THE NASM GUIDE TO OPTIMAL NUTRITION AFTER 40

Contents

Welcome!

I am excited that you are interested in learning about optimal nutrition over the age of 40 and that we at NASM get to be a partner in your educational journey. There has been an immense amount of research into human aging over the last several decades and one of the major themes from that work is that what we eat has a major impact on how we age. The food we eat not only plays a major role in our lifespan, but also our healthspan. This means that what we eat not only affects how long we live, but how well we live.

While there are many aspects about nutrition and how you age, there are a few critical ideas that can have the largest impact on how you age. Specifically, managing calories, ensuring you consume enough protein to maintain muscle mass and bone mass, maintaining adequate intakes of key micronutrients like vitamin D and calcium, and in some cases reducing disease risk by limiting certain types of food.

There are also biological events that happen in women as they age, such as menopause, that deserve specific attention. Changes in metabolism and sex hormones during and after menopause can have effects on body composition and even bone density, which can be improved through proper nutrition. Additionally, age-related declines in testosterone in men, which can contribute to age-related losses in muscle mass and vitality, can also be improved through proper nutrition.

This guide is focused on helping you navigate the major aspects of aging, especially life after 40, that you can influence through nutrition. We hope that after reviewing this guide, you feel more empowered and capable of changing the trajectory of your own aging process. We are thankful to have you here and are excited to guide you on this journey.

About NASM

The National Academy of Sports Medicine is the leader in educating and credentialing fitness, wellness, and performance professionals across the globe. We provide valid, up-to-date content on topics that improve the health and well-being of those they serve. We pride ourselves on creating content you can apply right away. Learn more about us at www.nasm.org, your favorite social media platform, or wherever you listen to podcasts.

Getting The Most From This Guide

This *Guide to Optimal Nutrition After 40* will walk you through information explaining a little bit of the "why" behind the "how". We will sort through all the noise in the world and make sense of the complicated information out there so you don't have to. Our goal is to take the science, distill it down, and give you key takeaways and actionable steps to apply whenever you like. All you need to do is take your time, review the material, think about how these concepts apply to you, and then take the action steps that make sense for you and fit your life.

Come back and use the information as a reference any time. Even though science is always updating itself, the information you find here will be useful for decades to come. Be sure to use the key takeaways and application strategies in whatever way makes sense for you. Don't feel obligated to put *everything* into action right away. When you're ready for a deeper dive on the topic, check out our recommended resources.

Introduction

Aging is part of the human experience and something that is inevitable for all of us. However, the rate at which we age and how we age can be greatly affected by our lifestyle. In fact, the two factors that are known to have the greatest impact on how long you live (lifespan) and how well you live as you age (healthspan) are what you eat and how physically active you are (Fadnes et al., 2022; Samitz et al., 2011).

When you think about aging, you probably think about the visual components, such as gray hair, wrinkles, and changes in body composition. But what you probably don't spend a lot of time thinking about is what is going on inside your body and how you can best slow down the process of aging.

This guide is going to review the most important aspects of how to maximize your quality of life as you age into your 40s and beyond. This guide will give you insights on how to use nutrition to lower your risk of chronic diseases, how to keep the sands of time from taking back your hard-earned muscle mass, and how to ensure that your body and bones stay strong as you age.

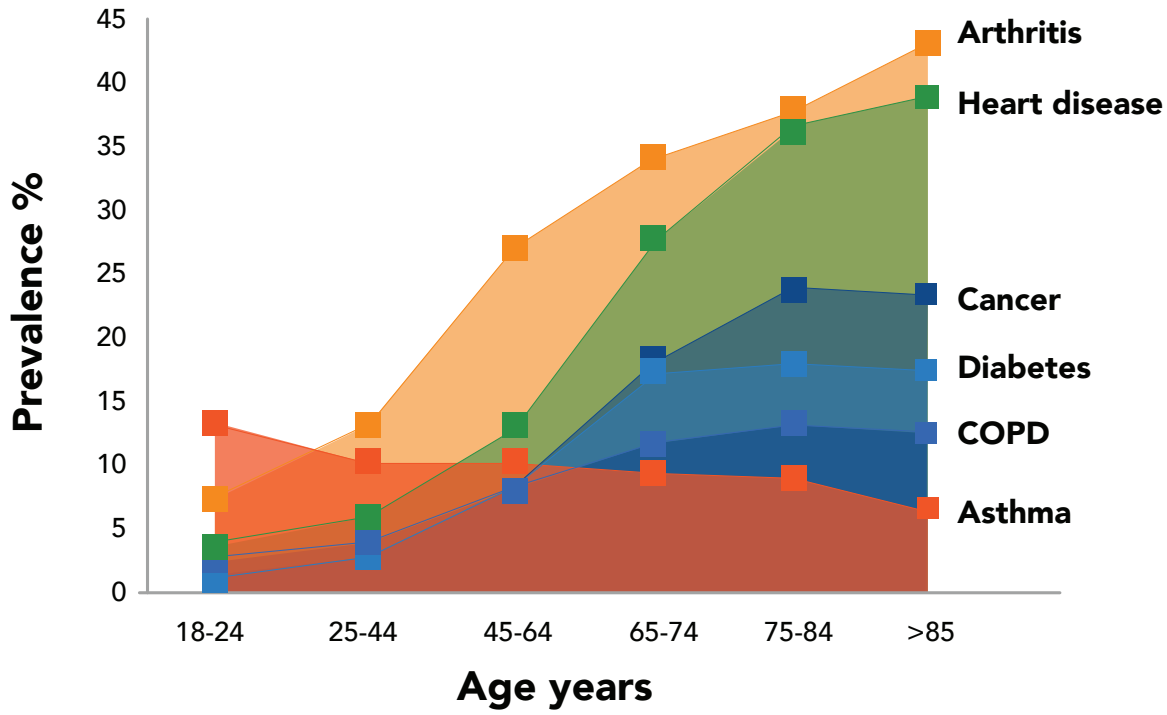
When we think about life after 40, one of the primary things that we begin to notice and experience much more acutely is the process of aging. Specifically, we begin to see the physical signs of the biological processes of aging. While aging is inevitable, at least for now, the way in which we age is at least partially under our control.

There are many aspects of aging to consider, but the ones that are the most controllable with nutrition center around a few key concepts. The first is how our bodies become more susceptible to chronic disease as we age. The second is the declines we experience in our muscle mass and bone mass that affect our quality of life. And the last key concept is the changes that we experience related to age-related declines in hormones that affect not only our energy levels and quality of life, but also our body composition and body weight.

Age and Chronic Disease

As you age, your risk of chronic disease increases. While disease risk begins to increase quite substantially after you reach the age of 65, the initial increase in risk begins in your 40s. Furthermore, many of the issues that manifest in our 60s and beyond often originated in your 40s.

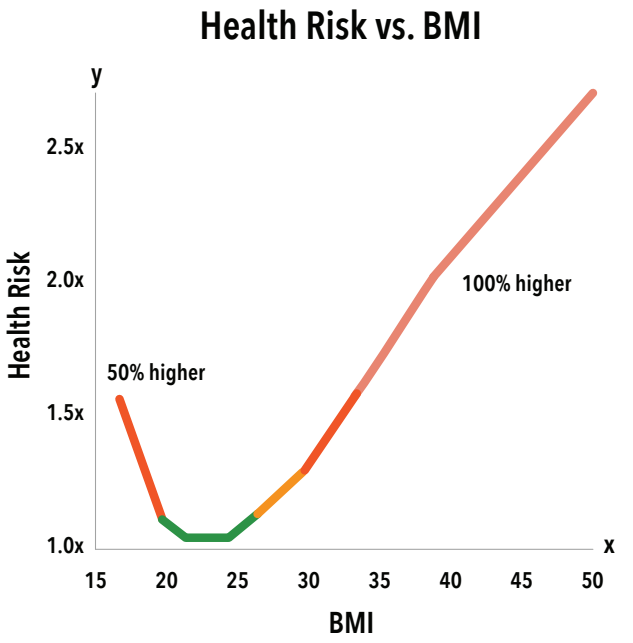
While there are a lot of factors that go into your personal risk for developing chronic disease, one of the primary factors is your Body Mass Index (BMI). In fact, BMI explains a large proportion of the risk for many diseases. For example, in some estimates, BMI explains 60 to 70% of the risk for developing cardiovascular disease in adults.



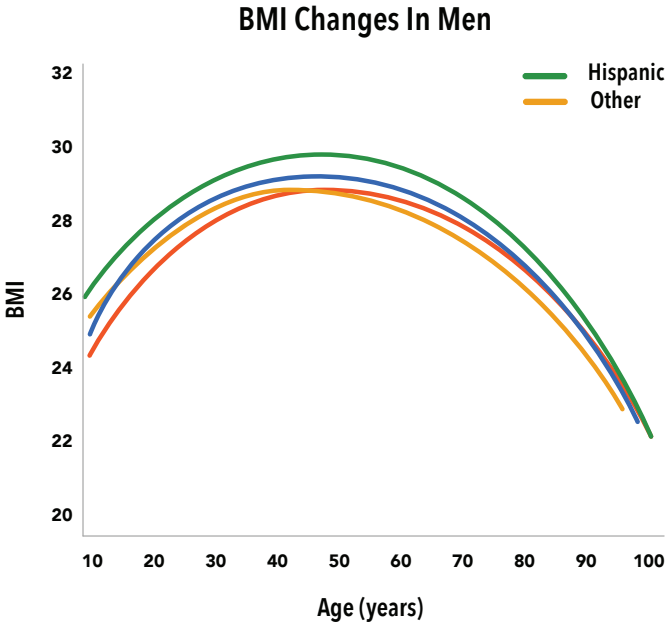
BMI and Disease

Body Mass Index (BMI) is a measure of body size that roughly correlates to the overall health of an individual. While BMI is not a perfect tool to assess body composition, at a population level, it is a powerful tool to help understand risk, especially as it relates to disease.

While there are a lot of nuances to BMI, the main thing to understand is that if we take out any of the meaning behind BMI and look at it as just a number, it tells us a lot about disease risk. For adults, especially those over the age of 40, disease risk increases for most chronic diseases when BMI goes above ~28 to 30. For example, when BMI goes above 30, adults have an increased risk of cardiovascular disease, diabetes, stroke, many cancers, and increased risk of all-cause mortality (Bhaskaran et al., 2014; Held et al., 2022). As such, adults should utilize strategies that lower their BMI. .



BMI changes throughout one's life and most adults reach their peak BMI in the 40s and 50s (Yang et al., 2021). While the decline in BMI as age advances past 60 might seem like a decline in risk, the decline in BMI is usually attributed to decreases in muscle mass and bone density in those above the age of 60. This actually increases overall mortality risk with age. This means that the nutritional focus of adults over the age of 40 should be to reduce BMI through lowering body adiposity (body fat) and to maintain lean body mass and body density into the later decades of life through calorie restriction.



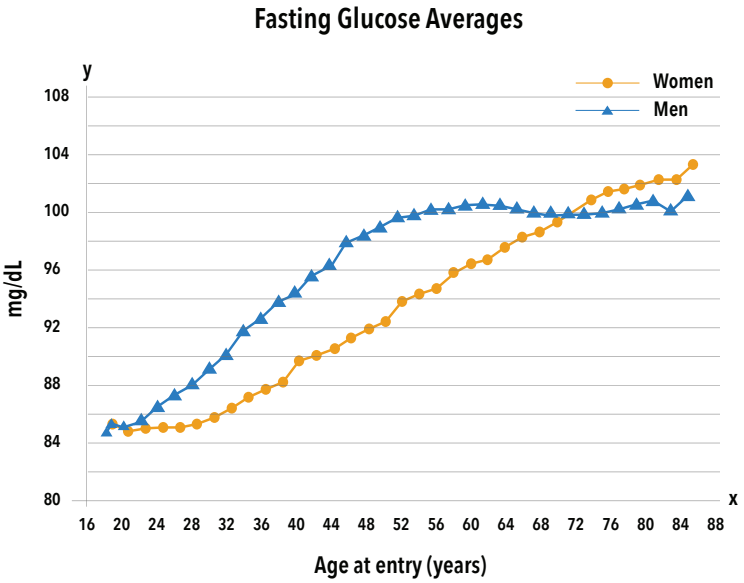
Although lowering BMI through managing calories is an important part of nutrition as you age, there are additional, more specific nutritional actions you can take to reduce the risk of many chronic diseases.

Lowering Disease Risk Through Specific Nutrition Interventions

Lowering disease risk through nutrition as we age can be accomplished independent of lowering BMI through weight loss. In fact, there are clear ways to lower the primary risk factors for many diseases (*e.g.*, blood sugar, cholesterol, blood pressure, and triglycerides) and the direct risk diseases through your nutrition.

Nutrition and Blood Sugar

Elevated blood sugar increases the risk of many chronic diseases, especially cardiovascular disease. Similar to BMI, blood sugar also increases with age, with increases occurring as early as our mid-20s and rising throughout the rest of our lives (Yi et al., 2017). This means that as you age into your 40s and beyond, managing blood sugar becomes an important aspect of your nutrition.



While BMI and body fat levels are one of the primary dictators of blood sugar levels, your nutrition also has meaningful effects. There are several nutritional changes you can make that can help you maintain lower blood sugar levels as you age:

- Decades of research has found that over longer periods of time, diets that are lower in processed carbohydrates can lead to lower blood sugar levels.
- In addition to limited processed carbohydrates, diets that have a lower glycemic load also can result in lower blood sugar.
- Diets higher in fiber can also help lower blood sugar in adults (Dieter & Tuttle, 2017).

DIGGING DEEPER

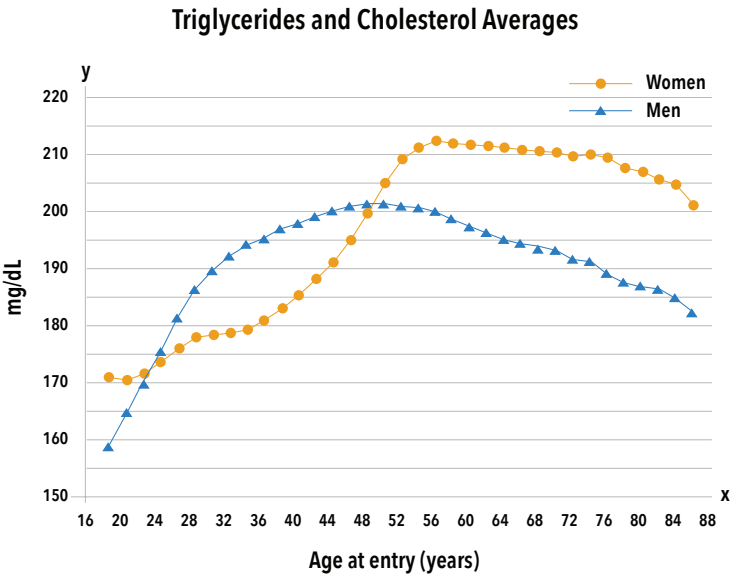
Glycemic load is a measure of the total amount of glucose that a given food provides to the body. This differs from glycemic index which is just a measure of the peak amount that glucose provides at a given time. Glycemic load is generally a more accurate measure of the amount of carbohydrates a food provides the human body.

Read more about glycemic index and load here: https://blog.nasm.org/glycemic-index-and-load

Nutrition and Blood Lipids

In addition to blood sugar, blood lipids are also directly associated with chronic disease among adults. Similar to BMI, higher levels of blood lipids like triglycerides and cholesterol increase your risk of heart disease, stroke, and even diabetes. Also similar to BMI and blood sugar, blood lipids tend to increase with age, especially total cholesterol (Yi et al., 2019).

However, blood lipids tend to peak in our late 40s and then declines into later age. However, much of that decline is our "good" cholesterol (HDL), which means the risk due to elevated blood lipids does not completely subside as we age.



The most effective way to lower blood lipids is to lower your BMI through weight loss. However, there are nutritional strategies that can lower your blood lipids independent of weight loss:

1. Reducing or eliminating trans-fats from your diet can reduce total cholesterol, LDL, and triglycerides.
2. Replacing a portion of the saturated fats in your diet with unsaturated fats can also help lower your blood lipids (Telle-Hansen et al., 2022).
3. Consuming dietary fiber at ~14 g per 1,000 kCals will help lower total cholesterol and triglycerides (Brown et al., 1999).
4. Reducing or eliminating alcohol intake to the recommended guidelines of <2 drinks per day for men and <1 drink per day for women can reduce LDL, increase HDL, and lower triglycerides (Rimm et al., 1999).

DIGGING DEEPER

Trans-fats, also called trans saturated fatty acids, are a type of fat that primarily comes from industrial/manufactured sources. These fats are used to help keep foods stable at room temperature and give better mouth feel to certain types of processed foods.

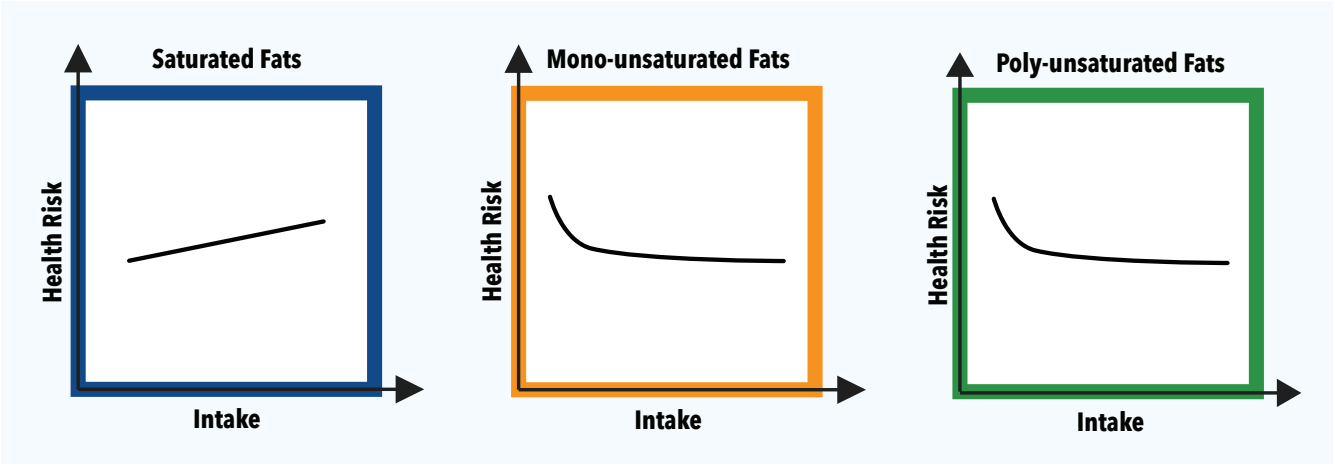
These fats were originally introduced into the food supply in a major way in the early 1900s with the invention of Crisco. However, in the 1990s research began uncovering data linking trans-fats with increased risks of heart disease, which ultimately led to the FDA officially prohibiting the use of artificial trans-fats in 2018. Trace amounts still appear in some foods and you should still be mindful about consuming them, especially if you live outside the US or consume large amounts of foods that contain trace amounts of trans fats such as commercial baked goods, microwave popcorn, stick margarine, some fried foods, and even frozen pizza.

Nutrition and Disease

Your nutrition can lower your risk of diseases in ways not directly related to risk factors like blood sugar or cholesterol. This is due to the fact that some nutrients in our food can be directly involved in either disease processes or in health-promoting processes directly. One of the best examples where nutrition directly affects disease is heart disease.

There has been a lot of debate about the role different types of fats play in heart disease over the last several decades. Despite the debate, there is a lot of clarity around deciding what type of fats you might consume in your daily life. If we simplify the research into a few key ideas, here are three major concepts you can use to understand how the types of fats you eat affect your risk of heart disease:

1. As saturated fat intake goes up, the risk of heart disease goes up. Intakes below 10% of your total calories appear to keep the risk of heart disease at the low end.
2. Replacing saturated fats above 10% of total calories with monounsaturated fats or polyunsaturated fats reduces your risk of heart disease.
3. After a certain point of increasing monounsaturated and polyunsaturated fats, the risk reduction drops off and does not provide any more benefit.



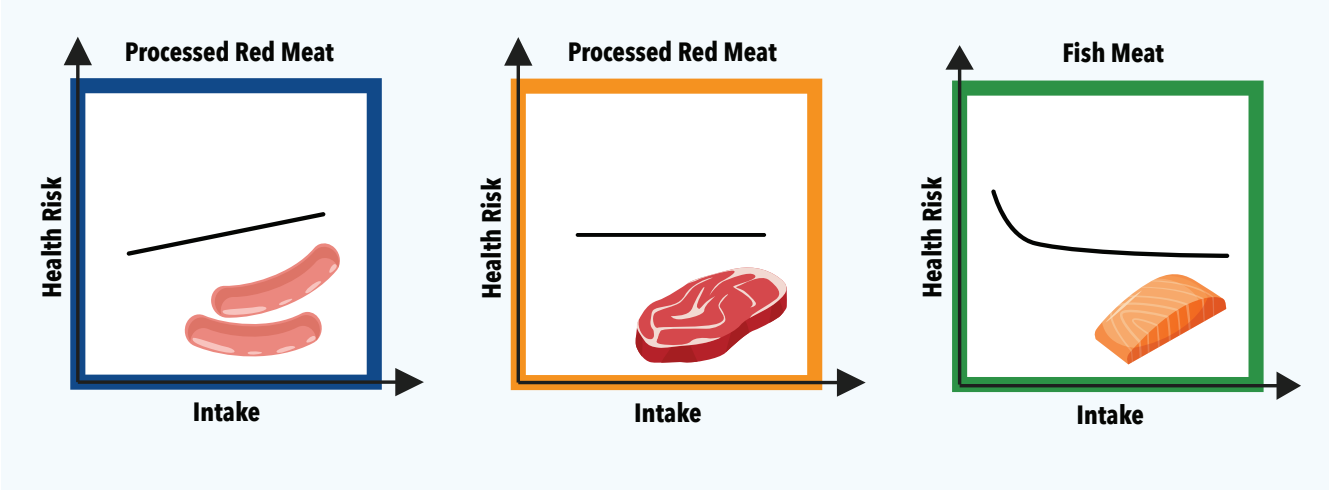
Another aspect of your nutrition that you can modify to reduce your risk of heart disease is understanding how different types of animal meat might affect your risk of heart disease. Similar to dietary fats, there has been decades of research on the topic, and while there is often a lot of debate on the topic, there are clear conclusions that can be drawn from the data. Here are three major concepts you can use to understand how the types of animal meat you consume might affect your risk of heart disease:

1. Regardless of the exact mechanism, as you decrease your consumption of processed red meat (e.g., pepperoni, sausage,

Examples of healthy protein sources.

bacon, salami, ham), your risk of heart disease goes down. Conversely, as your consumption increases, your risk of heart disease increases.

2. Unprocessed red meat (e.g., lean cuts of steak, ground beef) has a clear relationship with heart disease and appears to not meaningfully increase risk.
3. Increasing your fish intake from zero servings a week to three to five servings a week decreases your risk of heart disease. However, intakes above that don't appear to lower risk much further.



Age-Related Sarcopenia

Chronic diseases such as heart disease and diabetes that lead to death are not the only aspects of aging that you should consider. How well you live into old age also matters immensely, especially your ability to move through the world and to be able to physically function at a high level as you age.

Unfortunately, as you age, your muscle mass begins to decline. This phenomenon is often referred to as age-related sarcopenia. The exact peak for most people occurs somewhere between 20 and 40, depending on their physical activity levels over the course of those years. Most research suggests that meaningful decline in muscle mass begins for most people around the age of 35.

The decline in muscle mass occurs at a relatively rapid rate, with muscle mass decreasing at ~3 to 8% per decade (Volpi et al., 2004). This rate continues to increase after the age of 60 when levels of physical activity decrease even more. While it might be impossible to completely prevent age-related declines in muscle mass, the declines might be slowed through proper nutrition and exercise.

Protein and Age-Related Sarcopenia

Protein intake over the age of 40 has become a key topic in aging due to the fact that muscle tissue might be less responsive to protein as we age. Several research studies have shown that the anabolic signal that protein provides to muscle tissue might be blunted in older individuals compared to younger individuals (Cuthbertson et al., 2005; Volpi et al., 2000). These findings appear to match observational research showing that adults who have sarcopenia tend to consume less protein than those who do not have sarcopenia (Coelho-Junior et al., 2022; Volpi et al., 2000).

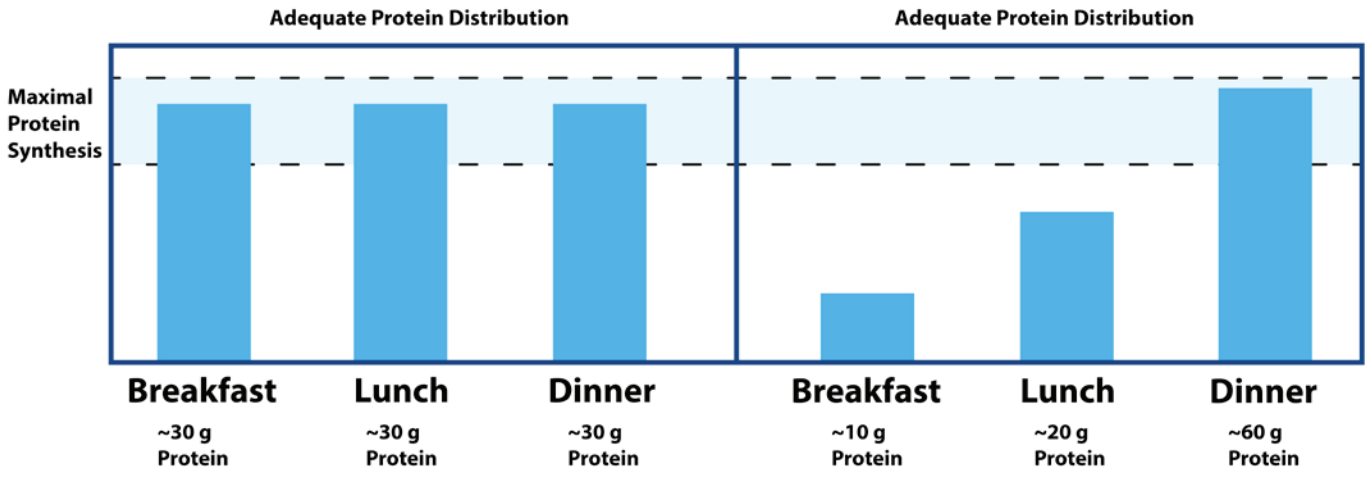
While the recommended daily allowance (RDA) for protein for adults is 0.8 g/kg per day, there is a body of research that suggests that individuals over the age of 40 might need slightly higher intakes. Recent evidence suggests that ~1.2 g/kg per day should be considered as the optimal daily protein intake for adults as they age (Coelho-Junior et al., 2022; Traylor et al., 2018).

In addition to increased daily requirements, the distribution of protein throughout the day might be more important to adults over 40 than it does in younger populations.

This is due to what appears to be an increased anabolic threshold among older adults. Whereas younger populations might get a signal for muscle growth at lower intakes (e.g., 10 grams), older adults might require higher single serving amounts (e.g., 30 grams) to elicit a muscle growth response (Paddon-Jones & Rasmussen, 2009). This means that it might make more sense for adults over 40 to eat higher protein meals evenly dispersed throughout the day than one large meal with many smaller meals, at least from a protein perspective.

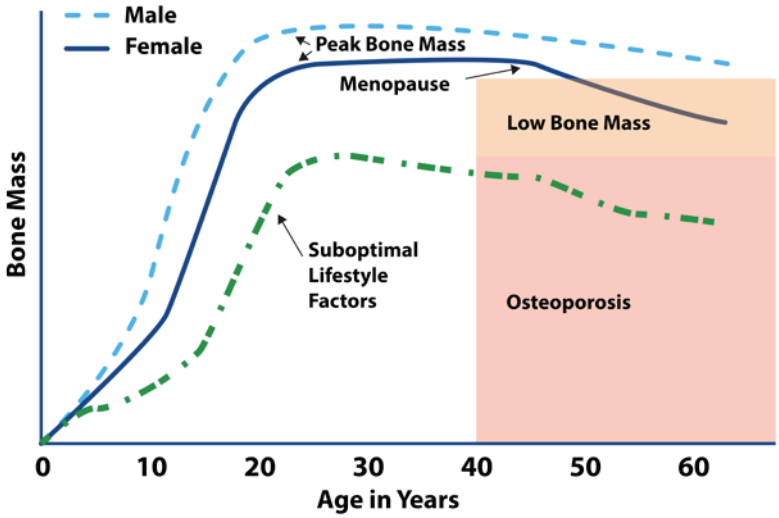
DIGGING DEEPER ON AGE-RELATED SARCOPENIA

It is likely that ensuring adequate protein intake is not by itself sufficient to meaningfully slow age-related declines in muscle mass. Most physicians and exercise physiologists agree that exercise, specifically resistance training, is also an important component of slowing age-related declines in sarcopenia.



Age-Related Osteopenia

In addition to age-related muscle loss (sarcopenia), age-related bone loss (osteopenia) is also a major contributor to frailty and all-cause mortality as adults enter their 50s and beyond. However, unlike muscle mass, bone mass appears to reach its peak in our 20s and begins its decline in our 30s, but begins to accelerate as we reach our 40s (Rozenberg et al., 2020; Warming et al., 2002). As such, understanding the role nutrition plays in bone health in adults is important.



Vitamin D and Calcium in Age-Related Osteopenia

The most well-known nutritional aspects that affect bone mass are vitamin D and calcium. And indeed, both of these nutrients are of critical importance for bone health in aging adults. While there has been a lot of research on both vitamin D and calcium supplementation in adults, most of the research occurs in adults age 55 and above, and more often than not occurs in individuals who have blood levels that are considered deficient in vitamin D. Collectively, however, the research suggests that individuals with deficient or insufficient levels of vitamin D would likely benefit by increasing their vitamin D intake from foods or through supplements to bring their vitamin D levels into normal range (Bolland et al., 2018; Reid et al., 2014). Calcium appears to be a little more straightforward in adults, where increasing calcium intake to ~800 to 1,200 mg per day appears to increase bone mineral density in adults over the age of 45 (Tai et al., 2015).

DIGGING DEEPER

Vitamin D deficiency is defined as someone having blood levels of vitamin D below 20 ng/mL (or 50 nmol/L). It turns out that overt vitamin D deficiency is much more common than many people think. In fact, most reports suggested that around one out of every five adults in the United States (~20%) are likely to be deficient in vitamin D (Amrein et al., 2020; Cui et al., 2023)..

Protein and Age-Related Osteopenia

One other nutrient that is often not well-appreciated for its effect on bone mass is protein. It is often thought that protein decreases bone density; however, research over the last few decades suggests the opposite is true. Protein might actually help maintain bone mass, especially in the aging population and particularly among women.

It turns out that higher intakes of protein have two primary ways they can help maintain and maybe even improve bone density. The first is that protein intake helps our bodies absorb and retain calcium, which means that higher protein intake (1.5 to 2.0g/kg/day) means we absorb and retain more calcium than diets that are lower in protein (Kerstetter et al., 2005). The second is that adequate protein intake sends signals to your bones through hormones (IGF-1 and parathyroid hormone) that promote maintaining or building bone instead of the opposite (Mangano et al., 2014).

Aging in Men and Women

As we age, the biological differences between men and women become more accentuated in some aspects. Specifically, women go through menopause, a large reduction in reproductive hormones that results in them no longer going through menstruation. Conversely, men experience age-related declines in testosterone. Although these events impact how you age, there are nutritional strategies that can reduce the effect they have on you.

Menopause and Women

Women often experience a host of physiological changes during and after menopause. One of the major changes that women report is that they find they gain body weight and body fat and that losing body weight and body fat is more difficult once menopause is over. While there are indeed changes in hormones and overall physiology in postmenopausal women, these changes can be mitigated and overcome through dietary interventions and physical activity.

Several studies have examined the effect that menopause has on women's body weight and body composition and have found that without monitoring calorie intake and physical activity, menopause can lead to increased body weight and body fat. This primarily occurs due to changes in estrogen and small reductions in metabolic rate (Knight et al., 2021; Panotopoulos et al., 1997; Poehlman & Tchernof, 1998). However, when you summarize the total research, the amount of body weight and body fat changes that are due primarily to the changes in hormone levels are relatively small. Conversely, large changes in body weight during and after menopause in women appear to be related primarily to changes in energy intake and energy expenditure. Lifestyle interventions that focus on overall calorie reduction and increasing physical activity have been shown to be highly effective for preventing weight gain and even helping women lose weight during and after menopause (Simkin-Silverman et al., 2003).

In addition to consuming fewer calories and increasing physical activity, there has been a lot of investigation on if different diets are more effective than others, given the hormonal changes that occur due to menopause. Several studies have looked at a wide variety of dietary patterns, such as low-carb, low-fat, ketogenic diets, and plant-based diets, and they all appear to have roughly the same results when it comes to weight loss (T. Hu et al., 2012; Prentice et al., 2019). However, each dietary pattern might have some unique benefits and drawbacks. For example, some studies show that diets that are lower in carbohydrates and higher in protein and fats might help women retain more muscle mass than a higher carbohydrate, lower protein, and lower fat diet (Goss et al., 2020).

Conversely, diets that are higher in carbohydrates and lower in protein and fat might result in lower cancer risk as you age (Goss et al., 2020; Prentice et al., 2019). Essentially, for women who are going through menopause or are postmenopausal, there are a variety of dietary approaches that can help you lose or maintain body weight and body fat. Controlling calorie intake appears to be the most important component for weight loss, and each dietary pattern might come with additional benefits and risks that you can consider as you decide what dietary pattern is best for you.

One of the more interesting findings in nutrition science is that vitamin K appears to have a benefit on body weight and body fat among postmenopausal women. In fact, randomized trials have found that supplementation with vitamin K can help women reduce body weight and reduce abdominal fat (Knapen et al., 2018; Prentice et al., 2019). In addition to the small but measurable benefits of vitamin K on body fat, vitamin K is also important for helping prevent the accelerated bone loss that occurs with menopause (Ma et al., 2022).

Age-Related Declines in Testosterone in Men

Over the age of 40, biologically available testosterone decreases by about 2-3% per year in men.

Not too dissimilar from menopause, men also experience age-related declines in sex hormones, specifically testosterone. Over the age of 40, biologically available testosterone decreases by about 2 to 3% per year in men (Feldman et al., 2002; Harman et al., 2001). Also similar to women, the declines in sex hormones in men are associated with increases in body fat, especially abdominal fat, and decreases in bone density.

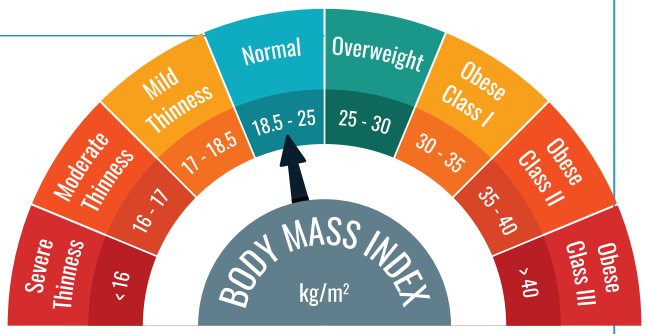
Some research has shown that the overall quality of your diet is associated with testosterone levels in adult males and there are some key dietary patterns that are associated with lower testosterone (T.-Y. Hu et al., 2018). These dietary patterns are:

- High consumption of baked goods (e.g., pastries and bread)
- High intakes of dairy products
- High intake of processed sugars
- Eating at restaurants instead of at home
- Low intake of fruits and vegetables

Essentially, a westernized diet that is high in processed foods and sugars, high in processed oils and fats, and is low in nutrient-dense foods like fruits and vegetables are known to accelerate age-related declines in testosterone.

Conclusion

As you enter your 40s and beyond, it is inevitable that your body will age. However, how you age and the rate of that aging is something you can control through your lifestyle choices. Several of the main reasons for a reduction of lifespan or healthspan are due to the nutrition choices we make every day.



You can lower your risk of many chronic diseases through your nutrition by managing your calorie intake and maintaining a healthy BMI. You can also directly lower your risk of many chronic diseases by following healthy dietary patterns that limit processed food intake, limit trans fat consumption, increase fruit and vegetable intake, and contain unprocessed red meat and fish.

Your muscle mass and your bone mass also decline with age, both of which can drastically reduce your healthspan. Consuming adequate protein as you reach your 40s and beyond can help slow the rate of age-related muscle loss and age-related bone loss. Protein requirements for older adults are increased, and you should be consuming at least 1.2 g/kg per day if you are over the age of 40. Additionally, vitamin D and calcium are critical for maintaining bone health, and ensuring you are consuming enough vitamins and calcium to maintain adequate blood levels is important as an adult over 40.

Lastly, there are biological sex specific differences that occur as you age. In women, menopause can result in weight gain, increases in body fat, and can accelerate age-related bone loss due to drops in metabolic rate. Managing calories, ensuring you consume adequate protein, and increasing vitamin K intake during and after menopause can help lower the menopause-related abdominal fat increase and reduce the menopause-related reductions in bone mass. Men experience age-related declines in testosterone that result in lower metabolic rate, increased body fat, and accelerate age-related bone loss. Reducing the consumption of processed sugars and industrial oils, and increasing fruit and vegetable intake along with meeting protein requirements, can offset the negative effects of age-related declines in testosterone in men.

What You Can Do Now

The primary goals for nutrition over the age of 40 need to be focused on reducing the risk of disease and on maximizing your healthspan as you age. While that might seem like a complicated and daunting task, here are nine nutritional concepts you can take and begin implementing in your own life to effectively reduce risk of disease and maximize healthspan.

1. Reach and maintain a healthy BMI through managing calorie intake and calorie expenditure.
2. Limit the amount of processed foods in your diet, especially those that contain processed sugars, oils, and processed meats.
3. Consume 5-7 servings of fruits and vegetables per day. This will also help you reach your fiber requirement.
4. Consume ~1.2-1.6 g/kg of protein per day to help maintain lean mass and bone mass as you age.
5. Over the age of 40, your "anabolic threshold" appears to be higher for protein consumption so it is more advantageous to consume 3-4 servings of protein per day with higher amounts than spread out throughout the day into smaller servings. Aim for ~30 grams per protein serving to maximize the anabolic effect of protein.
6. The majority of your protein sources should come from unprocessed meat, fish, dairy, eggs, and plant sources of protein. See our graphic for high quality protein sources for ideas on optimal protein selections.
7. Ensure you maintain adequate levels of vitamin D by working with your physician and getting blood tests each year. You can supplement with high-quality vitamin D to address any deficiencies, but consult with your physician to ensure you are dosing it properly.
8. If you are a woman who is in perimenopause, menopause, or postmenopause, ensure you are meeting your protein requirements of ~1.2-1.6 g/kg per day and also consider increasing your vitamin K intake through food or supplementation. Consult with a physician to determine the proper dosing as vitamin K can have some interference with certain medications.
9. If you are a man who is experiencing age-related declines in testosterone, first work to get to a healthy BMI, and then work to reduce processed food intake, specifically processed sugars and oils, and ensure you are meeting your protein requirements of 1.2-1.6 g/kg per day.

Online Resources

Want to learn more about nutrition? Here are a few places to find reliable information and insight about nutrition and healthy eating behaviors.

- NASM Certified Nutrition Coach Certification (NASM-CNC)
- NASM Blog
- NASM YouTube Channel

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