



EXERCISE AND BRAIN FUNCTION: INCREASE YOUR MENTAL PERFORMANCE

When we think about heading to the gym for a workout, typically we think only of the calories we will burn, the strength we will gain, or the waistline we hope to reduce. There could be another benefit that we are overlooking that might be more motivating than any others listed before. I'm talking about improved brain function from exercising. It's not a new theory, but researchers are getting closer to proving that it's true.

If you knew that you might do better on a test, or retrieve lost memories, or think more clearly you might not quit that exercise routine you promised yourself you would stick to this year. How exiting is that? We might get back some of the brain cells that we lost in college, or do better at work because we are exercising more.

One study involving 259 elementary school students showed significantly better scores in math and reading in those children that were among the fittest. Scientists have also found that vigorous exercise can cause older nerve cells to form dense, interconnected webs that make the brain run faster and more efficiently. This was previously thought impossible. These research findings give scientists clues that physical activity may also help stave off the beginnings of Alzheimer's disease. It appears that a physically fit body and a fit mind go hand in hand. 'Maybe I will go to the gym today.'

Researchers and scientists believe that exercise improves your brainpower based on what happens during a muscular contraction. Every time you perform a muscle contraction

like a biceps curl, your body sends out chemicals including a protein called IGF-1 that travels through the blood stream into your brain. The presence of IGF-1 in your brain triggers the production of different chemicals, including brain-derived neurotrophic factor or (BDNF). Ratey, a scientist calls this "Miracle Grow for the brain" and notes that it fuels almost all the activities that lead to higher thought.

Brains with more BDNF have a greater capacity for knowledge. On the other hand, says UCLA neuroscientist Fernando Gomez-Pinilla, "A brain that's low in BDNF shuts itself off to new information." "Dopamine, serotonin, norepinephrine—all of these are elevated after a bout of exercise," Exercise is starting to sound like a great coping mechanism for stress as well as a healthy habit that may improve your performance at work. Researchers even imply that impulsivity may be diminished though exercise. If that's true it could also help you make better nutrition decisions, which could only help you get in better physical shape.

William Greenough, a psychologist at the University of Illinois says "let your body go and your brain will follow." It seems that after a month of inactivity the neurons don't function as well anymore. This tells me that we should continue to work out as late in life as we can to continue getting the benefits of improved brain function.

So, which exercises seem to be the best for improving brain function? Well, a study published weeks ago in Proceedings of the National Academy of Sciences showed that 100% of sub-

jects who exercised for three months appeared to sprout new motor neurons. Here's the interesting part; those who gained the most in cardiovascular fitness, also grew the most nerve cells. Since cardiovascular improvement means increased oxygen to the brain it seems logical that those who achieved 'higher fitness levels' would have an easier time thinking and using all parts of the brain.

Okay, there is quite a bit of scientific information blended with a little real world application, which may be a lot to take in for those of us who haven't been exercising regularly. The body and mind are complicated, as is the interaction between the two. I think the take home message here is that exercise is a great way to feed fresh oxygen to the brain, and improve brain function over time. On those days where you are feeling sluggish and really don't want to go to the gym, remember that you are not just going for good looks, or to get stronger, you are going to get smarter and improve the way you perform at work. That just might push you over the edge, or at least off the couch.

Reference:

Newsweek: *Can Exercise Make You Smarter?* April 9, 2007 Issue.

Mental Skills Training For Sports: 3rd ed. *A manual for athletes coaches and sport psychologists* Rushall, B.S. Ph.D., R. Psy.

OVERTRAINING

Overtraining is what happens when you do exercise more than your body can handle resulting in a decrease in performance or stagnant performance. When you do resistance, or cardiovascular training it's typically in the hopes to reap some benefit from these actions. As most of us know these benefits can be things like improved fitness, increased strength, fat loss, or muscle toning. These benefits are called training effects, basically they are the effect that you get from doing the exercise. There are times when we don't get a training effect from exercise and it's usually the result of not doing enough to challenge the body to respond positively. Or it's the result of doing so much that the body can't repair itself enough to produce a benefit.

In order to get a training effect our bodies need to recover from the work that we did. Example, I did an upper body weight-training workout, and a week later I could lift more

weight. Had I not recovered, that would not be the case. During the act of weight training we are not getting stronger, we are merely breaking down the muscle fibers involved in the lift. Without a chance to recover properly, we won't get the training effect we desired. In that case we would be at the same level that we were at when we started, in some cases weaker than the previous training session.

What happens to our bodies when we over-train is a breakdown in muscle that cannot be repaired. The body makes an attempt to restore the tissue and adapt to the volume of lifting that you are asking it to perform. If you have not done too much to repair and you supply the body with the best nutrition to work with (water, high quality protein and slow digesting carbohydrates) you should be able to return to the gym with some type of training effect. If you have done too much work at the gym and haven't rested ade-

quately or supplied the body with quality nutrition, you are more likely to have symptoms of overtraining, and will probably notice a decrease in performance or stagnant performance in subsequent workouts.

Major symptoms of over training can include insomnia, loss of appetite, increased resting heart rate, and severe lack of motivation to train. Some minor symptoms include taking longer to finish workouts, not getting as many reps, or decrease in strength. In this case try taking more days rest between muscle groups or decreasing the training volume slightly, and don't forget about plenty of water and solid nutrition. Listen to your body, there's a difference between working hard and overdoing it.

Reference: Willardson, J., Burkett, N., The effect of rest interval length on bench press performance. *Journal of Strength and Conditioning Research* 2006. (20)2 p396-400.

MAY HEALTHY RECIPE HONEY-LEMON CHICKEN

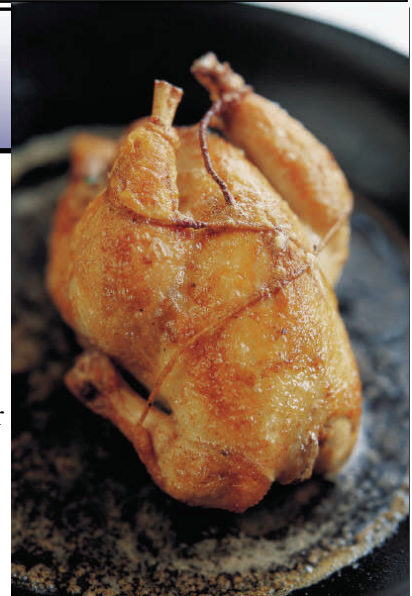
Ingredients:

3 lemons
2 tablespoons honey
1-2 sprigs fresh rosemary
1 Pinch salt
2 Fryer Chickens

Wash chicken inside and out. Pat dry. Cut excess fat off of leg and thigh area, but leave most of the skin on during cooking. Skin can be removed before serving. Slice chicken in half. Squeeze and zest the lemons. mix honey and 1 tbs rosemary leaves into a bowl with the juice, zest and salt. Rub mixture all over the 4 chicken halves. Throw the

chicken on the BBQ and start bone side down. After about 7 minutes do a couple of quick flips and then continue to cook bone side down. Finish skin side down.

Drizzle honey-lemon mixture on chicken every 8 to 10 minutes to prevent chicken from burning and to keep adding flavor. Cooking time will be around 30 minutes more for larger chicken. Salt and pepper to taste.



Nutrients per serving: Servings 4 Calories 450, Total fat 7g (21% of calories), Saturated fat 3g, Cholesterol 111 mg., Sodium 531 mg., Carbohydrate 15g, Protein 47g, Dietary fiber 0g.

Source: *Master Chef Phil Heacock* 2007.

Next Month:

Endurance/Threshold Training: Learn what it is and how to use it to your advantage in the gym.
Training Tips: Get the top 5 exercise tips that everyone should know.

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