 **Weight Management and Neurocognitive Function** Gerry Leisman

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We present findings of how movement contributes to synaptogenesis and neuroplasticity and increased BDNF in rats and brain state changes in children and adults.  Motor and cognitive processes have dynamical bidirectional relationships. Rodent research has revealed that exercise influences the striatum by increasing dopamine signaling and angiogenesis. In children, higher aerobic fitness levels are associated with greater hippocampal volumes, superior performance on tasks of attentional and interference control, and elevated event-related brain potential indices of executive function. We endeavor to integrate findings from the Neurosciences, Cognitive Psychology and Biomechanics from our own laboratories and those of others in providing a fundamental understanding of the relation between intention, decision-making, and movement in the context of functional connectivity, awareness, attention, and action. The lack of movement represented in office work and youngsters fettered to video games reduces the ability to formulate effective connectivities. Because children and adults are becoming increasingly overweight, unhealthy and unfit, understanding the neurocognitive benefits of an active lifestyle during childhood has important public health and educational implications. Methods will be discussed to effect weight and health management in educational and workplace environments.

**Biography:**

Gerry Leisman is Director of the Israeli government supported National Institute for Brain and Rehabilitation Sciences (NIBRS) project in Nazareth, Israel and Scientific Director of the affiliated (NIBRS-USA), Full Professor in the School of Health Science at the University of Haifa and Professor of Restorative Neurology at Universidad de Ciencias Médicas Facultad Manuel Fajardo, Havana, Cuba, where affiliated electrophysiology and imaging science laboratories are found.

He has examined self-organizing systems in the nervous system applied to cognitive functions in memory, kinesiology, optimization, consciousness, and autism. He has applied optimization strategies and graph theory to movement, gait, and cognition. In the 1970’s, he was one of the first to identify functional disconnectivities in the brain. His work in Rehabilitation Sciences, has applied the tools of Industrial Engineering to those with developmental disabilities and to health promotion in adults using the tools of neuro- and cognitive sciences. Gerry Leisman is the first recipient of the International Association of Functional Neurology’s Lifetime Achievement Award. He is also instrumental in having NIBRS-Israel partner with some of Israel's northern hospitals to provide urgent care services for casualties of the Syrian Civil War who are found at the Syrian Israeli border and brought to Israel for urgent intervention. NIBRS-Israel is to be investigating novel methods for effective but expedited methods of rehabilitation. Dr. Leisman has published over 500 papers, and numbers of books in the Biomedical, Rehabilitation, Neuroscience, Computational Neuroscience, Physics, and Biomedical Engineering literature and is the holder of patents. He and NIBRS-Israel have become a NIH/FDA approved clinical trials site and are working with US and other corporations to evaluate new technologies and devices in functional neurology applications.  He is the Editor-in Chief of the journal, *Functional Neurology, Rehabilitation and Ergonomics*.