



## Exercise on the Brain By Sandra Aamodt and Sam Wang

FEELING a little less mentally quick than you did a few years ago? Maybe you are among the many people who do "brain exercises" like sudoku to slow the cognitive decline associated with aging. We've got a better suggestion.

Computer programs to improve brain performance are a booming business. In the United States, consumers are expected to spend \$80 million this year on brain exercise products, up from \$2 million in 2005. Advertising for these products often emphasizes the claim that they are designed by scientists or based on scientific research. To be charitable, we might call them inspired by science — not to be confused with actually proven by science.

Environmental enrichment does improve mental function in laboratory animals. Rodents and monkeys that get playmates or toys learn to complete a variety of tasks more easily, at all ages. They also have larger brains, larger brain cells and more synaptic connections than animals raised alone in standard cages. But here's the rub: standard laboratory environments are tremendously boring. Lab animals rarely need to search for food or avoid predators. In contrast, most of us get plenty of everyday stimulation in activities like finding a new address, socializing with friends or navigating the treacherous currents of office politics. Animal enrichment research may be telling us something important not about the positive effects of stimulation, but about reversing the negative effects of deprivation.

Another line of evidence cited by marketers comes from studies of elderly people who improve certain skills by practicing a challenging computer-based task. Although most programs work to some extent, the gains tend to be specific to the trained task.

That is, practice can certainly make people better at sudoku puzzles or help them remember lists more accurately. The improvement can even last for years. Similarly, people tend to retain skills and knowledge they learned thoroughly when they were younger. Unless the activities span a broad spectrum of abilities, though, there seems to be no benefit to general mental fitness.

For people whose work is unstimulating, having mentally challenging hobbies, like learning a new language or playing bridge, can help maintain cognitive performance. But the belief that any single brain exercise program late in life can act as a quick fix for general mental function is almost entirely faith-based.

One form of training, however, has been shown to maintain and improve brain health — physical exercise. In humans, exercise improves what scientists call "executive function," the set of abilities that allows you to select behavior that's appropriate to the situation, inhibit inappropriate behavior and focus on the job at hand in spite of distractions. Executive function includes basic functions like processing speed, response speed and working memory, the type used to remember a house number while walking from the car to a party.

Executive function starts to decline when people reach their 70s. But elderly people who have been athletic all their lives have much better executive function than sedentary people of the same age. This relationship might occur because people who are healthier tend to

be more active, but that's not the whole story. When inactive people get more exercise, even starting in their 70s, their executive function improves, as shown in a recent meta-analysis of 18 studies. One effective training program involves just 30 to 60 minutes of fast walking several times a week.

Exercise is also strongly associated with a reduced risk of dementia late in life. People who exercise regularly in middle age are one-third as likely to get Alzheimer's disease in their 70s as those who did not exercise. Even people who begin exercising in their 60s have their risk reduced by half.

How might exercise help the brain? In people, fitness training slows the age-related shrinkage of the frontal cortex, which is important for executive function. In rodents, exercise increases the number of capillaries in the brain, which should improve blood flow, and therefore the availability of energy, to neurons. Exercise may also help the brain by improving cardiovascular health, preventing heart attacks and strokes that can cause brain damage. Finally, exercise causes the release of growth factors, proteins that increase the number of connections between neurons, and the birth of neurons in the hippocampus, a brain region important for memory. Any of these effects might improve cognitive performance, though it's not known which ones are most important.

So instead of spending money on computer games or puzzles to improve your brain's health, invest in a gym membership. Or just turn off the computer and go for a brisk walk.



**It's January... time to get back in shape!**

## Studies find effects on breast, prostate and colorectal tumors

(HealthDay News) Obesity and diabetes, risk factors so often linked to heart disease, can also affect the incidence and severity of cancer, a collection of four new studies suggests.

The findings, presented Friday at the American Association for Cancer Research's Sixth Annual International Conference on the Frontiers of Cancer Prevention Research in Philadelphia, link weight gain and diabetes to a number of malignancies, including breast, prostate and colorectal cancer.

confounding factors were taken into account. While the reason for the increased risk is not known, Flood said it could be due to the elevated levels of insulin seen with diabetes.

High levels of insulin in diabetic women could explain a threefold higher risk of death from breast cancer, said the second study, by researchers at Yale University. They measured blood levels of C-peptide, a marker of insulin secretion, in women in a long-term study of breast cancer. Over an eight-year period, the women in the highest third of C-peptide levels had twice the risk of dying from breast cancer, compared to women in the bottom third, the researchers said.

Another study, by researchers at the Johns Hopkins Bloomberg School of Public Health, found that weight gain after a diagnosis of invasive breast cancer could significantly increase a women's risk of death from the cancer.

The study of more than 4,000 women with breast cancer classified them by body mass index, a ratio of weight to height. For obese women, the risk of dying of breast cancer was 2.4 times greater than for women with a normal body weight, a relationship that persisted when age, menopausal status and smoking were taken into account.

Another Johns Hopkins study provided a possible explanation for the lower risk of prostate cancer seen in men with diabetes. The researchers matched 264 men diagnosed with the cancer with a group of 264 cancer-free men, measuring C-peptide levels in both groups.

Men with elevated blood levels of C-peptide when the study started were one-third less likely to develop prostate cancer than those with lower levels. Men with higher C-peptide levels had half the risk of developing prostate cancer confined to the prostate.

The protective effect of those high levels could be due to the activity of insulin in relation to the male hormone testosterone, Plantz said. C-peptide derives from the same parent molecule as insulin, and insulin is known to reduce the activity of testosterone, which stimulates the growth of prostate cancer, she said.

The possible protective effect of insulin against prostate cancer could offer a mirror image of the negative effect of estrogen, the female sex hormone, in breast cancer, said Dr. Rexford Ahima, professor of medicine at



the University of Pennsylvania.

"We have known for years that women who are obese are at high risk of breast cancer" Ahima said. "Fat tissue makes estrogen, which promotes breast cancer. The frightening thing is that the more obese you are, the greater the risk you have of dying of cancer. For every increase of 10 kilograms, 14 pounds, there is a 14 percent increased risk of breast cancer death."

So, instead of thinking of obesity just as a risk factor for heart disease, its effects on cancer must also be taken into account, Platz said. "In general, it is a good thing to do to avoid obesity," she said. "That is a message consistent with what we know about good health."

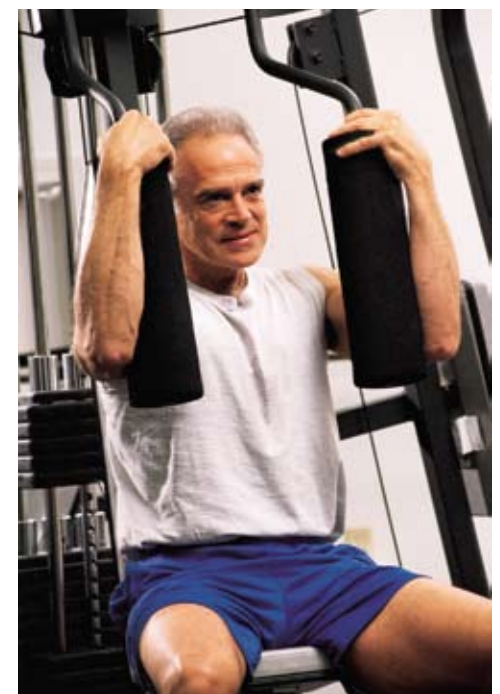
SOURCES: Elizabeth Platz, Sc.D., associate professor of epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore; Rexford Ahima, M.D., professor of medicine, University of Pennsylvania, Philadelphia; Dec. 7, 2007, presentations, American Association for Cancer Research, Sixth Annual International Conference on the Frontiers of Cancer Prevention Research, Philadelphia



"All of these are consistent with what we would expect with the occurrence of each of these cancers or cancer survival," said Elizabeth Platz, associate professor of epidemiology at the Johns Hopkins Bloomberg School of Public Health. «Metabolic perturbations enhance certain cancers. Insulin and other hormonal factors influence cell growth and make cells multiply."

Women with diabetes have a 50 percent increased risk of developing colorectal cancer, according to the first study, by researchers at the University of Minnesota. The group, led by Andrew Flood, assistant professor of epidemiology and public health, followed more than 45,000 women enrolled originally in a breast cancer detection program for more than eight years.

The increased incidence of colorectal cancer remained significant after all possibly



## Warning: Your Heart May Be Aging Faster Than You Are

Despite the increasing evidence that managing high cholesterol reduces cardiovascular events, many people do not achieve recommended lipid levels. This is due, in part, to patients' lack of understanding about their risk factors and the potential benefits of lifestyle modifications and therapy.

A new study undertaken by the McGill University Health Centre (MUHC), the Cardiovascular Health Evaluation to Improve Compliance and Knowledge Among Uninformed Patients (CHECK-UP), now provides definitive evidence that communicating the future risk of cardiovascular events to high-risk patients improves the treatment of cardiovascular risk factors, such as high cholesterol. CHECK-UP is the first successful study of its kind worldwide and is published in this week's Archives of Internal Medicine.

"The economic burden of cardiovascular disease is substantial to the Canadian healthcare system, but even more important are the devastating human costs associated with the disease," says Dr. Steven Grover, lead author and Director of the McGill Cardiovascular Health Improvement Program (CHIP). "The CHECK-UP study shows that when Canadians become more actively involved in the decisions surrounding their care, they are better equipped to manage their risk for future cardiovascular events."

Patients who entered the CHECK-UP study had high cholesterol requiring treatment

as per the Canadian Working Group Lipid Guidelines. Included were those who had diabetes, established cardiovascular disease or multiple risk factors for cardiovascular disease. The results of the study show that lipid therapy is enhanced when patients are informed about their cardiovascular risk and when they receive ongoing feedback from their doctor about the impact lifestyle modifications and statin therapy has on their cardiovascular risk. These patients saw a bigger drop in their lipid levels; in fact, the higher a patient's cardiovascular risk, the greater their risk profile was impacted.

The computerized risk profiles used in the CHECK-UP study were based on data from the Framingham Heart Study, and the Cardiovascular Life Expectancy model previously published by the McGill research team. Each patient's future risk of cardiovascular disease was based on their age, gender, blood pressure, blood lipids, and whether or not they smoked, had diabetes or a previous cardiac event such as a heart attack. For example, a 43-year-old male smoker who is substantially overweight, with above-average cholesterol and blood pressure levels, in actual fact has a cardiovascular age equivalent to that of a 51-year-old. If all these risk factors were managed according to current Canadian guidelines, he could reduce his cardiovascular age to that of a 42-year-old.

"We are very excited about the results of the CHECK-UP study," says Dr. Grover. "CHECK-UP is the first study of its kind in Canada to focus on the importance of communicating calculated cardiovascular risk to patients who are at high-risk for a cardiovascular event, such as a heart attack or stroke. Discussing a patient's coronary risk and taking the necessary steps to manage it is an important step in improving preventive care."

Cardiovascular disease, including heart disease and stroke, is the leading cause of death in Canada. Research shows that approximately 80 per cent of Canadians have at least one modifiable risk factor for cardiovascular disease, such as high cholesterol, hypertension, obesity and a sedentary lifestyle.



### The Chefs' Corner

by Derek Dammann, Executive Chef at Le Bistro Mansfield Mansfield Club Downtown

500 g

Sea salt and freshly cracked black pepper  
stale, good quality bread  
Parmesan cheese for grating

#### PAPA al POMODORO Bread and tomato soup

Serves 4

1 kg	very ripe, fresh tomatoes
3	cloves garlic, peeled and finely sliced
1 medium	onion, finely diced
2 ribs	celery, finely diced
2	whole anchovy fillets
1 tbsp	fennel seeds
1 tsp	red chili flakes
1 bunch	Italian parsley, leaves picked and stems finely chopped
1 large bunch	Basil, leaves picked and stems finely chopped
	The best extra virgin olive oil you can find

Bring a large pot of salted water to a boil over high heat. Core the tomatoes and score the bottoms with a shallow X. Have a large bowl of ice water standing by. Drop the tomatoes into the boiling water for 15 seconds, remove them and plunge them into the ice water. Peel off the skin and chop roughly.

Heat a generous glug of olive oil in a large pot and add the garlic, onion, celery, anchovy, fennel seeds, basil stalks, parsley stalks and chili flakes. Gently fry until softened. Add the peeled, chopped tomatoes, squashing them in your hands as you go. Add an additional 2 cups of water. Bring to a boil and simmer for 45 minutes over medium heat.

Tear the bread up into thumb sized pieces and add them to the pan. Mix well and season to taste. Allow to simmer for another 15 minutes. Tear in the basil leaves and the Italian parsley and give the soup a good stir... you're looking to achieve a thick, silky, porridge-like texture, so feel free to adjust it with a little water. Then, remove it from the heat and add 6 to 7 table-spoons of extra virgin olive oil.

Divide between your bowls and serve with a little extra basil torn over top and some freshly grated parmesan cheese.



## Bonding at the bench press

### Gym-goers and clubs realize the rewards of fitness friendships

By Jacqueline Stenson

Denis Barry, a former champion bodybuilder, is a man on a mission: to get his fitness clients in the best shape of their lives. Through a high-intensity training program called Power Hit at Edge Gym in New York City, he sends clients new workouts every week via e-mail, cracks the whip during workouts and administers weekly and monthly tests - a series of timed drills including dead lifts and bench presses - to chart their progress and make sure they aren't slacking off.

The program is so grueling that participants have started bonding together in solidarity, planning to work out together and cheering each other on during the tests. "With all the stress and grind of going through it, a lot of us became friends," says John Grosner, a hedge fund administrator. "They put us through the ringer, so it's pretty easy to vent." That venting - and other socializing - now takes place outside the gym, too. Grosner and some of the guys get together for drinks, to watch football or to go to Yankees games.

Barry never intended to be a party planner. But like more and more trainers, gym owners and exercisers themselves, he's realizing the benefits of fitness friendships. He's even added a message board to his Web site so members can share training tips.

"In the beginning, if you would have told me people would become friends, I would have

been aghast," says Barry, who is a co-owner of the gym. "We're not about trying to make friends. We're about performance. Now I find that they're getting together in bars and complaining about me. But they're also doing better on the tests. The group thing, the commonality, is really helping people train harder."

It's long been an inside joke in the fitness industry that it's better to sign up new members and never see them again than to have them use the facilities faithfully. But of course, those members don't renew their memberships either, and clubs are finding that creating a social atmosphere keeps members coming back. They also stay more fit.

### Beyond weights and cardio

A survey earlier this year by the Boston-based International Health, Racquet and Sportsclub Association, which represents gyms across the country, found that 18 percent of member clubs now offer "social programming," ranging from fitness classes that bring together new moms or seniors to marathon training programs to wine tasting and weekend ski trips.

"Increasingly the social atmosphere of a club is what drives business," says Sandy Coffman, an industry lecturer and consultant in Bradenton, Fla., and author of "Successful Programs for Fitness and Health Clubs." "People don't quit clubs because they've got too many friends. People will quit clubs if they're exercising on a lonely basis and they're not having a good time."

Coffman says facilities that successfully create a "club within a club" can give members a sense of community and support that helps them stick to a program.

Step aerobics, circuit training and other group exercise classes are an obvious way to bring people together. But some clubs are taking things further, offering social hours, small-group personal training and even using a buddy referral system to bring two members together to work out, she says.

Atlantic Coast Athletic Clubs in Virginia offer holiday parties, book clubs, new-member socials and monthly "coffee talks," in which a nurse speaks to a group about health issues. "Most of it falls under the wellness category," says general manager John Greene. "That encompasses a lot of things." He believes members enjoy having a variety of things to do at the club besides weights and cardio.

At The Sportsclub/LA, a chain of high-end clubs featuring restaurants, spas and child care services, some members stay all day, says president and co-founder Nanette Pattee Francini.

### Partner perks

Ultimately, gyms do better when their members come back, and so do the members.

Carolyn Nurnberg, a publicist in New York, says a woman she befriended while on the elliptical trainer is now her regular workout partner. They motivate each other to meet up at the gym at the crack of dawn every morning.

Nurnberg says they also encourage each other to try new activities rather than just sticking with the elliptical. "We've really inspired each other to step out of what's most comfortable to us," she says. Sometimes they socialize outside of the gym, too.

Grosner says the friends he's made at Edge are taking his fitness to levels he wouldn't have achieved alone. "Through the competitive spirit, you push yourself," he says. "It's also nice to have a core group of people who are interested in working out as hard as I am."

Kelly McGonigal, a psychologist at Stanford University who teaches yoga and group fitness, wrote an article earlier this year in the IDEA Fitness Journal, a trade publication, urging fitness instructors to promote social connections with their clients.

She says the benefits of fitness friendships are many. "Social connection amplifies the health benefits of exercise," she says. "It strengthens the immune system, protects the cardiovascular system, improves mood and makes you more resilient to stress. Social connection boosts motivation to work out and makes the experience more fun."

Sometimes it even makes a love connection.

Susan James Carr, a public health nurse in Glendale, Calif., met her husband while playing in a round robin tennis group at her health club.

"Not only did Jim's incredibly accurate drop shot catch my attention," she says of the love match, "but his beautiful blue eyes and great smile were hard to ignore."

That was in 1985 and they're still exercising together.

