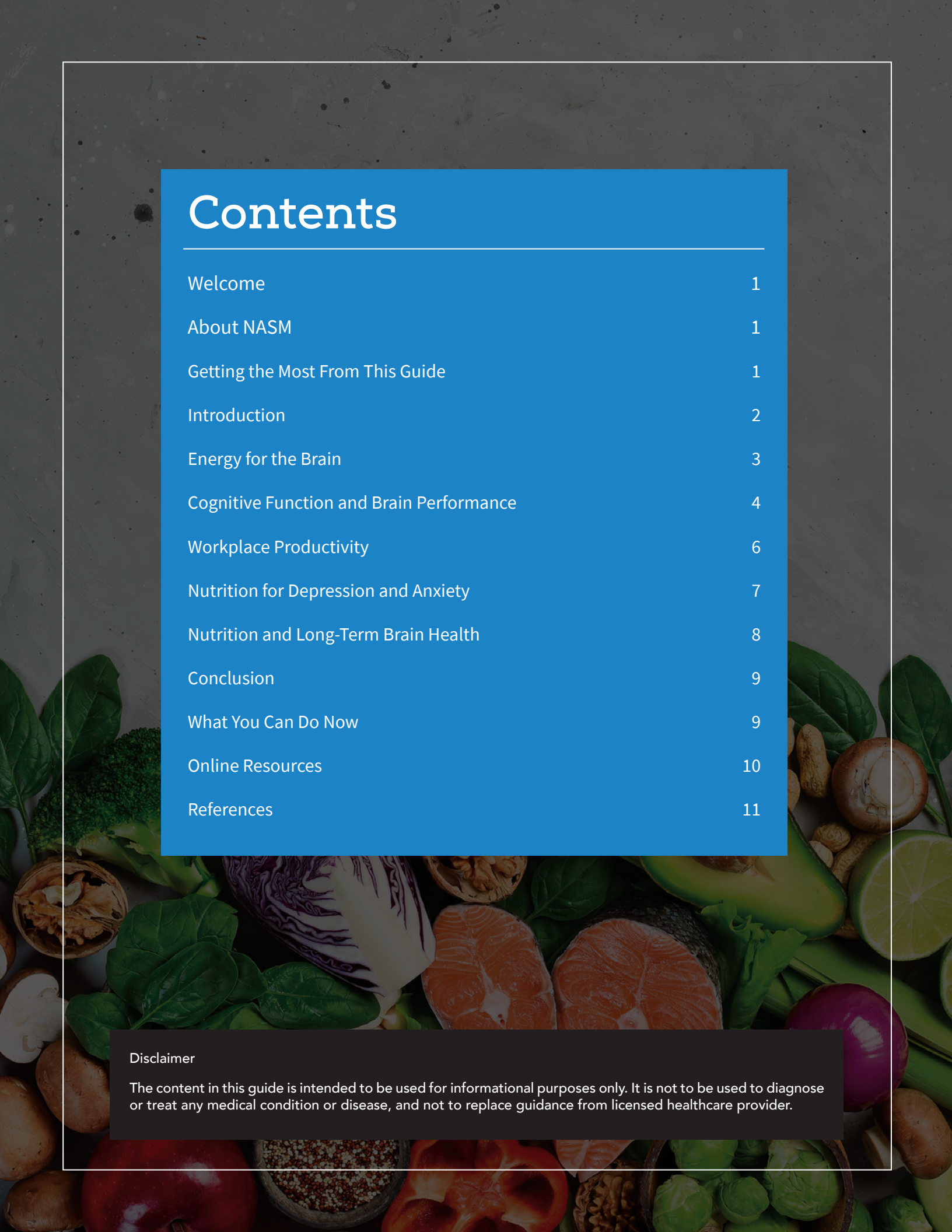
NASM
NATIONAL ACADEMY OF SPORTS MEDICINE

THE NASM GUIDE TO

NUTRITION FOR OPTIMAL MENTAL HEALTH

Contents



Welcome!

Welcome to the Guide to Nutrition for Optimal Mental Health and thank you for taking the time to explore some of the known connections between the food we eat and how the brain functions. The amount of information available to consumers on nutrition can be overwhelming and sometimes confusing. Many sources focus on nutrition strategies to positively affect one's physical health, yet the foods we eat also influence our mental health. The foods we consume affect everything from providing the necessary energy the brain needs to impacting feelings of anxiety and depression. The good news is that consuming a healthy and balanced diet provides benefits for both physical and mental states. This guide is meant to highlight some of the known associations between nutrition and optimal mental health by connecting the benefits of proper food intake to various aspects of brain function and cognition, leaving you with some food for thought.

About NASM

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

Getting the Most from This Guide

This Guide to Nutrition for Optimal Mental Health will walk you through information explaining a little bit of the "why" behind the "how". We'll make sense of the information out there, so you don't have to. Then, we'll give you some key takeaways and actionable steps to apply whenever you like. Come back and use the information as a reference any time. 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

Strategies to maximize brain health and function have become areas of interest among the general population in recent years. Because the brain serves as the central control center for the body's functions, it makes sense that the long-term health of this organ is a priority for many individuals. In addition to receiving and sending messages through the central nervous system, the brain provides executive function, which refers to a person's ability to make decisions, develop plans, and solve problems. The brain also holds our memories and habits, and it processes our cravings, making it a substantial component of leading a healthy lifestyle. Further, mental health is often described as either the lack of, or severity of, conditions like depression, anxiety, and dementia. Unfortunately, there are still more questions than answers when it comes to understanding how the brain works.

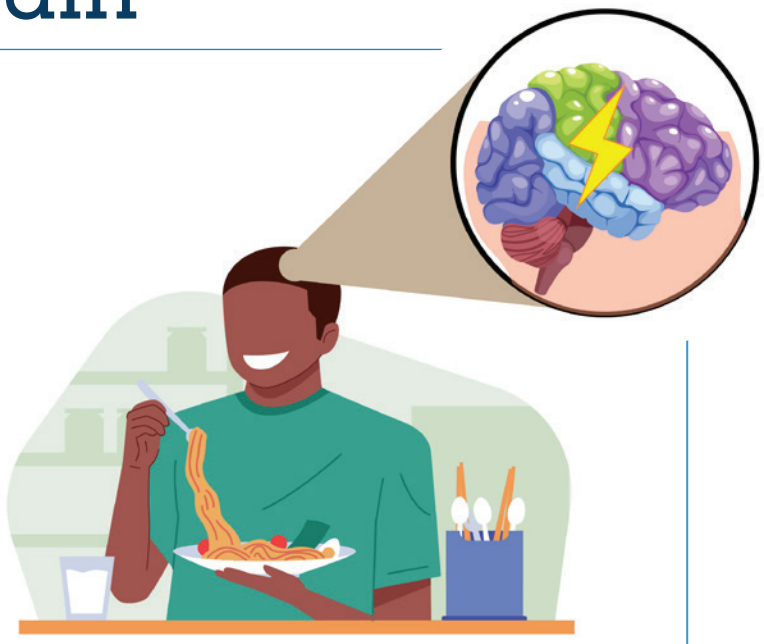
The good news is that an area of interest among some researchers is the role that nutrition plays in overall brain health and function. There are many promising connections between a healthy diet and improved brain health, including optimal function and protection from disease. In particular, diets that are deemed "heart-healthy" are also linked to better brain health, making what's good for the body also good for the mind. We will explore some of these known relationships and provide key takeaways that you can consider implementing into your daily life.

When meal planning, making a simple grocery list, or ordering at a restaurant, choosing foods to support mental health might not be the first thing that comes to mind. Most people focus on fueling their body, particularly their skeletal muscles, or supporting a specific goal such as weight loss or improving physical health. For example, someone might select foods that are low in calories to support weight-loss goals or choose foods to maintain a diet to better manage conditions such as hypertension, type II diabetes, or heart disease.

Adding the goal of improving mental health through better nutrition will complement many of the recommendations that are currently in place, because the foods that are best for your physical health also support your mental health. Research in nutrition to support mental health has increased in recent years as food intake is considered a modifiable variable to improve health outcomes. For example, a person cannot change their genetic predisposition to a disease, but one can control the foods they eat, making this something within each person's control and thereby a variable that they can choose to change or modify.

However, improving mental health is not a one-size-fits-all approach, because some people might want to reduce feelings of anxiety and depression, others might want to feel mentally sharp, and some might want to maintain cognitive function, including preserving memory and protecting against mental decline. Regardless of an individual's goal, the brain is a very important organ that relies on proper nutrition for optimal performance.

Energy for the Brain



One of the first considerations for optimizing mental health through nutrition is that the brain is an organ that burns calories and requires a constant flow of nutrients to carry out its many functions. The brain is like skeletal muscle in that it is made up of highly metabolic tissue that needs energy to function properly. Metabolism refers to the chemical reactions that take place inside our cells. For example, foods are metabolized when you eat a meal. This means that they are broken down into their most simple elements, which includes processes that harness the energy from these foods and is then used by your cells to properly function. Some energy is used by your muscles for movement, but all cells need energy to do their jobs. It has been long-established that the brain prefers to use carbohydrates, specifically in the form of glucose, to provide the required energy for different brain functions. It has been estimated that the brain consumes approximately 20% of the body's glucose, but only accounts for approximately 2% of body mass (Mergenthaler et al., 2013).

Further, glucose metabolism is believed to play an important role in all brain functions, along with the development of certain diseases when glucose metabolism is impaired (Ekstrand et al., 2021; Mergenthaler et al., 2013). Therefore, the first consideration for nutrition that supports brain health is to make sure the brain has adequate energy to optimally function. Current guidelines for carbohydrate consumption emphasizes the inclusion of whole grains, vegetables, and fruits, while likewise limiting added refined sugars and being mindful of total caloric intake (U.S. Department of Agriculture and U.S. Department of Health and Human Services, 2020). With the brain's reliance on glucose as its preferred energy source, consumers should proceed with caution when attempting a low-carbohydrate lifestyle, as some evidence points to overall mood being negatively impacted (Brinkworth, 2009). Therefore, consuming macronutrients outside of general guidelines should be done under the supervision of a qualified health professional, such as a Registered Dietician.

Cognitive Function and Brain Performance

Nutrition for optimal cognitive function and brain performance is an important area of research because there are proposed associations with dietary intake and both short- and long-term benefits and consequences. Several dietary approaches have been investigated for their effects on brain health, including the Mediterranean diet and the Dietary Approaches to Stop Hypertension (DASH diet).

The Mediterranean-DASH Diet Intervention for Neurodegenerative Delay (MIND diet) is being explored as a dietary recommendation to slow the decline in cognition as people age (Cherian et al., 2021; Morris et al., 2015). The Mediterranean diet is based on foods typically consumed in countries found along the Mediterranean Sea, the DASH diet specifically aims to address high blood pressure and heart health, and the MIND diet focuses on foods that are believed to improve brain function and reduce the severity of dementia (Morris et al., 2015). These diets all share an emphasis on fresh foods that contain high levels of nutrients and fiber, along with healthy fats in moderation.

DASH Diet

D Diet
A Approaches to
S Stop
H Hypertension

Emphasis on low sodium intake along with consuming whole grains, fruits, vegetables, fat free or low-fat dairy, lean meats, fish, and poultry

Limit fat and excess sugar

MIND Diet

M Mediterranean DASH Diet
I Intervention for
N Neurogenerative
D Delay

Combination of the Mediterranean and DASH diets

Specifies high consumption of berries and green leafy vegetables.

Does not specify high consumption of fruit, dairy, or potatoes.

In contrast, the consumption of foods associated with the western diet has been linked to poor mental health and serves as a guideline of foods to avoid, including high levels of saturated fats and refined sugars. It is important to note that the western diet is not a recommendation, but rather describes the typical pattern of foods consumed in developed countries such as the United States. **Table: Summary of Dietary Approaches and Mental Health** provides a summary of these dietary approaches and if they are generally supportive of mental health.

Summary of Dietary Approaches and Mental Health

Dietary Approach	Main Components	Supports Mental Health
Mediterranean Diet	• Emphasis on fruits, vegetables, whole grains, nuts, seeds, beans, legumes, fatty fish, olive oil • Limit refined grains and oils, red and deli meat, processed foods	YES
DASH Diet	• Emphasis on low sodium intake along with consuming whole grains, fruits, vegetables, fat free or low-fat dairy, lean meats, fish, and poultry • Limit fat and excess sugar	YES
MIND Diet	• Combination of the Mediterranean and DASH diets • Specifies high consumption of berries and green leafy vegetables • Does not specify high consumption of fruit, dairy, or potatoes	YES
Western Diet	• Low in fruits and vegetables • High in saturated fats, sodium, and sugar • High in calories	NO

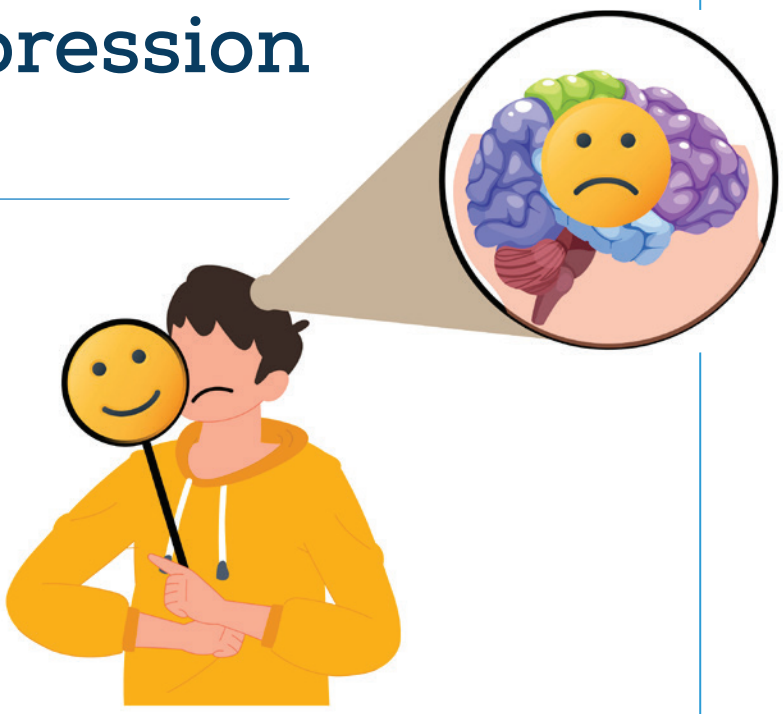
The research on food intake and brain health is evolving, but early indications suggest that, in general, the Mediterranean diet, DASH diet, and MIND diet might play a role in the prevention of mental decline, and the western diet might accelerate or exacerbate mental decline (Baranowski et al., 2020; Ekstrand et al., 2021; Gehlich et al., 2020; Morris et al., 2015). While specific recommendations for food intake to support brain health have yet to be established, these options provide some guidance for consumers seeking lifestyle modifications that improve mental and physical well-being.

Some simple things that you can do to support cognitive function and brain performance include adding a daily dose of fresh fruits and vegetables with an emphasis on colorful berries and dark greens when possible. Another strategy is to choose whole grains over refined options for comparable products. Also, when purchasing items at the grocery store, read labels to avoid products with added sugars, high fat content, and excess sodium.

Workplace Productivity

Research has also investigated how nutrition can impact workplace productivity. Mental health can pose a significant challenge in the workplace and accounts for a significant number of missed days, being present but showing low performance, and disability that causes extended leave. A recent review of the impact of nutrition and workplace productivity found that there might be immediate benefits to consuming a nutrient-dense diet, including improved alertness, cognition, mental function, and overall well-being (Drewnowski, 2020). Nutrient-dense foods are those with high amounts of vitamins and minerals and typically have low fat and sodium content. For example, fruits and vegetables are considered nutrient-dense, but so are unrefined whole grain products. When choosing between comparable carbohydrates such as bread, tortillas, or crackers, looking at calories is one consideration, but finding the product that has more vitamins and minerals per serving might be the better choice, even if it's slightly higher in calories per serving. One study even found that fruit and vegetable consumption was related to more curiosity and creativity in the workplace (Conner et al., 2015). An emphasis on healthy meals and snacks during the workday and avoiding the vending machine might support greater productivity for cognitive tasks.

Nutrition for Depression and Anxiety



Depression and anxiety are among the most common mental challenges people face on a daily basis. Both conditions can be categorized on a spectrum of severity from feeling mild symptoms on occasion to debilitating cases that significantly affect quality of life, productivity, and relationships. There are many approaches to treatment including counselling, medications, and lifestyle modifications. For example, increasing the quality and amount of physical activity is one lifestyle modification that is included with some treatment plans. Another component that has gained interest is the role that nutrition plays as a protective mechanism and potentially as part of a comprehensive treatment plan. One study found associations with healthier diets and reduced rates of depression, whereas those who mainly consume a western diet demonstrate increased depressive symptoms (Cherian et al., 2021). While the role of a person's diet remains unclear regarding the prevention of depression, these findings support the inclusion of fruits, vegetables, whole grains, and unsaturated fats, and limiting processed foods and saturated fats as a currently acceptable strategy.

Another investigation that looked at the different food groups within the Mediterranean diet found that eating non-refined grains and vegetables was associated with reduced severity of depression and anxiety (Gibson-Smith et al., 2020). This study included a large number of people with current depression or anxiety, those who experienced either affliction in the past, and individuals without any lifetime incidence of depression or anxiety. Overall, researchers found that a higher consumption of non-refined grains was related to a lower chance of having a current mental health disorder. Another study also found that a diet high in sugar and fat, consistent with the western diet, was associated with increased incidence of depression and suggested replacing unhealthy options with whole grains, fatty fish, vegetables, and fruit to decrease depressive symptoms (Vermeulen et al., 2017).

For those seeking a sense of calm, there are some foods that are believed to influence mood. When it comes to choosing foods that support a calm and relaxed state, there are several promising options. Many foods linked to relaxation have an effect on certain brain chemicals, or provide an anti-inflammatory response, which reduces stresses in the body. For example, salmon has several nutrients that are associated with certain brain chemicals that are considered calming, such as dopamine and serotonin (Liao et al., 2019). Chamomile provides similar benefits (Amsterdam et al., 2012).

Collectively, current evidence suggests that specific nutritional strategies might be an important component of a holistic approach for optimal results, and a protective component might exist as well. One strategy you can implement right away is to eat fewer components of the traditional western diet by reducing overall saturated fat intake, using less salt, and lowering sugar consumption. While the connections between nutrition and one's mental state are promising, it's important to always consult a qualified healthcare professional on the treatment and management of mental disorders such as depression and anxiety.

Nutrition for Brain Health Longevity

Many people seek instant gratification for their actions, but achieving positive health, fitness, and wellness requires long-term lifestyle approaches. While eating a healthy diet certainly contributes to feeling better day-to-day, maintaining healthy habits over time provides numerous benefits. One study found that consistently consuming fruits and vegetables on a daily basis was associated with improved depression and memory, both in the short- and long-term (Gehlich et al., 2020). These benefits were observed alongside several physical benefits and were demonstrated over the course of several years in a population of aging adults.

Brain metabolism also includes how well certain substances in the brain are regulated. For example, a person's neurochemical profile is one way to determine overall brain health, and polyunsaturated fatty acids, such as omega-3 and omega-6, have been linked to better brain metabolism, which might protect against cognitive decline as people age (Oleson et al., 2017). While more research is needed to verify this effect, the same study also found that consumption of saturated fatty acids was associated with reduced memory performance. Taken collectively, the evidence points to additional reasons to choose dietary fat sources carefully.

In a review examining dietary approaches to support brain health and reduce the risk of Alzheimer's disease, it was noted that components of the western diet might lead to cognitive decline, while the Mediterranean diet was found to be neuroprotective, meaning it has the opposite effect of a diet high in sugar and fat (Baranowski et al., 2020). Consistent with other studies (Ekstrand et al., 2021), this review also found that the high content of fruits, especially berries, leafy green vegetables, and olive oil as the main fat source, contribute to long-term mental health.

Brain-health longevity is a concern for many adults as they age and there are steps you can take now to support cognitive function for years to come. Identifying your current eating habits and minimizing the behaviors that do not provide benefits is a great place to start. For example, meal planning and food preparation can reduce impulsive decisions while also providing a nutritious foundation. Identifying when poor habits take over and being proactive when those situations arise is another way to establish brain-health longevity.

Conclusion

Optimizing mental health consists of a holistic approach where many variables play a significant role, including nutrition, physical activity, sleep, and stress management. This guide focused on the associations between certain dietary habits and their effect on overall brain health. It is important to note that many studies show promising results, but conclusive evidence is still needed (Ekstrand et al., 2021).

On a positive note, dietary recommendations that support heart health appear to also be related to mental health. These findings further reinforce the benefits of a balanced diet focused on fruits, vegetables, whole grains, and unsaturated fats, while limiting the intake of refined and processed foods as well as saturated fats. Consuming a diet that supports a healthy brain does not require sacrificing nutrition at the expense of physical health, but rather the mind-body connection is again reinforced with the shared benefits of a healthy diet. Finally, the evidence supports that when it comes to mental health, the foods you eat are on a spectrum, where healthy choices are known to be beneficial and unhealthy choices are deemed detrimental.

What You Can Do Now

One of the first steps you can take is to evaluate your current dietary intake against those recommended to support brain health. As with any change to nutrition, finding a balanced approach that is feasible and satisfying is essential to long-term adherence. Identifying foods that are easy to add to your daily diet, as well as those you can minimize, is another step that can provide immediate and long-term benefits that support mental health. The following evidence-based suggestions are some simple steps that you can take starting today. Remember that even small changes can make a big impact.

- Evaluate your positive and negative dietary habits.
- Think ahead and plan weekly meals that favor components of the Mediterranean diet.
- Preview menus at restaurants so that you know the best choices upon arrival and avoid impromptu decisions.
- Have at least one fresh fruit or vegetable on hand at all times for a quick snack or to add to a recipe.
- Shop for seasonally and locally grown produce when possible.
- Use dark greens and in-season vegetables for salads.
- Add vegetables to soups, sauces, and casseroles.
- Consume whole grain breads, cereals, tortillas, and pasta instead of refined versions.
- Try hummus or mashed avocado with whole grain crackers for a healthy snack.
- Pack berries, seasonal fruit, nuts, or homemade trail mix as a healthy on-the-go snack.
- Reduce consumption of beverages with added sugar such as regular soda, sweet tea, fruit, and sport drinks.
- Opt for a sugar-free creamer in your coffee.
- Limit sweet treats like ice cream, donuts, and other desserts. Try fruit instead.
- Cook with olive, vegetable, or canola oils instead of butter, margarine, or tropical oils.
- Trade red meats for leaner protein options, such as poultry.
- When eating red meat, look for sirloin, top round, or flank steak as leaner choices.
- Be cautious of foods known for their high saturated fat content, including pizza, sandwiches with deli meat, burgers, and pastas with heavy creams or cheese.
- Have fish, like salmon or tuna, once or twice per week.
- Look for fat-free or low-fat dairy options.
- Explore vegetarian options for healthy chili or soups.

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

References

Amsterdam, J. D., Shults, J., Soeller, I., Mao, J. J., Rockwell, K., & Newberg, A. B. (2012). Chamomile (Matricaria recutita) may provide antidepressant activity in anxious, depressed humans: an exploratory study. *Alternative Therapies In Health And Medicine, 18*(5), 44–49.

Baranowski, B. J., Marko, D. M., Fenech, R. K., Yang, A. J. T., & MacPherson, R. E. K. (2020). Healthy brain, healthy life: a review of diet and exercise interventions to promote brain health and reduce Alzheimer's disease risk. *Applied Physiology, Nutrition & Metabolism, 45*(10), 1055–1065. https://search.ebscohost.com/login.aspx?direct=true&AuthType=shib&db=s3h&AN=146176888&site=ehost-live&scope=site&custid=ken1

Brinkworth, G. D. (2009). Long-term effects of a very low-carbohydrate diet and a low-fat diet on mood and cognitive function. *Archives of Internal Medicine,* 169(20), 1873. https://doi.org/10.1001/archinternmed.2009.329

Cherian, L., Wang, Y., Holland, T., Agarwal, P., Aggarwal, N., & Morris, M. C. (2021). DASH and Mediterranean-dash intervention for neurodegenerative delay (MIND) diets are associated with fewer depressive symptoms over time. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences, 76*(1), 151–156. https://doi.org/10.1093/gerona/glaa044

Conner, T. S., Brookie, K. L., Richardson, A. C., & Polak, M. A. (2015). On carrots and curiosity: eating fruit and vegetables is associated with greater flourishing in daily life. *British Journal of Health Psychology,* 20(2), 413–427. https://doi.org/https://doi.org/10.1111/bjhp.12113

Drewnowski, A. (2020). Impact of nutrition interventions and dietary nutrient density on productivity in the workplace. *Nutrition Reviews*, 78(3), 215–224. https://doi.org/10.1093/nutrit/nuz088

Ekstrand, B., Scheers, N., Rasmussen, M. K., Young, J. F., Ross, A. B., & Landberg, R. (2021). Brain foods - the role of diet in brain performance and health. *Nutrition Reviews, 79*(6), 693–708. https://search.ebscohost.com/login.aspx?direct=true&AuthType=shib&db=s3h&AN=150287778&site=ehost-live&scope=site&custid=ken1

Gehlich, K. H., Beller, J., Lange-Asschenfeldt, B., Köcher, W., Meinke, M. C., & Lademann, J. (2020). Consumption of fruits and vegetables: Improved physical health, mental health, physical functioning and cognitive health in older adults from 11 European countries. *Aging & Mental Health*, 24(4), 634–641. https://doi.org/10.1080/13607863.2019.1571011

Gibson-Smith, D., Bot, M., Brouwer, I. A., Visser, M., Giltay, E. J., & Penninx, B. W. J. H. (2020). Association of food groups withdepression and anxiety disorders. *European Journal of Nutrition, 59*(2), 767–778. https://doi.org/10.1007/s00394-019-01943-4

Liao, Y., Xie, B., Zhang, H., He, Q., Guo, L., Subramanieapillai, M., Fan, B., Lu, C., & McIntyre, R. S. (2019). Efficacy of omega-3 PUFAs in depression: A meta-analysis. *Translational Psychiatry, 9*(1). https://doi.org/10.1038/s41398-019-0515-5

Mergenthaler, P., Lindauer, U., Dienel, G. A., & Meisel, A. (2013). Sugar for the brain: the role of glucose in physiological and pathological brain function. *Trends in Neurosciences*, 36(10), 587–597. https://doi.org/10.1016/j.tins.2013.07.001

Morris, M. C., Tangney, C. C., Wang, Y., Sacks, F. M., Barnes, L. L., Bennett, D. A., & Aggarwal, N. T. (2015). MIND diet slows cognitive decline with aging. *Alzheimer's & Dementia, 11*(9), 1015–1022. https://doi.org/10.1016/j.jalz.2015.04.011

Oleson, S., Gonzales, M. M., Tarumi, T., Davis, J. N., Cassill, C. K., Tanaka, H., & Haley, A. P. (2017). Nutrient intake and cerebral metabolism in healthy middle-aged adults: Implications for Ccognitive Aaging. *Nutritional Neuroscience, 20*(8), 489–496. https://doi.org/10.1080/1028415X.2016.1186341

U.S. Department of Agriculture and U.S. Department of Health and Human Services. (2020). *Dietary Guidelines for Americans, 2020-2025*. www.dietaryguidelines.gov

Vermeulen, E., Stronks, K., Snijder, M. B., Schene, A. H., Lok, A., De Vries, J. H., Visser, M., Brouwer, I. A., & Nicolaou, M. (2017). A combined high-sugar and high-saturated-fat dietary pattern is associated with more depressive symptoms in a multi-ethnic population: the HELIUS (Healthy Life in an Urban Setting) study. *Public Health Nutrition, 20*(13), 2374–2382. https://doi.org/10.1017/s1368980017001550

THANKS FOR READING!

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