Preserving Factors Integral to an Active Lifestyle

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A majority of the American population seems to equate old age with being inactive and unhealthy. The assumption is generally made that once we surpass a certain age we will not be as active as we once were, that the choice to remain healthy has been taken away from us by Father Time.

However, the research does not support this conclusion. Rather, the medical literature shows that we have the ability to age in a healthy, active manner. In fact, evidence supports the fact that how we age is not a predetermined conclusion but rather a choice that we make based on lifestyle and nutritional factors such as the amount of vegetables we consume and the amount of exercise we receive.1-2

Studies suggest that making the right health choices in middle age can play an important part in maintaining an active lifestyle later. One group of researchers investigated which factors are associated with overall survival and exceptional survival (free of a set of major diseases and impairments to ages 75, 80, 85, or 90 without incidence of six major chronic diseases and without physical and cognitive impairment) in 5,820 Japanese American middle-aged men living in Honolulu. The men were followed for up to 40 years.3

Of the original participants, 2,451 (42 percent) survived to age 85 years and 655 participants (11 percent) met the criteria for exceptional survival to age 85 years. The researchers found that both groups of men (those in the overall survival group and the exceptional survival group) had a number of common factors including being able to maintain high grip strength and avoidance of factors such as overweight, hyperglycemia, hypertension, smoking, and excessive alcohol consumption. In addition to these factors, the subjects who were categorized into exceptional survivors also were able to maintain healthy levels of triglycerides.

According to the researchers, “These data suggest that avoidance of certain risk factors in midlife is associated with the probability of a long and healthy life among men.”

As this study demonstrates, taking the proper nutritional steps now can be the driving factor behind what an individual’s life will be like in later years. As I share with my patients, “Genetics may load the gun, but diet and lifestyle pull the trigger.” Clearly, individuals armed with the proper knowledge can choose to develop habits that will preserve their active lifestyle throughout their later years. One of the most important lifestyle habits we can develop is to build a supplement regimen designed to preserve some of the most significant factors involved in healthy aging. These factors include heart health, cognition, joint health, blood sugar control, and vision. In this article, I will address each of these factors and explain the most critical nutrients we can consume to ensure we preserve our health throughout the “golden years.”

Blood Sugar Control

One of the most important factors in maintaining a high quality of life during the aging process is blood sugar control. Even if we never contract full-blown diabetes, as we age, our bodies become more prone to insulin resistance. More and more insulin is produced by the body to compensate for the elevated blood sugar that occurs after the consumption of sugar and refined carbohydrates. This ultimately results in the body becoming progressively more immune to insulin’s effects, which in turn

results in persistent weight gain and obesity. Overweight elderly are at increased risk of mortality, morbidity, and functional disability. Furthermore, higher waist circumference, waist-to-hip ratio and body mass index significantly increase the odds of acquiring various cardiovascular disease risk factors.4 In addition, high blood sugar itself is linked to various aspects of cardiovascular health, including strokes. Stroke is one of the main causes of disability in the elderly and along with Alzheimer's disease is one of the main reasons seniors give up their independent living. Animal and human studies have linked hyperglycemia in the acute phase of ischemic stroke to worse clinical outcomes regardless of the presence of pre-existing diabetes.5-6

Because it has such wide-ranging implications to our health, blood sugar control, therefore, even as early as in middle age, is one of the most important ways we can preserve quality of life and our level of activity throughout the senior years.

A number of nutrients have been found to effectively support healthy blood sugar levels. Bitter melon (Momordica charantia) contains substances with antidiabetic properties such as charantin, vicine, and polypeptide-p, as well as other unspecific bioactive components such as antioxidants. Metabolic and hypoglycemic effects of bitter melon have been demonstrated in cell culture, animal, and human studies. In one study, diabetic patients consuming bitter melon were able to reduce by half their dosage of antidiabetic drugs, leading the researchers to conclude "the extract acts in synergism with oral hypoglycemics and potentiates their hypoglycemia in NIDDM [type 2 diabetes]."7

Bitter melon also has been shown to have anti-obesity effects in rats.8

Another blood-sugar supporting nutrient is Goat's rue. Goat's rue is rich in guanidine, its hypoglycemic component. The guanidine in goat's rue improves insulin sensitivity and causes a long-lasting reduction of blood sugar content in rats and an increase in carbohydrate tolerance. Goat's rue extracts have increased glycogen levels in the liver and myocardium of both healthy and diabetic rabbits. In addition, this potent herb stabilizes blood sugar in both normal and diabetic humans.9

Recently, one of the most extensively studied natural hypoglycemic agents has become cinnamon. In one double-blind study of 79 patients with type 2 diabetes, the subjects were randomly assigned to take either 3 grams of cinnamon extract or a placebo three times per day for 4 months. In the cinnamon group, fasting plasma glucose levels declined significantly more (10.3 percent) compared to the placebo group (3.4 percent). The decrease in plasma glucose correlated significantly with the baseline concentrations, meaning subjects with a higher initial plasma glucose level benefited more from cinnamon intake than the diabetic subjects who already had a better grasp of glucose control.10

Heart Health

Another key component to maintaining a high quality of life during aging is cardiovascular health. Researchers have found that people who live to be 100 or older have largely avoided health conditions or behaviors linked to negative cardiac events. When they investigated 93 centenarians and compared them to 90 individuals age 40 to 60 years, they found that although hypertension occurred more often in the 100 plus group, smoking, overweight and high cholesterol were found statistically more often in a younger population. More than half of the centenarians had either none or no risk factors for cardiovascular disease whereas only 14.2 percent of younger subjects experienced none or one risk factor.11-12

The authors concluded, “Centenarians are characterized by a much better cardiovascular risk profile than middle-aged individuals. This indicates that longevity is related to low cardiovascular risk.” Cholesterol is considered the prime marker of heart health. Research has shown that maintaining healthy levels of cholesterol is a predictor of how active we remain during the aging process. In one interesting study, researchers evaluated the relationship between lipoprotein parameters and disability over a period of 2 years, in 344 institutionalized elderly aged over 65 years. They were divided into two groups according to their disability level. Severe disability was associated with low HDL levels and subjects who experienced a decline in their functional ability consistently showed lower basal HDL levels compared to subjects with stable/improved functional status.13

According to the researchers, “The results of this study suggest that in the elderly severe disability is strongly associated with low HDL-C levels. Longitudinal data support the hypothesis that low HDL-C might be considered as a marker for ‘ongoing’ disability.”

In addition to being a marker of disability, as mentioned above, high-density lipoprotein cholesterol is a proven antiatherosclerotic agent in animal models of atherosclerosis. It acts through the principal mechanisms of accelerating cholesterol efflux and inhibiting oxidation and inflammation. Nature has provided us with a number of substances that can lower overall cholesterol and increase HDL levels. Studies have shown that niacin exerts a powerful ability to raise HDL levels by 25 to 35 percent at the highest doses.14

Red yeast rice extract contains cholesterol-lowering compounds, some with antioxidant effects. Red yeast rice contains a family of nine different compounds that all have the ability to inhibit HMG-CoA reductase. Other active ingredients in red yeast rice include sterols, isoflavones, and monounsaturated fatty acids.

A double-blind, placebo-controlled trial of a red yeast rice supplement confirmed the theory that it is a synergistic effect between all the components of red yeast rice that results in cholesterol reduction. In this study, 80 subjects demonstrated a significant decrease in cholesterol levels from 250 mg/dL to 210 mg/dL over 8 weeks independent of diet.15

In another human study on red yeast rice, conducted in China, the treatment group had an 18 percent lower mean total cholesterol level compared to placebo and a 17 percent drop in total cholesterol from baseline. There was also a 23 percent difference in LDL between the treatment group and the placebo group and a 23 percent drop in the treatment group, evident at eight weeks. Furthermore, triglycerides dropped 16 percent in the treatment population. There were no changes in HDL levels.15

Red yeast rice extract may also influence weight control. In vitro, it has been shown to suppress adipogenesis, the formation of fat cells.16

Although human trials have not shown elevations of liver enzymes or renal impairment, because red yeast rice contains a natural statin, it’s recommended that individuals supplementing with red yeast rice also take CoQ10 as the pharmaceutical statins have been shown to deplete CoQ10 levels.

Gugulipid is another lipid-lowering substance. It appears to work best in a subgroup of the population whose LDL cholesterol levels are above 160 mg/dl (normal levels should be below 100). In this group of patients it has been shown to lower triglyceride levels by 14 percent at a 3,000 mg per day

dose and 10 percent at a 6,000 mg per day dose. Gugulipid also reduced Lipoprotein a [Lp(a)] (another risk factor for heart disease) by 7 percent and 5 percent for the low dose and high dose respectively. One of its most interesting effects, however, appears to be its ability to reduce levels of C-Reactive Protein (CRP), a marker of inflammation and a risk factor for cardiovascular disease. High-dose gugulipid reduced CRP by 29 percent and low-dose gugulipid by 25 percent.17

While cholesterol is considered an important cardiovascular risk factor, over the last several decades an increasing awareness has emerged over the possible role homocysteine may play in heart health. Studies have shown an independent association between high homocysteine levels and coronary heart disease.

According to a recent review of the literature, high homocysteine is responsible for about 10 percent of total risk of cardiovascular diseases. The review estimated that reducing the homocysteine concentration in blood by 3 mol/liter (with daily intake of 0.8 mg of folic acid) reduces the risk of ischemic heart diseases by 16 percent, vein thrombosis by 25 percent, and stroke by 24 percent. Six months' therapy with folic acid, vitamin B12 and vitamin B6 reduces the frequency of cardiovascular occurrences, the review concluded. Furthermore, the review estimated, high plasma homocysteine concentrations doubles the risk of having a myocardial infarction (heart attack).18

Other studies have shown that betaine can help reduce homocysteine levels, especially in rare instances when B vitamins are ineffective.

Cognitive Enhancement

Although we often think of physical disability during the aging process as the main factor preventing us from leading an active life, cognitive decline can play an equally detrimental role.

Alzheimer's disease is the most common form of dementia, affecting more than 20 million people worldwide. Because patients may live for more than a decade after they are diagnosed with AD, it is the leading cause of disability in the elderly. AD is characterized by a neurotransmitter defect that involves acetylcholine. Because cholinergic function is required for short-term memory, this cholinergic deficit is thought to be responsible for much of the short-term memory deficit in AD. Consequently, many of the prescription drugs that exist for AD augment levels of acetylcholine in the brain to compensate for the loss of cholinergic function. However, as one group of researchers described, "Although some Food and Drug Administration-approved drugs are available for the treatment of Alzheimer's disease, the outcomes are often unsatisfactory, and there is a place for alternative medicine, in particular, herbal medicine."19

One herbal medicine frequently used as a cognitive enhancer is huperzine-A, derived from a particular type of club moss (Huperzia serrata). Three double-blind trials enrolling a total of more than 450 people indicated that huperzine-A can significantly improve symptoms of Alzheimer's disease and other forms of dementia.20-22

Vinpocetine is another cognitive enhancer. It is derived from vincamine, a constituent of common periwinkle (Vinca minor). In a 16-week, double-blind, placebo-controlled trial of 203 people with mild to moderate dementia, vinpocetine produced significant benefit in the treated group.23 Currently, researchers have undertaken additional trials to confirm these results.

Ginkgo biloba is perhaps the best known herbal memory enhancer. In several studies, ginkgo biloba has improved the symptoms and slowed the progression of Alzheimer's disease. In a study of 309 patients with mild dementia, patients were given either 120 mg of ginkgo biloba extract or a placebo every day for up to a year.24 At six months, 27 percent of those using ginkgo experienced moderate improvement on a variety of cognitive tests. In subjects taking the placebo, by contrast, only 14 percent experienced an improvement on the cognitive tests.

In addition, scientists have explored ginkgo's effects in conditions that may lead to dementia. In 112 patients with chronic cerebral insufficiency taking 120 mg/day of ginkgo significant improvements occurred in blood and oxygen flow.25 Impaired blood and oxygen flow to the brain may be an important factor in the development of AD.

For best results, ginkgo should be taken consistently for at least 12 weeks.

Joint Health

Physical activity is a vital pre-condition for healthy aging and well-being. As we age, however, factors such as cartilage breakdown and osteoarthritis may interfere with our ability to lead an active life. Studies have shown that mental health and life satisfaction in seniors is related to the quality of their motor competence—the ability to "get around" on their own.26

Osteoarthritis, a degenerative joint disease, is the most common type of arthritis and a leading cause of disability. Three of the most promising natural agents for improving joint health in osteoarthritis patients are glucosamine, chondroitin sulfate, and collagen type II (hyaluronic acid).

When used in combination, glucosamine and chondroitin have proved effective in patients with moderate to severe osteoarthritis knee pain. In a recent double-blind trial, researchers evaluated the efficacy and safety of a combination of glucosamine/chondroitin for knee pain from osteoarthritis. In the 24-week study, the researchers randomly assigned 1,583 patients with symptomatic knee osteoarthritis into five groups. One group received 1,500 mg of glucosamine per day, another group received 1,200 mg of chondroitin sulfate per day, a third group consumed both glucosamine and chondroitin sulfate, a fourth group consumed 200 mg of the drug celecoxib per day, and a fifth group consumed a placebo for 24 weeks.

The results indicated that in the overall group of patients, the glucosamine/chondroitin combination worked only slightly better than the placebo. However, in the patients who suffered from moderate to severe knee pain glucosamine/chondroitin worked significantly better than the placebo. The rate of response in this group of patients was 79.2 percent in subjects taking the nutritional combination compared to only 54.3 percent in placebo-treated subjects.27

In another study testing two different forms of glucosamine, 142 patients suffering from knee osteoarthritis experienced considerable improvement in osteoarthritis symptoms after four weeks of treatment. The patients experienced more than 90 percent improvement after taking glucosamine. The effect was so powerful that it persisted for two weeks after discontinuation of the supplements.28

Interestingly, new research is beginning to suggest that glucosamine's effects on joint health may be due to its anti-inflammatory effects. In a cell culture study, researchers isolated chondrocytes (cartilage cells) from rats and cultured the cells with glucosamine. They then exposed the cells to IL-1

beta, which produces an inflammatory reaction. Glucosamine proved to be a potent, broad-spectrum inhibitor of IL-1beta. Glucosamine fully protected the chondrocytes from IL-1-induced expression of inflammatory cytokines, chemokines and growth factors as well as proteins involved in the synthesis of prostaglandin (PGE2) and nitric oxide, two other inflammatory substances.29

According to the study authors, the results suggest "that the potential benefit of glucosamine in osteoarthritis is not related to cartilage matrix biosynthesis, but more likely to its ability to globally inhibit the deleterious effects of IL-1beta."

Hyaluronic acid (collagen type II) is another joint-supporting substance thought to have beneficial effects on chondrocytes. Hyaluronic acid is incorporated into articular cartilage where it may have a direct biological effect on chondrocytes. In vitro, hyaluronic acid significantly increases factors involved in the building of cartilage, such as increasing DNA, glycosaminoglycans (substances that help form the connective tissue of skin, tendons, cartilage, ligaments and bone matrix) and hydroxyproline synthesis and increasing matrix deposition of chondroitin-6-sulphate and collagen type II.30

"These findings confirm a stimulatory effect of hyaluronic acid on chondrocyte metabolism," the study authors wrote.

HA has high daily turnover and levels decline with aging, so large amounts may be needed to maintain normal steady-state levels.

Vision

Preserving sight during the aging process is critical to leading a healthy, active life. Macular degeneration, a chronic, progressive eye disease, is the leading cause of blindness in older Americans. Two other eye conditions of concern to the aging population are cataracts (which also are one of the major causes of blindness throughout the world) and glaucoma.

Researchers have investigated a number of nutrients for their ability to maintain eye health. Lipoic acid has been shown to stop the formation of cataracts in diabetic rats, possibly due to its concomitant glucose-lowering ability.31

Lutein and zeaxanthin also are involved in eye health. Although consumption of these two carotenoids is best known for the reduced risk of age-related macular degeneration (ARMD), studies also are now linking their consumption to a reduced risk of cataracts. One group of researchers studied 899 subjects and determined that the highest levels of plasma zeaxanthin was significantly associated with reduced risk of ARMD, nuclear cataract and any cataract. The highest combined plasma lutein and zeaxanthin levels were significantly associated with a reduced risk of ARMD.32

Taurine, N-acetyl cysteine and grape seed extract are three other nutrients that play an important role in eye health. Animals with primary glaucoma experience ischemia-like losses of taurine in the photoreceptors of their eyes, especially in damaged regions, leading researchers to conclude that this depletion perhaps contributes to progressive damage in these areas.33

Vitamin B6 and NAC supplementation may be helpful in slowing the oxidation of lens proteins that occurs after high glucose blood concentrations.34

In rodents bred to develop cataracts, procyanidin-rich grape seed extract significantly prevented and postponed development of cataract formation. The grape seed extract also reduced concentration of malondialdehyde, a harmful marker of free radical damage, in the eye lens.35

According to the researchers, “These results suggested that procyanidins and their antioxidative metabolites prevented the progression of cataract formation by their antioxidative action.”

Conclusion

Although I’ve separately addressed each of these five components of healthy aging, they are all tied together and improving one factor may lead to improvements in other areas. Blood sugar control can help improve vision and heart health. Improvements in joint health can lead to more time spent exercising, thereby improving the cardiovascular system. Consequently, taking steps now in each of these five specific areas can preserve our overall general health and our active lifestyle as we age.

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