



Council for  
Public Interest  
in Anesthesia

## Changing the Shape of You

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**E**arly in life, we learn that when something is squashed, pulled, pushed, turned, twisted or stretched, the shape of the object will change. We learn that various forces affect different materials in different ways, and yes sometimes, things break. Over time, we come to know that we can shape and mold abilities into new forms to influence and change our personal environment and growth.

Shaping change however, is often plagued with setbacks and major challenges. Promises, plans, and lessons seem to fade with time and the pace of modern life. It becomes easy to overlook the importance of our general health, fitness, and well being.

Like millions of Americans, you resolve to eat right, exercise, and do what it takes to lose those extra pounds or get back in shape. Once again, you swear those New Year's resolutions to get in shape will become a reality. So, you join the gym, order the fast-track diet meals, throw out those bigger jeans, and vow to stay motivated. The challenge is to maintain the good intentions and enthusiasm for the next 365 days and longer.

### Get Active—Stay Young

Exciting news! Emerging research cites another reason to get active—*slowing the aging process*. We all recognize that by reducing stress, eating a balanced diet and regular exercise we can improve our health and well being. Recent studies now link these factors to the effects of aging and further suggest that there is no separation of mind and body—the very molecules in our bodies are responsive to our psychological environment.

Cellular aging begins in the cycle of mitosis. The nucleus of every cell has 23 pairs of chromosomes containing DNA, the genetic material of the cell. Every cell chromosome is capped with a protein button called a telomere that protects it from damage. Every time a cell divides, and as people age, the telomeres get shorter. As these telomeres wear out and fray, the ability of the cell chromosomes to divide and make new cells is slowed or halted. Normally, cells divide 75 times over a lifetime. As more and more cells reach the end of their telomeres and die, the process produces the effects of aging—muscles weaken, skin wrinkles, eyesight and hearing fade, organs fail,



and thinking abilities diminish.

Chronic stress appears to hasten the shriveling of the tips of the bundles of genes inside cells, which speeds the body's deterioration. In a study related to female caregivers of disabled children, it was found that telomeres and telomerase, parts of the chromosomes responsible for aging, are affected by psychological stress, which also takes its toll on the molecules believed to play a key role in cellular aging and may link to disease development.

Telomeres promote genetic stability utilizing telomerase, an enzyme that replenishes a portion of telomeres with each round of cell division. Oxidative stress, which causes DNA damage, has been shown to hasten the shortening of telomeres in cell culture. Researchers have measured levels of telomerase and also found changes in the telomeres of those individuals who perceived they were experiencing sustained stress.

The stress response system is self-regulating. The human body developed normal defense mechanisms to deal with the threat of predators and aggressors. Physical threats are not the only events that trigger stress. Modern life work schedules, chaotic change, interpersonal relationships, and illness can contribute to the body's stress response. Many of the modern stressful circumstances tend to be prolonged and disruptive to almost all of your body processes, increasing the risk of insomnia, digestive disorders, heart disease, depression, memory impairment, and other complications. Further, major stressors, such as life-changing illness for you or a family member, are associated with weight gain. New research published in the *Lancet* says people who smoke or are obese are biologically older than slim individuals and nonsmokers, because their telomeres are shorter than expected. The findings emphasize the importance of managing life stress, to take it seriously.

### Staying Alive as Motivation

Inactivity is the biggest barrier to successful intentions. According to a Centers for Disease Control and Prevention report, the United States is the most inactive and overweight nation on earth. More than 70 percent of the population is not active enough to benefit their health. Approximately 30 percent of children ages 6 through 11 are overweight, and 15 percent are obese. Overweight children have a higher risk for increased mortality later in life and face more problems related to obesity.

Obesity is a natural consequence of a car-friendly, fast-food, TV-watching lifestyle. Americans have seen significant lifestyle changes in the past 20 years. We are exercising less while consuming the same or greater caloric intake. Desk jobs, time constraints, and the increase in the number of sedentary leisure hours have combined to discourage physical activity. Inactivity is linked to chronic conditions and significantly higher costs. And it affects more people than smoking, heavy drinking, or poverty.

Sedentary lifestyles set the stage for obesity, diabetes, cancer, heart disease, osteoporosis, stroke, and other health problems. Risk factors are emerging for childhood obesity including heart disease, high cholesterol, high blood pressure, type 2 diabetes, depression, and of course, social ridicule and alienation.

Throughout the ages people have pursued the concept of staying young. Scientists are fascinated with studying the oldest people on earth, and a pattern has emerged. To some extent you can control longevity by taking better care of yourself and avoiding deleterious behaviors and habits.

*Take care of your body with  
steadfast fidelity.*

*Goethe*

Recent advances in our understanding the causes of aging provide each of you with an opportunity to improve your health and well-being. Optimum changes in lifestyle, including exercise and a balanced diet along with proven methods for reducing stress, increase the immune response and may contribute to an increase in life expectancy.

Stop stressing over not being able to find 60 minutes for exercise. Instead, adopt a “workout wedge” approach in convenient blocks of time. Studies show benefits are still achieved even in bouts of 10 minutes. Get plenty of sleep and learn to manage your stress.

Don't just tell your kids to go play. Play with them! When you are given the choice between walking or driving, choose walking—going up the stairs instead of the elevator, or parking further away from the store. Try to do something that is physically active and mentally relaxing each day. Make healthy nutritional choices and maintain your social support networks. You can shape your health and fitness into a way of life that may also keep you young. ■

### Resources

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