Keeping Muscle Atrophy on the Run

Kinesiologist and Ph.D. candidate Lance Bollinger is a serious runner. He’s run everything from 5k races to marathons, so his interest in muscle atrophy is no surprise. Bollinger’s research involves cellular mechanisms of protein degradation and muscle atrophy, especially with regard to obesity. He uses various cell culture models to study the regulation of protein degradation, with the goals of identifying how obesity affects muscle protein degradation and how the transcription factors FoxO and SMAD3 coordinately regulate MuRF-1 gene transcription, a protein that targets contractile proteins for degradation. His work as a clinical exercise physiologist for cardiac rehabilitation patients and bariatric surgery patients spurred his interest in muscle atrophy research. The patients’ muscle weakness was a primary reason they were prescribed exercise. According to Bollinger, muscle atrophy resulting from increased protein degradation is a common side-effect of many chronic diseases and can affect longevity and quality of life. His research is important because identifying the cellular mechanisms that regulating protein degradation will improve treatment strategies for many chronic diseases as well as boost quality of life and increase longevity for persons with muscle atrophy.

Academic Awards/Recognition

ACSM Foundation pre-doctoral research grant recipient
NSCA Certified Special Populations Specialist exam development committee member.