Exercise-enhanced neuroplasticity in Parkinson’s disease

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Neuroplasticity refers to the changes that occur in the organization of the brain, as a result of learning and experiences. It occurs over the course of a lifetime, as the brain changes with age to reflect new experiences and events. CNS is adaptable not only during development but also throughout life. Some techniques like Transcranial Magnetic Stimulation (TMS), Paired-associated Stimulation (PAS), Repetitive Transcranial Magnetic Stimulation (rTMS) and Theta Burst Stimulation (TBS) can be used for the measurement of Neuroplasticity. In Parkinson's disease, exercise enhances the neuroplasticity and helps slowdown the progression of the disease. Exercise promotes neuroplasticity in people with Parkinson’s disease and that this exercise induced neuroplasticity is accompanied by behavioral recovery. Exercises that incorporate goal-based training and aerobic activity have the potential to improve both cognitive and automatic components of motor control in individuals with mild to moderate disease through experience-dependent neuroplasticity. Preliminary studies suggest that continuous, deficit targeted, intensive training may confer neuroprotection and there by slow, stop or reverse the progression of the disease or promote neurorestoration through adaptation of compromised signaling pathways. The data from studies indicate that alterations in both dopaminergic and glutamatergic neurotransmission, induced by activity-dependent (exercise) processes, may mitigate the cortically driven hyper-excitability in the basal ganglia normally observed in the parkinsonian state. These insights have potential to find new therapeutic treatments to reverse or delay the disease progression. Periods of inactivity, may be prod generative contributing to further degradation of function and disease progression whereas regular exercise delays the appearance of Parkinsonian features in persons already diagnosed with the disease.

Biography
Rutvik Pandya is studying Physical therapy at the age of 23 years from Shree Devi College of Physiotherapy, Mangalore, Karnataka affiliated to Rajiv Gandhi University of Health Sciences, Karnataka, India. He has obtained certification for various fitness instructor training like Aerobics, Spinning, Diet and Nutrition, primary and advance Pilates, pre and postnatal fitness and Advance fitness from IAFT- Indian Academy of Fitness Training. He has worked as a Personal Physical Trainer for six months at Talwalkars Better Value Fitness Limited, India. He also has attended several workshops related to Physical Rehabilitation, Physical fitness and Awareness.

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