

Physical Activity Reduces Stress and Anxiety

Eli Carmeli*

Department of Physical Therapy, Faculty of Social Welfare and Health Sciences, University of Haifa, Israel

Feeling stress and anxious is a common experience among elderly people. These feelings are part of “defense mechanism” to better combat unusual situations or “adaptive behavior. There are many reasons triggered elderly people to be unrest and stressful such as losing a loved one which leads to chronic grief, ongoing illness, chronic pain, loneliness, adverse drugs reactions, physical or mental abuse or neglect, new social interactions, relocation, physical deficiency (e.g., poor vision or hearing) and nutritional deficiency. But when feeling stress and anxious becomes chronic and overwhelming it might affects daily activities, cognitive impairment and memory interferences, poor sleep, lack of energy or motivation, changes in appetite (weight loss or gain), and quality of life. These outcomes can end up with depression, self care neglect and losing social interest. Yet, older adults with anxiety disorders often undiagnosed and untreated. Moreover, in many cases older adults may not seek treatment because they do not feel comfortable to reveal or to admit this feeling.

Physical exercises as treatment option:

It is probably impossible to eliminate stress and anxiety, but one can learn to manage them. While there are variety of treatments for stress and anxiety reduction such as medication, cognitive behavior therapy, relaxation techniques, coping skills, recreational activities and family support, physical exercises may be the one most recommended by health care professionals and very successful to deal and to relieve stress and anxiety symptoms.

In recent investigation done in my lab we measured the effects of exercise training on spatial behavior among old mice. Previously, anxiety as a function of insecurity or lack of self-control has been evaluated using various laboratory measures such as chemical changes in saliva, cortisol [1], blood levels of serotonin and norepinephrine, using physiological parameters of blood pressure, heart rate, cholesterol, oxidative stress and free radicals [2], or using behavioral factors such as sleeping and eating [3,4]. In our study the results indicated the beneficial effects of moderate exercise training on reducing anxiety-related behavior and triggering spatial behaviors in an Open Field Test (OFT). Rodents that lack a sense of security prefer markedly prolonged stays at the edges or corners of the open field arena [5] while staying in or moving to the center of the arena indicates confidence and less anxiety [6]. Increase in the amount and speed of locomotion in the OFT and the number of times the running mice entered the center of the arena indicate a sense of security and higher “sensory-motor inner pressure” [7] to

scan and check the open space for different needs (such as food). The increased control and confidence in the running mice resulting from prolonged running can be explained by neurological as well as chemical and neuro-physiological mechanisms. One possible mechanism to explain our results might have to do with an adaptive response in the brain tissue that relates to anxiety-like behavior [8] and has led to the expression of brain plasticity. These reactions can trigger growth factors and create new synapses and neuronal connections through neurogenesis, synpathogenesis, angiogenesis and over expression of certain neuronal chemicals

In summary, rodents have genetic, biological and behavior characteristics that closely resemble those of humans, and therefore stress symptoms of human conditions can be replicated in rodents [9].

References

1. Stupnicki R, Obminski Z (1992) Glucocorticoid response to exercise as measured by serum and salivary cortisol. *Eur J Appl Physiol Occup Physiol* 65: 546-549.
2. Agarwal D, Dange RB, Vila J, Otamendi AJ, Francis J (2012) Detraining differentially preserved beneficial effects of exercise on hypertension: effects on blood pressure, cardiac function, brain inflammatory cytokines and oxidative stress. *PLoS One* 7: e52569.
3. Sartori SB, Landgraf R, Singewald N (2011) The clinical implications of mouse models of enhanced anxiety. *Future Neurol* 6: 531-571.
4. van Hulzen ZJ, Coenen AM (1981) Paradoxical sleep deprivation and locomotor activity in rats. *Physiol Behav* 27: 741-744.
5. Fuss J, Ben Abdallah NM, Vogt MA, Touma C, Pacifici PG, et al. (2010) Voluntary exercise induces anxiety-like behavior in adult C57BL/6J mice correlating with hippocampal neurogenesis. *Hippocampus* 20: 364-376.
6. Palanza P, Parmigiani S, vom Saal FS (2001) Effects of prenatal exposure to low doses of diethylstilbestrol, o,p'DDT, and methoxychlor on postnatal growth and neurobehavioral development in male and female mice. *Horm Behav* 40: 252-265.
7. Canbeyli R (2010) Sensorimotor modulation of mood and depression: an integrative review. *Behav Brain Res* 207: 249-264.
8. Urakawa S, Takamoto K, Hori E, Sakai N, Ono T, et al. (2013) Rearing in enriched environment increases parvalbumin-positive small neurons in the amygdala and decreases anxiety-like behavior of male rats. *BMC Neurosci* 14: 13.
9. Karanges E, Li KM, Motbey C, Callaghan PD, Katsifis A, et al. (2011) Differential behavioural and neurochemical outcomes from chronic paroxetine treatment in adolescent and adult rats: a model of adverse antidepressant effects in human adolescents? *Int J Neuropsychopharmacol* 14: 491-504.

*Corresponding author: Eli Carmeli, PT, PhD, Department of Physical Therapy, Faculty of Social Welfare and Health Sciences, University of Haifa, Israel; Tel: 03-6405434, 0507-393454, E-mail: ecarmeli@univ.haifa.ac.il

Received December 23, 2013; Accepted December 24, 2013; Published December 30, 2013

Citation: Carmeli E (2013) Physical Activity Reduces Stress and Anxiety. *Aging Sci* 2: e108. doi: 10.4172/2329-8847.1000e108

Copyright: © 2013 Carmeli E. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.