Introduction. The Advanced Stay Strong, Stay Healthy (ASSSH) program was developed in 2009 by a team of MU Extension Specialists to meet the increasing need for a follow-up program to the Stay Strong, Stay Healthy (SSSH) program. The goal of the program is to build on the fitness base acquired from SSSH by adding new and more complex exercises. The neuromuscular system quickly adapts to stressors and loads and must be constantly challenged for gains in strength, flexibility and balance to continue. Thus, it is necessary to alter the exercise routine regularly. Advanced SSSH is designed to challenge older adults in new and different ways to help stalesness and plateaus, and to improve activities of daily living (ADL's). Loss of muscular strength, flexibility, and balance are strong predictors of falls in the elderly.

Purpose. The primary purpose of this research was to investigate the effectiveness of the MU Extension program Advanced Stay Strong, Stay Healthy. It was hypothesized that the program can improve physical parameters of health including strength, balance, and flexibility which indicate the risk of falling among seniors.

Methods. Twenty eight older adults volunteered to participate in this study. Matched pairs t-tests were used to compare differences in measures of the physical indicators of strength, flexibility, and balance. Two-way analysis of variance (ANOVA) was conducted to examine exercise adherence and age effects on the increments in measures of the physical indicators of strength from pre to post. Dual X-Ray absorptiometry (DXA) scans were conducted before and after the 10-week exercise intervention to identify changes in body composition (lean mass and fat mass) and changes in percent body fat (%BF).

Results. Twenty three subjects (21 female, 2 male; 50-76 y) successfully completed the 10 week training protocol and were included in the analysis. Following a 10-week structured strength program, participants significantly improved strength, flexibility, and balance (p<0.05). Results from the DXA scans indicated improvements in body weight and whole body composition ratio displayed by a decrease in body fat (g) and an increase in lean body mass (g), however, no significant differences were observed. Subjects showed a significant decrease in %BF following 10 weeks of programming. No significant changes in bone mineral content (BMC) or bone mass density (BMD) were observed.

Conclusion. The community-based MU Extension program ASSSH can significantly improve muscular strength, flexibility, balance and, ultimately, reduce risk factors of falling among seniors. Although subjects showed statistically significant improvement in strength, flexibility and balance measures, 10 weeks appeared to be too short to achieve significant changes in BMC, BMD and changes in lean body mass and fat mass. Nevertheless, the positive trends observed in body composition and BMD suggest that analysis of a longer intervention period to elicit observable changes in bone turnover (i.e. 12 months or greater) is warranted.