

The role of the vestibular system in postural and piloting tasks

Dr. Faisal Karmali, Ph.D.

Otolaryngology – Head and Neck Surgery, Harvard Medical School
Jenks Vestibular Physiology Laboratory, Mass. Eye and Ear
Boston, MA, USA

ABSTRACT:

It has long been known that severe vestibular damage causes postural impairments, but less is known about the role of the vestibular system who are “healthy.” Furthermore, little is known about the specific vestibular cues (e.g., tilt vs. translation vs. rotation) that contribute to postural control. In this presentation, I will discuss our recent studies that examine the role of vestibular cues in postural control in subjects with no known vestibular deficits. I will also present our recent findings showing that variations in vestibular function among young, healthy subjects are correlated with performance in a simplified piloting task. Finally, I will interpret these results in terms of the hypothesis that sensory neural noise impairs performance in closed-loop control.

- [1] Karmali, F., Goodworth, A. D., Valko, Y., Leeder, T., Peterka, R. J., & Merfeld, D. M. (2021). The role of vestibular cues in postural sway. *Journal of neurophysiology*, 125(2), 672-686.
- [2] Rosenberg, M. J., Galvan-Garza, R. C., Clark, T. K., Sherwood, D. P., Young, L. R., & Karmali, F. (2018). Human manual control precision depends on vestibular sensory precision and gravitational magnitude. *Journal of neurophysiology*, 120(6), 3187-3197.
- [3] Karmali, F., Bermúdez Rey, M. C., Clark, T. K., Wang, W., & Merfeld, D. M. (2017). Multivariate analyses of balance test performance, vestibular thresholds, and age. *Frontiers in neurology*, 8, 578.

SHORT BIO OF THE PRESENTER:



Dr. Karmali is an Assistant Professor at Harvard Medical School and the Co-director of the Jenks Vestibular Physiology Lab at Massachusetts Eye and Ear, Boston, MA, USA. He studies the vestibular system, multisensory integration, and closed-loop control using computational and experimental approaches.

DATE AND PLACE OF THE SEMINAR:

Thursday, July 1st, 2021 at 16:00 (CET)

g-Meet link:

<https://meet.google.com/fsu-gbug-yvm>

