

A Comparison of Vestibular Rehabilitation Progressions for Vertigo caused by Different Diagnoses

By: Alexandra Cherin, SPT, Meredith Harris, SPT, Michelle LiTrenta, SPT, Casey Tarpey, SPT, Alexandra Tracy, SPT, Jessica Warren, SPT, Andrew Wolfanger, SPT
Faculty Advisor: Dr. Laura Gras, PT,DPT,DSc,MS,GCS

BACKGROUND: Dizziness is a common umbrella term that is often used to describe vertigo, disequilibrium, and lightheadedness. Vertigo (illusion of motion) in particular, can be associated with a variety of conditions classified as vestibular disorders. These diagnoses can be organized into two categories depending on where the pathology is located; those impacting either the central nervous system (i.e concussion, migraine) or the peripheral nervous system (i.e labyrinthitis, Meniere's Disease).¹ Vestibular rehabilitation addresses these disorders using a variety of interventions performed by physical therapists. These include static and dynamic balance activities, habituation exercises, adaptation exercises, ambulation, and eye movement activities.² Although these are the common forms of interventions used, there is a gap in the evidence regarding vestibular rehabilitation for different diagnoses that cause vertigo.

The purpose of this study is to examine the effectiveness of physical therapy treatments for conditions impacting the inner ear and brain that result in dizziness (vertigo).

METHODS: This study will be a retrospective chart review of 7 patients over the age of 18, who were referred to the Ithaca College Physical Therapy Clinic with a diagnosis of central or peripheral vestibular dysfunction (concussion, migraine, labyrinthitis and Meniere's Disease). Data will be collected through a thorough examination of the patient charts. In addition, a follow-up call to each patient will be performed which will include questions about their current symptoms, perception of therapy effectiveness, and their post-discharge management. A patient reported outcome measure, the Dizziness Handicap Inventory, will be administered at the end of the phone call to gather subjective information on the patient's current levels of dizziness in order to compare this information to their scores during treatment initiation. Descriptive statistics and visual analysis of graphs will be used to analyze the data.

RESULTS: We predict that patients with diagnoses impacting the vestibular centers of the central nervous system will require longer rehabilitation duration, decreased intensity and decreased frequency, compared to those impacting the peripheral nervous systems when performing the similar intervention programs.

DISCUSSION: There is limited evidence available that describes the recovery time, type of exercises, exercise effectiveness, and patient tolerance associated with vestibular rehabilitation for central and peripheral nervous system diagnoses. Therefore, our study hopes to evaluate these different components, in order to have a better understanding of what timeframes and progressions might be beneficial for this patient population. We are predicting that vestibular rehabilitation will be equally effective in patients who have central nervous system and peripheral nervous system diagnoses. However, we hypothesize that those with peripheral

nervous system diagnoses will progress faster through their rehabilitation program and also recover more quickly than those who have conditions impacting the central nervous system. Though this study will be able to show trends in various components of care and recovery, it will not be able to determine a cause and effect relationship because of the lack of a controlled environment. Therefore, in the future it would be beneficial to conduct a randomized controlled trial so that potential confounding factors can be eliminated and higher levels of evidence can be developed.

References

1. Schubert MC, Minor LB. Vestibulo-ocular physiology underlying vestibular hypofunction. *Phys Ther.* 2004;84(4):373-385.
2. Hall CD, Herdman SJ, Whitney SL, et al. Vestibular Rehabilitation for Peripheral Vestibular Hypofunction: An Evidence-Based Clinical Practice Guideline. *J Neurol Phys Ther.* 2016 Apr;40(2):124-155.