

## UNH Researcher Studies How Exercise Impacts Health For Both Young and Old

By *Sharon Keeler*  
UNH News Bureau

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DURHAM, N.H. -- Physicians and scientists agree that, in addition to a healthy diet, exercise is one of the most important contributors to good health. Even insurance companies are touting the benefits, putting money where their mouths are by subsidizing health club memberships and at-home exercise equipment. Then why is it that so many of us continue to live sedentary lifestyles, where walking to the local coffee shop is the extent of our physical fitness plan?

Robert Kenefick, University of New Hampshire assistant professor of kinesiology, says we might change our minds if we better understood just how important exercise is for maintaining longterm health. Sure, we've all heard about the cardiovascular benefits, but exercise also impacts other physiological systems. Kenefick is particularly interested in how the endocrine system and hormones are affected. Hormones are substances formed by one cell and conveyed to another, stimulating the cell to function a certain way. They influence many things, from the immune system, to reproduction, to social behavior.

Kenefick, who works in UNH's exercise physiology lab, researches how various forms and intensities of exercise trigger hormonal responses in individuals of all ages and fitness levels. He and his students then analyze the variability in these hormone levels over time, which can indicate whether a person is fit or stressed.

This past year, Kenefick published a study in the "International Journal of Sports Medicine" that observed highly trained athletes' responses to exercise in the heat, hypothesizing that the athletes are physiologically better able to adapt to environmental and exercise stress.

"We looked specifically at hormone levels of testosterone and cortisol, and found that the threshold at which these hormones are released was not altered significantly, due to the athletes' high fitness levels," Kenefick says.

Conversely, individuals who are not fit would show increased levels of the hormones, indicating that the body is stressed. Cortisol, for example, triggers the evolutionary "fight or flight" mode, readying the body for battle or flight by elevating the heart rate and increasing metabolism and respiration. While cortisol is necessary for energy, chronically elevated levels can be a problem, leading to a catabolic state where the body literally starts breaking itself down.

Kenefick concluded that for these highly trained athletes, exercising in extreme heat was not as stressful as previously believed. Being fit, in other words, can benefit us all when it comes to feeling less stressed in the summer heat.

Some of Kenefick's other work includes hormonal research on older adults (55 years and older) who weight train. Lifting weights illicit human growth hormone response, which stimulates muscles and bones to strengthen and grow. This is particularly beneficial for older adults, who exhibit decreased levels of this important hormone. Researchers are not certain if human growth hormone actually decreases with age, or if the body tissue is simply less sensitive to it.

"We're just beginning to analyze our results from this study," says Kenefick. "Next, we'll be looking at how much exercise is actually beneficial for this population. You don't want to stress the body too much, or cause injury."

A professor at UNH since 1996, Kenefick practices what he preaches and is an avid runner, rock climber and outdoor enthusiast. His advise to those of us who struggle every day to fit a little exercise into our busy lives -- just get moving. Along with eating well, there's no better prescription for long and healthy life.

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