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BOOST YOUR BRAIN

By Jean Carper

Conventional wisdom: We are born with a brain of a certain size and potential, and we can do little to improve it. Our intellectual and emotional destiny is decided at birth.

The new reality: Our brains are growing, ever-changing organs, and we can dramatically influence their functioning by what we eat, the supplements we take and the physical and mental stimulation we engage in.

Brain researchers have made amazing discoveries over the past few years about the enormous ability of the brain to reinvent itself constantly. They have learned, for instance, that by feeding the brain nutrients and other natural substances, we can expand its power, alter mood and reduce susceptibility to brain damage and neurological diseases. For the first time, scientists are suggesting ways to improve the brain's biological structure and electrochemical wiring to help us realize our optimal potential for mental achievement, happiness and fulfillment.

How is this possible? Chemicals in foods and supplements actually can *improve* the structure of individual brain cells and the efficiency of their communication centers so messages are transmitted more clearly and quickly. Armed with this new knowledge, we can optimize our brain's wiring to achieve peak mental and emotional well-being at any age -- whether we are 3 or 93.

Just Two Examples of New Breakthroughs:

U.S. Department of Agriculture researchers fed a group of young men **a diet high in the mineral selenium** (220 micrograms daily vs. the 40-60 micro-grams in a typical American diet) for about three months. Selenium is found in grains, garlic, meat, seafood (oysters, swordfish, tuna) and Brazil nuts, or it can be taken as a supplement. The new diet sent morale soaring: The men reported feeling more clearheaded, elated, confident and energetic. A USDA researcher, psychologist James Penland, says the extra selenium lifted the men's moods even though they had no signs of selenium deficiency. In other words, undetected deficiencies may run our moods and we don't even know it.

Two types of vitamin E -- the anti-oxidant powerhouse – can prevent surgery in some patients with severe narrowing of the carotid artery in the neck, one of the biggest causes of stroke. Cardiologist Marvin Bierenbaum of the Kenneth L. Jordan Heart Research Foundation in Montclair, NJ, gave 50 patients a vitamin E combination of 100 milligrams of alpha tocopherol plus 240 mg of tocotrienols. This duo acted as a Roto-Rooter through the blockages in 40% of the patients.

So where to begin to boost our brains, based on all this exciting research?

1. Take a multivitamin. The evidence is utterly compelling that taking modest doses of a variety of vitamins and minerals is excellent brain insurance. They can preserve and improve intellectual functioning and emotional well being, most likely at all ages. For instance, between one third and half of schoolchildren who took a multivitamin-mineral supplement raised their non-verbal IQ scores as much as 25 points, according to several American and British studies. That's an astounding 23 million to 35 million U.S. children. "No known pharmacological drug can cause this type of impact," says British psychologist David Benton, author of one of the studies.

2. Add antioxidant supplements. Most brands of multivitamins don't contain sufficiently high amounts of the powerful brain-protecting antioxidant vitamins E and C, let alone important alpha lipoic acid and coenzyme Q10. How much should you take? Dr. Lester Packer at the University of California, Berkeley, recommends 400 to 500 IUs of vitamin E, 500-1,000mg vitamin C, 10-50mg lipoic acid. (Packer himself takes 100mg divided between the morning and evening, and he says diabetics may need 200-600mg.) There is no established dose for coQ10, but Packer and other experts recommend 30mg. You may need 100-200mg if you smoke, have heart disease or are at high risk of degenerative brain disease.

Unfortunately, coQ10 supplements are expensive because Japanese producers have a monopoly. Should children take anti-oxidants, too? Yes, says Packer, who recommends half the usual adult dose.

3. Load up on foods with antioxidants, too. Think of it this way: Our whole bodies are exposed to constant assaults by harmful free-radical chemicals that, to be blunt, turn us and our brains rancid, just like a fatty piece of meat that has been left out of the refrigerator too long. Eventually, free-radical damage can kill brain cells, leading to sharp mental decline. Alzheimer's disease and other degenerative brain diseases. But what if we could don a kind of internal Superman suit that acts as armor to repel or neutralize those perpetual chemical attacks? Actually, we can. It's not difficult to take in high doses of antioxidants in modest amounts of fruits and vegetables. Just three prunes, one cup of mixed blueberries and strawberries, plus a half-cup of cooked spinach would put us over the top for the very highest daily intake of antioxidants recommended by authorities. Generally brightly colored fruits and berries and dark green leafy vegetables are the ones highest in antioxidants. Snacking on raisins, berries, apples, grapes, cherries or prunes – instead of or even in addition to the usual chips – could make all the difference in intellectual power and emotional well being.

4. Sip a cup of tea. It's one of the easiest, quickest ways to infuse the body and brain with antioxidants – and with virtually no calories. Put one tea bag – plain black tea (yes, the stuff you see on supermarket shelves, such as Lipton's, Twinning or Bigelow) or more exotic Asian green tea – in five ounces of boiling water. Let it brew for five minutes and drink it. In an instant you've taken in about 1,200 ORAC units of antioxidants -- about a third to a fourth of the total daily recommended amounts, according to Tufts University researchers. Iced tea counts, too. You don't, however, get significant amounts of antioxidants in herbal teas, commercial bottled teas or powdered tea mixes, according to the Tufts analyses.

5. Get omega-3-type fish oil by eating fish or taking supplements. The oil actually creates new communication centers in neurons and is absolutely essential for optimal brain functioning and mood. Without omega-3, your brain cells, stiffen and wither, stifling message transmission. Stunning new research ties a lack of fish oil in the diet to a whole host of problems, from low intelligence and learning disabilities to depression and degenerative neurological diseases. Developing brains – in the womb, in infancy and in childhood – especially require omega-3 type fish oil to construct the best neuronal architecture and biochemical wiring. Children who fail to get enough omega-3 in the early developmental periods may have lower Iqs later in life. Nor can adult brains achieve top cognitive potential without adequate supplies of omega-3 fatty acids. In one study, men who ate three quarters of an ounce of fish daily cut their odds of age-related memory decline by 60%, compared with non-fish eaters. One fraction of fish oil, DHA, has been shown to enhance brainpower, speed and efficiency, memory and learning, and may even help prevent and possibly treat Alzheimer's disease. Omega-3 fat also tells the brain to feel good, probably by boosting production of the neuro-transmitter serotonin. New evidence shows that fish oil helps prevent and even relieve major depression. It also can help block brain damage from alcoholism, and is being tested as a possible treatment for schizophrenia. How much do we need? A couple of servings of fish (especially fatty fish such as salmon, mackerel, sardines, herring) or an ounce or two a day is enough to keep brain cells happy. If you don't like fish, take about 650mg a day of omega-3s (DHA, or docosahexaenoic acid, and EPA, eicosapentaenoic acid) in capsules. You can even buy DHA alone (even in vegetarian form), which is specifically recommended for pregnant and lactating women to enhance fetal and infant brain development.

6. Lose the bad fats. We can take the perfectly good brain w were born with and screw up its communication circuits by feeding it the wrong type of fat – at any age. Americans typically eat 165 times more potentially brain-destructive oils than brain-building omega-3-type fats. Because this dynamic organ is made up mostly of the fat we feed it, it becomes the prime target of this dangerous fat imbalance. Probably the most dangerous to brain cells is saturated animal fat, so pervasive in fast foods such as burgers and shakes. Also detrimental to cells: to much polyunsaturated vegetable oil – so-called omega-6s – such as safflower, sunflower and corn oils, that can set up chronic inflammatory responses in brain tissue, thought to eventually lead to subtle brain damage, strokes and Alzheimer's disease. Eating trans-fatty acids, in processed foods such as salad dressings, fries, doughnuts and most margarines, also can foster blood-vessel damage that is detrimental to blood circulation in the brain.

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7. Take brain-boosting supplements. Some over-the-counter supplements can help rejuvenate brain-cell activity. A favorite is ginkgo biloba, and the scientific buzz is so good that countless prestigious scientists take it themselves, hoping to ward off age-related memory loss. For instance, Jerry Cott, chief of research on pharmacological treatment at the National Institute of Mental Health, takes 240mg of ginkgo a day. How, exactly, does it slow the gradual decline in mental faculties? In several studies, Dr. Packer of Berkeley has shown that ginkgo zaps two of the more virulent free radicals that readily savage brain cells. It also helps increase the circulation of blood and oxygen; many experts think this alone makes ginkgo a formidable brain-booster. Another potential brain saving is phosphatidylserine, or PS, reputed to stimulate production of the "memory" neurotransmitter acetylcholine, which may decline as we get older. Dr. Thomas Crook III gave half of 150 patients, ages 50 to 75 and all with memory problems, 100mg of PS three times a day for 12 weeks. The other half received a placebo. All subjects took a battery of neuropsychological tests. Those taking PS scored about 30% higher on tests of learning and memory, and those with the worst memory deficits benefited the most. "PS is not a magic bullet," says Crook. "It's not like you're 75 and take it and become 25. But it is the first thing we've ever seen of many, many compounds that does have a clear measurable effect – and that effect is about 12 years of rolling back the clock. I really firmly believe PS can roll back virtually all age-related memory impairment."

8. Watch sugar, including blood sugar. Eating too much sugar, and certain other carbohydrates, is not a good idea for young or old brains. Sugar overloads can inspire "insulin resistance," throwing blood-sugar (glucose) levels out of whack, as well as causing permanent damage to brain cells, leading to malfunction and death. But because the brain runs on energy derived mostly from carbohydrates, it's essential to have the right blood sugar available to the brain at every instant to promote memory, learning and other cognitive functions. Carbohydrates also may influence mood. But it is a delicate balance. "Eating white potatoes or white bread is just like eating candy, as far as your body knows," says Walter Willett, chairman of nutrition at the Harvard School of Public Health. So, for an optimally functioning brain, restrict these "fast carbs" and instead choose carbohydrates that are digested slowly, including peanuts, dried apricots, dried beans, yogurt, oat bran, All Bran cereal and sourdough bread. Adding vinegar or lemon juice to foods also suppresses a sharp rise in blood sugar. So does taking 200 micrograms a day of chromium.

Bottom line: Our brains grow and change every instant. The brain thrives on stimulation, exercise, education and the right diet and supplements. It is never too early or too late to start shaping your brain's destiny.

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TOP 10 ANTIOXIDANT FOODS

In order of greatest concentration:

1. Prunes
2. Raisins
3. Blueberries
4. Blackberries
5. Garlic
6. Cooked kale
7. Cranberries
8. Strawberries
9. Raw Spinach
10. Raspberries

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IMPORTANT NEWS YOUR BRAIN CAN USE

What we know about how the brain works has exploded in the past decade. Here are some highlights from groundbreaking research at leading scientific centers, including the National Institutes of Health, Harvard, the University of California, Tufts and other facilities worldwide.

Boost Your Brain - continued

✂ Eating **blueberries**, one of the foods highest in antioxidants, dramatically reversed memory loss and restored motor coordination and balance in aged animals, according to new Tufts University research. The animals ate an amount equal to about half a cup a day for humans.

✂ Middle-aged men with the highest blood level of **vitamin B6** scored twice as high on a memory test as those with the lowest B6, found Tufts researchers. The higher the B6, the higher the memory scores.

✂ Older people taking vitamin supplements, notably **B vitamins**, had "higher cognitive performance" than non-supplement takers and "scored as well as or better than younger adults on verbal memory," according to University of New Mexico researchers.

✂ High doses of the supplement **coenzyme Q10** stimulated dopamine activity in nerve cells, leading the National Institutes of Health to launch new studies of coQ10 as a treatment for Parkinson's and Huntington's diseases.

✂ More than 50 controlled studies proclaim the supplement **ginkgo biloba** a successful brain pill for aging memories, concentration, absentmindedness, confusion, dizziness and Alzheimer's disease.

✂ **Vitamin E and ginkgo** supplements have delayed the progression of Alzheimer's disease, and are being widely tested by the National Institutes of Health as antidotes to age-related memory loss and dementia.

✂ Not a single older person taking daily **vitamin E** (about 400 IU) or **vitamin C** (about 500mg) developed Alzheimer's during a four-year study at Chicago's Rush Institute for Healthy Aging. The expected Alzheimer's rate: 15%.

✂ Eating three additional daily servings of **fruits and vegetables** reduced overall stroke rates 22% and the risk of bleeding stroke by 51%, says the Framingham Heart Study.

✂ Infants who are breast-fed or given formula fortified with a component of **omega-3-rich fish oil** have higher IQs and academic achievement later in life, several international studies have concluded. Unfortunately, fortified formulas, available in Europe, Asia and Mexico, aren't sold in the USA or Canada.

✂ Older men who ate diets heavy in the destructive **omega-6-type fat** found in margarine, salad dressings, corn oil and processed foods were 75% more likely to be intellectually impaired than those who ate the least amount of such fat, according to a Dutch study.

✂ **Fish oil capsules** released manic depression in 65% of patients, often within a couple of weeks, according to a Harvard study.

✂ Up to 38% of adults diagnosed with depression have low blood levels of **folic acid** and respond less well to anti-depressant drugs, say researchers at Harvard. Adding about 400mcg of folic acid to the daily diet can help. Low blood levels of folic acid triple your risk of Alzheimer's disease, new research at Britain's Oxford University finds.