

The Hidden Benefits of Exercise

Even Moderate Physical Activity Can Boost the Immune System and Protect Against Chronic Diseases

As millions of Americans flock to the gym armed with New Year's resolutions to get in shape, medical experts are offering an additional reason to exercise: Regular workouts may help fight off colds and flu, reduce the risk of certain cancers and chronic diseases and slow the process of aging.

Physical activity has long been known to bestow such benefits as helping to maintain a healthy weight and reduce stress, not to mention tightening those abs. Now, a growing body of research is showing that regular exercise—as simple as a brisk 30- to 45-minute walk five times a week—can boost the body's immune system, increasing the circulation of natural killer cells that fight off viruses and bacteria. And exercise has been shown to improve the body's response to the influenza vaccine, making it more effective at keeping the virus at bay.



"No pill or nutritional supplement has the power of near-daily moderate activity in lowering the number of sick days people take," says David Nieman, director of Appalachian State University's Human Performance Lab in Kannapolis, N.C. Dr. Nieman has conducted several randomized controlled studies showing that people who walked briskly for 45 minutes, five days a week over 12 to 15 weeks had fewer and less severe upper respiratory tract infections, such as colds and flu. These subjects reduced their number of sick days 25% to 50% compared with sedentary control subjects, he says.

Medical experts say inactivity poses as great a health risk as smoking, contributing to heart disease, diabetes, hypertension, cancer, depression, arthritis and osteoporosis. The Centers for Disease Control and Prevention says 36% of U.S. adults didn't engage in any leisure-time physical activity in 2008.

Even lean men and women who are inactive are at higher risk of death and disease. So while reducing obesity is an important goal, "the better message would be to get everyone to walk 30 minutes a day" says Robert Sallis, co-director of sports medicine at Fontana Medical Center, a Southern California facility owned by managed-care giant Kaiser Permanente. "We need to refocus the national message on physical activity, which can have a bigger impact on health than losing weight."

Regular exercise has been shown to combat the ongoing damage done to cells, tissues and organs that underlies many chronic conditions. Indeed, studies have found that exercise can lower blood pressure, reduce bad cholesterol, and cut the incidence of Type 2 diabetes.

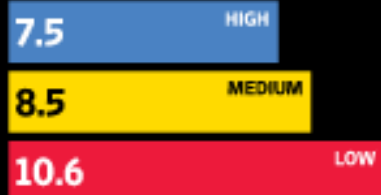
Cold Front

In a study of how fitness fights the common cold, researchers showed that regular exercise lessens its miseries.

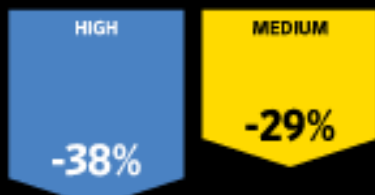


How each fitness level influences rates of upper respiratory tract infections:

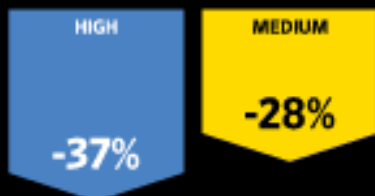
Number of days (over 12 weeks)



How number of symptoms compare to low-fitness subjects



How the severity of illness compares to low-fitness subjects



Note: Based on a study of 1,000 people over a 12-week period in the winter and fall of 2008.

Source: Prof. David C. Nieman, Appalachian State University

Cold-study participants were asked to rank their fitness level on a scale of 1 to 10.

High-fitness level

Committed to regular exercise, most are normal weight

1 2 3 4 5 6 7 8 9 10

Medium-fitness

People in this group tend to be overweight and are periodic exercisers.

1 2 3 4 5 6 7 8 9 10

Low-fitness

This group tends to be obese and sedentary.

1 2 3 4 5 6 7 8 9 10

Other studies show that exercise...

- ★ Lowers the risk of **stroke** by 27%.
- ★ Reduces the incidence of **diabetes** by approximately 50%.
- ★ Reduces the incidence of **high-blood pressure** by approximately 40%.
- ★ Can reduce mortality and the risk of recurrent **breast cancer** by approximately 50%.
- ★ Can lower the risk of **colon cancer** by over 60%.
- ★ Can reduce the risk of developing **Alzheimer's disease** by approximately 40%.
- ★ Can decrease **depression** as effectively as Prozac or behavioral therapy.

Source: American College of Sports Medicine

Building on that earlier research, scientific studies are now suggesting that exercise-induced changes in the body's immune system may protect against some forms of cancer. For example, Harvard Medical School's consumer Web site (hms.harvard.edu/public/consumer) notes that more than 60 studies in recent years taken together suggest that women who exercise regularly can expect a 20% to 30% reduction in the chance of getting breast cancer compared with women who didn't exercise. While researchers are still studying the molecular changes caused by exercise and how they affect cancer, the studies suggest the outcome could be due to exercise's ability to lower estrogen levels.

One study of 3,000 women being treated for breast cancer, published in the Journal of the American Medical Association, showed that for those patients with hormone-responsive tumors, walking the equivalent of three to five hours per week at an average pace reduced the risk of dying from the disease by 50% compared with more sedentary women.

Researchers are also investigating whether exercise can influence aging in the body. In particular, they are looking at whether exercise lengthens telomeres, the strands of DNA at the tips of chromosomes. When telomeres get too short, cells no longer can divide and they become inactive, a process associated with aging, cancer and a higher risk of death.

In a study published in November in *Circulation*, the medical journal of the American Heart Association, German researchers compared two groups of professional athletes (32 of whom were in their early 20s, and 25 who were middle-aged) with two groups (26 young and 21 middle-aged) who were healthy nonsmokers, but not regular exercisers. The athletes had significantly less erosion in telomeres than their more sedentary counterparts. The study concluded that physical activity has an anti-aging effect at the cellular level, suggesting exercise could prevent aging of the cardiovascular system.

What's Your Workout Plan?

Right: Jim Coddington preserves art for a living. His other racket is the one he swings on the squash court to keep fit. Plus, see more executives' workout routines.



Left: 81-Year-Old Marathoner Amps Up Workout

Watch how Joy Johnson, the defending 80-and-over champion in the New York City Marathon, cranks up her training regimen. WSJ's Matthew Futterman reports. (Oct. 30)



Why You Should Step Up Your Workout

Wake-Up Call for Couch Potatoes The federal government, which issued its first physical-activity guidelines for Americans in 2008, is developing a national plan to encourage their use. Here are recommendations for adults:



- At least two hours and 30 minutes a week of moderate-intensity, or one hour and 15 minutes a week of vigorous-intensity aerobic physical activity, or a combination of moderate and vigorous activity. Aerobic-activity episodes should last at least 10 minutes, preferably spread through the week.
- Additional health benefits are gained from as much as doubling the minimum recommended time spent each week in moderate or vigorous aerobic physical activity.
- Muscle-strengthening activities for all major muscle groups two or more days a week.
- Moderate activity can include ballroom and line dancing; biking on level ground or with a few hills; canoeing; gardening (raking, trimming shrubs); tennis (doubles); brisk walking; water aerobics.
- Among vigorous-activity exercises are aerobic dance; biking faster than 10 miles an hour; heavy gardening (digging, hoeing); tennis (singles); jumping rope; swimming laps; hiking uphill; race walking, jogging or running.

-- U.S. Dept. of Health and Human Services



Efforts are underway to get sedentary Americans moving. The federal government issued its first national exercise guidelines in 2008. Now it is working with a number of medical and fitness groups to develop a National Physical Activity plan, to be released early this year, to encourage Americans to adhere to the guidelines.

The guidelines, developed by the Department of Health and Human Services and available online at health.gov/paguidelines, recommend that adults get at least two hours and 30 minutes weekly of moderate-intensity aerobic physical activity, or one hour and 15 minutes a week of vigorous-intensity aerobic exercise, or an equivalent combination of both. The guidelines also say that additional health benefits can be had from as much as doubling the minimum recommendation

for aerobic exercise. Also recommended: muscle-strengthening activities two or more days per week, which protects against a decline in bone mass, especially that experienced by post-menopausal women.

Kaiser Permanente's Dr. Sallis also is chairman of Exercise is Medicine, a two-year-old program developed by the American College of Sports Medicine and the American Medical Association to encourage doctors to assess and review each patient's physical activity program at every visit. A survey by the ACSM, whose members include physicians and exercise-science professionals, found that only four out of 10 doctors talk to their patients about the importance of exercise, and they don't always offer suggestions on the best ways to be physically active.



Kaiser Permanente's California facilities last year began rolling out exercise counseling to eight million members as part of their regular doctor visits. The company also has set up a toll-free telephone line to help members create a personal-fitness plan incorporating favorite activities like gardening. "Exercise can be used like a vaccine to prevent disease and a medication to treat disease," says Dr. Sallis. "If there were a drug with the same benefits as exercise, it would instantly be the standard of care."

While some patients may have risk factors such as heart conditions that could lead to heart attacks and sudden cardiac death with physical exertion, physicians can screen for such risks before prescribing an exercise program. Also, the exerciseismedicine.org Web site includes videos and self-assessment tools for consumers on how to start an exercise program, including how to exercise with diseases such as asthma and heart disease, and exercise following a stroke or heart attack.

Starting an exercise program can have benefits at any age, but is particularly important for those over 40, when physical strength, endurance, flexibility and balance begin to decline, says Pamela Peeke, a Bethesda, Md., physician and fitness expert who is the author of "Fit to Live," an advice book on how to create and stick to a fitness plan.



Naomi Henderson, 66, says Dr. Peeke gave her an exercise prescription several years ago, when she weighed 220 pounds. The plan called for Ms. Henderson, who owns her own market-research company, to start by walking on a treadmill five minutes a day and gradually increase the duration as her fitness level improved. Eventually she was able to walk in a marathon. Ms. Henderson says she has slimmed down to a size 12 from an 18 and says she is rarely ill. "I look at exercise as no different than a drug I have to take to stay healthy," she says.

Lisa Callahan, co-director of the Women's Sports Medicine Center at New York's Hospital for Special Surgery, says her patients are often only partially aware of the benefits of exercise.

They may know that it is helpful in reducing their risk of osteoporosis, for example, but they usually don't know that a combination of strength training, aerobic exercise and balance training is most effective at staving off the disease, says Dr. Callahan, who is the author of "The Fitness Factor," a guide for women.

Dr. Nieman, of Appalachian State University, says that during exercise, two types of immune cells circulate more freely in the blood, neutralizing pathogens. Although the immune system returns to normal within three hours, the effect of the exercise is cumulative, adding up over time to reduce illness rates, he says. He compares the process to "a cleaner who comes in for an hour a day, so by the end of a month, your house looks much better."



But, Dr. Nieman says, high-intensity exercise over long periods, like running a marathon, can "take a good thing too far." Such exertion can induce the release of stress hormones in the body that damp some functions of the immune system temporarily, increasing susceptibility to infection for short periods. He cites a five-year study he conducted on 350 athletes who completed an ultra-marathon 160-kilometer race in the Sierra Nevada mountains. Among the contestants, one out of four reported sickness in the two weeks following the races.

Still, says Robert Mazzeo, a professor in the department of integrative physiology at the University of Colorado in Boulder, although a single bout of intense exercise can suppress the immune system, long-term training in marathoners and other athletes can boost their baseline immunity and ability to respond to the stress of intense exercising.

Rather than worrying about super athletes, however, "my concern is the sedentary people who start out pumping the Stairmaster too hard, then get sick and stop working out," says Dr. Mazzeo. "If you've made a New Year's resolution to get in shape, don't try to do it all at once," he says.