

Atlanta VAMC Rehabilitation Research & Development Center News

Center of Excellence in Aging Veterans with Vision Loss

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Research Project of the Quarter

Dynamic Visual Acuity & Fall Risks in Older Adults with Vestibular Loss

Both the visual and vestibular systems contribute to balance control. The vestibular system interacts directly with the visual system to maintain gaze stability during head movements and with the motor system to maintain balance during head movements. A failure in any one of the systems may result in impaired balance and mobility. When there is a loss of vestibular function, the individual may lose balance when required to walk and turn quickly, such as occurs when an obstacle in the path suddenly comes to attention. My proposed research will examine the relationships between visual acuity during head movement (a functional measure of gaze stability) and fall risk and the effect of exercise interventions on fall risk in individuals with vestibular loss and in individuals with visual loss due to retinitis pigmentosa (RP). Our recent research has shown that appropriate vestibular exercises can improve both gaze stability and postural stability during head

movements as well as reduce the risk for falls in individuals with unilateral vestibular hypofunction. Visual acuity during head movement was found to predict the effect of rehabilitation on fall risk in these patients.

One component of the proposed research is to determine the ability of individuals with vestibular deficits and with visual loss due to RP to make quick predictable and unpredictable turns when walking. An additional purpose for this research is to identify changes in the ability to make quick turns following physical therapy. The second component of the proposed research is to examine the impact of visual loss due to RP on balance control. RP is a degenerative disease that results in progressive visual field loss, leading to significant central visual field loss. In addition, to the visual changes individuals with RP also exhibit balance and mobility difficulties. Research has shown that these individuals fail to use available visual cues appropriately to stabilize balance. In addition, individuals

with RP have reduced gait speed and increased accidental contact with objects in the environment under both normal and reduced illumination. This study will examine 1) the correlation between visual acuity during head turns in patients with RP and functional tests of balance, 2) the efficacy of physical therapy exercises to improve balance and mobility in individuals with RP who have impaired balance.



Dr. Hall (r) works with a research volunteer using the balance machine.

About the Researcher...

Courtney D. Hall, P.T., Ph.D.

Dr. Hall attended Davidson College for her undergraduate studies and UNC Chapel Hill for physical therapy. She received her Master's degree in Exercise and Movement Science from the University of Oregon and her Doctorate in Kinesiology from the University of Texas at Austin where she received the Hutchison

Fellowship award for excellence in academics and research. The emphasis of her research has been on age-related changes—both healthy and pathological—in balance control. Her doctoral and post-doctoral training have enabled her to combine her research interests in balance control with clinical practice

specializing in the treatment of patients with balance and vestibular deficits. She is Assistant Professor at Emory University and Research Health Scientist at Atlanta VAMC.

Rehabilitation Research & Development Center

Atlanta VA Medical Center (151R)
1670 Clairmont Road
Decatur, GA 30033

Important Dates during....

? **September**

Healthy Aging Month
National Rehabilitation Week (19-25)

? **October**

National Physical Therapy Month
Health Literacy Month
World Blindness Awareness Month

? **November**

Diabetic Eye Disease Month

? **December**

Hand Washing Awareness Week (5-11)

Quote:

*Vision is the art of seeing things
invisible to others - Jonathan Swift*

Visit our website: www.varrd.emory.edu

Subject Recruitment

Have you been diagnosed with Retinitis Pigmentosa (RP)?
Are you legally blind?
Are you 20 years or older?

The Atlanta VA Medical Center Rehab R&D Center and Emory University are looking for volunteers to participate in a study of visual function and everyday function in people with Retinitis Pigmentosa (RP).

??We are using several measures to study vision & balance
??This study could take up to 2 years, 4 times/year
??You will be paid \$10/hour for your participation

For information contact:
Adrienne Lloyd at 404-321-6111, ext. 6822
adrienne.lloyd@med.va.gov

