

Milena Raffi

University of Bologna
Italy



Effect of physical exercise on microsaccades in diabetic people

Abstract:

During locomotion the eyes scan the environment so the gaze is not always directed to the focus of expansion of the optic flow field. Diabetic retinopathy is a principal cause of visual damage. Such progressive degeneration of the retina is believed to cause postural instability. The regular practice of physical exercise is beneficial in diabetes management, thus, we sought to study the eye-movement characteristics produced during the view of optic flow stimuli in two groups of diabetic people. The active group included 15 subjects who followed a 6 months exercise program (age $57,3 \pm 9,9$, BMI $28,9 \pm 5,7$), while the inactive group included 25 sedentary participants (age $62,4 \pm 11,5$, BMI $31,7 \pm 6,4$). The experiments were performed in the dark at month 0 (baseline) and month 6. The participants stood in front of a screen covering $135 \times 107^\circ$ of visual field and were instructed to fixate a central fixation point while expanding optic flow stimuli were presented full field, in the foveal and in the peripheral field. Fixation in the dark was used as control stimulus. Oculomotor data have been recorded by EyeLinkII (SR research). Eye-movement orientations have been analyzed by circular statistics and mean vector uniformities were assessed by Rayleigh Test ($p < 0,05$). The active group showed significant non-uniform distributions in microsaccade orientation in all visual stimulations in both baseline and month 6, while the inactive group always show uniform distributions. No difference has been observed for saccade orientation. These results indicate that physical exercise modulates microsaccade activity suggesting beneficial effects in heading perception processes.

Biography

Milena Raffi is associate professor of Human Physiology at University of Bologna, Italy. She has published more than 50 papers in peer-review journals with IF and has been serving as an editorial board member of repute. The research activity focuses on various aspects of cognitive functions: role of visual perception on postural and motor control, functional characterization of eye movement neurons, cellular mechanisms involved in the analysis of visual perception, role of spatial attention and oculomotor functions. She is Principal Investigator of several national and international projects.