



ARBOR FARMS MARKET

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Our April 2020 Newsletter for Healthy Living

Stay Sharp for Life

Staying fit as you age is about far more than aesthetics. Increasing research shows that maintaining healthy levels of body fat and greater muscle mass has an effect on your brain health and even your rate of cognitive aging. It's known, for instance, that being obese in midlife and early late-life is associated with worse cognitive aging. What's more, the amount of muscle and fat you have may be a more important factor in how your level of fluid intelligence decreases over time than your chronological age. Your chronological age, i.e., your age in years, is just a numerical measurement, but your real age is your biological age as dictated by your choices and habits, as well as your modifiable risk factors like levels of muscle and fat.

While many people tend to gain fat and lose muscle mass as they age, this can be largely combated by staying active and eating right — lifestyle choices that will influence your cognitive function significantly. In a study by Iowa State researchers, data from 4,431 adults were examined to compare levels of lean muscle mass, abdominal fat and subcutaneous fat with changes in fluid intelligence — the ability to solve problems in new situations — over a six-year period.

Those with higher amounts of abdominal fat had worse fluid intelligence with age, while those with greater muscle mass were more protected against such declines. In fact, women



who had greater muscle mass tended to have better scores in fluid intelligence during the study period. Study co-author Auriel Willette, assistant professor of food science and human nutrition at Iowa State University, said in a news release, "Chronological age doesn't seem to be a factor in fluid intelligence decreasing over time. It appears to be biological age, which here is the amount of

ple effects on the brain, including anatomically speaking. Obese individuals may have reduced gray matter in brain regions such as the hippocampus, prefrontal cortex and other subcortical regions. Atrophy in the hippocampus, in turn, has been linked to Alzheimer's disease. Gray matter is the outer layer of the brain associated with high-level brain functions such as problem-solving,

"Chronological age doesn't seem to be a factor in fluid intelligence decreasing over time."

fat and muscle."

Further, the study revealed a link between the immune system and how changes in fat levels affect cognition. Previous research suggests a higher body mass index (BMI) leads to greater immune system activity in the blood, which in turn activates the immune system in the brain, with a negative outcome on cognitive function. The featured study also found that changes in white blood cells called lymphocytes and eosinophils explained the link between abdominal fat and worsening fluid intelligence in women. In men, basophils, another type of white blood cell, were linked to about half of the link between fat levels and fluid intelligence, the study found. "Lymphocytes, eosinophils, and basophils may link adiposity to cognitive outcomes," the researchers explained.

Similar research has revealed that overweight and obese individuals have greater brain atrophy in middle-age, corresponding with an increase in brain age of 10 years. Obesity has multi-

language, memory, personality, planning and judgment. Even in elderly people who are otherwise cognitively normal, obesity is associated with measurable deficits in brain volume in the frontal lobes, anterior cingulate gyrus, hippocampus, and thalamus compared to individuals with a normal weight.

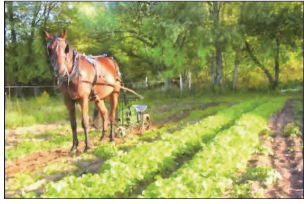
Further research published in Radiology found that obesity may lead to alterations in brain structure, shrinking certain regions. Among men, higher total body fat percentage was linked to lower brain gray matter volume. Specifically, 5.5% greater total body fat percentage was associated with 3,162 mm³ lower gray matter volume. Among men, 5.5% greater total body fat was also associated with 27 mm³ smaller globus pallidus volume, an association also seen in women. In women, 6.6% greater total body fat percentage was associated with 11.2 mm³ smaller globus pallidus volume. The globus pallidus is a brain region that plays a role in supporting a range of functions, including motivation, cognition and action. Obesity was also

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2020 Organic Produce CSA



Homer Organic Family Farms



Our Farming Practices

We farm much the same way as our forefathers of the 1930's. Our fields are plowed and worked with horses. Our large families provide many hands to do the planting, picking rocks, hoeing, weeding, harvesting, washing produce and packing boxes.

We are certified organic. Every year all of our farms are inspected by a third party and the information sent to our certifier to verify that we are in compliance with National Organic Program Standards. This is to assure you that we are not using harmful chemicals and pesticides or genetically-modified organism (GMO) seeds.

About Us

We farmers (there are seven participating in our co-op) have been raising produce for more than a decade, providing fresh vegetables for farmer's markets and several Ann Arbor food stores.

We, being of the Amish faith, do not have computers or e-mail, and only limited access to phones. Our communication is best done by mail or through our friends at Arbor Farms.

What is a CSA Program?

By subscribing to a CSA you are investing in a share of the farmer's harvest. You are also sharing the farmer's risk. If a crop fails we will need to substitute something else or wait for the next planting. You will get a box of fresh vegetables every week. The early harvest begins June 3rd, continues throughout summer, and ends October 1st (for a total of 18 weeks).

Not only are subscribers getting the freshest food, but they are also showing their support for the small farmer. The program works well for farmers and members both. The farmer can plan how much to grow; the member knows they have a box of fresh vegetables coming every week. It makes shopping quite simple. It broadens your eating habits, as you will try new things you've never had before. It can challenge the cook. A seed catalog to us is like a cookbook to you. Sometimes we like to try new items. So be our guest and enjoy the food.

What might I see in my weekly box?

Early Season: June

Asparagus,
Leaf Lettuce,
Swiss Chard,
Kale varieties,
Collards,
Zucchini,
Peas: Snap and Shell,
Salad Greens,
Rhubarb

Summer Season: June/July/August

Lettuce, Broccoli, Cabbage,
Radishes, Beans, Peppers,
Zucchini, Cucumbers, Hot Peppers,
Carrots, Peas, Tomatoes,
Sweet Potatoes, Basil,
Cantaloupe, Potatoes,
Green Onions, Sweet Corn,
Onions, Eggplant, Beets,
Garlic, Watermelon

Late Season: September/October

Remaining summer crops,
Red Peppers,
Hard Squash,
Spinach,
Late Greens,
Turnips,
Parsnips

Community Supported Agriculture

Subscribe now through May 15th

Stay Sharp for Life, *continued from page one*

associated with changes in white matter microstructure, which may be related to cognitive function. Cognitively speaking, there's also a strong link between obesity and deterioration in cognitive function, as well as to other brain disorders such as dementia, anxiety and de-

healthy lifestyle in young adulthood may be protective against cognitive decline later.

Obesity can trigger chronic inflammation in your body, and chronic inflammation in your brain

"...accumulating evidence suggests that lower muscular strengths are linked to poorer cognitive performance."

pression. Further, past research has linked midlife obesity with an increased risk of mild cognitive impairment, changes in short-term memory and executive functioning and dementia.

Obesity's effects on brain health are also due to its associated health problems, including heart disease, diabetes and atherosclerosis, each of which can have its own deleterious effects on your brain. For instance, as noted in *Frontiers in Neuroscience*:

"Obesity-derived vascular problems, such as atherosclerosis and arteriosclerosis, which are systemic diseases, are known to affect the steady blood flow of vessels that feed the brain, thus contributing to cognitive impairment or even stroke, where large areas of the brain die due to the stop in the blood flow of a major brain artery caused by a blood clot."

In terms of diabetes, of which obesity is a key risk factor, having this condition in midlife is associated with a 19% greater cognitive decline over 20 years compared with not having the condition. Even those with prediabetes had significantly greater cognitive decline than those without. Indeed, "Epidemiological studies have linked type-2 diabetes mellitus with cognitive impairment and dementia, with insulin resistance and hyperglycemia as the probable mechanistic links," researchers noted.

Coming full circle, eating a highly processed, junk food diet not only increases obesity risk but also can lead to normal but elevated blood sugar levels that, in turn, can lead to impaired glucose metabolism and Type 2 diabetes. Both diabetes and higher fasting glucose levels are linked with lower total brain volume. Impaired glucose metabolism is then associated with neurodegeneration that impairs cognitive function. This connection begins not in old age but much earlier, such that following a

(neuroinflammation) is known to impair neurogenesis, your brain's ability to adapt and grow new brain cells. It's also linked to neurodegenerative disorders such as Alzheimer's disease (AD), and it's been suggested that "Obesity may serve as an amplifier or initiator of the chronic inflammation observed in AD patients." Further, higher levels of inflammatory markers have also been associated with lower brain volume, including "greater atrophy than expected for age."

Excess body fat, particularly visceral fat, is also related to the release of proteins and hormones that can cause inflammation, which in turn can damage arteries and enter your liver, affecting how your body breaks down sugars and fats. According to a study in the *Annals of Neurology*, "[A]dipose-tissue derived hormones, such as adiponectin, leptin, resistin or ghrelin, could also play a role in the relation between adipose tissue and brain atrophy." Further, obesity may also be associated with lower volume in brain regions that regulate food-reward circuitry, possibly influencing overeating.

While obesity takes a toll on your brain, increased muscle mass protects it, which is likely one reason why strength training has been found to be beneficial for your brain. In other words, your body's physical strength may serve as a marker of your brain power. In fact, strength training is known to trigger beneficial neurobiological processes, leading to positive functional brain changes, including in the frontal lobe, with corresponding improvements in executive functions.

One systematic review even found that strength training led to less white matter atrophy in the brain, with researchers noting, "*Taken together, during aging processes, a substantial decline in muscular strength, especially in lower limb muscles, occurs, and accumulating evidence suggests that lower muscular strengths are linked to poorer cognitive performance. Hence, resistance (strength) exercises (a single bout of resistance exercise, also referred*

to as acute exercise) and resistance (strength) training (more than one resistance exercise session, also referred to as chronic exercise...) seem to be promising activities to ensure the preservation of physical functioning and cognitive functions with aging."

Regular strength training, in addition to other forms of exercise and daily activity, is an important strategy

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for keeping your brain sharp and may help to offset some of the cognitive decline that occurs with age. While obesity may accelerate neurodegeneration, regular exercise to increase your muscle mass will be protective.

Further, eating a high-fat diet will help protect your brain from free radical damage and will supply the cells with preferred fuel while also helping you to lose weight and avoid obesity. A diet high in healthy fats and low in net carbohydrates (total carbs minus fiber) prompts your body to start burning fat as its primary fuel, rather than sugar. This produces ketones, which not only burn efficiently but are also a superior fuel for your brain. Ketones also generate fewer reactive oxygen species (ROS) and less free-radical damage. One of the simple strategies you can implement is to take ketone precursors like refined MCT oils of caprylic acid (C-8), as well as include animal sources of healthy omega-3 fats such as grass-fed beef, wild-caught salmon and sardines in your diet.

Reference: *Brain, Behavior, and Immunity* November 2019; 82:396-405. *Science Daily* December 17, 2019. *Newsweek* December 20, 2019. *Neurobiology of Aging* 2016 Nov; 47:63-70. *Frontiers in Neuroscience* 2019; 13:513. *Human Brain Mapping* 2010 Mar; 31(3):353-64. *Radiology* 2019 Apr 23; 181012. *Frontiers in Neuroanatomy*, 10 April 2017. *Neuroscientist* 2013 Feb; 19(1):8-15. *Annals of Internal Medicine* 2014; 161(11):785-93. *Diabetes Care* 2011 Aug; 68(2):136-44. *Frontiers in Neuroendocrinology* June 6, 2019. *Neurology* 2007 Mar 27; 68(13):1032-8. *Annals of Neurology* 2010 Aug; 68(2):136-44. *European Review of Aging and Physical Activity* 2019, vol. 16(10).



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2020 Organic Produce CSA Homer Organic Family Farms

**Duration: 18 weeks/
June 3rd - October 1st**

Cost: \$400

Share Size: 1/2 Bushel box
(2-person size, about 9-10 lbs
will vary w/ seasonal contents)

Subscriber Information

Name(s) _____

Phone # _____

Address _____

Phone # _____

City/Zip _____

E-mail _____

Choose your Pickup Time: (circle one)

Wednesdays @ 7:30AM or **Thursdays @ 2:30PM**

Picking up your box within one hour of designated time will yield the freshest produce. All pickups will take place in a designated area in front of Arbor Farms, outside the store and under our canopy to protect from the elements as much as possible. **You will be able to park, pick up your box, and be on your way in as little as 60 seconds!** Please note that boxes not picked up within 36 hours will be donated to Food Gatherers.

Choose your Payment Schedule:

\$400 paid in full

\$200 now, remaining \$200 by May 27th