



OPTIMIZING HEALTH THROUGH NUTRITION IN EVERY STAGE OF LIFE

More than just serving to provide fuel for everyday energy and vitality, the impact of good nutrition on health continues to be validated and strengthened by the latest science. We now have a much better understanding of the role certain nutrients play in optimizing health as well as longevity. Research has also helped us understand the impact of nutrition on both acute and chronic diseases. We know that both dietary excesses and deficiencies are linked to various health conditions. Epidemiologic studies have shown that when certain nutrients are low in the diet we are at elevated risk of disease. Conversely, when they are abundant, risk of disease is diminished. And to make matters worse, as we age we tend to absorb nutrients from food less efficiently.

Obesity and high fat diets are established risk factors for the development of coronary heart disease, many types of cancers, ischemic stroke, and type-2 diabetes. In fact, these four conditions alone account for approximately 85% of all deaths in the United States.

WHY DO OUR NUTRITIONAL NEEDS CHANGE AS WE AGE?

Our nutritional needs to promote good health are not the same as we go through the various stages in life. In fact, they change rather dramatically based on the physical and physiological changes our bodies go through as we age. Various external factors such as lifestyle, exposure to environmental toxins, and climatic conditions impact our nutritional needs as well. Some of the physiological changes that occur in our bodies as we age include:

- Changes in body composition that may result in changes in caloric requirements
- Changes in skin that may influence requirements for vitamin D
- Changes in the intestinal tract that may influence absorption of nutrients

ENLIGHTENED, FORWARD-THINKING PHYSICIANS AND NURSES USE & RECOMMEND SUPPLEMENTS

PHYSICIANS	NURSES	“Healthcare professionals are now among the highest users of supplements and most physicians and nurses now recommend supplements to their patients,” says a new study published in <i>Nutritional Journal</i> , a peer-reviewed online journal that focuses on the field of human nutrition. ¹
72%	89%	
Use Dietary Supplements		



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Improving both the quality and duration of healthy life among older adults is a critical public health goal. Good nutrition and physical activity enhance the health

and enjoyment of life among people of all ages. But this is especially true for people age 60 and older.

We increasingly realize that there are lifecycles for nutrient requirements, and the physiological changes that occur in our bodies as we age greatly influence the requirements for calories as well as specific nutrients.

This can become quite challenging specifically for the elderly where one can find a marked increase in nutritional inadequacies for many reasons, including a lack of attention to nutrient density, no use or misuse of supplements, and drug induced nutritional deficiencies.

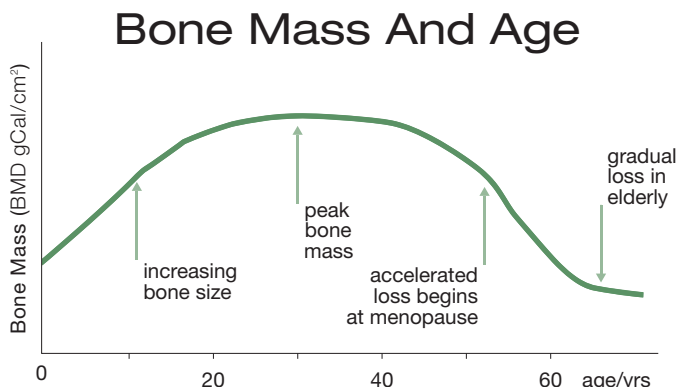
Importantly, in contrast to earlier beliefs that because older people are smaller and more sedentary they have lower nutrient needs we realize now that the requirements for several nutrients such as vitamin B12, folic acid, and iron increase with age. For older people, following standard nutritional advice such as recommended dietary allowances (RDAs) may not be adequate. As people age, some vitamins, minerals and phytonutrients become increasingly important. Thus, increased requirement for many nutrients with age often requires rational intake of dietary supplements.

TOP HEALTH CONCERNS AND RELATED NUTRITIONAL NEEDS IN VARIOUS STAGES OF LIFE

YOUNG ADULTS

BUILDING PEAK BONE DENSITY

Early adulthood is a critical time in our lives to achieve peak bone density. Up to 90% of peak bone mass is acquired by age 18 in women and age 20 in men, which makes youth the best time to ‘invest’ in one’s bone health. Bone mass can keep growing until around age 30, at which point bones have reached their maximum strength and density, known as peak bone mass. Health examination surveys (NHANES) show that 72% of women ages 19-30 do not get adequate amounts of **calcium**, 65% do not get adequate amounts of **magnesium**, and 78% do not get enough **vitamin D**—nutrients critical for building strong bones.²



OPTIMIZING LEAN BODY MASS

Just like building peak bone density, early adulthood is an important time in life to build peak lean body or muscle mass that can lay the foundation for a lifetime of strength and agility. Consuming adequate amounts of high quality, biologically complete protein that provides all of the 22 amino acids involved in human nutrition is key since **protein** provides the body with the components it needs to create, maintain, and repair every cell and tissue. Staying physically active plays a synergistic role in building lean body mass.

MAINTAINING HEALTHY BODY WEIGHT

The prevalence of obesity among adolescents aged 12 to 19 years increased from 5.0% to 18.1% from 1980 to 2008.³ Obese youth are more likely to have risk factors for cardiovascular disease, such as high cholesterol or high blood pressure and are at a greater risk for diabetes and bone and joint problems. In a population-based sample of 5- to 17-year-olds, 70% of obese youth had at least one risk factor for cardiovascular disease.⁴ Obese youth are also more likely to become overweight or obese adults. Hence it is very important

that we develop a habit of **mindful eating of a variety of low calorie nutritious foods**, and not succumb to emotional or unconscious eating of snacks that are usually high in fats and sugar.

PHYSICAL AND MENTAL PERFORMANCE

Youth is a period of intense physical and mental performance as we help shape up our future—both in terms of health as well as education and career. Most people go through intense competition at this time. Hence providing bodies the ‘fuel’ needed to get an edge to maximize physical performance can have a significant impact. This fuel needs to be in the form of **protein, carbohydrates, healthy fats, vitamins, and minerals** as well as nutrients that enhance mental performance such as omega-3 fatty acids, phospholipids and phytonutrients such as **polyphenols**.

ADULT MEN & WOMEN

STRESS

According to a survey conducted by the American Psychological Association, one-third of Americans feel they are living with extreme stress, 77% experience physical symptoms, and 73% report feeling psychological symptoms.⁵ Money and work are leading causes of stress. About half of Americans report lying awake at night due to stress. Chronic stress increases our need for certain vitamins and minerals that are consumed faster during periods of stress such as **vitamins B and C and minerals**.

ENERGY

Complaints of fatigue are widespread, especially among middle-aged men and women juggling multiple priorities between the needs of their family and workplace. Those who provide themselves with balanced nutrition including plenty of nutrients from **whole grains, high quality protein sources, fruits, vegetables, and fish**, while practicing ways to incorporate adequate relaxation and sleep and spending quality time with friends and family often are able to manage their energy levels better throughout the day.



WEIGHT MANAGEMENT

Weight management is important at any stage of life, but takes on paramount importance during adult years and as we approach mid-life due to changes in our caloric needs, body composition, and hormones. Maintaining a healthy body weight by consuming foods with **controlled glycemic response** that promote fat burning and prevent fat storage in the body, and incorporating plenty of physical activity lays a foundation for lifelong health and vitality.



PREVENTING CHRONIC DISEASES SUCH AS HEART DISEASE, DIABETES, AND CANCER

Protective nutrients including **lipids and sterols** found in whole grains, **carotenoids and flavonoids** from fruits and vegetables, and **omega-3 fatty acids** are foundational in maintaining lifelong health and vitality and warding off chronic diseases. A new study published in the *British Journal of Nutrition* shows that **polyphenol rich berries** can lower type 2 diabetes by slowing down carbohydrate digestion and absorption, as well as heart disease risk.⁶ Another new study indicates that **probiotics**, in addition to their well established benefits related to digestion can help improve metabolic syndrome by counteracting the adverse effects of a high fat diet.⁷ The World Health Organization (WHO) is now also recommending **magnesium and calcium** fortification. They say that well documented deficiencies of these minerals could be linked with heart disease, bone disease, hardening of the arteries, and hypertension.

WOMEN'S SPECIFIC HEALTH CONCERNS

HEALTHY PREGNANCY

The well understood benefits of **multivitamin** supplementation for a healthy pregnancy are further validated by a new study with African American women showing that such supplementation may improve the growth of the baby in the womb.⁸ Increased intake of **omega-3 fatty acids** during pregnancy has been associated with better brain and vision development of the baby.⁹ In addition to preventing neural tube birth defects, **folic acid** has been linked to brain function. The development of a child's brain in early pregnancy may be impaired by low folate levels in the mother, and lead to hyperactive kids.¹⁰



OLDER ADULTS AND SENIORS

MAINTAINING DIGESTIVE FUNCTION AND NUTRIENT ABSORPTION

A physiological change that occurs with aging that influences nutritional requirements is the decreased production of stomach acid that impacts both digestive function as well as nutrient absorption—especially of **vitamin B₁₂**, **folic acid**, and **iron**. In addition to supplementation by readily absorbable forms of these nutrients, use of **digestive enzymes and probiotics** can help the breakdown and absorption of nutrients from food and maximize nutrient uptake from the lower calorie diets of older adults.









BONE & JOINT HEALTH

The latest science has unfolded health connections to **vitamin D** way beyond bone health. Lack of this “sunshine vitamin” has been linked to osteoporosis, diabetes, asthma, multiple sclerosis, and cancer. According to experts at a European parliament conference on vitamin D, combating its deficiency should be made a public health priority since getting it from food is the least likely strategy due to the infrequent consumption of vitamin D rich foods and the health risks associated with prolonged sun exposure. Supplementation is an effective

SUPPLEMENTS THAT EVEN REGISTERED DIETITIANS SWEAR BY

Even registered dietitians, considered better than most at meeting their nutritional needs through foods, fill their nutritional gaps with supplements.¹ A new study shows:

	96%	Take at least one supplement
	84%	Take a multivitamin to support overall health
	63%	Take calcium to build and maintain strong bones
	47%	Take fish oil to ward off dementia and heart disease
	43%	Take vitamin D to fight cancer
	29%	Take vitamin C to boost immunity

strategy for all ages and specifically for older adults. Current vitamin D recommendations are being updated by health authorities around the world, including those in Germany, Finland, the U.S., and Canada. Nutrition surveys (NHANES) show that inadequate intake of **calcium, magnesium, and vitamin D**, (critical for healthy bones) is quite widespread. Moreover, age-related decline in the body's ability to absorb calcium can impact calcium levels.¹¹ The benefit of glucosamine in maintaining joint flexibility and mobility has been experienced by many, but a recent study from Berlin reported that **combining omega-3 fatty acids with glucosamine** could provide significantly better pain reduction than glucosamine alone.¹²



IMMUNITY

Use of immune strengthening vitamins such as **vitamin C** and immune boosting phytonutrients such as **carotenoids** has been well documented and understood, but new science is pointing towards **vitamin D** for its immune enhancing effects as well. In fact, in a new randomized, double-blind, placebo-controlled trial from Japan, daily supplementation with **vitamin D₃** has been linked to reducing the incidence of seasonal flu by over 40%.¹³ Vitamin D is necessary to trigger T-cells, the immune systems killer cells, into action, and insufficient levels mean that these cells remain dormant and inactive according to new research from Denmark.¹⁴ Other studies suggest that immune function may be improved by supplementation with **protein, vitamin E, zinc, and other micronutrients**.

RETAINING MUSCLE MASS

Older adults experience a natural, age-related loss of muscle mass and strength called Sarcopenia, recognized by the Centers For Disease Control And Prevention (CDC) as one of the top 5 major health risks, facing the U.S. population.¹⁵ Seniors with high blood levels of **vitamin D** are likely to have better physical function according

MAINTAINING GOOD NUTRITION WHILE USING PRESCRIPTION DRUGS

Half of all Americans take at least one prescription drug, with one in six taking three or more medications according to Department of Health and Human Services HHS).¹⁶ 75% of all doctors visits involve drug therapy—with prescriptions that come at a nutritional cost.

Listed below are some commonly prescribed and over the counter drugs that lead to depletion of essential nutrients—and potential health problems from their known side effects:¹⁷

DRUG	APPLICATION	DEPLETES NUTRIENT	POTENTIAL HEALTH PROBLEMS
Antacids	Acidity	Calcium, phosphorus, potassium, folic acid	Osteoporosis, heart and blood problems, tooth decay, bone problems, anxiety, birth defects, cervical dysplasia, anemia, heart disease, cancer risk
Antibiotics	Infection	B vitamins, vitamin K	Dysbiosis (imbalance of intestinal microflora), gas, bloating, decrease in digestion and absorption of nutrients
NSAIDs (Ibuprofen®)	Pain/ inflammation	Folic acid	Birth defects, cervical dysplasia, anemia, cardiovascular disease
Statins (Lipitor®)	High Cholesterol	Coenzyme Q ₁₀	Low energy, weak immune system, cardiovascular problems
Non-sulfonylureas (Glucophage)	Diabetes	Vitamin B ₁₂ , folic acid, coenzyme Q ₁₀	Weak immune system, cardiovascular problems, low energy, anemia, weakness, heart disease, cancer risk
Calcium channel blockers (Novasc®)	High Blood Pressure	Potassium	Irregular heartbeat, muscle weakness, fatigue, edema
Proton pump inhibitors (Prilosec®)	Ulcers/GERD	Protein, vitamin B ₁₂	Anemia, weakness, protein amino deficiency
SSRI's (Prozac®)	Depression	Sodium	Weakness, fatigue, heart problems, nausea, vomiting, bloating, cramping

to another new study suggesting higher levels are recommended to ensure muscle health and physical function.¹⁸ Also, for the first time, a recent study from McGill University in Canada, has shown a clear link between vitamin D levels and accumulation of fat in muscle tissue.¹⁹

HEALTHY VISION AND EYE HEALTH

The Age-Related Eye Disease Study (AREDS), a major clinical trial sponsored by the National Eye Institute, showed that high levels of antioxidants such as the **Beta carotene vitamins A and C, zinc, and copper** significantly reduce the risk of advanced age-related macular degeneration and its associated vision loss.²⁰ The impact

of the carotenoid **lutein** on preserving vision and enhancing eye health has been well-established. A recent study shows that daily supplement of lutein, in combination of **vitamin A**, may slow vision loss associated with retinitis pigmentosa—a condition impacting peripheral vision.²¹ Data from a Women's Health Initiative study suggests that the consumption of carotenoids including **lutein and zeaxanthin** may reduce the prevalence of cataracts. Another study showed that **green tea catechins** could reduce glaucoma risk.²²

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