Meet Our Members: Joanna E. Hoh, MS, OTR/L



Joanna E. Hoh, MS, OTR/L is a PhD student at the University of Delaware with a clinical background in occupational therapy. She has been a member of ASNR throughout her PhD education to be part of an engaging clinical research community that provides opportunities to share her research findings, an environment where she can learn about innovative work being done in neurorehabilitation, and connections with other neurorehabilitation researchers. Joanna has also professionally benefitted from and enjoyed being a part of the ASNR Virtual Mentoring Program, where she was matched with a clinician-researcher with an occupational therapy background, Dr. Marika Demers.

1) How did you get interested in science, and what steps did you take to get to your current role?

I first became interested in neurorehabilitation research during my training as an occupational therapy student. As a research apprentice, I worked on a study investigating adherence to an upper limb, occupation-based home program in individuals with chronic stroke. This opportunity gave me insights into the importance of rigor while developing a research question, organization throughout the data collection process, and the reward of sharing research, both at conferences and through scientific publications.

And most importantly, being a part of data collection gave me one-on-one interactions with individuals post-stroke. This was pivotal in my desire to work clinically with the stroke population upon graduation.

After graduating with my clinical degree, I worked as an occupational therapist for three years, primarily in the inpatient rehabilitation setting. During that time, I gained important clinical experience related to assessment and intervention in stroke and other neurological populations. In addition, I developed a first-hand understanding of the gaps between evidence and practice in neurorehabilitation–namely sensation and proprioception. My clinical experience, coupled with the research experience I gained as both a student and clinician, inspired me to pursue a research doctorate. I knew this would allow me to maximize my contribution to the body of knowledge in the rehabilitation field, especially regarding the effects of sensory impairments after stroke.

2) What is the focus of your current research, and what are some of your findings?

My dissertation work, supervised by Dr. Jennifer Semrau, aims to investigate how proprioceptive impairments contribute to arm activity outcomes and learned non-use after stroke. Proprioception is our sense of position or movement of the body in space. Arm activity can be broken down into two categories: an individual's capacity (one's capability of executing certain tasks or actions) or an individual's performance (one's execution in the real-world). While proprioceptive deficits after stroke have been associated with lower functional outcomes, the relationships between proprioception, capacity, and real-world performance have been underexplored. Additionally, learned non-use after stroke is the phenomenon describing the incongruence between capacity and performance. It can have detrimental effects on full recovery and real-world use of the paretic arm.

Previous animal studies have used a limb deafferentation model that eliminates sensory information to study learned non-use; however, the connection between proprioception and learned non-use has not been explored after stroke despite the fact that poor sensory function is a likely contributor to learned non-use.

In a sample of 59 participants with chronic stroke, we observed that proprioception moderated the relationship between arm capacity and real-world performance. In other words, those with proprioceptive impairments had a weaker capacity-performance relationship compared to individuals without proprioceptive impairments after stroke. Overall, findings from my dissertation add to the limited body of literature that links the contributions of sensory function to real-world activity and learned non-use after stroke.

3) What are your longer term career goals?

My dissertation work has validated that the capacity-performance relationship after stroke is not always congruent, and work in the physical activity space has provided further evidence that capacity and performance outcomes often require different types of interventions after stroke. Therefore, my long-term goal is to obtain a research faculty position to investigate promising interventions to increase real-world upper limb performance after stroke. In order to gain skills to be an independent clinician scientist, my next step is to obtain additional training related to clinical trials as a post-doctoral fellow.

You can reach Joanna by email (eskander@udel.edu) or find her on LinkedIn.