress the body in an effort to prompt it to become stronger. By exercising properly, it's possible to elevate cortisol levels sufficiently to break down older tissues that will then be rebuilt during sleep with the help and impetus of HGH. If, however, the exercise is too intense, too frequent, or of excessive duration, cortisol levels will rise too much. The resulting excess of cortisol blocks many of the beneficial effects of HGH, and rather than being confined to breaking down spent tissues, cortisol begins to attack healthy tissues. The bottom line is that after 30-50 minutes of strength training exercises, additional

training will inevitably trigger a stress response, meaning that cortisol levels rise beyond optimum, and a catabolic state, rather than the desired anabolic state, will be achieved. Singular or infrequent sessions of excessive exercise are no problem, but regularly training too long or too hard, or training when one is sore, will inevitably damage long-term health.

The Answer

The unique, off-center design of the kettlebell provides a superior method for stimulating the nervous system and causing cortisol and HGH to release *faster* than any other strength-training method. While there are already many excellent articles on how to use kettlebells to develop maximum strength, I hope I have convinced you to be aware of the other systems and organs that are affected by kettlebell training. It simply doesn't take much to give your body the impetus to improve, and it's far better to train moderately than to overtrain chronically.

What I propose is that total strength-training time be restricted to 100-120 minutes per week, and that each session be no longer than 40 minutes no matter how old or how advanced you are. Various clients of mine have experienced optimum results with either three 40-minute or five 20-minute training sessions per week. All of my clients perform circuits of 2-4 sets of 2-3 high tension exercises (presses, deadlifts, or squats) followed by ballistic interval training (high repetition ballistics such as swings or snatches with relatively little rest in between sets). Clients who are primarily interested in strength or explosiveness perform more sets of the high-tension exercises and de-emphasize the ballistics so that each workout fits within the allotted time. Clients who are primarily interested in endurance or weight-loss perform some high-tension drills, but emphasize interval training.

Although we'd all love to be able to maintain the rate of strength and performance gain that we enjoy when we first start a new exercise or a new program, it's just not a feasible goal. Unless your livelihood depends on possessing superhuman strength and athleticism, be content to allow your strength to develop steadily and gradually as you strive for overall health rather than simply maximum strength. When I read about people consistently performing 800 snatches in an hour I think to myself "Is that impressive?" Definitely! But I worry about the long-term consequences of such extreme training. Optimum health is my goal, and I'm content to slowly become stronger and stronger. Keep your workouts to less than 120 minutes per week, do not regularly train while you are sore, and you'll be maximizing the long-term health benefits of your workouts. Over time you'll see that you've managed to harness the power of your endocrine system and create a perpetual state of growth and renewal.

Best of luck to you in your training.