

Lifestyle: Physical Activity

Core Concepts

Hey, everybody. In this presentation, we're going to talk about core concepts for physical activity. Regular exercise has been found to help prevent many chronic diseases and health concerns, ranging from obesity to cardiovascular disease to type 2 diabetes, metabolic syndrome, cancer, osteoporosis, anxiety, depression, insomnia, dementia, Alzheimer's, risk of falls, and early death, and that's just a partial list.

Other benefits of regular exercise include reduced stress hormones, better mood and outlook, improved self-confidence, extra outdoor time, prevention of cognitive decline, boost of brain function and memory, helping to control addiction, increased productivity and creativity, and better physical and mental performance.

Unfortunately, we've become a nation of sitters at work, increasingly even during our leisure time with things such as video games, social media, and while commuting. The average office worker only expends about 10 calories per pound of body weight each day. Compare that to 43 to 55 calories per pound of body weight expended by hunter-gatherers, and that's a really big difference. Increased sitting and decreased physical activity have had a major negative impact on nearly all aspects of human health.

Let's talk a little bit more about sitting. It's been shown to impair metabolic function, to decrease the activity of an enzyme called lipoprotein lipase, or LPL, which is associated with higher triglycerides, lower levels of HDL, and an increased risk of cardiovascular disease. Sitting reduces insulin sensitivity and weakens bone density, and it may have harmful effects on blood flow and increased damage to blood vessels. It also increases the risk of death from all causes but particularly from cardiovascular disease, and it may impair cognitive function as we age.

Vigorous exercise alone is not able to prevent the changes that are caused by too much sitting or sedentary behavior. People who are lean tend to be physically active for more than 50 percent of the day. Excess vigorous exercise can also lead to overtraining when people try to make up for sedentary lifestyles by exercising too hard.

Our Paleolithic ancestors didn't work out, formally at least. Movement was just a way of life. Humans had to exert themselves strenuously to survive. We spent time outdoors walking, hunting, gathering, and playing. Anthropological research suggests that our ancestors sprinted, jogged, climbed, carried, crouched, and jumped throughout the day. They also walked an average of six miles and ran a half to one mile per day. Women were as active as men. They alternated between days of strenuous demanding movement and rest, and their instinctual response to rest protected them from injury and fatigue.

Contemporary studies of hunter-gatherer populations have shown that they are highly active and average around 10,000 steps, or five miles, per day. These 10,000 steps are punctuated by frequent bouts of more intense physical activity. Studies of traditional Amish people have shown that they walk between 14,000 and 18,000 steps per day on average, and even in Western societies, up until the Industrial Revolution in the 1800s, the vast majority of people were highly active because we were still a nation of farmers. Changes in lifestyle, communication, technology, and food access have meant that the average American adult today, however, only gets between 5,900 and 6,900 steps per day.

Our ancestors walked, ran, and did all of the other physical activities they performed barefoot or in simple leather shoes. I recommend using barefoot or minimalist-style footwear for most movement activities. Running shoes often are highly cushioned with elevated heels that impair range of motion and create an unnatural gait. These shoes increase the risk of overuse problems such as plantar fasciitis, ankle sprains, Achilles tendinitis, hamstring tears, and low back pain. Transitioning to barefoot running or lifting should be done slowly, however, because if you move too quickly, you can easily injure yourself. You want to pay attention to good biomechanics and start with short distances, and a good resource for this is a book called *Born to Run*, which goes into a lot more detail about the mechanics of barefoot or running with minimalist footwear.

Fitness can be measured using VO_2 max. The average sedentary person has a VO_2 max of 35 mL/kg per minute. The average elite endurance athlete has a VO_2 max of 70 mL/kg per minute, and the estimated VO_2 max of modern hunter-gatherers is 52 mL/kg per minute. This puts them in the excellent to superior fitness category, so moving like our ancestors can help us to get and stay highly physically fit.

Many concepts in these presentations on physical activity have been inspired by the enduring mover framework created by Dan Pardi. Enduring movers maintain optimal health and fitness by incorporating both low- and high-intensity activity into their daily lives. The framework involves three elements expressed by the acronym SWAP: stand, walk, and push, and we'll discuss the SWAP framework in more detail in another presentation.

Excessive exercise is a common problem in the Paleo and primal communities. Nearly any type of exercise can be overdone: marathons, full-distance triathlons, long-distance bicycling, high-intensity strength training, etc. This is associated with increased injury, oxidative damage, inflammation, and cognitive decline. It can also lead to decreased immune function, slower fat metabolism, and reduced cardiovascular health.

There is some evidence for the dangers of overtraining, including higher levels of coronary calcium in middle-aged marathon runners compared to non-runners, and they had a risk of a cardiovascular event during follow-up that was similar to people with pre-existing heart disease. Elite runners who participated in a large number of long-distance races had increased scarring of heart tissue directly correlated to the number of events and the number of years they spent training. Marathoners between 50 and 72 years old who ran an average of 35 miles per week were

three times more likely to have heart damage than non-runners. Now keep in mind this evidence is mixed and still somewhat controversial, but it is cause for caution and concern.

Excessive exercise habits can also cut into valuable sleep time in order to fit in exercise before or after work for people who have a busy life, which is most people I know these days. People who overtrain may also sit more throughout the day due to fatigue or incorrectly assuming they are protected from the damage of sitting. For example, there was one study that showed that even marathon runners who sit for most of the rest of the time outside of their marathon training sessions were at increased risk for disease.

Symptoms of overtraining include decreased performance, increased recovery time, fatigue or lethargy, insomnia, difficulty concentrating, memory issues, muscle or joint pain, low libido, amenorrhea in women, anxiety, and depression.

To recover from overtraining, ask the patient to reduce or stop anything more than moderate physical activity for a while; focus on gentle activities such as walking, gardening, hiking, and yoga; spending time outdoors; getting plenty of sleep and rest; eating adequate calories, macronutrients, and micronutrients; addressing HPA axis dysfunction with appropriate supplements; and not returning to high-intensity activity until fully recovered.

Okay, that's it for now. See you in the next presentation.