Meet Our Members: Jordan Acosta

Jordan Acosta is a Graduate Research Assistant in the Sensorimotor Neuroimaging Laboratory at Colorado State University where she is preparing to finish her master's degree in Health and Exercise Science. We were excited to welcome her as a new ASNR Member this year! Jordan joined ASNR because the collaboration, networking, and sharing of new ideas in neurorehabilitation is such an incredible opportunity. You can learn more about Jordan and her research in our interview below.

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

Science has always been a passion of mine, specifically understanding neurological disorders. I had the privilege of growing up with a dear friend who has spinal muscular atrophy. Witnessing his remarkable resilience, determination, and faith fueled my desire to join the field and motivated me to help him and others who suffer from neurological disorders. I am grateful to be able to understand the complexities involving neuroscience, however it is my empathy for the individuals that prompted me to concentrate my career around alleviating any aspects of neurological impairments that I can.

From a personal aspect, last March in 2022 I was diagnosed with a neurological disorder called chronic inflammatory demyelinating polyneuropathy (CIDP). It requires me to receive immunotherapy infusions every 15 days and manage various symptoms throughout the day. Although this diagnosis was never what I had expected nor something I could have anticipated, it has reshaped how I interact with my participants and has increased the dedication I have for neuroscience. My current role has been influenced by my experience greatly as I navigate care for myself whilst balancing actions to express gratitude for things I am still able to do. This includes research, supporting individuals, exercising, collaborating, and always striving to achieve personal and career goals. Now, I can see my diagnosis as a unique opportunity to be knowledgeable of neurophysiology, but moreover to truly understand and exude empathy for others with neurological conditions. I believe I'm in a position now to help bridge the gap between patient and researcher/clinician. Experiencing and seeking to alleviate the ailments of living with a neurological disorder allows me to better communicate with others and provide a deeper insight that may fuel advancements in the field. And I hopefully provide encouragement and support as I pursue avenues to live unlimited.

The steps I took to get to my current position started in my undergraduate years. I made sure to diversify my experience with the Honors program, NCAA Division I athletics, and joining different clubs. I was fortunate to start working in the Sensorimotor Neuroimaging Laboratory during my junior year. Being mentored by Dr. Brett Fling and others in the lab helped shape my next steps to pursue graduate school. Now, our research in multiple sclerosis and the tools I have developed throughout the past couple of years have allowed me to thrive in my current

role and research. The support from my mentor, faculty, family, and peers has been essential not only to my success, but my ability to manage my health and mental wellbeing as well.

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

The current focus of my research is within the multiple sclerosis (MS) population. We aim to combine gait analysis with neurophysiology to investigate the underlying neural mechanisms contributing to the walking asymmetries we often see in people with MS. The observed asymmetry in strength and function between the legs in people with MS creates gait dysfunction that can impact mobility and quality of life. With 93.7% of individuals with MS experiencing gait performance deficits, and over 50% requiring mobility assistance within 18 years of their diagnosis, our lab seeks to alleviate and understand this further. The structural and functional integrity of the corpus callosum in the brain plays a critical role in the coordination of bilateral movements. In people with MS, degradation of the corpus callosum is common and directly related to poorer bimanual control. Therefore, our lab utilizes a split-belt treadmill paradigm and transcranial magnetic stimulation to evoke locomotor adaptation and assess inhibitory capacity in the individual's more and less affected limb. Our research has demonstrated the absence of differences in inhibitory directionality between brain hemispheres in people with MS. This is impactful because it suggests people with MS may retain the ability to inhibit certain muscle groups regardless of their more affected hemisphere, and these findings can inform future research investigating different neural mechanisms for gait asymmetry. However, we also observed a significant correlation between neural inhibition and how well participants could adapt the spatial components of their gait to become more symmetrical. Specifically, lower inhibitory metrics correlated with better adaptation performance on the split-belt treadmill. These results are pivotal to further understand the neural underpinnings for gait asymmetry and may also help stratify people with MS into the best rehabilitation protocols to reduce walking impairments.

3) What are your longer term career goals?

My long-term career goal is to own a multidisciplinary neurorehabilitation center. One that is not just focused on the physical therapy aspect, but also mental, emotional, and other support elements. Neurological conditions may be identified through physical impairments; however, the individual also experiences various struggles with grief, lack of motivation, and decreased quality of life, and they may feel isolated with their condition. My goal is to have a space that individuals can allocate intentional time for their physical, mental, or emotional health and leave my center feeling more hopeful and encouraged in their journey. In this way, I hope to bring additional resources and opportunities for people with neurological disorders in the future.

To learn more, you can connect with Jordan on LinkedIn.