

High Intensity Interval Training

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Here's another reason why exercise or maintaining physical activity is one of the pivotal pillars in wellness. In the ongoing English Longitudinal Study of Ageing, 3,454 healthy seniors were followed for 8 years to see the effects of exercise and aging. 19% were aging in a healthy way, which means that they had not developed any major chronic diseases, depression or had not experienced any deterioration in their physical or mental status during that period. They found that people who remained active were over seven times more likely to experience healthy aging. Seven times is a big variable. Bottom line, we have to teach our patients the importance of movement and maintaining lean muscle if they are to age gracefully.

A previous Tuesday Minute featured a form of exercise called Sprint 8, developed by Phil Campbell. He found middle age hospital workers could increase growth hormone 770% and reduce body fat by 31% using a



simple 20 minute exercise regimen 4 times a week for 8 weeks. You can see the link below.

Sprint 8 is one example of a "time saving" genre of exercises called "high intensity interval training" or HIIT. Another method of HIIT that involves even less time is called the "Tabata method" after Dr. Izumi Tabata. The Tabata method starts with a 10 minute warm up followed by 8 repeats of 20 seconds at high intensity with 10 seconds of recovery. (4 minutes of high intensity interval training)

This workout produces a near maximal oxygen debt. In a 6 week study where one group trained for an hour, 5 days a week at a moderate 70% intensity and the second group trained for 4 minutes 5 days a week at 170% intensity (or the Tabata method), aerobic performance was similar in both groups. Surprisingly though, the anaerobic systems of the second group increased by 28% using high intensity interval training.

Dr. Tabata has been interested in the production of glucose transporter 4, a protein found in skeletal muscles, and how it can benefit

diabetes patients. When someone exercises, this glucose transporter moves from inside the muscle to the membrane of the muscle, facilitating the entry of glucose into the muscle. This is important for diabetes patients as it can improve their glucose metabolism.

He has been using rats to study the effects of the Tabata protocol on the movement of glucose transporter 4. The animals perform 20 seconds of intensive swimming, allowing 10 seconds of rest, repeating as necessary. In his animal studies, Dr. Tabata found that high intensity interval training exercises are effective for producing more glucose transporter 4.

Dr. Tabata shared how his colleagues also found that in diabetic patients this kind of training not only produces more glucose transporter 4 but also increases glucose metabolism. As you might expect, just as exercise increases glucose transporter 4, the lack of exercise decreases it. In one study it was shown that people with twenty-one days of bed rest decreased the glucose transporter 4 in their thigh muscles by 20% whereas those who performed just 90 seconds of resistance training daily showed an increase of 20%.

Another proponent of HIIT is Jamie Timmons, a professor from Loughborough University in the UK. In a BBC Horizon program in February 2012, he put Michael Mosley, a borderline diabetic, on an exercise bike regiment. His method consisted of 2 minutes of gentle pedaling, followed by 20 second intense bursts of cycling at maximum effort. He uses 3 sets of "twenty second bursts" which is only one minute of high intensity exercise. This was done 3 times a week which translates into 3 minutes of intense exercise per week, plus some warm-up and recovery time.

Measurable health benefits were reported, including a 24% improvement in insulin sensitivity after 4 weeks.

These results correlate with Timmons' larger studies. He explains that high intensity interval training breaks down the stored glycogen stores in the muscle forcing the muscle to absorb more sugar from the blood. Timmons believes that this response occurs because HIIT uses 80% of muscles in the body, compared to 40% for gentle jogging and cycling.

Similarly, in young women, HIIT three times per week for 15 weeks compared to the same frequency of steady state exercise (SSE) was associated with significant reductions in total body fat, subcutaneous leg and trunk fat, and insulin resistance.

So regardless of the system, it's clear that brief periods of high intensity interval training are causing major physiologic changes. This gives your busy people options. Keep in mind; these changes do not involve major diet changes or insulin stabilizing products like GlucoBalance or growth hormone precursors like Gammanol Forte.

I get excited when I see the different forms of exercise and how they are so life giving. Of course, each person will start their training differently, and that's where your professional expertise comes in as you monitor and coach people individually.

Sharing results like these will make a big difference in how people live their lives and hopefully age gracefully.

Thanks for reading this week's edition. I'll see you next Tuesday.