



TO A LONGER HAPPIER LIFE!

ALAN S. PETERSON, M.D.

Associate Director, Family & Community Medicine
Walter L. Aument Family Health Center



Over the last few weeks I've run across an array of articles devoted to improving our life span. (Does this have anything to do with my age?) This is what I've learned . . .

The reasons why an otherwise healthy person grows old and dies still remain a mystery, but researchers are busily at work. A recent lay article (Consumer Reports, March, 2008) lists nine steps to a longer life:

1. Eat whole grains,
2. Take in more Vitamin D,
3. Eat the right kinds of fats (see my past articles in JLGH),
4. Limit time in the sun (to decrease life-threatening skin cancer),
5. Exercise,
6. Eat colorful produce (for phytochemicals),
7. Get enough sleep (7-8 hours per night for most),
8. Decrease stress (to lessen the risk of hypertension, type II diabetes, obesity, high cholesterol, impaired concentration and memory, and decreased immunity),
9. Don't smoke, and don't breathe second-hand smoke.

Let's dig into some of the recent medical literature:

1. DNA maintenance – Telomeres (the ends of chromosomes) guard chromosomes like plastic tips on the ends of shoelaces. They shorten, however, with each cell division, thereby shortening a cell's life, and they hold up better in those who are physically active. In the Archives of Internal Medicine (1/28/08), a study of over 2,400 twins showed that those who exercised regularly (defined as moderate to vigorous exercise of more than 3 hours per week) displayed markedly longer telomeres. The most active subjects had telomeres the same length as those of sedentary individuals who were 10 years younger.

2. Adult stem cells may contribute to aging. Some kinds of stem cells grow more abundant with age; others become less numerous. Whether the aging body's decline is due to the depletion of stem cells depends on which organ is in question – and on which scientist you ask (Science News-page 89, 2/9/08).
3. Overall, there's a 10-15% chance that you'll develop Alzheimer's disease if you live a normal life span. (If you live past 90, the likelihood rises to almost 50%.) Sixteen million of us will have Alzheimer's by 2050. Cornell University's Norman Relkin, MD is undertaking antibody studies that target beta-amyloid, a protein fragment found in the brain plaques of Alzheimer's patients. But immunotherapy is just one of many research areas; others seek to develop drugs that target enzymes involved in the clumping of these proteins.

For now the best we can do for our brains is to use them! John Ratey, MD of Harvard has written "Spark: The Revolutionary New Science of Exercise and the Brain." A joint Mayo Clinic/ University of Southern California team has developed a computer-based mental training program that seems able to roll back the clock on declining cognition by as much as 10 years. Besides a healthful diet and physical exercise, crossword puzzles and brain games may help. People involved in art or music, as well as those with five or more social ties, were less likely to suffer cognitive decline.

4. Diabetes prevention and treatment is aided by exercise, alcohol, and small molecule activators of SIRT₁. A study in Nature (11/29/07) shows that calorie restriction in mice extends lifespan and produces a desirable metabolic profile. The investigators found that SIRT₁, an NAD⁺ dependent deacetylase, is a principal modulator of pathways affected by calorie restriction, and can produce

beneficial effects on glucose homeostasis and insulin sensitivity. Resveratrol, a polyphenolic SIRT₁ activator, found in some red wines, prolongs survival in mice. These new small molecule activators of SIRT₁ are structurally unrelated to resveratrol and are 1,000 times more potent!

A report in *Acta Physiologica* (7/07) shows exercise aids in preventing and treating diabetes by increasing the number of enzymes that transport fat to muscle cells where it is used for energy. Since less fat is available to block insulin receptors, blood sugar drops.

Recent research reported in the June issue of the *American Journal of Clinical Nutrition* shows that moderate alcohol intake before or during a meal controls blood glucose without increasing insulin production. The author emphasizes that when it comes to intake of alcohol, more is not better, since consumption of more than 1-2 drinks daily reverses the benefits. Physicians have to be careful about recommending alcohol to non-drinkers, since teetotaling may be due to religious beliefs, a previous problem with alcoholism, or other medical problems.

5. Physical activity has been waning in the United States for years. The *American Journal of Health*

Promotion (Sept/Oct 2003) showed that residents of sprawling counties were likely to walk less during leisure time, weigh more, and have a greater prevalence of hypertension than residents of compact counties.

One of the largest studies that links exercise capacity to mortality risk appeared in *Circulation* online (1/23/08). This VA study of over 15,000 veterans showed that fitness reduced death-risk in a dose-response fashion. The adjusted risk of dying was reduced by 13% for every increase of one metabolic equivalent (MET) in exercise capacity; men in the highest category of exercise capacity reduced their mortality risk by 70%.

Finally, a study from the online *European Heart Journal* (1/9/08) shows that those who drink moderately (1-14 drinks of alcohol weekly) and are physically active, have a significantly lower risk of death from heart disease and other causes than those who don't drink at all. Those who neither drink nor exercise have a 30% - 49% higher risk of heart disease than those who drink, exercise, or do both.

So, along with my fish oil, vitamin D, and coffee, I'll add 3 hours of weekly exercise and a daily glass of merlot before my evening meal to my best life-style practices! ("Easier said than done.")

Alan S. Peterson, M.D.
Associate Director, Family & Community Medicine
Walter L. Aument Family Health Center
317 South Chestnut Street
Quarryville, PA 17566
717-786-7383
ASPeters@lancastringeneral.org