

1. Specific Aims

This pilot project is designed to test the following **specific hypotheses**:

- 1) Older adults following hip fracture and surgical repair will demonstrate a diminished stimulation of microvascular blood flow and a blunted physiological upregulation of system A and L muscle amino acid transporters in response to EAA intake and, consequently, decreased muscle protein anabolism vs healthy older adult controls.
- 2) Older adults following hip fracture and surgical repair will demonstrate an increase in microvascular blood flow and physiological upregulation of system A and L muscle amino acid transporters and, consequently, increased muscle protein anabolism when acute EAA intake follows a bout of physical activity compared to physical activity alone.

To test our hypotheses, we will address the following **Specific Aims**:

- 1) To characterize older adults following hip fracture and their diminished stimulation in microvascular blood flow and blunted physiological upregulation of system A and L muscle amino acid transporters in response to EAA intake and, consequently, decreased muscle protein anabolism compared to healthy older adult controls.
- 2) To determine if older adults following hip fracture will demonstrate an increased microvascular blood flow and physiological upregulation of system A and L muscle amino acid transporters and, consequently, increased muscle protein anabolism when acute EAA intake follows a bout of physical activity compared to physical activity alone.

This pilot data will aid in determining in Older adults following hip fracture and surgical repair: 1) the feasibility of protein metabolism experiments, 2) a proposed mechanism associated with anabolic impairment (microvascular blood flow and amino acid transport), and 3) the anabolic effectiveness of acute physical activity coupled with EAA ingestion. This pilot data will be translated into a competitive R01 application aimed at using the anabolic combination of physical activity and EAA supplementation to counter nutrient anabolic resistance in Older adults following hip fracture and surgical repair, ultimately improving muscle mass, strength and mobility.