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## Evaluation of Gait and Balance in Community Dwelling Older Adults

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## **Evaluation of Gait and Balance in Community Dwelling Older Adults RCEU 2015 Proposal**

### **Faculty Mentor**

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### **Project Summary**

Older adults experience age-related changes that increase the risk for falling. The musculoskeletal system is affected by atrophy of muscles and degenerative joint disease, leading to loss of function. Muscle atrophy, lower extremity weakness, and joint dysfunction have been associated with a decrease in strength and balance resulting in an inability to safely perform independent activities, including walking. Research studies report a positive relationship between the reduction in the number of falls and participation in regular exercise and balance training (Sherrington et al., 2008). Therefore, the purpose of this project is to implement and evaluate the effectiveness of an evidence-based fall prevention program designed to improve gait and balance in order to reduce falls among community-dwelling older adults. The research question guiding this RCEU proposal is the following: In community-dwelling older adults (65 years and older), what effect does balance and strength training performed two to three times per week have on outcomes (gait, balance, and number of falls) compared at baseline, at 3 weeks, and 6 weeks?

The research design for the RCEU study is quasi-experimental, using repeated measures to test for changes in gait and balance over time. The intervention is an exercise program designed using research findings from the Centers for Disease Control and Prevention (CDC) *Compendium of Effective Fall Interventions: What Works for Community-Dwelling Older Adults, 3rd Edition*. Measurements include the Smartphone Timed Up and Go Test (sTUG) using an app created by Dr. Emil Jovanov in the College of Engineering at University of Alabama in Huntsville (UAH), the 30-second Chair Stand Test, and the 4-Stage Balance Test.

The study will be conducted at local community churches in Huntsville, Alabama that participate in *Balance for Life exercise* classes under the auspices of the Center for Aging, a non-profit organization. All adults 65 years of age or older who enroll in the exercise classes will be eligible for inclusion in the study. The student will meet participants and follow the process of history taking related to falls and performing gait and balance testing using the STEADI toolkit in conjunction with smartphone technology. The student will perform baseline balance testing on each new participant and reevaluate participants after 3 weeks of participation in exercise and strength training. This study will provide a creative learning experience related to community dwelling older adults and fall prevention strategies utilizing exercise and strength training. The project data analysis will include descriptive statistics and data display with graphs.

### **Student Prerequisites**

The student should be currently enrolled in the upper division nursing program and express an interest in research. The student must possess excellent communication and organizational skills. The student must be able to function independently once receiving the proper training in conducting gait and balance testing.

### **Student Duties**

The study requires students to interact with community-dwelling older adults that are participating in exercise and balance classes. The student will help reinforce education to participants on the benefit of exercise and strength related to fall prevention. The student will learn how to perform tests from the STEADI toolkit recommended by the CDC for older adults and fall prevention. The student will also learn and use smart phone technology (sTUG) in the testing process that allows recordable data be uploaded to a secure server at UAH. The student will be responsible for organization, communication, and will collaborate with the faculty mentor to discuss all findings.

### **Mentor Supervision and Interaction**

The selected student will receive supervision and mentoring beginning June 1<sup>st</sup>, 2015. The faculty mentor will be available at all times the student is scheduled for collaboration and will make site visits twice weekly once the student has been trained and demonstrates ability to function independently.

