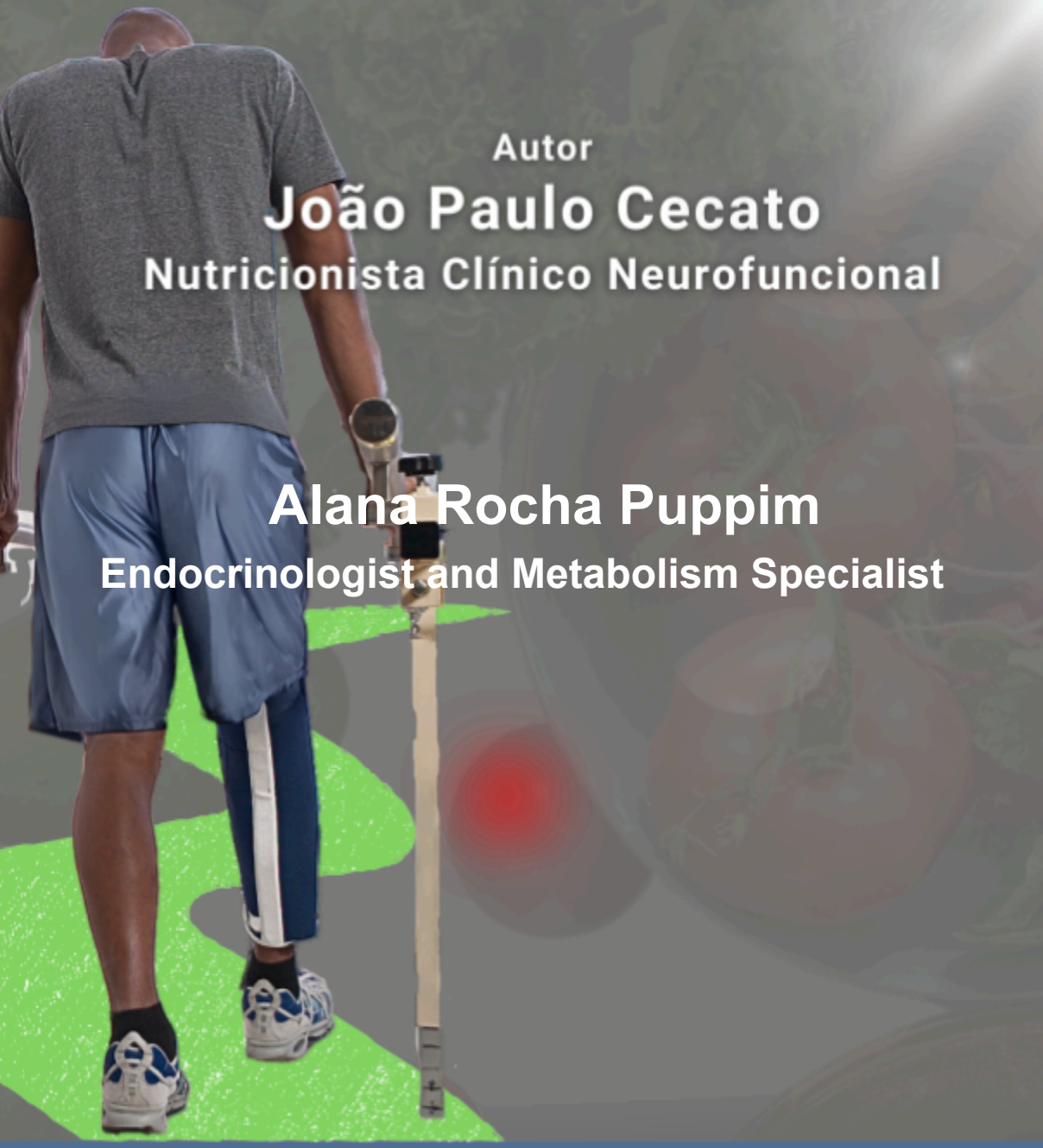

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NUTRITIONAL GUIDE FOR STROKE PATIENTS

NUTRITION AND STROKE: PATHS TO RECOVERY

From experience to guidance

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SUMMARY

INTRODUCTION

Hi, I’m João Paulo, I’m going to tell my story and my purpose with this Digital Guide!

Discover how nutrition can be your greatest ally in post-stroke recovery! This digital guide is more than just a manual; it’s a roadmap for transforming adversity into resilience and hope. Here, we debunk myths and reveal how strategic eating can accelerate your rehabilitation journey. Equipped with reliable and practical information, you and your family will have the tools to face this challenge and improve your health. Because believing in recovery is the first step to making it a reality.

"I fully believe that food is the pillar in this process so that other activities can be explored".

João Paulo Cecato

JOÃO PAULO
THE PROFESSIONAL

João Paulo Cecato is a highly qualified nutritionist, who graduated from the renowned Centro Universitário Salesiano (Unisales). His expertise is not limited to his undergraduate degree; he holds several specializations that place him at the forefront of clinical nutrition. Among his credentials are a specialization in Functional Clinical Nutrition from IPGS, advanced training in Supplementation from Hi Nutrition, and a specialization in Neuroscience from Unifesp. In addition, João Paulo is at the forefront of technology, incorporating clinical assessments with the use of advanced artificial intelligence.

Not only a clinician, João Paulo also shares his knowledge as a professor, focusing on topics ranging from metabolism to neuroscience. He is an advocate for continuing education and believes in the power of knowledge to transform lives. His approach to patient care is deeply rooted in scientific evidence and proven practices. He is dedicated to providing an individualized nutritional care plan that not only meets but exceeds the needs of his patients. His treatment philosophy is holistic, considering the interconnection between body, mind, and soul to promote health and well-being. Throughout his career, João Paulo has positively impacted the lives of hundreds of people, including patients with varying levels of stroke sequelae. He continues to be an active force in the scientific community, always seeking innovative ways to improve the health of his patients.

Dawn After the Storm: "An Inspiring Journey from Struggle to Victory"

It was a typical Sunday in 2002 when it all happened. I was at home, enjoying a quiet dinner. It was an incredibly warm summer night. Amid this stillness, I was suddenly struck by a pain I had never experienced before. The intensity was such that I vomited, repeatedly, like I had never done in my life.

My neighbor, noticing my condition, offered me a ride to the nearest hospital. We were both unaware of the approaching storm, which was actually an ischemic stroke. At the hospital, the physicians had a hard time diagnosing a man so young, only 22 years old. Stroke was not a common diagnosis for my age in 2002, but the conditions told a different story. I was admitted and the worst week of my life was about to begin.

That week was a whirlwind of emotions. The pain, the confusion, and especially the fear of being alone. With each dizzy spell, the fear of another stroke invaded me. But thank God, after seven difficult days, I was discharged from the hospital, although still without much specific guidance for recovery.

Information was not as accessible as it is today. I suffered motor impairments, mainly affecting the fine movements of the left side of my body. It was months before I was able to see a neurologist who could help me stabilize my condition. At that time, I sought the help of psychologists to manage the emotional rollercoaster that tormented me.

Days turned into months and months turned into years. And over the years, I became more aware and proactive about my health.

I was always vigilant with blood tests, stress control, physical activity, and antiplatelet medications, as well as natural treatments.

And then, amid all the struggle, I found my true passion—nutrition. I completed my undergraduate degree in nutrition and specialized in clinical nutrition for critically ill patients, as well as a specialization in neuroscience. My studies and experiences gave me a new perspective on stroke and the importance of nutrition in recovery and prevention.

Since 2020, I have been leading the Institute of Functional Neuro Nutrition as a nutritionist, neuroscientist, and researcher. Pain and fear have been replaced with a clear purpose: to provide safe and effective treatment for all those who have suffered a stroke, just like me.

Today, I am here, 99% recovered, living each day with gratitude and resilience. This is my story, the journey of a stroke survivor who found his purpose amid chaos. And it is through this connection that I hope to help, encourage, and inspire everyone facing similar challenges.

"On the journey to recovery, every obstacle overcome is a victory, and every step taken is an achievement. Don't underestimate yourself, believe in your potential to overcome and transform adversity into strength to continue."

CHAPTER 01

Introduction to stroke: What is it, types and symptoms

A stroke occurs when there is an interruption in the blood supply to the brain, leading to the death of brain cells. There are two main types of stroke: ischemic and hemorrhagic. Ischemic stroke is the most common, accounting for about 87% of cases, and occurs when a blood vessel that supplies blood to the brain is blocked by a blood clot or fatty plaque, resulting in a lack of oxygen and nutrients to the affected brain tissue. Hemorrhagic stroke occurs when a blood vessel ruptures.

What are the most common causes or triggers?

Eating behavior:

- Ultra-processed foods
- Intake of trans fats
- Diets high in sugar
- Fried foods

Cardiovascular Conditions:

- High blood pressure
- High cholesterol
- Atrial fibrillation
- Peripheral arterial disease
- Heart valve disease

Lifestyle and Habits:

Smoking | sedentary lifestyle
Obesity | alcoholism
High salt intake Insomnia

Metabolic Conditions:

Diabetes and sleep apnea

Psychological Conditions:

Depression, anxiety
Chronic stress or stress spikes

Other Medical Conditions:

Autoimmune diseases
Elevated homocysteine and fibrinogen levels
Hematological and blood clotting disorders
Chronic kidney disease
APS (Antiphospholipid Syndrome)

Additional Risk Factors:

Advanced age
Family history of stroke or cardiovascular disease
Use of oral contraceptives
Use of illicit drugs

POST-STROKE COMPLICATIONS

Muscle atrophy is a common complication after a stroke and can significantly compromise a patient's functionality. Adequate intake of high-quality proteins, such as lean meats, eggs, and legumes, is crucial. Guidance from a dietitian is essential to determine individual protein needs.

Neuropathy

This condition can affect somatic sensitivity in several areas of the body. Supplementation with B vitamins, magnesium, and omega-3 fatty acids may be beneficial. In addition, strategies to reduce neuroinflammation and correct possible deficiencies of vitamins such as B12, B6, and B1 may be considered.

Spasticity

Characterized by an involuntary increase in muscle tension, spasticity can be mitigated through a diet rich in anti-inflammatory foods such as legumes, dried fruits, green leaves, and seeds. The use of essential oils can be an effective adjuvant when administered under medical or nutritional supervision.

Bowel dysfunction after a stroke

A stroke can have surprising effects on your body, including damage to the nervous system that affects your gut. If you have constipation and are having bowel movements every 3 days or more, be aware that this can lead to anxiety, depression and even delay your recovery. But don’t despair. With the right nutritional support, specific supplements, massages with essential oils, and breathing techniques, it is possible to improve your bowel function and speed up your recovery.

Diarrhea after a stroke

Diarrhea can be a common problem for stroke patients, especially after discharge from the hospital, due to both medication use and gastrointestinal infections. This condition can lead to several risks, such as dehydration, electrolyte imbalance, malnutrition, unintentional weight loss, anxiety, and depression. In addition, diarrhea can interfere with the absorption of nutrients and medications, making recovery from stroke more difficult.

Therefore, nutritional monitoring is essential to prevent and treat diarrhea after a stroke. The nutritionist can assess the patient’s diet and prescribe an appropriate diet that promotes recovery and prevents the worsening of symptoms. It is important to ensure adequate fluid intake to prevent dehydration and consume foods rich in soluble fiber, such as fruits and vegetables, which help regulate intestinal transit and prevent diarrhea.

Further, it is important to avoid foods that can aggravate diarrhea, such as fatty, spicy, fried, processed foods, and refined sugars. Consuming probiotics can also be beneficial under a nutritionist's or physician’s supervision, as they help restore intestinal flora and improve digestion.

Transition from enteral to oral diet
Many patients after a stroke require feeding via a nasogastric tube or gastrostomy. However, it is crucial to plan the transition to oral feeding. A nutritionist can help identify the appropriate time for this transition, adapt the texture and consistency of food, and ensure adequate nutrient intake. Caloric and protein deficiencies can quickly lead to malnutrition, muscle weakness, and reduced rehabilitation capacity.

Fatigue is a common complaint among patients after a stroke and can be caused by many factors, including lack of sleep and dehydration, vitamin deficiencies, brain energy deficiency, inflammation, or even an imbalance in the amount of carbohydrates, proteins, and fats consumed. To reduce fatigue, it is important to maintain good hydration, have a balanced diet, and engage in moderate physical exercise. Some supplements can also be used under the guidance of a specialized professional.

Headaches and migraines are common complaints after a stroke. To alleviate these symptoms, it is important to avoid foods that can trigger attacks, such as cheese, coffee, chocolate, and foods high in sodium, fried foods, or processed foods. In addition, it is important to maintain a balanced diet and stay well hydrated.

Dysphagia is a common complication after a stroke and can affect the patient's ability to swallow food and liquids. The patient must receive nutritional guidance to adapt their diet, with softer foods and thicker liquids, to avoid the risk of aspiration and future hospitalizations that may trigger malnutrition. It is essential to calculate the nutrients to prevent loss of muscle mass.

CHAPTER 01

Fatigue after stroke: a common, surmountable obstacle

Feeling constantly tired after a stroke? You’re not alone. Fatigue is a common complaint and can be triggered by diverse factors, from lack of sleep and dehydration to nutritional imbalances and brain inflammation.

The secret to combating this fatigue is a balanced diet, rich in energy sources that are well distributed between proteins, carbohydrates, and fats. Avoid inflammatory foods such as butter, sugar, and white flour, which can drain your energy and unbalance your metabolism.

Supplements such as magnesium and coenzyme Q10, PQQ, and natural anti-inflammatories, in addition to evaluation of simple blood tests, can also be powerful allies in revitalizing and improving the body's energy functioning, always under specialist guidance.

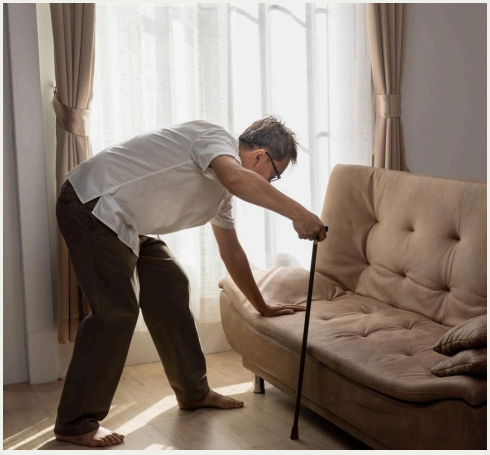
It is natural to feel fatigue soon after a stroke since your brain is in the process of healing. However, if fatigue persists for more than 6 months, it becomes a chronic problem that should be investigated.

Staying hydrated, following a well-balanced diet, and doing moderate exercise are fundamental steps. Additionally, specific supplements can give that extra energy boost, always under the guidance of a specialist.

Remember, everything is a readjustment process, and this may take a few months, however it is treatable.

Sarcopenia after stroke

Sarcopenia is a serious condition that can occur after a stroke, characterized by the progressive loss of muscle mass and strength. This condition can significantly slow down the patient's rehabilitation process. To prevent or mitigate the effects of sarcopenia, it is crucial to incorporate a high-protein diet and engage in regular physical activity. Physical therapy and Pilates can also be effective strategies to combat muscle mass loss and improve strength. Guidance from a specialized health professional is essential to personalize treatment and maximize the effectiveness of interventions.



STROKE IN CHILDREN, WHAT DO WE KNOW ABOUT IT?

Ischemic stroke in children can be caused by blood clots that form in the heart and travel to the brain, congenital heart problems such as abnormal valves or infections, or sickle cell disease, in which red blood cells cannot carry oxygen to the brain. Transcranial Doppler ultrasound is recommended to detect the high risk of stroke in children with sickle cell disease. In addition, risk factors such as high blood pressure, diabetes, obesity, sickle cell anemia, and heart disease increase the risk of ischemic stroke in children, according to 2021 data from the American Heart Association and American Stroke Association.

CHAPTER 01

COGNITIVE CHANGES AFTER STROKE: SOME POSSIBLE OVERVIEWS

MEMORY

Difficulty retaining or retrieving information, both recent and past.

ATTENTION AND CONCENTRATION

Challenges in maintaining focus on tasks for prolonged periods.

VISUAL PERCEPTION

Difficulties in recognizing objects or people.

EXECUTIVE FUNCTIONS

Difficulties in planning, organizing, and executing tasks effectively.

VISO-SPATIAL ABILITY

Problems in understanding spatial relationships between objects.

JUDGMENT AND DECISION MAKING

Challenges in critically evaluating information and making informed choices.

PROCESSING SPEED

Difficulty in processing information quickly and efficiently.

MOOD CHANGES

Includes symptoms of depression and anxiety, as well as difficulties in understanding and expressing emotions. In addition to behavior.

APRAXIA

Affects the ability to perform voluntary, purposeful movements, even when the motor function is intact.

AGNOSIA

Compromises the ability to recognize and interpret sensory stimuli, such as objects, people, or sounds, even when the senses are functioning normally.

DYSARTHRIA

Difficulty in articulating words, affecting the clarity of speech.

APHASIA

Characterized by challenges in producing fluent speech, understanding language, and constructing coherent sentences.

Dementia after stroke, myth or truth?

Dementia after stroke is a reality, not a myth, and can affect individuals of all ages after a stroke.
In children, it is rare but possible, especially after ischemic or hemorrhagic strokes. Prevention involves a balanced diet, mental activities such as puzzles, regular exercise, and controlling risk factors such as high blood pressure and diabetes.

It is recommended to monitor vitamins B12, B6, zinc and iron, homocysteine, folic acid, and thyroid levels every six months.

In adults, it is more common in those who are older and have risk factors for dementia, such as Alzheimer's disease. In the elderly, this scenario is most often aggravated after a stroke, requiring special attention to its management and prevention.

Against time: the brain is shrinking, but you can take action!

Aging is a natural process, but did you know that it also affects the size of your brain? Scientific studies in humans show that aging can lead to a significant decrease in brain volume, impacting both cognitive and motor function.

From the age of 35, brain mass loss can be around 0.2% per year. This rate only increases over time: after the age of 60, the decrease varies between 0.5% and 1% per year. These changes can have profound effects on your quality of life, affecting everything from memory and concentration to motor coordination.

But there’s no reason to despair! Some strategies and approaches can help minimize these effects, such as a balanced diet, physical and mental exercise, and even specific supplements. So, while the biological clock is ticking, you can take action and make choices that benefit your brain health.

This reduction may be even more pronounced in people who have suffered a stroke and are undergoing rehabilitation. It is important to note that nutrition plays a crucial role in maintaining brain health and recovery after a stroke. The process of brain mass loss is natural and can be influenced by several factors, such as eating habits, physical activity, stress, smoking, alcoholism, and physical and mental sedentary lifestyle, among others.

So what should you do? Adopt a healthy lifestyle. Plan with a physical trainer or physical therapist to do at least 150 minutes of moderate physical activity per week. Stimulate your brain with new learning every year, whether through new habits, studies, reading, courses, lectures, workshops, or mental games such as puzzles, crosswords, riddles, and chess. We are talking about daily activities, okay?!

The biological clock never stops, but with the right choices, you can minimize the impact of brain aging and live a fuller, healthier life. What new activity would you choose for the next 3 months?

Foods and supplements rich in omega 3, especially DHA, B complex, dark green leaves, nuts, and a colorful and diverse diet, rich in soluble fiber, can slow down and help protect the brain against the effects of aging and excess free radicals “toxic substances”.

CHAPTER 01

POST-STROKE REHABILITATION, THE CLINICAL NUTRITIONIST

A nutritionist specializing in clinical nutrition is a healthcare professional trained to assess a patient's nutritional status. They identify nutritional needs and plan an appropriate and personalized diet for each individual. Nutritional intervention is crucial to prevent or treat several complications. These include lack of appetite, malnutrition, constipation, and dehydration. It also addresses issues such as cognitive impairment, and loss of muscle and bone mass, as well as emotional states such as anxiety and depression. Adequate intake of foods such as carbohydrates, proteins, fats, fiber, water, supplements, vitamins, and minerals is necessary in this recovery process.

Another important point is the improvement in the patient's quality of life. Nutritional intervention promotes the intake of tasty and pleasurable foods. In addition, it helps to alleviate the symptoms of dysphagia and improve food acceptance.

Think of stroke rehabilitation as a major renovation of your home. *In this analogy, the clinical nutritionist is the architect who draws the plans and makes the necessary adjustments to rebuild your health. Just as a house needs a solid structure, your body needs a balanced diet to recover effectively*.

A clinical dietitian not only plans a personalized diet but also provides the essential building blocks, i.e., the nutrients needed for successful rehabilitation. Through this meticulous approach, it is possible to alleviate symptoms, improve quality of life, and even speed up the recovery process to make the patient more independent.

But it doesn't stop there, they also care about the pleasure of eating, making this 'reform' not only necessary but also enjoyable. In short, the clinical nutritionist is the professional who will guide the patient in the recovery process beyond the curative aspect.

What did you learn in Chapter 01?

Common causes of stroke

The most common causes include hypertension, diabetes, smoking, and a sedentary lifestyle.

Complications after a stroke

After a stroke, patients may face a series of complications, such as loss of muscle mass, neuropathy, overweight, and intestinal dysfunction.

The role of the clinical nutritionist

The clinical dietitian is the architect of your rehabilitation, prescribing a specialized nutritional plan that ensures accessibility and guarantees that you consume the necessary nutrients and appropriate treatments.

Cognitive changes and dementia after stroke

Stroke can lead to significant cognitive changes and increase the risk of dementia, especially in older age groups.

The importance of nutrition in preventing brain aging

Aging naturally leads to a reduction in brain size. Adequate nutrition is crucial to slowing this process.

Benefits of nutritional intervention

Nutritional intervention can prevent complications, improve quality of life, and speed recovery. It is a vital part of post-stroke treatment.

The multidisciplinary team

The clinical dietitian is an essential member of the multidisciplinary team that cares for the stroke patient, working together with physicians, physical therapists, and other health professionals.

The Power of Specialized Nutrition in Stroke Recovery

Did you know that being **overweight and obese** is not only a physical condition but also a significant barrier to neurological recovery after a stroke? In addition to affecting weight, these conditions can trigger hormonal changes and brain toxicity, further complicating the rehabilitation process.

“Advanced Nutritional Strategies: The Key to Effective Recovery”

However, what if I told you that you have the power to change this reality? **Yes,** with advanced nutritional strategies, you can not only speed up neurological recovery but also significantly improve your quality of life. Here are some innovative approaches, researched 100 years ago:

- **Ketogenic diet:** A diet high in healthy fats and low in carbohydrates that has been shown to improve brain function and modulate systemic inflammation.
- **Intermittent fasting:** Besides helping you manage your weight and improving how your body uses sugar, intermittent fasting also acts as a natural “detox” for your cells. It’s like giving your system a “reboot,” helping to clean out old or damaged cells and improve your health “from the inside out”.
- **Metabolic assessments:** Tests such as lipid profiles, fasting blood glucose, and inflammatory markers can provide valuable information for developing an individualized nutritional plan.

Why choose a specialized approach? When considering these strategies, it is crucial to develop specific protocols for each patient, taking into account their needs and medical conditions. In addition, these approaches must be closely monitored to ensure their effectiveness and safety.

Curiosity!

Laughter and smiling can have a positive impact on recovery after a stroke. While there are no specific scientific studies that directly support this claim, there is a wealth of research that shows the general benefits of laughter and smiling on overall health and well-being, which can be applied to the context of stroke recovery. Tip: Watch more comedy movies.

Improves cardiovascular function: Laughter can improve blood vessel function and increase blood flow, which can be beneficial for people who have had a stroke.

Reduces stress: Laughter is known to reduce levels of stress hormones in the body, which can help lower blood pressure and therefore reduce the risk of complications after a stroke.

Promotes emotional well-being: Laughter and smiling can improve mood and promote a sense of well-being, which is crucial for recovery, as depression and anxiety are common after a stroke.

Encourages social connection: Laughter and smiling can help strengthen social connections and promote social support, which is an important factor in stroke recovery.

Eases pain: Laughter can act as a natural painkiller, releasing endorphins that can help ease pain.

So, while laughter and smiling alone cannot cure stroke, they can play an important role in recovery and improving quality of life.

Chapter 02
Care and Guidance After Hospital Discharge

CHAPTER 02

Care and Guidance After Hospital Discharge

After a stroke, it is essential to follow specific care and guidelines to ensure proper recovery.

Calm environment: create a calm environment for the patient. Avoid excessive stimuli, such as loud music, bright lights, and intense smells. The absence of agitation helps with concentration and the ability to remain calm.

Structured routine: set a consistent daily routine. Set fixed times for meals, activities, and rest. This promotes predictability and mental organization. You can create a table on paper, listing the days of the week and planned activities.

Cognitive stimulation: Encourage the patient to engage in activities that stimulate cognition. This may include puzzles, memory games, and reading. Keep conversations stimulating and positive, avoiding touching on past topics that may be sensitive. The goal is to keep the mind active and aid in cognitive recovery.

Clear communication: Use simple, straightforward language when communicating with the patient. Avoid overly complex or confusing information. If necessary, repeat important information several times to ensure understanding.

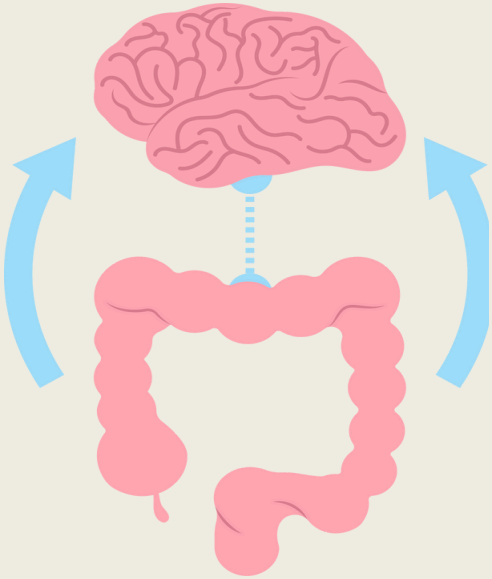
Emotional support: Provide constant, reassuring emotional support. Show patience and understanding, especially if the patient is confused, which is normal in the days and perhaps months following a stroke. Encourage the patient to express their emotions and provide appropriate emotional support.

Occupational therapy and physical therapy: Both are highly recommended after a stroke. They help the patient with daily tasks and contribute to improving cognitive function.

Medication: Help the patient control and use prescribed medications appropriately. Keep a schedule of medical appointments to ensure effective monitoring.

THE INTESTINE, THE PROCESS STARTS HERE!

The gut is often referred to as our body's 'second brain'. It is crucial for communication between nerve cells in the brain, which aids in rehabilitation after stroke.



Excessive consumption of processed foods, rich in trans fats and sugars, as well as the indiscriminate use of antibiotics and laxatives, can compromise intestinal health and, consequently, affect your rehabilitation.

Just as a conductor directs an orchestra, the gut is the conductor of our well-being, acting as a second brain. It coordinates the neuronal 'symphony', essential for rehabilitation after a stroke. When the gut is healthy, it sends positive signals to the brain.

Signs of an unhealthy bowel:

- *No bowel movements for 3 consecutive days;*
- *Bloated bowels daily or after eating;*
- *Intestinal pain or cramps;*
- *Frequent diarrhea;*

These are signs that contribute to the release of toxic substances that worsen symptoms after a stroke. Foods such as chicory leaves, sautéed leeks, white or red onions, and oat bran, combined with probiotics (yogurt, kefir, and fermented milk, all with probiotics), are essential to maintaining this healthy balance.

"The power to transform your stroke recovery is in your hands, and it starts on your plate. Don't underestimate the role your gut plays in your brain's recovery. Taking action now is the first step toward a healthier life and a stronger mind."

HOSPITAL DISCHARGE AND CONTINUITY OF NUTRITIONAL SUPPORT

It is important to emphasize that hospital discharge does not mean the end of treatment after a stroke. On the contrary, patients often leave the hospital still weakened and in need of ongoing care. In this sense, specialized nutritional treatment immediately after discharge is essential to enhance recovery and avoid complications resulting from the inflammatory state after a stroke. In addition, patients often do not notice or report symptoms of inflammation, which reinforces the need for constant monitoring by a nutritionist.

The importance of nutritional support: it is essential to ensure adequate nutrition for patients who have difficulty eating. In the case of patients who have suffered a stroke, nutritional support is of great importance in the recovery process.

Studies show that well-planned nutrition can help prevent the loss of lean mass and help heal damaged tissue, creating an environment conducive to neural recovery. Therefore, it is crucial to begin nutritional support as early as possible after a stroke.

The nutritional plan should be personalized and developed by a specialized nutritionist, taking into account the specific needs and conditions of each patient. In cases of malnutrition or anorexia, nutritional support is vital for preserving or increasing lean mass and can be particularly beneficial for patients with eating difficulties or problems absorbing nutrients.

Therefore, nutritional support should be an integral component of post-stroke care. Physicians, nurses, and, especially, nutritionists should be aware of this need and provide the most appropriate nutritional assistance for each case.

CHAPTER 02

SO WHAT TO EAT WHEN YOU GET HOME?

When returning home from a stroke, it is natural to have questions about the right foods to eat to promote recovery and maintain health. Choosing the right foods is crucial at this time. This guide provides guidance based on internationally recognized scientific guidelines, such as the Clinical Practice Guideline for Stroke Rehabilitation in Korea, Canadian Stroke Best Practice Recommendations, and Clinical Guidelines for Stroke Management. We will explore the recommended foods, their nutritional properties, and the benefits they may offer for recovery after a stroke.

During this period, it is recommended to consume light, nutritious, and easily digestible foods. Plan to take five meals a day to maintain muscle mass, and strength and control inflammation. Opt for purple or yellow vegetables, skinless chicken breast, oat bran, and flaxseed flour.

Beans and other legumes: remember to soak the beans for 12 hours in a bowl with lemon drops. Other options include boiled colored potatoes, toasted and crushed sunflower and pumpkin seeds, yogurt with probiotics, an extra dose of extra virgin olive oil, avocado, Brazil nuts, and walnuts. Opt for boiled or sautéed vegetables.

For breakfast, it is important to include porridge with cereals (oat bran and flaxseed or chia flour) or smoothies with purple or red fruits, accompanied by yogurt. Protein sources are necessary: boiled egg, shredded chicken or turkey, or supplements such as whey protein or vegan proteins as a meat substitute.

Loss of appetite, or lack of hunger, is a common problem that can quickly lead to malnutrition. To combat this condition, citrus foods such as oranges, kiwi, and lemons can be useful. They have an acidic and refreshing flavor that can awaken the taste buds and increase the desire to eat.

In the collation or at 10:00 am snack, many Brazilians skip this meal, missing a valuable chance to nourish their body. This is the perfect time to hydrate yourself and enjoy the benefits of natural juices without added sugar. In addition to hydrating, these juices are rich in vitamins and minerals. Adding chia or flaxseed to the juice can make it even more nutritious. Suggestion: Mango with flaxseed!

When it comes to lunch and dinner, consider including soups or broths made with vegetables and lean meats, shredded, boiled, or stewed. Enhance your meal with olive oil and use natural seasonings such as garlic, red onion, and aromatic herbs to add flavor. At this time, it is wise to reduce salt and avoid fried foods, opting for healthier cooking methods such as grilling or boiling.

Avocado can be a beneficial addition, as can fruits such as kiwi, lime orange, and pineapple for dessert. Prioritize cooked vegetables for easier digestion.

For your afternoon snack, choose healthy, nutrient-rich options. A handful of trail mix is a great choice and can be complemented with sandwiches made with cottage cheese, chickpea paste, sesame seed paste, or whole-grain peanut butter. Other options include oat bran porridge enriched with seeds and fruits.

It is crucial to control your sodium intake. Avoid processed foods, snacks, and other products high in sodium, as excess sodium can raise your blood pressure and increase your risk of nocturnal stroke.

Hydration is essential for brain function and recovery after a stroke. To calculate your daily fluid needs, multiply your weight by 30 mL. For example, if you weigh 65 kg, you should consume 1,950 mL of water throughout the day, in a fractional manner. In summer and winter, it is suggested to consume concentrated juices (01) once a day (300 mL); options: watermelon, apple, orange, lemon, pineapple, kiwi, grape, and mango.

Curiosity!

Let’s address an often-overlooked element in stroke recovery: **sleep**. Although it may seem trivial, sleep is actually a fundamental pillar in rehabilitation. Let’s see why.

A nutritionist is a valuable ally at this stage. They can order tests to identify possible factors that affect sleep and recommend a balanced diet, as well as possible supplements to improve it. Foods such as oat bran, rich in melatonin, and bananas, which contain tryptophan, can be beneficial. In addition, it is important to avoid substances such as caffeine and alcohol, which disrupt sleep. Deep breathing techniques, meditation, and even calming music can help improve the quality of sleep. Practicing conscious breathing and meditation can help calm the mind while calming ambient music can create a setting conducive to rest.

In long-term rehabilitation, sleep plays a vital role in memory consolidation. During this period, the brain solidifies the new skills we are acquiring, making the recovery process more efficient. In this context, melatonin, a sleep cycle regulator, may be recommended by your nutritionist or physician.

In short, maintaining good sleep hygiene, with 7 to 8 hours per night, is crucial for overall health and for preventing a second stroke. Remember, sleep is more than just rest.

Teas such as lemon balm, chamomile, and mulungu can be helpful, but it is important to note that some teas can interact with medications. In more severe cases, master formulas of supplements or herbal remedies can also be used as an adjuvant in modulating the biological clock, always under professional supervision.

Nutritional strategies for ischemic stroke and hemorrhagic stroke may present some differences, considering the specific characteristics and needs of each type of stroke.

In the case of ischemic stroke, which occurs due to a blockage of blood flow to the brain, health professionals generally recommend a balanced diet. The focus is on promoting cardiovascular health, controlling risk factors, and minimizing the formation of blood clots.

The diet should emphasize reducing the intake of saturated and trans fats, sodium, and added sugars. In addition, it is recommended to increase the consumption of fruits, especially purple ones, vegetables, whole grains such as oat bran, and fish rich in omega-3. Foods with anti-inflammatory properties, such as ginger and cloves, are also recommended under supervision.

In the case of hemorrhagic stroke, due to the rupture of a cerebral vessel, nutrition focuses on blood pressure and coagulation. Limiting foods rich in sodium, cinnamon, red meat and stimulants such as caffeine is crucial.

Avoiding alcohol is also recommended. A balanced diet with vegetables, oats, and fruits helps brain recovery. Avoid turmeric, garlic, and ginger, which can alter blood clotting. Yellow or red fruits and vegetables are a priority.

In both types of stroke, it is necessary to reduce the consumption of red meat to two (2) times a week.

Special care for the elderly

According to the Brazilian Guideline for Parenteral and Enteral Nutrition in Geriatrics, there is special care for the elderly after a stroke:

- A thorough and accessible nutritional assessment is vital to determine individual nutritional needs and monitor nutritional status. This includes analysis of diet, weight, body composition, and identification of nutritional deficiencies that need to be corrected.
- Dysphagia is common in elderly people after stroke and can cause complications such as aspiration pneumonia.
- A speech therapist should assess the level of swallowing.
- A nutritionist provides guidance on the types of food and their consistencies, adapting the diet as necessary.

Controlling high blood pressure is crucial to preventing stroke in the elderly. This requires a low-sodium diet, avoiding processed and salty foods, and following prescribed antihypertensive medication.

Dehydration is common in older adults after a stroke and can hinder recovery. It is vital to keep older adults hydrated by encouraging them to drink water and other healthy fluids. Be aware of signs of dehydration such as dry mouth and excessively yellow urine.

Blood glucose control is crucial for elderly diabetics, a group at risk for stroke. It is essential to follow an individualized eating plan that includes adequate carbohydrate distribution, monitoring glucose levels, and following the prescription of anti-diabetic medications, if necessary.

“Think of senior health as a garden. High blood pressure is the salt that prevents growth, dehydration is the lack of water, and blood sugar control is sunlight. Just as a garden needs balance, so does senior health to prevent stroke”.

Protein and energy nutritional support is vital and can be provided orally, enterally, or parenterally. This ensures that the elderly person receives adequate nutrients, preventing the loss of lean mass.

Monitoring kidney function is crucial, especially in the elderly. Blood tests such as 24-hour urine, serum creatinine, microalbuminuria, urea nitrogen, and filtration rate are necessary to adjust the diet and care plan. Kidney problems after a stroke can quickly lead to death. Do not neglect!

These are just some nutritional guidelines for the care of elderly people after a stroke. Each case is unique and requires an individualized treatment plan, taking into account previous health conditions, medications being used, and specific needs. Always consult qualified health professionals who can offer personalized guidance.

"Think of the health of an elderly person after a stroke as a race car. Nutritional support is the fuel, kidney function is the fuel filter, and an individualized plan is the driver. Everyone needs to be in sync to cross the finish line of recovery."

HOW NUTRITION PROTECTS AGAINST POSSIBLE SEIZURES?

When it comes to seizures, nutrition plays an important role in preventing and controlling these episodes. Some foods can trigger seizures in some people, while others can help prevent or even reduce their occurrence.

It is important to be aware of foods that can trigger seizures, such as caffeine, alcohol, artificial sweeteners, aged cheeses and cheddar, and foods high in refined sugar. Processed foods such as salami, sausage, ham, soda, chips, burgers, French fries, and others can also be triggers.

Given the significant role of diet in seizure management, it is crucial to consult qualified healthcare professionals for personalized guidance. These recommendations should be based on scientific evidence to ensure the effectiveness and safety of nutritional interventions.

Other foods high in sodium include spinach and tomatoes, peanuts. Avoiding or limiting their intake can be beneficial in preventing or reducing the frequency of seizures.

On the other hand, some foods can help protect the brain, such as colorful fruits and vegetables, whole grains (oats), nuts and seeds, as well as lemon balm tea, which are excellent choices for promoting brain health.

It is important to remember that each person is unique and may react differently after eating certain foods. The joint work of a physician and a nutritionist makes it possible to develop an individualized eating plan, taking into account their specific needs and preferences.

Supplements may be helpful in prevention and control. Medication treatments are necessary in more severe cases and always according to medical prescription. Depending on the patient's progress, it is possible to reduce the use of medications while maintaining supplementation and specific foods, under professional supervision.

What did you learn in Chapter 01?

Care after stroke

- A calm environment, structured routine, and emotional support are essential.

Intestinal Health

- Crucial for brain recovery, even years after the event.

Diet

- Focus on light and nutritious foods.

Nutritional Strategies

- Differences between ischemic and hemorrhagic stroke.

Elderly

- Nutritional assessment and hydration with vegetable juices and soups are key.

Seizure Prevention

- Avoid trigger foods.

Nutritional Support

- Continues after hospital discharge.

Benefits of Nutrition

- Helps in recovery and prevention of muscle loss.

Personalization

- Individualized nutritional monitoring is vital.

Professional Attention

- Necessary for post-stroke care.

Curiosity!

Did you know that a nutrition professional (nutritionist) can request blood tests? Yes! As provided for in Federal Law 8234/1991 and the guidelines of the Federal Nutrition Council. This is a crucial tool for precise and personalized nutritional monitoring. Imagine knowing exactly which nutrients are missing in your body or if there is any sign of inflammation that may be delaying recovery after a stroke. Check with your country.

This information is like a map that guides the nutritionist to make specific adjustments to your diet, making your recovery more effective and preventing future complications.

Now, if you are thinking about the cost of these tests, here is some good news: do you use a health insurance plan? The physician who is part of your health insurance plan will request the tests indicated by the nutritionist who is treating you privately.

This means that you can have the best of both worlds: the expertise of a specialized nutritionist and the coverage of your health insurance plan. Therefore, there is no reason to postpone this vital step in your health journey. Remember, investing in nutrition is investing in a healthier, longer life.

Chapter 03
Discover Neurofunctional Nutrition

The inability to move a muscle after a traumatic or neurological event can be a devastating experience. However, the science of neurofunctional nutrition offers an increasingly promising approach to muscle and neural rehabilitation. This innovative approach not only provides the nutrients needed for physical recovery but also targets the genetic and molecular levels, particularly the Creb and BDNF genes, which are crucial for neuroplasticity.

"Neurofunctional nutrition serves as a personalized plan for brain health. It highlights essential nutrients, such as vitamins and bioactive compounds, that regulate neurons and neural connections. These components are crucial for neuroplasticity, helping to build new neural pathways. The frequency and amount of consumption of these nutrients are managed to optimize the prevention and treatment of neurological conditions, such as stroke."

Neuroplasticity and Rehabilitation

Neuroplasticity is the ability of the nervous system to change its connections and behaviors in response to new information, changes in the environment, or physical challenges. In a rehabilitation setting, this plasticity can be crucial to regaining the function of a muscle that no longer moves. Neurofunctional nutrition can provide the building blocks needed to support this plasticity.

Creb and BDNF genes: the architects of neuroplasticity

They are responsible for improving support for transmissions between neurons and, consequently, increasing neural conductivity. Neurofunctional foods are rich in nutrients that can activate or up-regulate these genes, making them powerful allies in rehabilitation. These genes are stimulated by food.

"Neurofunctional nutrition is like fertile soil for a plant. You may not see the plant growing every day but the rich soil is there, nourishing its roots and helping it grow strong and healthy over time."

The influence of dopamine

The potential influence of dopamine and other neurotransmitters on neuromotor rehabilitation after a stroke. Neuromotor rehabilitation after a stroke is a long-term process that involves several therapeutic strategies, and neurofunctional nutrition is increasingly understood. One of the neurotransmitters that plays a central role in this process is dopamine.

Dopamine: participates in motor coordination and control

Dopamine is produced in specific areas of the brain, such as the substantia nigra, and is crucial for the modulation of motor activity. Dopamine facilitates communication between neurons in areas of the brain responsible for *motor control and balance*.

Neurofunctional Nutrition: a boost for dopamine production

Neurofunctional foods such as *meats (chicken breast, turkey, salted fish), eggs, dairy products (yogurts and cured cheeses), dark chocolate at least 70% cocoa, spinach, and peas*, are the matrix for the production of dopamine. By providing the body with these essential nutrients, neurofunctional nutrition can help optimize dopamine levels, which is vital for stroke patients who face mobility challenges.

In special situations, such as when the patient has difficulty eating certain foods or is undergoing enteral nutrition, it is possible to use supplements that help in the production of dopamine.

There are ways to naturally increase dopamine: music therapy, exposure to sunlight in the morning for 30 minutes, doing pleasurable activities, and being in open and bright environments.

I need to tell you!

The dietary approach that combines the ***Ketogenic Diet*** with the ***MIND Diet*** is characterized by a significant reduction in carbohydrate intake and an increase in the consumption of healthy fats. This diet is designed to bring the body into a metabolic state known as ketosis, in which fat burning is optimized. In addition to promoting weight loss, this nutritional approach offers remarkable benefits for the brain.

The combination of these two diets can help reduce brain inflammation, improve cognitive function, and protect brain cells. This not only enhances neuroplasticity but also promotes more robust overall brain health. It is possible to work them together in cycles every 15 days, so as not to become tiring.

This dietary strategy needs to be carefully guided by a professional nutritionist. Assessing a person's caloric expenditure is essential to determine the appropriate amount of calories to be consumed, ensuring that the diet is customized to meet individual requirements. Therefore, simply increasing fat intake is not enough; the approach needs to be highly individualized.

In some cases, the inclusion of low-cost supplements can be beneficial to further enhance results, always under the guidance and supervision of a qualified health professional.

You need to know!

Intermittent fasting works as a 'reset' for the body and brain. It is a dietary strategy that alternates between periods of food intake and fasting, benefiting both general well-being and brain health.

During fasting, the body uses fat reserves as a source of energy, which is advantageous for weight loss, reduction of visceral fat, hepatic steatosis, and regulation of insulin and glucose levels.

As far as the brain is concerned, this 'reset' offers even more notable benefits. The process reduces inflammation, stimulates neurogenesis, and improves neuroplasticity. It works as an effective 'toxin sweeper', potentially eliminating harmful elements from the brain. These effects result in significant improvements in several brain functions, such as memory, attention, and reasoning, and indirectly benefit motor recovery. However, any intermittent fasting strategy must be adopted under the guidance of a specialized health professional.

Intermittent fasting is a powerful and accessible tool that can be applied at different stages of post-stroke care—from hospital discharge to years after the event. This strategy can provide lasting benefits to brain function, regardless of the time elapsed since the stroke.

“Any strategy that enhances neurogenesis and neuroplasticity benefits brain function and motor rehabilitation”.

WHY AND HOW ARE THESE FOODS ESSENTIAL FOR OPTIMAL BRAIN FUNCTIONING?

The brain is an organ that requires a significant amount of energy and nutrients to function properly. Some important nutrients for brain function include omega-3 fatty acids, B vitamins, magnesium, vitamin D, and others. These nutrients help improve memory, mood, cognition, and mental performance, as well as the production of new neurons.

Muscles need nutrients to function properly and recover after exercise. For example, proteins are essential for building and repairing muscles, while carbohydrates provide energy for exercise and help replenish muscle energy after exercise.

"The number of calories needed may vary depending on the patient's age, weight, height, sex, level of physical activity, and degree of neurological impairment." On average 1,800 Kcal.

RECOMMENDED FUNCTIONAL FOODS FOR POST-STROKE SUPPORT

Fruits are a rich source of vitamins, minerals, and fiber, as well as bioactive compounds such as antioxidants, which are important for brain health and preventing cardiovascular disease. Adequate fruit intake can help reduce the risk of a second stroke.

“You can think of antioxidants as your body’s security team, working tirelessly to protect healthy cells from free radical damage. Just as a security team protects a building from intruders, antioxidants protect cells from harmful molecules that try to invade and wreak havoc. And just as the security team needs resources to do its job effectively, your body also needs antioxidant-rich foods to keep that protection at optimal levels”.

FUNCTIONAL FLOURS, EASY-TO-CONSUME ALLIES

Functional flours are food products with a high content of nutrients in their composition, such as vitamins, minerals, and fiber, as well as bioactive compounds that bring health benefits. These flours can be obtained from different sources, such as cereals, seeds, and dehydrated fruits and vegetables.

“We can compare functional flours to a toolbox for our health. They contain different nutrients and bioactive compounds that are essential for the optimal functioning of our body and brain, just as a toolbox contains different tools to perform different tasks. We can take the right tool for each task, we can choose the most suitable functional flour for each culinary preparation, adding flavor and nutritional value to our meals.”

One of the main advantages of functional flours is their practicality of consumption, as they can be added to various preparations such as smoothies, juices, breads, crepes, tapioca, cakes, and pies, among others. *Flours* that stand out:

- ***Golden flaxseed:*** *2 to 3 tbs.*
- ***Green banana:****1 tbs.*
- ***Chia seeds:*** *2 to 3 tbs.*
- ***Purple corn:*** *1 dsp.*
- ***Plum:*** *2 to 3 tbs.*
- ***Apple:*** *1 to 2 tbs.*
- ***Freeze-dried acai:****1 tsp.*
- ***Purple grapes:*** *1 tbs.*
- ***Amaranth:*** *2 to 3 tbs.*
- ***Carob:*** *1 tbs.*
- ***Buckwheat:*** *2 to 3 tbs.*
- ***Sunflower seeds:*** *2 to 3 tbs.*
- ***Pumpkin seeds:*** *2 to 3 tbs.*
- ***Blackberries:*** *1 to 2 tbs.*

Usage strategy: choose 2 different types of flour for the month and use them daily. The following month, invest in others, and so on. Change as much as you can.

Postponing nutritional care is like ignoring a leak in your home: the problem only grows and the cost of fixing it becomes ever greater. Don't wait for a stroke to take over your life to take action; take control today!

NEUROLOGICAL BENEFITS AND SUGGESTIONS FOR USING SPICES

Cardamom powder is a spice rich in *neuroprotective and anti-inflammatory properties, which also act to improve cognitive function*. Its unique flavor and striking aroma make it a versatile addition to various preparations. It is especially recommended for teas, smoothies, and shakes with cocoa powder and chocolate mousse. To enjoy all its benefits, the suggested use is half a level coffee spoon per day.

Sweet or smoked paprika is a spice that offers multiple health benefits, including *improving blood circulation in the brain, stimulating, anti-depressant, anti-inflammatory properties, and toxin-scavenger*. Its vibrant flavor and color, especially when smoked, make it an excellent choice for enriching salad dressings, pâtés, homemade red sauce pasta, and meat dishes. The suggested use is half a coffee spoon to take advantage of all its benefits.

Turmeric, when combined with pepper or ginger, is a powerful spice with multiple benefits for brain and general health. It has *anti-inflammatory and neuroprotective properties, acts as a brain stimulant and anti-depressant, maintains and creates new neurons, contributes to the improvement of cognitive function, and contributes to motor rehabilitation.* Its earthy flavor and vibrant color make it an excellent addition to a variety of dishes, from smoothies and juices to stews and pâtés. To make the most of its benefits, the suggested use is (01) coffee spon a day. Add a pinch of powdered pepper or ginger. (*Attention to people on Marevan). Citrus foods reduce their bitter taste!*

Dehydrated rosemary powder is a special spice for brain health and general well-being. It is known for its properties that improve attentional focus, and memory, relieve stress, and offer neurological protection. In addition to contributing to an environment favorable to neuroplasticity.

Additionally, rosemary helps *increase blood circulation to the brain, which can improve nutrient delivery*. Its aromatic, earthy flavor pairs well with many dishes, including grilled meats, soups, beans, and even chocolate drinks and teas. The suggested use is half a level coffee spoon, ideal for consumption 1 hour before activities that require focus and attention (physical therapy and speech therapy). It is worth noting that people with hypertension should avoid consuming rosemary.

Dried basil is an aromatic herb that offers multiple benefits for mental and emotional health. Known for its properties that aid digestion, reduce stress, and improve mood, in addition to having antioxidants. Its fresh and slightly sweet flavor is versatile and goes well with several dishes. It is especially good in meat stews, tomato sauces, salads, omelets, and pâtés. The suggested use is a level coffee spoon to enjoy all its benefits.

Oregano has digestive properties that can *help improve digestion and reduce gastrointestinal discomfort*. *In addition, it has a slightly calming action, which can be beneficial for relaxing the nervous system and improving the quality of sleep*. Therefore, it may be more appropriate to use oregano in evening meals, such as dinner, to take advantage of its relaxing and neurological effects. The suggested use is a (01) level coffee spoon to enjoy all its benefits.

Cayenne or black pepper is known for its *brain-boosting and cardiovascular-protective properties*, this spice also helps improve focus and concentration. Suggested Use: Add a pinch to savory dishes, sauces, or soups to add a spicy touch and enhance flavors. Start with a small amount and adjust according to your preference.

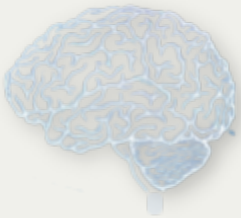
Clove powder, a spice, is notable for its *brain-protective and anti-inflammatory properties*. It is especially effective as a *mental stimulant*, making it beneficial for stroke prevention and rehabilitation. It has a strong, warm, spicy aroma that is both sweet and earthy. A versatile addition to dishes and drinks, including chocolate milk and smoothies. Suggested Use: Add half a coffee spoon to your favorite drink or dish. It is ideal for use before activities, especially when combined with cocoa powder. Consumption should be moderate and do not exceed this dosage.

Think of your life as a complex culinary recipe that you are constantly tweaking. Each ingredient you add has the power to transform the flavor, texture, and even nutritional benefits of the final dish. Now, think of spices as the “magic seasonings” that not only enhance flavor but also bring healing and restorative properties to your “recipe for life.”

As with cooking, the key is the right dosage and combination. Adding these “magic seasonings” to your daily routine can be the special touch you need to get your movement back, open new doors, and turn your “recipe for life” into a delicious and healthy dish. And remember, it’s always a good idea to consult a health professional to ensure you’re making the right choices for your individual needs.

COCOA

THE SUPERFOOD



Researchers have discovered that bacteria living in our intestines feed on compounds found in cocoa. After feeding, these same bacteria produce great substances that increase brain neuroplasticity, which is the brain's ability to obtain new connections.

The healthier your gut, the greater the benefits for your brain, and the higher your intake of *at least 80% cocoa*, the healthier your gut microbiota will be–a two-way street. *Ideal as a pre-workout 1 hour and a half before, to improve physical performance. Make a shake, of cocoa with coffee lightly sweetened with honey.*.

- *Strengthens blood vessels;*
- *Slows down cognitive aging.*
- *Increases temporary oxygen supply to the brain after consumption.*
- *Regulates blood pressure.*
- *Favors the intestinal flora.*
- *Acts as a stimulant and antidepressant.*

20 grams of 100% cocoa powder;
25 grams of 80% cocoa powder;
40 grams of chocolate with 80% cocoa per day, significant health benefits are already observed.

EXTRA VIRGIN OLIVE OIL
THE SUPERFOOD

Olive oil is indeed a valuable ingredient in the Mediterranean diet and may play an important role in recovery after a stroke. It contains unique nutrients that can protect and nourish the brain. Polyphenols, particularly **oleuropein**, are a key component of olive oil that have neuroprotective, antioxidant, and anti-inflammatory properties, keep neurons healthy, and help support new neurons.

In everyday life, where we are exposed to a busy environment full of potential dangers, olive oil acts like a superhero alongside our brains. It acts as a shield for brain cells, keeping them healthy and functioning properly, even in the face of daily pressures and stresses. Just as a superhero protects us from the dangers of heavy traffic, olive oil protects our brain from damage caused by oxidative stress and inflammation.

By including olive oil in our diet, we are taking an effective approach to supporting recovery after a stroke and promoting long-term brain health. However, it is important to remember that olive oil is not a miracle cure on its own. It should be combined with a balanced diet and a healthy lifestyle, including regular physical activity, to achieve the best results.

Which olive oil should I consume? (characteristics on the label)

Pure extra virgin olive oil;
Dark green or black bottle;
Glass bottle;
The bottle cannot be exposed to sunlight on the shelf;
Cold extraction;
Information on origin;
Peroxidation < less than 20 (meq O2/kg);
Manufacturing date less than 1 year and a half.

SUGGESTED CONSUMPTION:

2 to 4 tablespoons a day.

LION'S MANE MUSHROOM
THE SUPERFOOD

The Lion's Mane mushroom is a type of mushroom that brings benefits to brain health. It contains special substances that help protect and strengthen neurons, and the brain cells. These substances can also stimulate the formation of new neurons.

The Lion's Mane mushroom also has antioxidant properties, that is, it helps fight free radicals that can harm the brain. It also has anti-inflammatory properties, which means it helps reduce inflammation in the brain.

You can prepare it in different ways, such as smoothies, juices, and soups, and add it to bean broth, including other neurofunctional seasonings.

It is recommended to consume 1 coffee spoon a day; however, it is important to consume it under supervision.

CURRY
THE SUPERFOOD

Curry is a spice blend that usually contains cumin, coriander, ginger, pepper, and cinnamon as its main ingredients. This spice blend not only enriches the flavor of food but also offers significant health benefits.

In addition to reducing inflammation in the brain and improving cognitive function, curry can help produce new neurons, which is crucial for learning, memory, emotional balance, and cardiovascular health, contributing to a more effective neurological recovery process.

To take advantage of these benefits, it is recommended to add 1 heaping coffee spoon of curry a day to juices, teas, meat preparations, smoothies, rice, beans, and soups.

GREEN TEA OR MATCHA THE SUPERFOOD

Green tea, rich in polyphenols such as EGCG, has antioxidant, toxin-clearing, anti-inflammatory, anti-obesity, anti-depressant, neuroplasticity-supporting, appetite-regulating, and neuron-protecting properties. Regular consumption may reduce the risk of stroke by improving cardiovascular health and lowering blood pressure. After a stroke, green tea may aid recovery by protecting brain cells from damage and reducing inflammation and oxidative stress. Therefore, green tea may be a valuable addition to the diet for stroke prevention and recovery.

Imagine your brain as a bustling city. Brain cells are like buildings, and roads are the blood vessels that carry oxygen and nutrients to those buildings. A stroke is like a devastating earthquake that damages buildings and roads, causing chaos in the city. Green tea, in this scenario, is like a rescue and reconstruction team.

Green tea polyphenols, such as EGCG, are the workers on this team. They enter the damaged city and begin repairing the buildings (brain cells), protecting them from further damage. They also clean the roads (blood vessels), improving the flow of oxygen and nutrients to the buildings. They also help reduce inflammation, which is like a fire that can spread after an earthquake, causing further damage.

But the green tea team's work doesn't stop there. They also help improve the function of the city, improving memory and attention, which are like the essential services that keep the city running efficiently.

So, drinking green tea is like hiring this rescue and reconstruction team for your brain city. It's a simple and effective way to support your brain health and aid in recovery after a stroke.

SUGGESTED CONSUMPTION:

Tea with 3 tablespoons of leaves or 1 coffee spoon of Matcha in the morning.

ACAI
THE SUPERFOOD

Acai, a fruit native to the Amazon, is known for its multiple health benefits, including neuroprotective properties and improvements in cognitive health. Rich in antioxidants such as anthocyanins, acai may help combat oxidative stress, a factor that contributes to age-related cognitive decline and neurodegenerative diseases. Studies show that acai may promote brain health in several ways.

First, the antioxidants in acai can protect neurons from damage, thereby improving brain health and function. Additionally, acai can help improve memory and learning.

“Silently, acaí increases support for neurological health, creating an environment that is favorable to neuroplasticity and motor rehabilitation.”

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SUGGESTED CONSUMPTION:
Serving size of 300 grams.

Let's try a different approach:

"Imagine that your brain is an orchestra and acaí is a conductor. A stroke is like a noise that interrupts the music. Acaí, with its antioxidants, acts like the conductor, calming the noise, protecting the instruments (neurons), and improving the orchestra's performance (cognitive function). Thus, acaí helps to keep the beautiful music of your brain playing, even in the face of adversity."

WALNUTS
THE SUPERFOOD

According to studies related to this food, *the ideal daily consumption varies between 20 and 40 grams and can be consumed at any time (for an indefinite period)*.

Walnuts are considered a superfood in stroke rehabilitation due to their nutritional properties. They are an excellent source of alpha-linolenic acid (ALA), a type of omega-3 fatty acid.

In addition, walnuts are rich in antioxidants, such as polyphenols, which combat oxidative stress and inflammation in the brain, contributing to brain health and protection against neurodegenerative diseases. Antioxidants help protect brain cells from damage and aid in the regeneration and recovery process.

Walnuts are also a source of vitamin E, a powerful antioxidant that plays an important role in cognitive health and reduces the risk of diseases such as Alzheimer's. They also provide minerals such as zinc, magnesium, and selenium, which are essential for brain function and the nervous system.

Including walnuts in your diet during stroke rehabilitation can have significant benefits.

Their main benefits include

- Improved brain function;
- Protection of neurons;
- Supporting neurotransmitters;
- Sustaining brain energy; and
- Supporting neuroplasticity.

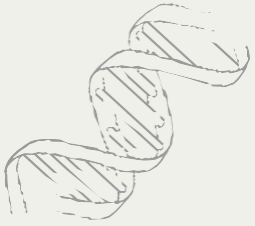
NEW DISCOVERIES IN NUTRITIONAL TREATMENT

Nutritional epigenetics is a subfield of epigenetics focused on studying how nutrients can influence gene expression, especially regarding brain health. Research suggests that diet can affect epigenetics and, by extension, gene expression in the brain, with potential impacts on mental and cognitive health. Macro- and micronutrient deficiencies, for example, have been linked to behavioral problems, while nutritional supplementation may be an effective strategy in the treatment of neuropsychiatric disorders.

In the context of rehabilitation after a stroke, it is crucial to choose foods that stimulate the expression of genes linked to the production and communication of neurons, as well as the protection of brain cells. This nutritional approach optimizes the functioning of the brain areas responsible for movement, which is essential for the success of interventions in physical therapy, speech therapy, and occupational therapy.

The diet should be balanced and guided by a nutritionist, with the choice of specific nutrients. Studies indicate that the Mediterranean diet and the MIND diet, rich in fatty acids, omega-3, soluble fiber, vitamins, and antioxidants, can bring benefits to brain health. It is important to emphasize that nutritional therapy after a stroke must be personalized, considering the individual needs of each patient.

Nutritional epigenetics is a promising area of research, as it suggests that diet can affect gene expression and therefore have a significant impact on brain health. However, more research is needed to better understand how specific nutrients can affect epigenetics and gene expression in the brain, as well as the mechanisms underlying these effects.



What did you learn in Chapter 03?

- Neurofunctional nutrition is an approach focused on optimizing the health of the nervous system through nutrition. It plays a crucial role in recovery after a stroke, helping to prevent complications and reduce the risk of a second stroke event. Nutritional calculation is a key component of this strategy, allowing for a personalized approach..

- Functional foods, such as fruits and cereals, are rich in vitamins, minerals, and antioxidants that are essential for brain health. Functional flours, obtained from a variety of sources, enrich the diet with nutrients and can be incorporated into various culinary preparations. In addition, neurofunctional spices and seasonings, such as turmeric and ginger, offer additional benefits for the brain.

- Nutritional epigenetics complements this approach by studying how nutrients can influence gene expression in the brain, with potential impacts on mental and cognitive health. Therefore, personalized nutrition is essential to promote a healthy and balanced diet, aiming at good brain function.

Chapter 04
Essential Nutrition

Quantities, does it matter?

YES! The amounts of neurofunctional spices, fibers, and functional flours make a big difference in your daily diet.

Consuming **a teaspoon** of chia will not bring any significant benefits but by consuming 2 to 3 heaping tablespoons daily, you will be able to enjoy the expected benefits in the short and long term.

When we add a coffee spoon of turmeric or curry when preparing food, its benefits are dispersed throughout the meal. However, consuming an individual spoonful in a dish or smoothie daily will bring a much greater benefit, as it will ensure a concentrated amount of these spices, enhancing their positive effects.

“Nutrition works when we maintain regularity and adequate quantity, through the consumption of neurofunctional foods”.

CARBOHYDRATES: BRAIN AND MUSCLE ENERGY

Carbohydrates are to stroke rehabilitation what a solid foundation is to a building. They provide the energy required to support the recovery and rehabilitation process, just as a strong foundation is crucial to the stability of a building. Inadequate nutrition can compromise recovery, just as a weak foundation can cause a building to collapse.

Foods rich in starch such as *barley, barley bran, rye flour, brown rice, 7-grain rice, 100% whole grain multigrain bread, quinoa, beans, lentils, chickpeas, sweet potatoes, taro, yam, cassava, whole grain cakes, oat bran, among others*.

Cooking white rice, cooling it, and even freezing it to reheat the next day can make it more glucose-friendly. This process produces resistant starch, which has a lesser effect on blood sugar levels. To make it more nutritious, add whole grains or chopped vegetables.

Clinical guidelines highlight the importance of carbohydrates in rehabilitation after a stroke, emphasizing the need to ensure adequate intake of these nutrients. For example, the Clinical Practice Guidelines for Stroke Rehabilitation in Korea 2016 and the Canadian Stroke Best Practice Recommendations include nutritional guidelines for stroke patients, emphasizing the importance of ensuring adequate carbohydrate intake. The ESPEN Guideline Clinical Nutrition in Neurology also highlights the importance of adequate nutrition for the recovery of stroke patients.

Fruits are a great source of natural carbohydrates, and they are also rich in vitamins, minerals, fiber, and antioxidants.

Below, the energy foods will be divided into groups:

CEREALS AND TUBERS GROUP

Considering individual nutrient needs, a serving should be on average 80 grams. It is recommended to consume one serving at both lunch and dinner. However, this amount can be adjusted according to the specific needs of each patient.

BEANS AND LEGUMES GROUP

In your daily routine, your legume intake should be between 100 and 200 grams, which is approximately equivalent to two servings. Each serving corresponds to approximately 1 medium ladle.

Food	**Household Measure (approximately 100 grams)**
Peas in pods	1 large ladle
Frozen peas	1 large ladle
Black-eyed peas	1 large ladle
Adzuki beans	2 large ladles
White beans	2 large ladles
Pinto beans	1 large ladle
Black beans	1 ½ large ladle
Green beans	1 large ladle
Brown lentils	1 large ladle
Pink lentils	½ large ladle
Chickpeas	1 large ladle

Add neurofunctional seasonings already mentioned in this Guide.

BREAD AND CEREALS GROUP

To maintain a balanced and healthy diet, we suggest including more whole-grain breads in your menu. The exact amount depends on your personal needs and health goals, but in general, we recommend moderate consumption of 1 serving per day. To better understand, this amount represents approximately 50 grams of bread.

- Sliced bread corn;
- Wholemeal sliced loaf bread;
- Multigrain sliced loaf bread;
- Gluten-free sliced loaf bread;
- Whole wheat French bread (in moderation);
- Pita bread (in moderation);
- Whole wheat flatbread (in moderation);
- Whole wheat multigrain toast;
- Whole grain oat bread;
- Whole wheat quinoa bread;
- Whole wheat barley bread;
- Whole wheat flaxseed bread;
- Whole wheat chia bread;
- Tapioca and oat bran mix;
- Whole-wheat buckwheat bread;

Although bread is a cultural part of snacks and other foods, we believe that industrialized breads in particular contain numerous preservatives that harm the intestines, causing bloating, constipation, headaches, and weakness. We suggest eating more potatoes, fruits, and whole-grain flour.

Consume with functional pâtés, fruit jellies.

SEED GROUP

Important source of fiber, vitamins, minerals, good fats, and bioactive compounds. It is suggested to consume 3 to 4 servings per day. One serving is equivalent to 1 heaping tablespoon.

- *Chia, black soybean, black rice, red rice, brown flaxseed, sunflower, pumpkin, black sesame, black quinoa, and black lentils.*

“Bioactive compounds (see Chapter 03) are present in these seeds, which help protect nerve cells from damage, creating a healthier and more resilient cellular environment. It can be beneficial in complementary therapies, such as physical therapy, occupational therapy, or speech therapy, as a healthy and optimized nervous system with the presence of these bioactive compounds will be more responsive to therapeutic stimuli.”

The longer neurofunctional compounds circulate in the bloodstream, the greater their availability to benefit the brain on an ongoing basis.

Instructions:

To make the most of the benefits of chia and flax seeds, it is recommended to soak them in water for 10 minutes before consuming them, forming a gelatinous consistency.

To take advantage of the nutrients of sunflower, pumpkin, and sesame seeds, it is interesting to lightly toast them over low heat with olive oil and neurofunctional seasonings. Store in a container and serve whenever you want.

A handful of toasted pumpkin seeds at dinner helps you sleep because they contain magnesium.

"try to vary every week or fortnight or month, thus maintaining different sources of nutrients"

FIBERS, ESSENTIAL FOR REHABILITATION, UNDERSTAND WHY!

Soluble fiber from certain carbohydrates can improve intestinal function and neurological health due to its anti-inflammatory and neuroprotective effects. In addition, soluble fiber can help maintain intestinal health, protecting against the development of intestinal diseases.

The process of digesting fiber generates a substance in the intestine, especially butyrate, which has been associated with a series of beneficial effects on brain health.

They act as an energy source for intestinal cells, help strengthen the intestinal barrier, reduce intestinal toxins, control hunger, and, consequently, promote the health of the central nervous system. In addition, recent research has shown that butyrate can have positive effects on cognition, memory, and learning, in addition to being anti-obesity.

"Soluble fiber found in certain carbohydrates acts as a fuel for intestinal cells, strengthens the intestinal barrier, reduces inflammation, and has positive effects on brain health."

The foods that stand out in terms of fiber content, according to "Dietary fiber and the microbiota: A narrative review by a group of experts from the Asociación Mexicana de Gastroenterología", published in 2020, include

1. Oat bran;
2. Black beans;
3. Avocado;
4. Chickpeas;
5. Lentils;
6. Pears;
7. Raspberries;
8. Barley bran;
9. Apple or apple peel bran;
10. Sweet potato;
11. Okra;
12. Broccoli;
13. Grated raw carrots;
14. Cauliflower

Do neuroscience and nutrition come together in post-stroke rehabilitation?

Neuroscience and Nutrition are more than isolated subjects; they are strategic allies in the search for more efficient and humanized rehabilitation after a stroke. This multidisciplinary collaboration not only expands our understanding of the brain and its complexities but also allows us to create more robust and targeted treatment strategies.

Neuroscience offers us a detailed map of the brain, revealing how different regions are impacted by a stroke and how we can stimulate neuroplasticity, the brain's incredible ability to reconfigure itself. This knowledge is a powerful tool for personalizing treatments, making them more effective and less invasive.

On the other hand, Nutrition brings to the table an arsenal of nutrients and bioactive compounds that can accelerate recovery and even enhance the effects of neurorehabilitation therapies. Imagine Nutrition as the fuel that powers the engine of neuroplasticity, making each therapy more effective and each advance more significant.

When combined, Neuroscience and Nutrition offer a holistic and integrated approach that goes beyond standard treatment. They allow us to look at the patient as a whole, considering not only symptoms but also emotional well-being and quality of life. Each case is unique, and the collaboration between these two subjects ensures safer, more effective, and, above all, patient-centered treatment. In short, the union of Neuroscience and Nutrition is more than promising; it is a revolution in the way we approach rehabilitation after a stroke, offering hope for a more complete and dignified

FRUIT GROUP

In the case of a stroke, it is important to include fruits rich in antioxidant compounds, which are mainly present in purple, red, or yellow fruits. These compounds have anti-inflammatory properties and can contribute beneficially. *Eat an average of 300 grams of fruit per day. If you have difficulty, eat 400 grams on alternate days. Try to choose 3 to 4 varieties per week and intensify. The following week, choose others*.

Among them, the following stand out:

- Plum;
- Watermelon;
- Dried plum;
- Kiwi;
- Blackberry;
- Jabuticaba (peel)
- Blueberry;
- Strawberry or cranberry;
- Pomegranate;
- Acaí;
- Purple grape;
- Surinam cherry;
- Raspberry;
- Cherry (ideal for consuming at night to improve sleep).

Next, we highlight

Northern Cherry;
Cambuci;
Grumixama;
Purple Araca;
Cajuí;
Pitomba;
Mango;
Guava;
Tahiti lime;
Passion fruit;
Soursop;
Papaya;
Apple;
Nectarine;
Melon;
Raw Williams pear;
Red dragon fruit;
Pineapple;
Acerola;
Cavendish banana;
Burro banana;
Sweet orange / Pera orange
Formosa papaya

Suggested consumption:

Fruit salad with 3 types of different colors, adding neurofunctional flours (1 serving size) + yogurt with probiotics.

PROTEIN GROUP, ESSENTIAL IN THE RIGHT AMOUNT

Just as a house needs bricks to be built, our body needs proteins to build and maintain muscles. In the post-stroke rehabilitation process, protein is essential to help maintain muscle and brain recovery. It provides the "bricks" needed for the body to build and repair damaged tissues.

An important guideline is to consume two 0.5 cm thick palm-sized portions of meat as a reference for lunch and dinner meals. The weight of this meat will depend on the type of meat and its density, but on average it can be estimated at around 70-80 grams.

The need may vary depending on the patient's health, weight, and physical activities performed. In particular, for critical patients, the calculation of the amount of protein must be done under the guidance of a nutritionist.

The weekly consumption guideline is:

Chicken and pork: It is recommended to consume 2 to 3 servings of chicken per week. One serving can be equivalent to about 70 to 80 grams of already cooked or roasted chicken. Chicken breast is recommended.

Eggs: It is recommended to consume 4 to 7 eggs per week. One serving of protein is equivalent to about 2 eggs.

Fish: It is recommended to consume 2 to 3 servings of fish per week. One serving can be equivalent to about 100 to 130 grams of cooked fish. Do you not eat fish or foods that provide omega-3? We suggest supplementation.

Red meat: It is recommended to limit the consumption of red meat to between 2 and 3 servings per week. One serving can be equivalent to around 80 to 100 grams, that is, 240 to 300 grams per week.

PROTEIN GROUP, QUICK OPTIONS

Whey protein isolate: highly nutritious, whey protein is a source of high-absorption protein, making it a convenient option for increasing protein intake. It is easily prepared by mixing it with water, plant-based milk, or other beverages, and can be consumed as a shake. Ideal for breakfast.
01 serving = 25 g

Vegan protein bars: are a practical option for supplementing your diet with protein, especially for those who follow a vegetarian or vegan diet. They are ready for immediate consumption and can be easily transported as nutritious snacks. Ideal for breakfast.
02 average units 70 g each = 1 serving

Special ready-made or homemade enteral formulas: enteral formulas are liquid preparations that provide complete and balanced nutrition. For cases of difficulties in swallowing, low weight, malnutrition, and chronic fatigue, they can be prescribed by a nutritionist or nutritionist.

Liquid pasteurized egg white: Liquid pasteurized egg white is an excellent source of high-quality protein. It is ready to eat and can be used in various preparations, such as omelets and scrambled eggs. 01 serving = 200mL

High-protein yogurts: with average amounts of 20 to 25 grams of protein, they serve as a breakfast option.
01 unit = 1 serving

"Proteins are essential in our three main meals: breakfast, lunch, and dinner".

Special guidance: patients who are underweight, have poor digestion, are malnourished, and elderly with low protein intake or difficulty in consuming proteins are advised to take supplements such as digestive enzymes to facilitate protein absorption.

PROTEINS: THE IMPORTANCE IN THE RIGHT AMOUNT

“Breakfast is a meal that deserves special attention, and including protein in this meal is essential. In addition to providing the energy needed to start the day with energy, proteins play a crucial role in the production of neurotransmitters, such as dopamine, which influence our mental and physical disposition.

Dopamine not only improves mood and disposition but also plays a crucial role in the ability to think about the future. This hormone has the incredible ability to make us look ahead, and feel more willing and motivated to make plans and projects. It helps with motor balance, reducing tremors and improving movement coordination.

OILS AND FATS GROUP

It is recommended to consume 30 grams of solid foods and 20 milliliters in the case of liquids.

Brain energy: Fatty acids are vital for brain function, serving as a primary source of energy for nerve cells.
Nutrient absorption: Fats facilitate the absorption of essential vitamins such as A, D, E, and K, which are crucial for neurological health.

Neural protection: Lipids act as insulators in myelin sheath, optimizing the transmission of nerve impulses.

Plasticity and repair: Phospholipids are essential for neuroplasticity, allowing the formation of new neural connections, essential for learning and rehabilitation.

Neuronal regulation: Fats are precursors to neurotransmitters and hormones such as BDNF, which regulates the growth and survival of neurons and is vital for long-term brain health.

The main ones include:

Extra-virgin olive oil;
Flaxseed oil;
Peanut oil;
Palm oil;
Chia oil;
Avocado oil;
Coconut fat (in moderation);
Brazil nuts;
Avocado (80 grams);
Almonds;
Pistachios;
Macadamia nuts (in moderation);
Baru nuts;
Raw cashew nuts;
Shelled peanuts.

"Extra virgin olive oil can be used for cooking; however it needs to be on low heat and not generate burning smoke; do not use olive oils mixed with other oils".

Lard, friend or foe?

According to recent studies in the Journal of the American College of Cardiology, there are differing opinions about the effects of lard on health. It is important to control its consumption, as it contains a significant amount of saturated fats, which can cause problems in the intestine and metabolism. In addition, consuming too much lard can lead to weight gain and increase the risks related to obesity. Therefore, it is recommended to consume lard in moderation.

We can compare inflammation to an alarm in our body. When there is inflammation, it is as if this alarm is activated, alerting us that something is wrong. Controlling the consumption of lard is like silencing this alarm, preventing it from continuing to ring and causing greater problems. It is important to understand the impact that certain foods have on our bodies in order to take care of our health in a conscious and balanced way.

“The recommendation from the Instituto Neuro Nutrição Funcional is to use the smallest amount of oil possible just to grease the pan, removing the excess with a napkin."

FOODS RICH IN OMEGA 3

Omega-3 is a type of healthy fat with anti-inflammatory properties and can help in the post-stroke rehabilitation process. Some scientific studies have shown that omega-3 can reduce inflammation and improve cerebral blood flow, in addition to contributing to the recovery of cognitive and motor function.

Fish rich in omega-3 include *wild salmon, tuna, mackerel, herring, sardines, sea trout, anchovies, cod, halibut, and sea bass*.

Among plant sources, we highlight flaxseed and chia seeds, walnuts, and flaxseed oil, however, it is estimated that the conversion of this oil to omega- is around 3%.

The intake of animal-based sources of omega-3 can be via supplements.

We emphasize the importance of the preparation method:

Grilled: grilled fish is a healthy and delicious option when using extra virgin olive oil to prepare it. Simply season the fish with salt, pepper, and herbs to taste and grill it in a frying pan. Be careful when grilling to avoid burnt areas, as these are harmful and damage the brain.

Baked: simply place the fish on a baking tray, season with salt, pepper, and herbs to taste, and bake for about 30-40 minutes, depending on the size and type of fish. Be careful when browning the fish at the end so that it does not burn. These are harmful and can damage the brain.

Stew or moqueca: to prepare it, simply place the fish in a pan with water and seasonings to taste, and cook over medium heat for about 30 minutes, or until completely cooked.

DAIRY GROUP

1. **Skimmed curd:** One serving is approximately one cup (200mL).
2. **Light ricotta cream:** One serving is one tablespoon.
3. **Skimmed Greek yogurt:** One serving is approximately one pot of yogurt (150g).
4. **Natural yogurt:** One serving is equivalent to one pot of yogurt (150g).
5. **Soy drinks with calcium:** One serving is considered one cup (200mL).
6. **UHT skimmed cow's milk:** One serving is equivalent to one cup (200mL).
7. **Skimmed cow's milk powder:** One serving is approximately three tablespoons.
8. **Light Minas fresh cheese:** One serving corresponds to one medium slice (30g).
9. **Soy cheese/Tofu:** One serving is approximately half a block (50g).
10. **Light cottage cheese:** One serving is equivalent to two tablespoons.
11. **Light cheese spread:** One serving is considered one tablespoon.

1. **Bone health:** After a stroke, mobility may be limited, leading to a loss of bone density. Get enough calcium to prevent osteopenia.
2. **Muscle function:** Calcium plays a crucial role in muscle contraction and relaxation. In physical therapy, it is essential in physical rehabilitation to restore muscle function and strength.
3. **Blood pressure:** Some research suggests that calcium may help regulate blood pressure.
4. **Nerve function:** Calcium is necessary for the transmission of nerve signals. Maintaining adequate calcium levels may help optimize nerve function during stroke recovery.
5. **Blood clotting:** Calcium is a key component in blood clotting. After a stroke, maintaining normal clotting function is important, and calcium may contribute to this.

LEAFY VEGETABLE GROUP

Leafy greens are crucial in post-stroke rehabilitation, thanks to their abundance of essential nutrients and bioactive compounds. Rich in vitamins, minerals, and fiber, these vegetables also contain antioxidants that combat oxidative stress and inflammation, which are often exacerbated after a stroke.

These vegetables are characterized by their distinct colors: dark green (such as spinach, kale, and arugula), red (radishes and bell peppers), and purple (such as purple cauliflower). Each color indicates the presence of different bioactive compounds. For example, carotenoids are responsible for the colors orange and yellow; anthocyanins give the colors red and purple; and chlorophyll is the cause of the green color. All of these compounds have antioxidant and anti-inflammatory properties that are beneficial for brain and cardiovascular health.

"Leafy vegetables can be compared to an army of colors and nutrients that work together to protect and strengthen the body during rehabilitation after a stroke. Each color represents a troop of bioactive compounds, ready to combat the negative effects of a stroke. Like a diverse and well-organized army, leafy vegetables offer a variety of health benefits, providing the essential nutrients for recovery and strengthening the body. By including a variety of leafy vegetables in different preparations, we are ensuring a robust defense and a more effective recovery after a stroke".

If you have difficulty preparing it or trouble with the flavor, try making it with citrus fruit smoothies or cooking it together with meat.

LEAFY VEGETABLE GROUP

Among them we highlight:

- Purple lettuce;

Sautéed spinach; Leek;

- Chicory;
- Cooked and sautéed ora-pro-nóbis

Next, we highlight:

- Chard
- Watercress
- Curly lettuce/smooth lettuce
- Raw chicory
- Cooked asparagus
  Sautéed bertalha
- Collard greens
- Chinese cabbage
- Mustard greens
- Arugula
- Sautéed taioba
- Broccoli Leaf
- Beetroot Leaf
- Cooked and Sautéed roselle
- Cooked and sautéed bertalha

These plants have different flavors, nutrients, and health benefits, and can be used in various culinary preparations, such as salads, stews, and juices.

The recommended intake of leafy vegetables is 2 servings of leafy vegetables per day. One serving is equivalent to about 1 large cup or saucer of raw or sautéed vegetables.

These are only general recommendations, and individual needs may vary depending on health status, age, gender, level of physical activity, and other factors. Therefore, it is always advisable to seek guidance from a health professional or nutritionist for a personalized recommendation.

"try to diversify every week"

I have no cooking skills, I don't like vegetables in general, what should I do?

I understand that cooking may not be your thing and that you may not be a fan of vegetables. However, the good news is that there are other ways to ensure you get the nutrients you need for your stroke recovery.

First Step: **whole grains and fruits**. If you are **unwilling** to incorporate vegetables into your diet, I suggest you increase your consumption of whole grains and fruits. Porridge, smoothies, and overnight oats are practical options. Ideally, 300 grams of fruit per day + 2 to 3 servings of cereals. They will help your intestines and your intake of vitamins, minerals, and bioactive compounds.

Step Two: **supplements and functional flours**. If preparing food is still a challenge, consider using supplements rich in *special fibers and functional flours (chapter 03)*. Consider doubling the amount of functional flour described in this *Guide* to 2 servings. They contain bioactive compounds that indirectly help your brain health. Try to vary the functional flours each month.

Step Three: **establish a routine.** Create a minimum consumption routine to ensure that you are getting the right amount of nutrients. Balance sweeter fruits, such as mango and banana, with less sweet fruits, such as apple and pear.

Additional Guidance: Reevaluate making leafy vegetable juices with fruits and cereals. This will provide a nutritional advantage, or at least vary the options from steps 1 and 2.

Does your mind control you or do you control it?

- The power of our thoughts over our actions and emotions is immeasurable. They can be the wind that propels us or the anchor that holds us back.

- In the rehabilitation and treatment journey, it is crucial to understand how automatic thoughts can influence our progress. Challenge these negative mental patterns and replace them with positive affirmations. (Example: ‘This won't work’ -> **It is already working**).

- Cultivate a mindset of self-compassion, resilience, and openness to change. (Example: ‘I didn't do enough today’ -> **Tomorrow is a new opportunity to do more**).

- Believe in your recovery potential and take control of your mind. Transform your life, overcome limitations, and achieve a state of well-being and fulfillment. (Example: ‘This is so boring’ -> **This is for my physical and mental well-being, I value myself**).

- Don’t let negative thoughts dictate the pace of your rehabilitation. Challenge them and feed your mind with positivity. The decision of who controls who is in your hands. (Example: ‘Does this really work? I’ve never heard of it’ -> **This is scientifically supported, it's worth trying**).

The choice is yours: to be dominated by the mind or to dominate it. Which one do you choose?

Let's make consumption easier?

Roma tomato juice is a powerful, tasty, and nutritious drink for neurological health, providing a favorable environment for the rehabilitation journey, which can bring numerous health benefits. Capable of bringing benefits to blood pressure, neuroprotection, cholesterol, immune system, among others. Make this juice 2 to 5 times a week. Now, how about a simple and refreshing recipe for tomato juice with mint? Be curious, try with other leaves.

Ingredients:

(02) ripe Roma tomatoes
(01) handful of mint leaves (optional)
(01) small cup of watermelon
(01) dessert spoon of extra-virgin olive oil or avocado oil;
Drops of Persian lime or lemon;
(100mL) yogurt with probiotics or kefir fermented yogurt or water or coconut water.

Method of preparation:

1. Wash the tomatoes and mint leaves well.
2. Remove only the white top of the tomato.
3. **"Do not remove the skin".**
4. Blend the tomatoes and mint until smooth. Serve immediately, do not freeze!

Why "Roma" tomatoes?
Roma tomatoes are less acidic, unlike conventional tomatoes.

Let's make consumption easier?

Let's look at variations for tomato juice :

(10 units) strawberries with (02) Roma tomatoes;
(15 units) blackberries with (02) Roma tomatoes;
(02 units) red or Argentine apples with (02) Roma tomatoes;
(200mL) acaí with (02) Roma tomatoes;
(½ cup) blueberries with (02) Roma tomatoes;
(25 units) purple grapes with (02) Roma tomatoes;
(04 units) dried plums with (02) Roma tomatoes;
(200g) cherries with (02) Roma tomatoes;
(200g) Surinam cherries with (02) Roma tomatoes;
(½ cup) Barbados cherries with (02) Roma tomatoes;
(200g) natural red guava pulp with (02) Roma tomatoes.

All of them will be added olive oil, mint, and preferred liquid.

To sweeten, we suggest using honey, coconut sugar, brown sugar, agave, and organic sugarcane molasses. We recommend using as little as possible. Sweeteners are not considered safe.

Tomatoes have bioactive compounds that act both on our brain machinery and also block weight gain (fat).

We suggest that people undergoing kidney treatment or immunotherapy reduce their consumption or use it under professional guidance.

VEGETABLE GROUP

Vegetables stand out for their greater amount of water, ideal for hydration, in addition to their fibers. In addition to the composition of their colors and benefits.

Among them, we highlight:

- Eggplant
- Tomatoes
- Red cabbage
- Red onion
- Beetroot
- Radish
- Shimeji
- Shitake

Broccoli

Next, we highlight:

- Courgette
- Kabocha squash and pumpkin
- Cooked artichoke
- Beetroot
- Onion
- Grated carrot
- Chayote
- Cooked scarlet eggplant

Preserved pupunha palm heart
Raw cucumber
Red and yellow bell pepper
Okra
Maroon cucumber
Cooke green beans

The amount may vary depending on the food; however, on average 300 grams per day is recommended, approximately 2 large cups according to OPA and WHO 2023.

Can calcium supplements help meet daily requirements?

Yes! Chelated calcium supplements can help supplement your daily calcium needs. They can be particularly helpful when used in combination with other nutrients, such as vitamin K2, which works synergistically with calcium to improve bone health.

However, it is important to remember that supplements are not a substitute for a balanced, nutrient-rich diet. Foods such as milk, cheese, yogurt, green leafy vegetables, and fish are excellent natural sources of calcium and should be part of our diet.

The incorrect use of this mineral can lead to cardiovascular problems, kidney stones, and calcification of the joints.

Always consult a specialist health professional before starting any supplementation.

DO VEGANS NEED SOMETHING EXTRA?

For vegans recovering from a stroke, it may be necessary to find alternatives to make up for the lack of animal protein in their diet. Although many sources of animal protein are eliminated from their diet, there are many plant-based protein options, such as legumes, tofu, tempeh, quinoa, lentils, chickpeas, seeds, and nuts. However, these sources often have a lower amount of protein per 100g compared to animal proteins, making it difficult to reach the recommended daily amount with these foods alone. Therefore, vegans must plan their meals carefully to ensure they are getting adequate protein and other important nutrients.

Supplementation can be a great option but it is necessary to be monitored by a nutritionist to ensure the correct dosage and avoid possible side effects. The correction should be assessed based on the patient's weight, height, and nutritional status.

PROTEIN SUPPLEMENTATION FOR VEGANS

Protein supplementation can be especially helpful for vegans who have trouble meeting their daily protein needs through diet alone. Here are some types of protein supplements that are popular among vegans:

1. **Pea protein:** This is a popular type of protein powder for vegans. It is made from yellow peas and is a great source of complete protein.
2. **Brown Rice Protein:** Brown rice protein is another common option. While it is not a complete protein on its own, it is often combined with pea protein to create a complete amino acid profile.

Vegans need to reach the daily supplementation amount to maintain muscle mass. On average, 50g per day is enough.

PRACTICAL GUIDE FOR HEALTHY PREPARATION OF MEAT

- **For meat preparation methods:** Choose to roast, boil, or grill meats, as these cooking methods preserve nutrients and add less fat than frying.
- **Cleaning the meat:** Before preparing, remove the skin and visible fat from the meat to reduce the intake of saturated fats and cholesterol.
- **Seasonings and sauces:** Avoid adding fatty sauces or excess salt to the meat. This care can help keep sodium and fat intake within healthy limits.
- **Choosing the oil:** When cooking, opt for extra virgin olive oil or vegetable oils such as corn, peanut, and sunflower, which are sources of unsaturated fats and are healthier for the heart.
- **Avoid burning the meat:** Do not let the meat burn until it forms a hard crust, as this can lead to the formation of compounds that are potentially harmful to health. Neurotoxic.
- **Using natural seasonings:** Use natural herbs and spices to flavor the meat, as they add aroma and flavor without adding calories or sodium.
- **Cooking temperature**: Cook the meat over low heat to avoid burning it or making it too dry. This helps preserve the juiciness and flavor.
- **Incorporating vegetables:** Add vegetables and greens when preparing the meat. In addition to increasing the nutritional value of the meal, they can also help keep the meat juicy and add flavor.
- **Preferences:** Use more leeks, and red or white onions when preparing the meat. They help add flavor and juiciness to the meat.
- **Cooking methods to avoid**: Avoid using charcoal or barbecue whenever possible, as burning the meat releases toxic substances that instantly harm brain health.

Let's make consumption easier?

It is not recommended to season meats before freezing, as some seasonings can change the flavor of the food.

Here is a step-by-step guide on how to buy, season, and freeze meat:

1. **Purchase:** When you go to the butcher, ask the butcher to cut the meat the way you prefer and bag it in portions.
2. **Transport:** Take the meat home as quickly as possible to avoid it sitting at room temperature for too long.
3. **Preparation:** When you get home, wash your hands thoroughly and prepare the area where you will handle the meat.
4. **Packaging**: Place the seasoned meat in freezer-safe containers. You can use plastic food-grade bags or glass containers with lids.
5. **Freezing:** Place the meat in the freezer. Try not to stack the packages until the meat is completely frozen to ensure even freezing.
6. **Storage:** Meat can be stored in the freezer for up to 3 to 4 months. Never thaw and refreeze any type of meat.

Time to consume:

Leave the meat to defrost in the refrigerator the night before, and the next day season it with olive oil-based preparations and moisten the meat, protecting it so that it does not dehydrate during the final preparation.

You should invest in Rosemary!

Rosemary has a variety of benefits that will help your brain and body have tools for rehabilitation.

Recipe 01: Pickled Rosemary (lunch)

Ingredients:

- *2 tablespoons dried rosemary with herbs of your choice*
- *50 mL extra virgin olive oil*
- *Pinch of cardamom powder*
- *Pinch of black pepper powder (optional)*

Preparation Method:

1. *Place the dried rosemary, pepper, and cardamom at the bottom in a glass jar, then add the olive oil.*
2. *Mix well and leave to marinate in the refrigerator.*

Every time you consume it, take a tablespoon of olive oil and add a new one to keep it fresh. Change the rosemary every 2 months. Use it on your salad or meat, individually.

Recipe 02: Rosemary Tea (daily, before or after breakfast)

- *1 tablespoon of fresh or dried rosemary leaves in 1 cup of boiling*
- *water*

Honey or lemon (optional, to sweeten or add flavor)
Preparation Method:

1. *Place the rosemary leaves in a cup.*
2. *Pour the boiling water over the rosemary leaves.*

Cover the cup with a saucer or plate to keep the heat in and allow the infusion. Leave it for 15 minutes. Strain and drink with lemon.

DISCOVER THE SECRETS TO NATURALLY FLAVOR MEATS!

Want to make your meat dishes irresistible? Here are some natural spices and seasonings that will transform your dishes.

- **Chicken**: Enhance its flavor with *sweet paprika, onion, parsley, coriander, cumin, cayenne pepper, turmeric, basil, rosemary, lemon pepper, and oregano*. The combination of these spices will bring an amazing aroma and flavor to your chicken meat.
- **Red Meat:** Try *bay leaves, sun-dried tomatoes, red onion, mustard seeds, cloves, cardamom and chimichurri*. These ingredients will add a complex layer of flavor, making your red meat even more delicious.
- **Fish**: Add freshness and flavor with *tomatoes, onions, parsley, dill, tarragon, lemon and pink pepper*. These spices will enhance the delicacy of the fish, creating a perfect harmony of flavors.

HAVE YOU EVER HEARD OF HERBAL SALT?

This natural blend of dried herbs and spices ground together with salt is a healthy alternative to regular table salt.

Ingredients:

2 tablespoons dried rosemary
2 tablespoons dried basil
2 tablespoons dried oregano
1 tablespoon dried thyme
1 tablespoon dried sage
1 tablespoon garlic powder
1 tablespoon onion powder
1 teaspoon sweet or smoked paprika
1 teaspoon ground black pepper
1/4 cup sea salt or good quality coarse salt

Place the herbs in a food processor, grind them, and then add the salt. Place in a glass jar with an airtight lid and store in a cool, dry place.

Did you know?

Eggs are a food rich in essential nutrients such as protein, vitamins, minerals, and choline (essential for our muscles). For years, there have been concerns about the impact of egg consumption on health, mainly due to their cholesterol content. However, recent robust research suggests that moderate consumption of **(01) one egg per day** is acceptable.

Neurologist J. David Spence, a researcher at the Robarts Research Institute in Canada, has dedicated the last 40 years to the study and prevention of cardiovascular disease and stroke. He advocates an integrated approach to preventing these diseases, which includes a healthy lifestyle, regular physical activity, a balanced diet, and smoking cessation.

Spence also explores the relationship between diet and the risk of cardiovascular disease, focusing particularly on the excessive consumption of eggs and red meat. He points out that egg yolk can contribute significantly to cardiovascular disease since it can produce potentially harmful substances in the body through the intestine. The risk is even greater in people with kidney problems and the elderly.

“Relatively short-term temporary dietary strategies, with the use of more than (01) egg per day, due to its ease of use in several dishes or nutritional strategies such as the ketogenic diet above one unit per day, are permitted under nutritional supervision.”

A treasure trove of wisdom for your health!

Bad Fats, How Do They Delay Your Rehabilitation?

When a stroke occurs, it is important to control your diet to aid recovery. Some fats present in foods can be harmful to the body during this period, negatively affecting the rehabilitation process. Therefore, it is recommended to avoid foods with bad fats and, instead, choose sources of healthy fats, such as seeds, fish, olive oils, and nuts.

A study published in 2015 in the journal Nature showed that saturated fats from animal sources can have a negative impact on brain cells, increasing the risk of cognitive decline. Bad fats can also contribute to inflammation in the body and brain, worsening the damage caused by the stroke.

We can compare bad fats to the obstacles in the path of rehabilitation after a stroke. They hinder the path to brain recovery and can cause even more damage. In addition, these fats can cause inflammation in the body and brain, which is like heavy rain that can worsen the damage caused by the stroke. It is important to control the consumption of bad fats to keep the path clear and safe for the recovery of the body and mind. *Bad fats include butter, margarine, fatty yellow cheese, whole milk, ice cream, ready-made cake batter, fast food, industrialized French fries, filled biscuits, heavy cream, mayonnaise, ready-made industrialized salad dressings, stock cubes, sausage, salami, turkey breast and ham, hydrogenated vegetable oils, red meat with a layer of fat, poultry skin, gizzards*.

What did you learn in Chapter 04?

- Carbohydrates are crucial to post-stroke rehabilitation, providing energy and support for the recovery process.
- Starchy foods, such as whole grains and pulses, are vital sources of carbohydrates.
- Fruits provide natural carbohydrates and are rich in essential nutrients such as vitamins, minerals, and antioxidants.
- Soluble fiber, found in many carbohydrates, is beneficial for gut health and has positive effects on the brain, strengthening the intestinal barrier and reducing inflammation.
- Specific intake guidelines have been provided for pulses, bread, red meat, and fish, helping to guide food choices for effective recovery.
- Vegans recovering from stroke may require plant-based protein supplementation and should plan their diets carefully to meet their nutritional needs.
- Rosemary and other “superfoods” are recommended for daily inclusion in the diet, likely due to their antioxidant and anti-inflammatory properties.

Chapter 05
Diet Planning After a Stroke: Promoting Recovery and Health

DIET PLANNING AFTER A STROKE

After a stroke, nutritional planning plays a key role in recovery and health promotion. A proper diet aids the rehabilitation process by providing the nutrients needed to rebuild damaged tissue and support brain recovery.

Therefore, remember to choose quality, balanced foods that are appropriate for your individual needs. Through conscious and guided nutritional planning, you will be building a solid foundation for your recovery after a stroke and promoting the health of your entire body.

"Imagine that your body is a house that has been through an earthquake, the stroke. To rebuild this house and make it strong again, you need quality materials. Carbohydrates are like the solid foundation that supports the building, providing the necessary energy. Proteins are the bricks that build and repair damaged tissues. Healthy fats are like the mortar that holds everything together, while soluble fibers are the pillars that strengthen the structure and promote internal health. Each food plays an important role in this rebuilding process.

Just as a construction team works together to rebuild a house, a team of healthcare professionals, such as physicians and nutritionists, are there to help you plan a proper diet. They are the architects and engineers who will design a personalized eating plan for your recovery".

Did you know that coffee?

Coffee, a beloved beverage around the world, is more than just a morning pick-me-up. Rich in antioxidants (toxin-scavengers) and bioactive compounds, coffee can offer a range of health benefits for the body and brain, as long as it is consumed in moderation.

To improve your physical performance during physical therapy, coffee is an excellent option to be consumed one (1) hour before physical therapy, helping to increase your endurance, and focus, and possible effects on increasing strength.

In addition, studies suggest that caffeine can benefit the brain, improving memory, mood, and general cognitive function.

However, as with everything in life, moderation is key. Excessive coffee consumption can lead to unwanted side effects, such as insomnia, nervousness, increased heart rate, and stomach problems. Avoid drinking coffee after 5:00 pm, so as not to interfere with the quality of sleep.

When it comes to choosing the type, *Arabica coffee* is the best, because it is less acidic, more alkaline, and does not harm the stomach. However, it is important to remember that not everyone can consume coffee. People with heart disease, stomach ulcers, and pregnant women should limit or avoid coffee consumption.

We suggest 250 to 300mL, evaluate and observe your body's response. If you are in the first 6 months after a stroke, we suggest reducing your coffee consumption to 50mL per day. There is no consensus on this subject, however, each individual may respond in a more sensitive way.

CHAPTER 05

DIET PLANNING AFTER A STROKE

Food groups play a crucial role in the recovery and prevention of illnesses, including stroke. By organizing foods into different categories, we can get a clearer picture of how each group contributes to health and well-being after a stroke. Classifying foods helps ensure a balanced and nutritionally adequate diet.

- Cereals and Tubers Group Beans
- and Legumes
- Breads Group
- Seeds Group
- Fiber Group
- Fruit Group
- Protein Group
- Oils and Fats Group
- Dairy Group
- Leafy Greens Group
- Vegetable Group

“Just as an orchestra needs different instruments to create a beautiful melody, our bodies need different food groups to stay healthy, especially after a stroke.

Each food group plays an important role in recovery and disease prevention. Cereals and tubers provide energy, proteins help rebuild tissue, dairy strengthens bones and muscles, fruits provide vitamins and antioxidants, good fats are essential for brain health, and vegetables provide fiber and various nutrients.

Just as a song becomes more interesting with different instruments and harmonies, your diet becomes more complete and beneficial when you include all the food groups. This way, you will be providing the nutrients necessary for the recovery and maintenance of your health, creating a symphony of well-being within your body."

PRE-WORKOUT SNACKS PHYSICAL THERAPY, HYDROTHERAPY

Pre-workout snacks play an essential role in physical therapy after a stroke, providing the nutrients needed to optimize performance and promote recovery.

These snacks should be balanced, containing complex carbohydrates, protein, and healthy fats. Carbohydrates provide quick energy, while protein helps with muscle activity. Healthy fats provide extra energy.

"By providing adequate nutrients before physical therapy training, it is possible to improve energy, endurance, and recovery, thus optimizing the outcomes of rehabilitation after a stroke."

"A lack of adequate nutrients can be compared to a car without fuel. Just as a car needs fuel to function properly and achieve good performance, our body also needs the right nutrients to stay energized and perform well during training. If we do not provide our body with the necessary nutrients, just as a car would stop halfway, our physical performance can also be compromised. Therefore, it is essential to provide our body with the right nutrients to perform at its best during training and achieve the best results."

PRE-WORKOUT SNACKS FOR PHYSICAL THERAPY ACTIVITIES, AMONG OTHERS

We suggest that snacks be eaten *1 hour before training* so the body can digest properly.

Pre-workout snacks should be light and high in energy, containing a good amount of nutrients. The use of liquid MCT is a supervised strategy.

It is suggested that you consume highly nutritious functional juices that help with blood circulation.

Example 1:
Banana smoothie with 1 serving of skimmed milk powder + 1 serving of functional flour, accompanied by 2 slices of toast with olive oil.

Example 2:
1 wholemeal roll with 1 serving of cottage cheese, accompanied by 3 Brazilian nuts.

Example 3:
1 serving of cooked sweet potato + Greek yogurt with functional flour + ½ serving of solid good fats.

Example 4:
2 slices of multigrain nut-based loaf, accompanied by 1 serving of the dairy group + 1 purple or yellow fruit + ½ serving of solid good fats

NOTE: Never eat those bad fats before working out.

If your workout is very intense and you feel hungry during exercise, drink natural juice (100mL):

Watermelon and lime
Orange and lime
Apple and lime
Strawberry and orange Orange and mango

Do not add sugar or fatty fruits during working out.

See attached other snack options.

SNACKS AFTER PHYSICAL THERAPY, HYDROTHERAPY, AND SIMILAR ACTIVITIES

We suggest that snacks be eaten within *30 minutes of exercise to avoid fatigue, loss of muscle mass, or hypoglycemia*.

Post-workout snacks should be light and highly nutritious but not too energetic. Allow yourself to recover energy with larger meals. Functional flours and purple or yellow fruits are good options at this time.

We can prepare this snack like this: *carbohydrate + 1 serving of functional flour + purple or yellow fruit*.

Example 1:
Smoothie with 2 tablespoons of skim milk powder + 1 cup of purple or yellow fruit + 1 serving of functional flour + ½ banana.

Example 2:
Soy milk smoothie + 1 cup of purple or yellow fruit + 1 serving of functional flours + ½ banana.

Example 3:
Greek yogurt or natural yogurt + *1 cup of purple or yellow fruit + 1 serving of functional flour*.

NOTE: Never consume the bad fats mentioned in this guide, they delay your recovery.

Optional savory side dishes:

02 whole-wheat toasts with ricotta pâté and/or;
½ loaf slice with a slice of white cheese and/or;
½ pita bread with ricotta pâté.

Special recipe: cottage cheese pâté with pout pepper
Ingredients: (1 tablespoon of cottage cheese + 1 teaspoon of chopped pout pepper + 2 tablespoons of olive oil + pinch of salt)

See attached other snack options.

Have you ever stopped to think?

When we consider the frequency of festive holidays in Brazil, it is clear how often we invest in shopping and traveling without assessing the long-term impact. A retrospective analysis of annual spending reveals that these amounts could be better invested in consulting with a nutrition professional, whose benefits would last a lifetime.

Investing in nutritional health goes beyond the immediate pleasure associated with impulsive eating. Even a short period of expert guidance can result in healthier food choices, maintenance of an ideal weight, and improved well-being and energy. These gains have a cascading effect, benefiting everything from the execution of daily tasks to the prevention of chronic diseases.

"Therefore, it is essential that we rethink our priorities and consider investing in our nutritional health as a one-time and long-lasting investment. By making this choice, we will take a significant step towards a healthier and more balanced life, where we can enjoy long-term well-being and quality of life."

BREAKFAST:

A well-balanced breakfast not only supplies the body with essential nutrients for brain and general recovery but also helps regulate satiety throughout the day. This can prevent overeating during lunch, thus reducing glucose spikes, which have neurotoxic effects and can complicate the metabolic condition. Therefore, a proper breakfast is an effective strategy for optimizing brain function and metabolic well-being in patients in post-stroke rehabilitation.

Protein Group (one serving): omelet or omelet with shredded chicken or turkey.

- ***Bread Group (one serving):*** whole-wheat roll or tapioca with oat bran or multigrain loaf sandwich, etc.
- ***Dairy Group (½ serving):*** curd or Minas cheese.
- ***Seed Group (½ serving):*** chia, flaxseed or sunflower seed, etc.
  Fruit Group (½ serving): orange, tangerine, apple, etc.
- ***Liquids (100mL):*** green tea, black tea, Arabica coffee, natural orange
- juice, lemon juice, etc.

- *Protein Group: Omelet with 4 egg whites and seasonings with shredded*
- *chicken*
- *Bread Group: Tapioca with oat bran*
- *Dairy Group: Curd with chia seeds Fruit*
  Group: Half an orange
- *Liquids: Green tea with cloves in bloom*

Seasonings to taste in the omelet (dried fine herbs - or - Fresh basil - or - Smoked paprika - or - Black pepper - or - Black cumin - or - Dried sage - or - Sweet paprika powder).

COLLATION

Collation serves as an important “nutritional bridge”, especially for individuals undergoing rehabilitation, such as post-stroke patients. Even though it is a micro-meal, it offers the opportunity to include bioactive compounds that contribute to the recovery and maintenance of metabolic and cognitive balance. In this way, collation helps to avoid long periods of fasting, which can be counterproductive for these patients, providing energy and essential nutrients for the continuation of the rehabilitation process.

Fruit group (1 serving): purple grapes, guava, papaya, mango, pineapple, plum, among others.
Liquids (100mL): green tea, black tea, white tea, lemon balm or fennel tea, fruit juices with functional flours.

Example 1:

- Fruit group: *½ mango with purple grapes*.
- Liquids: *One cup of fennel tea*.

Example 2:

- Fruit group: *One plum and one slice of pineapple*.
- Liquids: *One cup of lemongrass or cherry tea*.

Example 3:

- Fruit group*: 01 Cavendish banana + 03 plums*
- Liquids*: rosemary tea or oolong tea*

Every snack that is not made is a lost opportunity to nourish the body.

Track your tests to improve your health today!

Neurological rehabilitation is a well-founded and safe process, especially when conducted in collaboration with professionals from different health areas. Every aspect of treatment is crucial to achieving the best possible results. Negatively altered results directly affect your rehabilitation, mental health, and risk of further stroke.

Specific ideal biochemical parameters:

- Homocysteine: between 6 and 10 µmol/L
- Fibrinogen: up to 280 mg/dL
- Ferritin: no more than 300 ng/mL
- Uric Acid: between 4 and 6 mg/dL
- C-reactive protein (CRP): < 2 mg/L
- Fasting Cortisol: entre 6-15 µg/dL
- Fasting Insulin: < 10 µIU/mL
- Fasting Glucose: between 60 and 100 mg/dL
- Hemoglobin A1c: < 5.5%
- HDL (High-Density Lipoprotein): between 40 and 70 mg/dL
- LDL (Low-Density Lipoprotein): between 60 and 100 mg/dL
- Active vitamin D (1-25 hydroxyvitamin D): between 40 and 70
- pg/m
  Vitamin B12: between 400 and 600 pg/mL
- Folic acid: between 10 and 20 ng/mL
- Potassium: between 4.0 and 5.0 mmol/L
- Magnesium: between 2.0 and 2.2 mg/dL
- Chlorine: between 100 and 105 mmol/L
- Phosphorus: between 3.0 and 4.0 mg/dL
- Sodium: between 140 and 145 mmol/L

Track your tests to improve your health today!

Total calcium: between 9.0 and 10.0 mg/dL
Zinc: between 90 and 110 µg/dL
Selenium: between 100 and 130 ng/mL
Vitamin A: between 50 and 60 µg/dL
Interleukins (IL-6): < 3.0 pg/mL (only in severe cases)
TNF-alpha: < 4.1 pg/mL (only in severe cases)
Hemogram: total leukocytes: < 6,500 /mm3

For a truly integrative and functional health approach, you must consult your nutritionist or physician to evaluate these parameters. The results should be at a functional level that is considered optimized. Optimizing these parameters is not only an issue of prevention but also a fundamental pillar for promoting long-term well-being and quality of life. Neglecting these parameters can sabotage your rehabilitation silently, without the onset of pain. This can lead to complications that manifest themselves subtly but have a significant impact on your long-term health. Therefore, these aspects must be carefully monitored and adjusted as necessary. Remember, health is an ongoing investment and requires a holistic approach that involves not only medical treatments but also lifestyle changes and awareness. By keeping these parameters optimized, you are taking a significant step towards a healthier and more balanced life. Draw up a plan with the professional who assists you, and undergo all of these tests at least once. In this way, you will be sure that the path is open to significant improvements in your health.

AFTERNOON SNACK

An afternoon snack can be a great opportunity to introduce fiber-rich foods, which not only help you feel full but also have a beneficial role in intestinal function and can help you lose weight. Fruit and vegetable smoothies can provide a boost of fiber, vitamins, and antioxidants, while a salty, protein-rich snack can provide sustained energy until dinner. Combining these elements can optimize both physical and mental recovery.

Cereals (2 servings): Oat bran or flakes or chia flour or flaxseed or wheat germ or barley bran or buckwheat

- ***Fruit group (½ serving):*** Plum or banana or avocado.
- ***Dairy group (1 liquid serving):*** Activia or Yakult or kefir.
- ***Bread group (½ serving):*** Whole wheat toast or cornbread or whole wheat roll accompanied by dairy products.

Example 1:
Banana and Oat Smoothie with Whole wheat Toast and Pâté

- 2 servings of medium oat flakes
- 200 mL Activia
- 1 ripe Cavendish banana

Method of preparation: Blend everything until you get a homogeneous mixture.

- Side dish: 2 whole wheat toasts + pâté.

Example 2:
Flaxseed and Strawberry Smoothie with Whole-Wheat roll and curd

- 2 servings of flaxseed
- 1 liquid serving of dairy
- 2 dried plums

Method of preparation: Blend everything until you get a homogeneous mixture.

- Side dish: ½ whole wheat roll + 1 serving of curd with smoked paprika.

CHAPTER 05

LUNCH

Lunch, being an intermediate meal, aims to provide sustainable energy and essential nutrients to maintain cognitive and physical performance throughout the day. It should include a balanced combination of high-quality proteins, complex carbohydrates for sustained energy, and vegetables rich in fiber and micronutrients for metabolic and cognitive support.

Lunch is a meal where we can follow some basic rules. It should always contain:

- ½ serving of carbohydrates;
- 1 serving of legumes (beans group);
- 1 serving of protein;
- 1 serving of leafy vegetables;
- 1 serving of cooked vegetables;
- 2 tablespoons of olive oil or ½ serving of good fats;
- ½ serving of neurofunctional seasonings that can be mixed into the food, for example, beans.
- Dessert: ½ orange and or 1 date and or 1 dried plum and or 02 strawberries.
- Rosemary tea is a great choice for digestion.

Never eat sweets such as ice cream, puddings, or popsicles. Sugary cold juices and or chocolates.

Never skip this meal!
Never add 2 servings of the same group! E.g., 4 eggs
Never add 2 foods from the same group! E.g., 1 serving of chicken + 1 serving of pork
Never mix different types of meat!
E.g., ½ serving of chicken with ½ ground beef.

DINNER

Eating a dinner rich in good fats and low in carbohydrates can promote neurological recovery from daytime activities and optimize the circadian rhythm for better quality sleep. A balanced dinner helps you start the next day in a good mood, with energy.

- ***Cereals and Tubers Group (½ serving):*** sweet potato or 7-grain rice.
  Protein Group (½ serving): Grilled sardines, chicken, tilapia, or shredded pork.
- ***Oils and Fats Group (2 servings):*** extra-virgin olive oil or crushed Brazil nuts.
- ***Vegetables Group (2 servings):*** Cooked courgette, sautéed courgette, cooked broccoli, cooked carrots, chayote, or scarlet eggplant.

Example 1:
Brown Rice Salad with Sardines and Nuts

½ serving of cooked brown rice

- ½ serving of canned sardines
- 1 serving of crushed or broken chestnuts
- 1 serving of cooked courgette + 1 serving of cooked broccoli

Example 2:
Chickpea Salad with Grilled Chicken and Olive Oil with Oregano

- ½ serving of cooked chickpea
- ½ serving of diced grilled chicken
- 2 servings of extra-virgin olive oil mixed with oregano
- 1 serving of cooked chayote + 1 serving of Roma tomatoes

Let's make consumption easier?

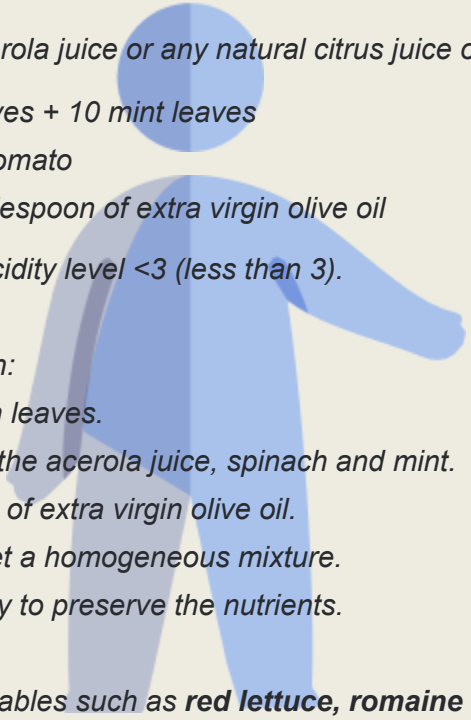
YES. For individuals with extensive hemiparesis, neurofunctional **green juices** are an excellent alternative to including more vegetables in the diet, especially when eating whole vegetables becomes a challenge due to limited hand movement. Adding citrus fruits to these juices not only enriches the flavor but also enhances the benefits for brain, cardiovascular, and intestinal health.

"Just as green juices nourish our bodies and bring vitality, we can also add citrus touches and neurofunctional foods to awaken our minds and reach our full potential."

Suco de Acerola com Espinafre

- *Ingredients:*
  - *200 mL of acerola juice or any natural citrus juice or pulp*
  - *6 spinach leaves + 10 mint leaves*
  - *1 ripe Roma tomato*
  - *1 heaping tablespoon of extra virgin olive oil*

  Olive oil with acidity level <3 (less than 3).



Method of preparation:

1. *Wash the spinach leaves.*
2. *In a blender, add the acerola juice, spinach and mint.*
3. *Add a tablespoon of extra virgin olive oil.*
4. *Blend until you get a homogeneous mixture.*
5. *Serve immediately to preserve the nutrients.*

Use other leafy vegetables such as ***red lettuce, romaine lettuce, coriander, kale, arugula, watercress, roselle, broccoli leaves, beet greens, and purslane****.*

The secret of distributed feeding and the magical power of spices

Imagine your recovery from stroke as a symphony, where each musical note represents a nutrient essential to your well-being. Now, think about how unbalanced that symphony would be if all the notes were played at once. That's how it is with your diet: to create a harmonious melody of health, you need to spread your nutrients throughout the day.

It's not just about eating well; it's about eating smart. Spreading out proteins, carbohydrates, and healthy fats throughout the day is not an option, it's a necessity. Not only does this provide your body with consistent energy, but it also fuels your brain, optimizing cognitive performance and speeding up your recovery from stroke.

And here's a secret: consume dried sage. Yes, these little culinary treasures have the power to take your diet to the next level. Traditionally, we only use a pinch here and there, but after a stroke, increasing the consumption of these spices can be the magic touch that is missing in your recovery journey.

So why not start now? Every meal is an opportunity to nourish your body and mind, to compose a new note in your recovery symphony. Remember, you are the conductor of your own health, and every choice you make is a chord in your wellness melody.

What did you learn in Chapter 05?

Just like the journey of life, adjusting your diet is a journey full of discoveries and challenges. Imagine yourself as a renowned chef, responsible for the menu of your own life. Each week offers a new opportunity to incorporate innovative ingredients, create nutritious combinations, and revitalize your palate.

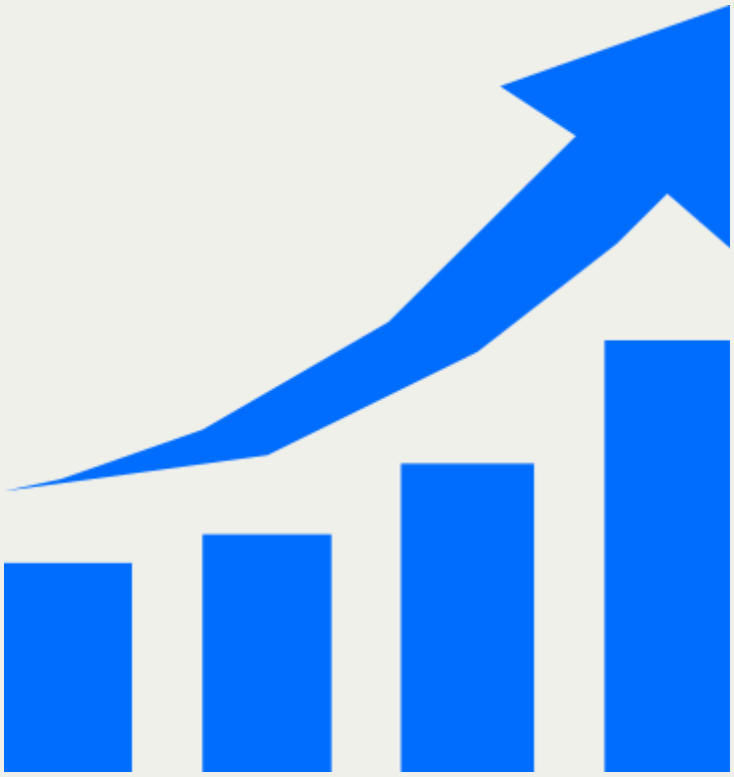
It is important to recognize that not every culinary experiment will result in perfect dishes. However, do not let this discourage you. Remember that it is your effort and dedication that really matter. Even if not all of your creations are flawless, the crucial thing is to give your best in each preparation.

Proceed on this journey with an open and determined mindset. With each meal, you are making a valuable investment in your health and well-being. And don’t forget: just as functional foods nourish the body; your food choices have the power to enrich your soul.

Note: In post-stroke rehabilitation, a balanced diet is crucial, but it is not enough to be 'so-so'. Even a small proportion of poor food choices can significantly compromise recovery progress.

Enjoy your meal!

Chapter 06
Strengthening Post-Stroke Rehabilitation



SUPPLEMENTS FOR SUPPORT AFTER A STROKE

Don’t let misinformation limit your rehabilitation. Discover how our innovative approach to rehabilitation and nutritional supplementation can accelerate your recovery and restore your quality of life.

Vitamin D3: essential for muscle contraction and strength, neuroprotection, neuron connections, and neuroplasticity. It also plays a crucial role in stimulating neurogenesis, contributing to the regeneration of nerve cells.

B Complex: important for brain energy metabolism, providing the energy needed for brain function. It also offers protection against neurotoxicity, helping to preserve neuronal health.

Omega 3 (DHA): contributes to neuroprotection and synaptic plasticity, facilitating communication between brain cells. This is essential for recovery after a stroke.

Coenzyme Q10 and PQQ: act to mitigate cellular stress, protecting brain cells from damage. They are also essential for promoting energy in the brain.

Vitamin E: acts as an antioxidant, protecting nerve cells from damage caused by free radicals and helping to maintain brain health.

Vitamin C: with antioxidant properties, vitamin C supports neurotransmission, helping in effective communication between neurons.

Magnesium: plays a fundamental role in neuroprotection and supporting neurotransmission. Its presence is vital for the proper functioning of the nervous system.

Zinc: in addition to promoting neuroprotection, zinc modulates neurotransmission, ensuring that messages between neurons are transmitted efficiently.

SUPPLEMENTS FOR SUPPORT AFTER A STROKE

Psychobiotics: These are probiotics that promote the modulation of the gut-brain axis, contributing to a balanced mood, anxiety, and depression, and supporting mental health after a stroke. They are an adjunct to treatment and promote a psychological response in a few days.

Probiotics: They maintain intestinal health, which, in turn, positively affects the gut-brain axis, helping to regulate mood and brain function.

Taurine: Offers neuroprotection and modulates brain electrical activity, helping to preserve neuronal function and communication between neurons. Some studies suggest its use in controlling *seizures* in conjunction with a specialized diet.

Selenium: acts as an antioxidant, providing protection against neurotoxicity and helping to preserve the integrity of nerve cells.

Iron: Essential for transporting oxygen, iron plays a crucial role in brain function, ensuring that cells receive the oxygen they need for optimal performance. Anemia reduces communication between neurons and synaptic connections, reducing the ability to rehabilitate.

Do you want to maximize your brain power? Learn how the right vitamins and minerals can be your greatest allies.

It is essential to remember that personalizing dosages and duration of use are aspects that require monitoring by specialized professionals. The approach of these specialists goes beyond conventional laboratory tests, incorporating an integrative and functional perspective to understand the unique needs of each individual. Each person's brain health deserves this specialized attention. Considering this step is a valuable investment in the well-being journey.

Word from the Expert!

Increased muscle strength

The quest to maintain or increase muscle strength and mass after a stroke is a continuous and daily effort. Supplements such as Creapure creatine, whey protein, BHB, and combinations of whey with creatine, creatine with beta-alanine, and caffeine with arginine. Always under professional supervision.

Improved sleep quality and anxiety

Sleep quality is an essential pillar in post-stroke treatment. Supplements such as l-theanine, valerian, tryptophan, GABA, and myo-inositol magnesium are suggested, as well as daytime consumption (5 pm) of oatmeal porridge (40g). Integrative practices such as music therapy, massages, and the use of essential oils are also recommended. An anti-inflammatory diet must be consumed daily. Blood tests to assess homocysteine, fibrinogen, vitamin B12, folic acid, and iron are necessary. Always under professional supervision.

Omega-3

Omega-3 plays a significant role in rehabilitation, especially for those who consume less than 300 grams of fish rich in fatty acids. It contributes to the formation of new neurons and helps to slow the shrinkage of brain mass. The quality of omega-3 and the correct proportion between DHA and EPA must be assessed. Attention to the elderly.

Spasticity

Spasticity is a symptom present in about 40% of stroke cases and can complicate the rehabilitation process. Medications such as Baclofen are used to control this symptom but can affect the levels of minerals such as potassium and magnesium. Complementary use of integrative therapies such as essential oils, magnesium dimalate, and l-carnitine may help. Consult your physician or nutritionist for dosages and duration of use.

Word from the Expert!

Testosterone

This hormone is crucial for preserving muscle mass and strength, cognition, bone health, and even for the formation of new neurons. It is recommended to consult your physician to ensure that your levels are optimized at 400-800 ng/dL. Be careful with sarcopenia in men.

Estrogen and progesterone

These hormones are vital for preventing thrombosis and maintaining cognition. A deficiency in these hormones can lead to weight gain and fluid retention. Optimal levels participate in maintaining brain volume and producing new neurons, in addition to preventing depression. Consult your physician.

Post-stroke fatigue

This is a common condition that can last months or even years after a stroke. It is related to chronic inflammatory states, nutritional deficiencies, and thyroid dysfunction. An unbalanced diet in the context of amounts of proteins, carbohydrates, and fats. Supplements such as D-ribose, magnesium, PQQ, and coenzymes restore energy.

Special formulas for constipation

Constipation is a common problem after a stroke that can affect rehabilitation and mental health. Probiotics, special fibers such as inulin, supplements such as magnesium citrate and Peg4000. As integrative nutrition options, we highlight the use of essential oils. Always under professional supervision.

Word from the Expert!

Loss of sexual interest

Loss of sexual interest is a common occurrence after a stroke and can lead to depression and anxiety in couples. The safest approach involves lifestyle and dietary changes, such as stress management and improving sleep quality. Complementary therapies, such as acupuncture and the use of essential oils, as well as supplementation, can be effective strategies in the medium term. Hormonal and nutritional tests are also recommended.

Slowing brain shrinkage

The brain begins to subtly reduce in size from the age of 30, and this process can accelerate depending on the severity of the stroke. To maintain brain health, it is recommended to practice physical activities, reduce stress, and ensure adequate consumption of B vitamins, magnesium, and omega-3. Professional supervision is necessary.

Essential oils

The use of essential oils can be a valuable complementary approach in rehabilitation after a stroke. They have properties that help relieve stress, and pain and improve cognitive function, among several other conditions. However, the use of these oils must be guided by qualified health professionals to ensure the safety and effectiveness of the treatment.

Support in muscle contraction

Adequate nutrition is crucial to provide choline, an essential nutrient found mainly in egg yolk. Daily consumption of (01) one brown or free-range egg is recommended.

Word from the Expert!

Gut health is not only essential for effective digestion but also plays a crucial role in brain function and motor recovery, especially in patients after a stroke. Fermented foods such as yogurt and high-fiber sources such as oat bran, celery, leeks, onions, asparagus, and cauliflower contribute to a healthy gut microbiota. These beneficial bacteria produce butyrate, a fatty acid that has anti-inflammatory and neuroprotective properties.

Gut-brain and vagus nerve

The vagus nerve is a key component in this gut-brain relationship. It functions as an “information superhighway,” facilitating communication between the gut and the brain. Effective communication through this nerve is vital for improving brain function and may even aid motor recovery after a stroke.

Daily and continuous consumption

To reap all these benefits, it is essential to consume foods rich in probiotics and fiber on a daily and continuous basis. This ensures a constant production of butyrate, which in turn strengthens the communication of the vagus nerve between the intestine and the brain.]

Beware of sugar and bad fats

It is crucial to avoid consuming sugars and fats more than twice a week. They weaken your intestine, hindering the absorption of nutrients.

Incorporating these elements into your daily diet is an effective strategy to speed up recovery after a stroke and improve your quality of life.

Word from the Expert!

Music therapy is a therapeutic resource that goes beyond the field of physical therapy and can be a valuable complement to nutritional monitoring. It acts directly on the neurochemical system, stimulating the production of neurotransmitters such as dopamine and serotonin, which are essential for emotional and mental well-being. This neurochemical stimulation can help dispel the "brain fog" that many people experience, especially after traumatic events such as a stroke.

In addition to its emotional benefits, music therapy can be a powerful tool for combating depressive states. Music has the power to elevate mood, create a more positive environment, and, consequently, improve adherence to and effectiveness of a nutritional plan. When the mind is clear and the mood is elevated, it is easier to make healthy food choices and follow nutritional recommendations.

The best thing is that music therapy can be practiced at home and does not require a large financial investment. Personalized playlists or even music apps can be used to create an atmosphere that favors emotional and mental well-being. Nevertheless, this practice must be guided by a professional specialized in integrative neurology or neuroscience to ensure that it is effective and safe.

In short, music therapy can be an effective integrative complement to nutritional monitoring, offering a more holistic approach that benefits both the body and the mind.

Chapter 07
Eating Behavior According to Neuroscience

CHAPTER 07

HOW TO CHANGE EATING HABITS ACCORDING TO THE NEUROSCIENCE OF EATING BEHAVIOR

Changing eating habits in light of neuroscience requires an understanding of the interaction between the brain and the body in the context of food. Neuroscience reveals that our food choices are shaped by factors such as feelings of pleasure and reward, appetite regulation, and emotional responses to food.

To make meaningful changes, it is crucial to understand the brain mechanisms that influence eating decisions. This allows us to identify harmful patterns and create strategies to replace them with healthier habits. Neuroscience also highlights the importance of repetition in cementing new habits, as it establishes brain connections that facilitate the automatic adoption of healthy behaviors.

Changing eating habits is similar to training a muscle: initially challenging and requiring conscious effort, but it becomes easier with continued practice. Persistence in adopting healthy habits results in lasting improvements in health and well-being.

The key to change lies in celebrating each small daily achievement. By expressing gratitude for each step forward, you reinforce your commitment and stay motivated to continue progressing.

LIFESTYLE CHANGE OR TEMPORARY?

When discussing lifestyle change versus temporary adjustments, we are discussing the difference between implementing temporary dietary changes and adopting a long-term healthy lifestyle. Neuroscience suggests that consistency and continuity are crucial to establishing new healthy patterns and habits.

Temporary dietary changes can result in immediate benefits, such as weight loss or temporary health improvements. However, these changes are often not sustainable in the long term, as the brain tends to revert to old, more familiar habits.

In contrast, lifestyle change involves making conscious, long-term decisions about diet, exercise, sleep quality, stress management, and other wellness factors. Neuroscience confirms that repetition and consistency are essential to automating these changes and integrating them into our daily routines.

Making temporary dietary changes is similar to following a fad diet: it may be appealing and promise quick results, but it is often unsustainable and results in a yo-yo cycle. On the other hand, lifestyle change is like building a solid house: it takes time, effort, and commitment to establish a solid foundation of healthy habits that will sustain your long-term health and well-being.

Chapter 08
Suggestion of Special Recipes

CHAPTER 08

SUGGESTIONS FOR SPECIAL BREAKFAST RECIPES

Leek and Nutmeg Omelet:
Omelet (1 egg) + 3 egg whites + 2 heaping tablespoons of oat bran + ½ cup of chopped leeks + pinch of nutmeg + ½ coffee spoon of smoked paprika + 3 tablespoons of avocado.

Leek and Smoked Paprika Omelet:
Omelet (1 egg) + 3 egg whites + 2 heaping tablespoons of oat bran + ½ cup of chopped leeks + ½ coffee spoon of smoked paprika + ½ coffee spoon of dried thyme + 2 tablespoons of olive oil.

Red Onion and Thyme Omelet:
Omelet (1 egg) + 3 egg whites + 2 heaping tablespoons of oat bran + ½ small cup of chopped red onion + 1 level coffee spoon of dried thyme + 1 level coffee spoon of dried coriander + 1 tablespoon of light ricotta cream + 4 Brazil nuts.

Arugula and Rosemary Omelet:
Omelet (1 egg) + 3 egg whites + 2 heaping tablespoons of oat bran + ½ cup of arugula + ½ level coffee spoon of rosemary powder + pinch of black pepper + 1 tablespoon of strawberry jam + 2 tablespoons of black sesame seeds.

Spinach and Mint Omelet:
Omelet (1 egg) + 3 egg whites + 2 heaping tablespoons of oat bran + ½ heaping tablespoons of oat bran + ½ cup of chopped or torn spinach + 1 level coffee spoon of dried coriander + ½ level coffee spoon of smoked paprika powder + 1 tablespoon of light ricotta cream + 2 tablespoons of sunflower seeds.

Always adding: + ½ dairy +
½ seeds.

CHAPTER 08

SUGGESTIONS FOR SPECIAL BREAKFAST RECIPES

Strawberry and Flaxseed Porridge: 04 heaping tablespoons of fine oat flakes + Water + 02 heaping tablespoons Nutren Control + Chopped strawberry to taste + Flaxseed: 1 heaping tablespoon

Pear and Walnut Porridge: 04 heaping tablespoons of fine oat flakes + Water + 02 heaping tablespoons Nutren Control + Chopped pear to taste + Broken walnuts: 1 heaping tablespoon

Blackberry and Sunflower Porridge: 04 heaping tablespoons of fine oat flakes + Water + 02 heaping tablespoons Nutren Control + Chopped blackberry to taste + Sunflower seeds: 1 heaping tablespoon

Cranberry and Chia Porridge: 04 heaping tablespoons of fine oat flakes + Water + 02 heaping tablespoons Nutren Control + Cranberry to taste + Chia seeds: 1 heaping tablespoon

Goji Berry and Flaxseed Porridge: 04 heaping tablespoons of fine oat flakes + Water + 02 heaping tablespoons Nutren Control + Goji berry to taste + Flaxseed: 1 heaping tablespoon

Acai and Nuts Porridge: 04 heaping tablespoons of fine oat flakes + Water + 02 heaping tablespoons Nutren Control + Acai pulp to taste + Broken nuts: 1 heaping tablespoon

Strawberry and Chia Porridge: 04 heaping tablespoons of fine oat flakes + Water + 02 heaping tablespoons Nutren Control + Chopped strawberries to taste + Chia seeds: 1 heaping tablespoon

Pear and Flaxseed Porridge: 04 heaping tablespoons of fine oat flakes + Water + 02 heaping tablespoons Nutren Control + Chopped pear to taste + Flaxseed: 1 heaping tablespoon

SUGGESTIONS FOR SPECIAL RECIPES BEFORE PHYSICAL THERAPY, PHYSICAL TRAINING OR SPEECH THERAPY

200mL of Arabica coffee + 1 heaping tablespoon of MCT (medium chain triglycerides) + pinch of black pepper powder + 1 heaping teaspoon of 100% cocoa powder + 1 tablespoon of honey + drops of vanilla + ½ level coffee spoon of xanthan gum powder (optional).

200mL of Arabica coffee + 1 heaping tablespoon of MCT (medium chain triglycerides) + ½ level coffee spoon of ground cloves + 1 heaping teaspoon of 100% cocoa powder + 1 tablespoon of honey + drops of vanilla + ½ level coffee spoon of xanthan gum powder (optional).

200mL of Arabica coffee + 1 heaping tablespoon of MCT (medium chain triglycerides) + ½ level coffee spoon of powdered ginger + 1 heaping teaspoon of 100% cocoa powder + 1 tablespoon of honey + drops of vanilla + ½ level coffee spoon of xanthan gum powder (optional).

200mL of Arabica coffee + 1 heaping tablespoon of MCT (medium chain triglycerides) + ½ level coffee spoon of ground cloves + ½ coffee spoon of powdered rosemary + 1 tablespoon of honey + drops of vanilla + ½ level coffee spoonof xanthan gum powder (optional).

200mL plant-based drink + 1 heaping tablespoon of coconut oil + ½ level coffee spoon of ground cloves + 1 heaping teaspoon of 100% cocoa powder + ½ coffee spoon of rosemary powder + 1 tablespoon of honey.

200mL plant-based drink + heaping tablespoon of MCT (medium chain triglycerides) + 2 heaping teaspoons of 100% cocoa powder + drops of vanilla + 1 dessert spoon of honey.

Prepare in a mixer, blender, or shaker. Ideal to be enjoyed 40 minutes before activities.

SUGGESTIONS FOR SPECIAL RECIPES AFTER PHYSICAL THERAPY, PHYSICAL TRAINING, OR SPEECH THERAPY

- Cottage cheese pâté with toast and 200mL of purple fruit juice.
- Greek yogurt with a serving of flour and a handful of raisins.
  Protein YoPRO with a cooked plantain.
- A handful of walnuts and four dates.
- Spiced omelet with a tablespoon of chia.
  Smoothie with three tablespoons of powdered skim milk, blended with strawberries or kiwi.
- A serving of tapioca with cottage cheese and tomato.
- Bowl of oats with seeds.
- Wholemeal bread sandwich with light tuna and salad.
- Yellow and purple fruit salad with fermented yogurt.
- Smoothies with Roma tomatoes, accompanied by cottage cheese and bread.

The goal after activities is to always have a small source of protein and foods with nutritious carbohydrates.

CHAPTER 08

SUGGESTIONS FOR SPECIAL LAXATIVE RECIPES FOR PEOPLE WITHOUT MILK INTOLERANCE OR SENSITIVITY

Choose 01 option from each group:

Grains and Seeds

- Flaxseed in grains - 02 tablespoons
- Psyllium - 01 heaping tablespoon
- Shelled sunflower seeds - 02 heaping tablespoons
- Fine oat flakes - 03 heaping tablespoons
- Fiber Mais Nestlé - 02 tablespoons

Fruit:

- Not very ripe Cavendish banana - 01 unit
- Kiwi or soft pear - 01 unit
- Purple grape - 20 units
- Papaya - ½ small unit
- Dried apricot - 02 units
- Mango var. tommy - ½ small unit
- Dried plum - 04 units
- Peach - 01 unit

Dairy products and substitutes:

- Activia - 200 mL
- Kefir - 200 mL
- Yakult - 200 mL
- Milk fermented with lactobacilli - 200 mL

Oils and Spices

- Extra virgin coconut oil - 1 heaping tablespoon
- Extra virgin avocado oil - 1 heaping tablespoon

Supplements

- Carrot with skin - 4cm
- Raw Roma tomato - 01 unit

Prepare your smoothie in the blender, help yourself! Do not store, consume immediately.

SUGGESTIONS FOR SPECIAL LAXATIVE RECIPES FOR PEOPLE WITH MILK INTOLERANCE OR SENSITIVITY

Choose 01 option from each group:

Grains and Seeds

- Flaxseed in grains - 02 tablespoons
- Psyllium - 01 heaping tablespoon
- Shelled sunflower seeds - 02 heaping tablespoons
- Fine oat flakes - 03 heaping tablespoons
- Fiber Mais Nestlé - 02 tablespoons

Fruit:

- Not very ripe Cavendish banana - 01 unit
- Kiwi or soft pear - 01 unit
- Purple grape - 20 units
- Papaya - ½ small unit
- Dried apricot - 02 units
- Mango var. tommy - ½ small unit
- Dried plum - 04 units
- Peach - 01 unit

Dairy products and substitutes:

Laticínios e Substitutos

- Plant drink based on Brazil nuts or almonds - 200 mL
- Coconut milk drink - 200 mL

Oils and Spices

- Extra virgin coconut oil - 1 heaping tablespoon
- Extra virgin avocado oil - 1 heaping tablespoon

Supplements

- Celery - 04 cm

Prepare your smoothie in the blender, help yourself! Do not store, consume immediately.

SNACKS THAT FIGHT DEPRESSION AND DISCOURAGEMENT

Bittersweet chocolate accompanied by mousse.
Chocolate meio amargo acompanhado de mousse.

Bittersweet chocolate: 80% cocoa, Hershey brand, or
Bittersweet chocolate: 80% cocoa Kopenhagen brand, or
Bittersweet chocolate: 80% cocoa: 80%, Espírito Cacau brand, or
Bittersweet chocolate: 80% cocoa, Chocolat du Jour brand, or
Bittersweet chocolate: 80% cocoa, Cacau Show brand, or
Bittersweet chocolate: 80% cocoa, Cookoa.

Quantity: 30 grams.

Mousse preparation:

Nutren Control vanilla flavor: 1 tablespoon, Turmeric powder: ½ level coffee spoon, Ginger powder: ½ level coffee spoon. Add approximately 30 mL of plant-based milk or natural yogurt. Mix well until smooth. Options for adding a “pinch”: ground cloves, or ground cardamom.

Ideal time:
4:00 p.m.

Pineapple Juice with Cottage Cheese and Toast
Ingredients for the Juice:

- Pineapple: 2 slices (keep the core)
- Spinach: 6 leaves

Juice preparation:

1. Make the juice with the 2 pineapple slices and the 6 spinach leaves.
2. Do not strain the juice.
3. Avoid adding sugar.

Side dish:

- Cottage cheese pâté with smoked paprika: 2 tablespoons
- Toasts

Ideal time:
10:00 a.m.

SNACKS THAT FIGHT DEPRESSION AND DISCOURAGEMENT

Greek Yogurt with Freeze-Dried Acaí Powder and Dates

Main Ingredients:

- Greek yogurt: 250 mL
- Freeze-dried acai powder: 1 heaping teaspoon

Method of preparation of the Greek yogurt with acai:

1. Mix the freeze-dried acaí powder with the Greek yogurt until you get a homogeneous mixture.

Side dish:

- Dates: 3 units “attention to the pits”

How to Serve::

1. Place the yogurt mixed with acaí in a bowl or glass. Add the dates as a side dish next to or on top of the yogurt.

Ideal time:
10:00 a.m.

"Combating depression is a multifaceted approach that requires synergy between several elements essential for well-being. These include proper and balanced nutrition, adopting a positive mindset, practicing regular physical activity, and incorporating integrative and holistic medicine therapies. In addition, maintaining a healthy lifestyle is crucial to reinforcing the positive effects of these strategies. Each of these components works together to create an environment conducive to improving mental and emotional health."

"Use this *Nutritional Guide* as a **guide** for your rehabilitation, gradually adjusting your time and investment. Have the *wisdom and patience* of a Zen master when applying this knowledge. Be wise and intelligent like an ancient philosopher, pondering each choice and decision. Plan your journey for the ***next 365 days*** after reading this e-book, as a great strategist would plan their journey to victory."

Annual Health and Well-Being Calendar

Phase 1: January to April (4 months) - Blood Tests

- Objective: Preparation and carrying out of blood tests.
- Investment: BRL (value to be discussed with the laboratory)

Actions:

Request for tests in a private laboratory.
Splitting the tests, if necessary.
Starting small changes in diet and lifestyle.

Phase 2: May and June (2 months) - Assessment

- Objective: Assessment of nutritional status based on blood tests.
- Investment: BRL (price to be discussed)
- Actions:
  - Consultation with a physician, functional nutritionist, or specialized nutritionist.
  - Analysis of tests and individualized adjustments to the diet.
  - Onset of dietary re-education.

Phase 3: Starting in July

- Objective: Implementation of changes based on the results of tests and assessments.
- Investment: Prioritization of functional foods.
- Actions:
  - Continuous use of the information acquired.
  - Prioritization of functional foods in the diet.

🌟 You Can Do It! 🌟

Taking care of your health may seem challenging, but with our **Annual Health and Well-Being Calendar**, you have a clear and achievable plan. Take the first step and remember: you are stronger than you think. Let's go on this journey together!

Hello, dear readers,

I hope this *Digital Guide* has been a source of inspiration and knowledge for you. Here, we share valuable tips on how diet and lifestyle can make all the difference in stroke recovery and prevention.

We know that each of us is unique, with different challenges and needs. But what we all have in common is the ability to make decisions that benefit our health and quality of life. When we understand how our choices affect our well-being, we gain the power to change for the better.

Don’t forget that recovery after a stroke is an ongoing process that involves several strategies. Persistence is key. After all, it is through good nutrition that our body has the chance to produce new neurons and improve muscle function. Every healthy choice you make is a positive step in your rehabilitation journey.

The information you found here is based on studies and guidance from health professionals. But remember, it is not a substitute for personalized advice from a physician or specialized nutritionist. So, before making big changes, talk to a professional.

I sincerely hope this *Guide* has been useful to you. Every step you take towards a healthier lifestyle is an investment in yourself. So why not start now? Make conscious choices and take care of yourself, you deserve it!

Oh, and don't forget to revisit this *Guide* whenever you need it. Print it out, leave it in the kitchen, and share it with those you love!

I wish everyone a rehabilitation journey full of success and continued growth!

With affection, João Paulo Cecato

Statement: Dietary Guidance for Stroke Rehabilitation. The information provided in this digital guide is intended to provide general guidance on diet and nutrition in the context of stroke rehabilitation. However, it is important to note the following. *General Nature of Information:* The information contained in this guide is general in nature and is not a substitute for the personalized assessment and advice of a healthcare professional, such as a physician or registered dietitian. We strongly recommend that you consult with a healthcare professional before making any significant changes to your diet or lifestyle, especially if you are managing specific medical conditions such as severe malnutrition, diabetic ketoacidosis, recurrent seizures, enteral feeding via tubes, kidney disease with hemodialysis, liver disease, and conditions such as gallstones. *Individual Responsibility:* Each person is unique, with individual needs and circumstances. Dietary guidelines can vary widely from person to person, depending on factors such as medical history, age, gender, health goals, and dietary preferences. Therefore, the responsibility for applying the information in this guide appropriately to your individual needs lies with the reader. *Limitations of General Guidance:* The dietary guidelines presented here are intended to provide general information about healthy food choices and nutritional practices after a stroke. We cannot guarantee specific results, and individual results may vary. *Legal Disclaimer:* This *Guide* is not intended to provide medical advice, diagnosis, or treatment. Those seeking specific medical or nutritional advice should consult a licensed healthcare professional. By using this digital *Guide*, you agree to be bound by the terms and conditions outlined herein and assume full responsibility for your food choices and amounts. Remember that each person is unique, and personalized advice is essential to meet your specific needs. This *Guide* is not intended to replace professional medical advice and should not be construed as such. This *Guide* provides information that can help readers discover new dietary possibilities and benefit from proper follow-up.

References

Marx W, Moseley G, Berk M, Jacka F. Nutritional psychiatry: the present state of the evidence. Proc Nutr Soc. 2017 Nov; 76 (4) : 427 - 436 . doi: 10 . 1017 / S 0029665117002026 . Epub 2017 Sep 25 . PMID: 28942748 .

Pignanelli M, Just C, Bogiatzi C, Dinculescu V, Gloor GB, Allen- Vercoe E, Reid G, Urquhart BL, Ruetz KN, Velenosi TJ, Spence JD. Mediterranean Diet Score: Associations with Metabolic Products of the Intestinal Microbiome, Carotid Plaque Burden, and Renal Function. Nutrients. 2018 Jun 16 ; 10 (6) : 779 . doi: 10 . 3390 / nu 10060779 . PMID: 29914158 ; PMCID: PMC 6024790 .

Spence JD. Diet for stroke prevention. Stroke Vasc Neurol. 2018 Jan 13 ; 3 (2) : 44 - 50 . doi: 10 . 1136 / svn- 2017 - 000130 . PMID: 30022800 ; PMCID: PMC 6047334 .

Fereshteh Dehghani, Shima Abdollahi, Farzad Shidfar, Cain C. T. Clark & Sepideh Soltani. (2023) Probiotics supplementation and brain-derived neurotrophic factor (BDNF): a systematic review and meta-analysis of randomized controlled t r ia l s. Nutritional Neuroscience 26 : 10 , pages 942 - 952 .
Elahe Mansouri, Somayyeh Asghari, Parinaz Nikooei, Mehdi Yaseri, Ali Vasheghani-Farahani & Mohammad Javad Hosseinzadeh- Attar. (2023) Effects of v i rgin coconut oi l consumption on serum brain-derived neurotrophic factor levels and oxidative stress biomarkers in adults with metabolic syndrome: a randomized c l in i cal t r ia l . Nutritional Neuroscience 0 : 0 , pages 1 - 12 .

Eleni Fanarioti, Martha Tsarouchi, Paraskevi B. Vasilakopoulou, Antonia Chiou, Michael Karvelas, Vaios T. Karathanos & Catherine R. Dermon. (2023) Brain polar phenol content, behavioural and neurochemical effects of Corinthian currant in a rotenone rat model of Parkinson’s disease. Nutritional Neuroscience 26 : 7 , pages 652 - 666 .

Elske Gravesteijn, Jos J. Adam, Ronald P. Mensink, Bjorn Winkens & Jogchum Plat. (2022) Effects of the egg protein hydrolysate NWT-03 on cognitive function in men and women with the metabolic syndrome: a randomized, double-blind, placebo-controlled study. Nutritional Neuroscience 0 : 0 , pages 1 - 10 .

Manolescu BN, Oprea E, Mititelu M, Ruta LL, Farcasanu IC. Dietary Anthocyanins and Stroke: A Review of Pharmacokinetic and Pharmacodynamic Studies. Nutrients. 2019 Jun 28 ; 11 (7) : 1479 . doi: 10 . 3390 / nu 11071479 . PMID: 31261786 ; PMCID: PMC 6682894 .

Tian L, Tan Y, Chen G, Wang G, Sun J, Ou S, Chen W, Bai W. Metabolism of anthocyanins and consequent effects on the gut microbiota. Crit Rev Food Sci Nutr. 2019 ; 59 (6) : 982 - 991 . doi: 10 . 1080 / 10408398 . 2018 . 1533517 . Epub 2018 Dec 30 . PMID: 30595029 .

References

Scharfman HE, Mac Lusky NJ. Estrogen and brain- derived neurotrophic factor (BDNF) in hippocampus: complexity of steroid hormone- growth factor interactions in the adult CNS. Front Neuroendocrinol. 2006 Dec; 27 (4) : 415 - 35 . doi: 10 . 1016 / j . yfrne. 2006 . 09 . 004 . Epub 2006 Oct 20 .
PMID: 17055560 ; PMCID: PMC 1778460 .

Poulose SM, Miller MG, Scott T, Shukitt- Hale B. Nutritional Factors Affecting Adult Neurogenesis and Cognitive Function. Adv Nutr. 2017 Nov 15 ; 8 (6) : 804 - 811 . doi: 10 . 3945 / an. 117 . 016261 . PMID: 29141966 ;
PMCID: PMC 5683005 .

Heidarzadeh- Rad N, Gökmen- Özel H, Kazemi A, Almasi N, Djafarian K. Effects of a Psychobiotic Supplement on Serum Brain- derived Neurotrophic Factor Levels in Depressive Patients: A Post Hoc Analysis of a Randomized Clinical Trial. J Neurogastroenterol Motil. 2020 Sep 30 ; 26 (4) : 486 - 495 . doi: 10 . 5056 / jnm 20079 . PMID: 32989186 ; PMCID:
PMC 7547201 .

Kennedy DO. B Vitamins and the Brain: Mechanisms, Dose and Efficacy-- A Review. Nutrients. 2016 Jan 27 ; 8 (2) : 68 . doi: 10 . 3390 / nu 8020068 . PMID: 26828517 ; PMCID: PMC 4772032 .

Aquilani R, Scocchi M, Iadarola P, Viglio S, Pasini E, Condello S,
Boschi F, Pastoris O, Bongiorno AI, Verri M. Spontaneous neurocognitive retrieval of patients with sub- acute i schemic stroke i s associated with dietary protein intake. Nutr Neurosci. 2010 Jun; 13 (3) : 129 - 34 . doi: 10 . 1179 / 147683010 X 12611460764002 . PMID:
20423562 .

Kirkland AE, Sarlo GL, Holton KF. The Role of Magnesium in Neurological Disorders. Nutrients. 2018 Jun 6 ; 10 (6) : 730 . doi: 10 . 3390 / nu 10060730 . PMID: 29882776 ; PMCID: PMC 6024559 .

Zhao B, Hu L, Dong Y, Xu J, Wei Y, Yu D, Xu J and Zhang W (2019) The Effect of Magnesium Intake on Stroke Incidence: A Systematic Review and Meta- Analysis With Trial Sequential Analysis. Front. Neurol. 10 : 852 . doi: 10 . 3389 / fneur. 2019 . 00852.

OUR INFORMATION IS BASED ON RENOWNED RESEARCH CENTERS AROUND THE WORLD, PROVIDING A SOLID AND RELIABLE BASIS FOR THE INFORMATION WE SHARE. SOME OF THE INSTITUTIONS WE USE AS REFERENCES INCLUDE:

- JOHNS HOPKINS MEDICINE
- AMERICAN STROKE ASSOCIATION AMERICAN HEART ASSOCIATION
- AMERICAN SOCIETY FOR NUTRITION STROKE ASSOCIATION
- SOCIEDADE BRASILEIRA DE CARDIOLOGIA STROKE FOUNDATION
- ASIA PACIFIC STROKE ORGANISATION

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