PILLAR 02

EXERCISE

"EXERCISE IS FOOD FOR THE BRAIN"

Exercise makes a significant impact on brain function and preservation. Physical activity could very well be the most important thing one can do to enhance brain function and resiliency to disease. As people reach middle age and/or when they live a sedentary lifestyle, the brain may begin to degenerate, and exercise is critical in offsetting this process. Understanding the importance of exercise is more important than ever, because so many people live sedentary lives, in front of screens, sitting most of the day. There is an old saying, “use it or lose it”. This goes for the brain as well as the body.

REASONS EXERCISE IS MANDATORY FOR GOOD BRAIN HEALTH

1. Unless muscles are used, they waste away. This makes Parkinson’s and MS motor-symptoms more likely to manifest or worsen. Exercise fights this natural regression. With stronger muscles, better balance can be achieved and preserved. Strengthening the body maintains quality of life.

2. It was once thought that the adult brain was ‘fixed’ and incapable of producing new neural pathways. We now know better. Dr. Norman Doidge has done pioneering work discovering neuroplasticity- the ability of the brain to form and reorganize synaptic connections. The brain is also capable of neurogenesis, the process by which new neurons are formed in the brain, especially in the hippocampus and cerebral ventricles- and exercise stimulates this growth. Exercise signals cells to start acting like stem cells, capable of new growth. In addition, exercise increases the brain’s ‘baseline activity’ which also stimulates cellular growth. What’s more, what you chose to focus your attention on rewires the brain.

But, the brain doesn’t need new growth in order to stimulate better cognition; the brain is incredibly under-utilized. In other words, we don’t operate at anything close to maximum capacity. When specific pathways in the brain are blocked or damaged, the brain is capable of utilizing alternate means of circumventing those blockages which results in the establishment of new pathways, as well as increasing the brain’s myelin sheathing, thus enhancing transmission speed of electrical impulses and improving its function.

If you think of the brain's networks like a series of roads, the more networks you have, the more options are available to shift direction and arrive at the same destination if one road becomes impassable. These networks or roads are the cognitive reserves, and they develop through exercise as well as learning new skills, cognitive stimulation and curiosity.

The brain can always find ways to overcome challenges through neuroplasticity. If we can regenerate brain cells and reshape connections, imagine what an impact this has on neurodegenerative disorders.

3. The belief that a PD diagnosis is guaranteed to lead to inevitable decline is disempowering. This flawed belief only reinforces a resignation to a PD diagnosis. When PD patients allow this belief to define them, this can lead to a self-fulfilling prophecy with more focus on coping with the diagnosis, and less effort spent on improving their condition through brain healthy activities like exercise.

Because the brain needs to be stimulated in order to retain and maintain efficient function, the less PD patients move, the faster the neuronal circuits for movement and muscles will weaken, hastening decline. Exercise also makes dopaminergic cells more efficient and releases greater amounts of dopamine. This gives a person a sense of rewarding pleasure as well as an energy boost. Motivation is then enhanced and neuroplasticity is reinforced making movement easier the next time creating a positive feedback loop that leads to improvement rather than decline.

4. Exercise also stimulates the release of particular hormones in the brain that nourish brain cells, GDNF (glial-derived neurotrophic factor) and BDNF (brain-derived neurotrophic factor), which permit the brain to form new connections between brain cells. GDNF is a special protein that is naturally produced inside the brain and supports the survival of many types of brain cells–including the cells lost in PD by having a positive effect on dying dopamine neurons.

BDNF is a growth factor that consolidates the connections between neurons and helps to wire them together so they fire together reliably in the future. Dr. John Ratey, a neuropsychiatrist at Harvard who has written extensively on the connection between physical fitness and brain health, calls BDNF "Miracle-Gro for the brain". In addition to nurturing neurogenesis, BDNF also protects neurons from degenerating, catalyses neuronal growth in

part of the basal ganglia and encourages synapse formation (the way neurons communicate with each other).

People often say they “don’t have time” to exercise or they “don’t feel up to it”. Physical exercise may offer the greatest return on your investment, and it’s the antidote to many things that play into the risk for neurological decline.

Exercise provides brain-protective, health boosting benefits such as lowering inflammation; improving sleep; and improving motor skills, balance, muscle control and movement, in general. Incorporating exercise and movement into daily life dramatically decreases neurodegenerative symptoms.

In cases where mobility is already severely impacted by MS or PD, movement must still be a priority. When muscles aren’t used, they begin to degenerate. Additionally, people with MS and PD experience fatigue if the disease progresses. Exercise programs are very helpful for reducing fatigue and improving quality of life, as movement begets movement and results in more energy. Lack of mobility only leads to immobility.

A professional trainer can create an exercise routine that meets goals and needs. A good plan should consist of stretching, balance, strengthening and cardiovascular fitness.

Dr.Terry Wahls based on the work of Dr. Richard Shields recommends whole body vibration. The principle of whole-body vibration is that by standing on vibration plates the muscles need to make hundreds of constant tiny corrections in response to the changing position. The body then sends a flow of messages to the brain to compensate for the motion. All the messages to and from the brain stimulate the release of hormones in the brain. The body is also stimulated to release hormones in the muscle, which then promotes muscle growth and repair.

The good news is that if you are active, even a few minutes in motion will counter the effects of neurodegeneration. Exercise is a daily nonnegotiable activity, just like brushing your teeth! Start thinking of it this way, and watch the transformation.

GET MOVING!

BEYOND THE BASICS; EXERCISE SUGGESTIONS:

VIDEOS

Dr. Greg Eckel in his book “Shake It Off”, recommends specific exercises for the brain. Below are his videos:

- Qigong Videos
- Super Brain Yoga

NEUROBIC EXERCISES

Neurobic exercises are a new science of brain exercise. It uses non- routine ways of thinking and moving to create new neural pathways and improve memory, mood and brain function. These exercises stimulate brain regeneration by challenging the brain in varying and specific ways.

Here are just a few such exercises:

- Brush your teeth, or perform any other daily activity with your non-dominant hand.
- Write a sentence daily with your non-dominant hand.
- Take a different route to work or when you take a walk.
- Cross your arms and pinch your ears and then go into a squat. Do some repetitions.
- Increase the challenge with closing your eyes while doing simple tasks such as putting the key in the keyhole, opening the door and stepping in. These will heighten your senses.
- Try reading either ultra-slow or ultra-fast out loud. This exercises your focus of hearing as you articulate the words audibly.

Other exercises that create new pathways are called “big exercises”, and are commonly used for Parkinson's patients. Parkinson’s disease affects the signals traveling between the body and the brain. Often movements get smaller. A person with Parkinson’s takes noticeably smaller steps, arm swing decreases, and even handwriting may become smaller and harder to read.
Aside from the impact to balance and ability to walk at a quick pace, many people with Parkinson’s become self-conscious about their reduced arm swing and changes in gait. This can lead to avoiding social situations, which can have a negative impact on emotional wellbeing. One way to counter this symptom is with “big” exercises.

Big exercises for Parkinson's are designed to retrain the brain using exaggerated motions, which are repeated over and over. By performing these exercises regularly, a person can restore their range of motion. The movements are simple and safe, they are merely exaggerated to help counter the change in perception caused by PD disease.

Big exercises can be included in workouts or done alone guided by a trainer therapist. Participants have seen measurable improvement in balance, gait and range of motion.

Through NeuroGems, we will customize the best exercise regimen for you. The goal of our exercise program is to improve quality of life, provide better control of symptoms and enable you to push way beyond your perceived limitations.