

BACKGROUND AND PURPOSE

Aging results in the loss of skeletal muscle mass, which may compromise functional performance and lead to the loss of independence. The purpose of this project was to determine associations between leg lean mass, whole body lean mass, and total body mass to functional performance in older, community dwelling individuals beginning a progressive resistance exercise program.

METHODS

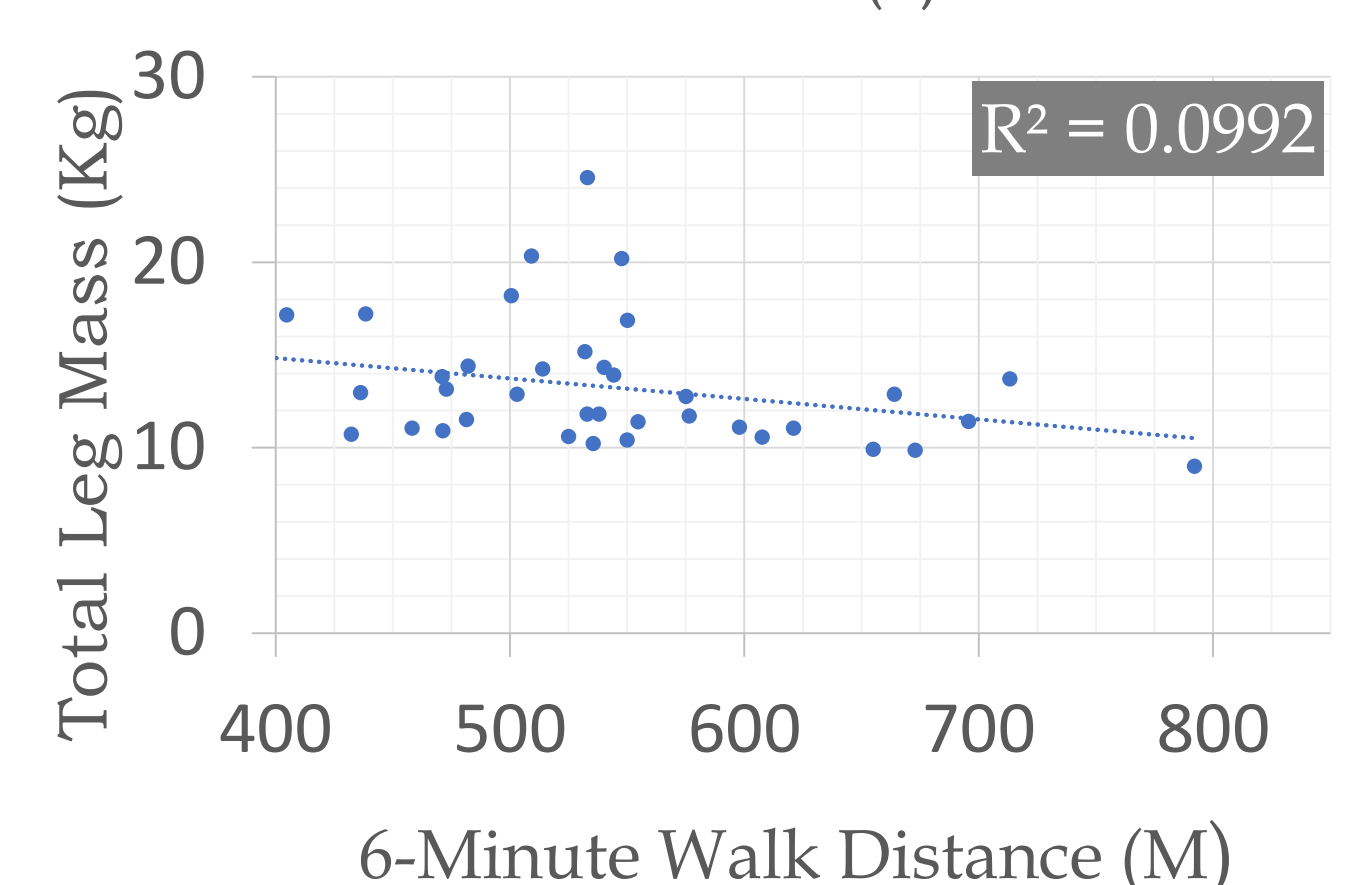
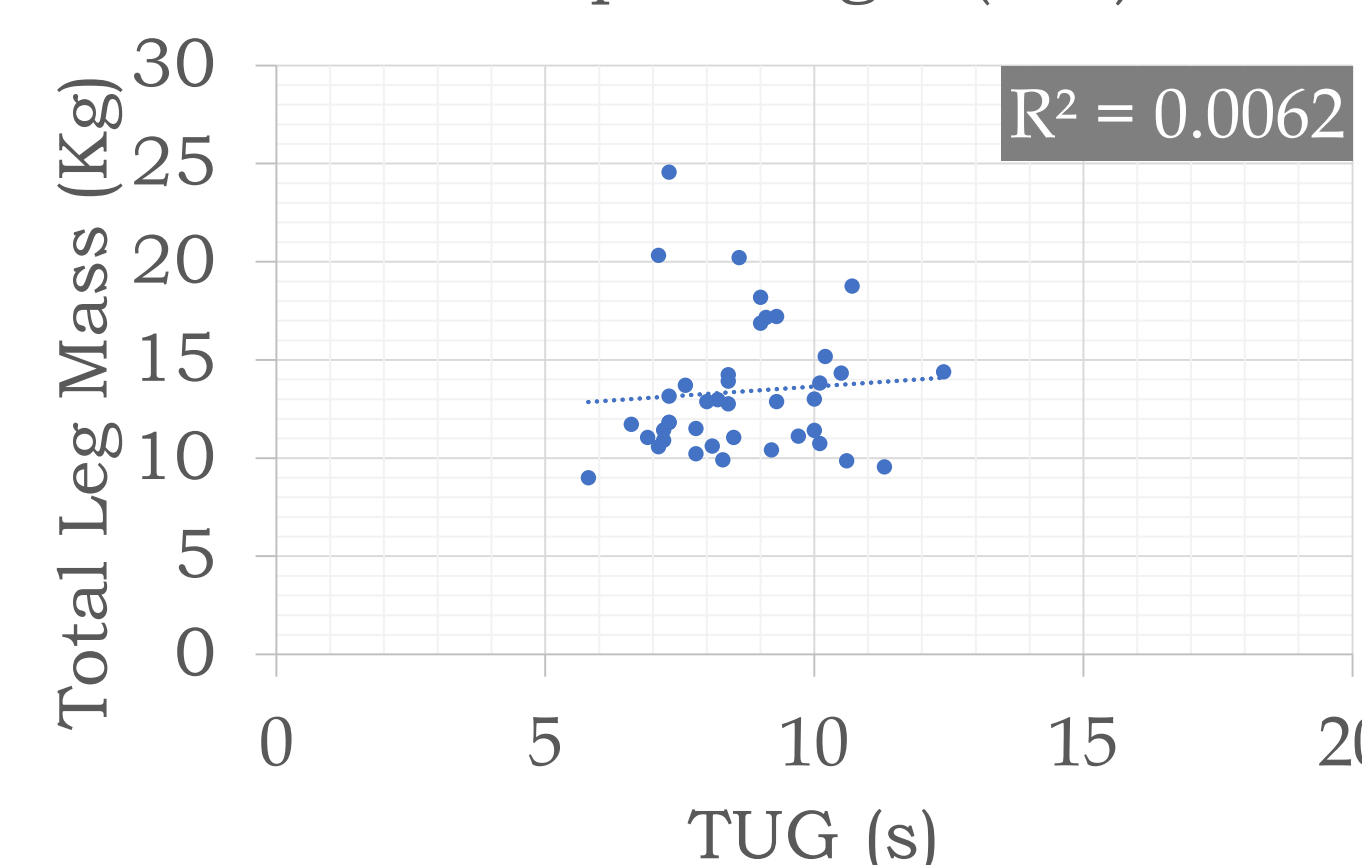
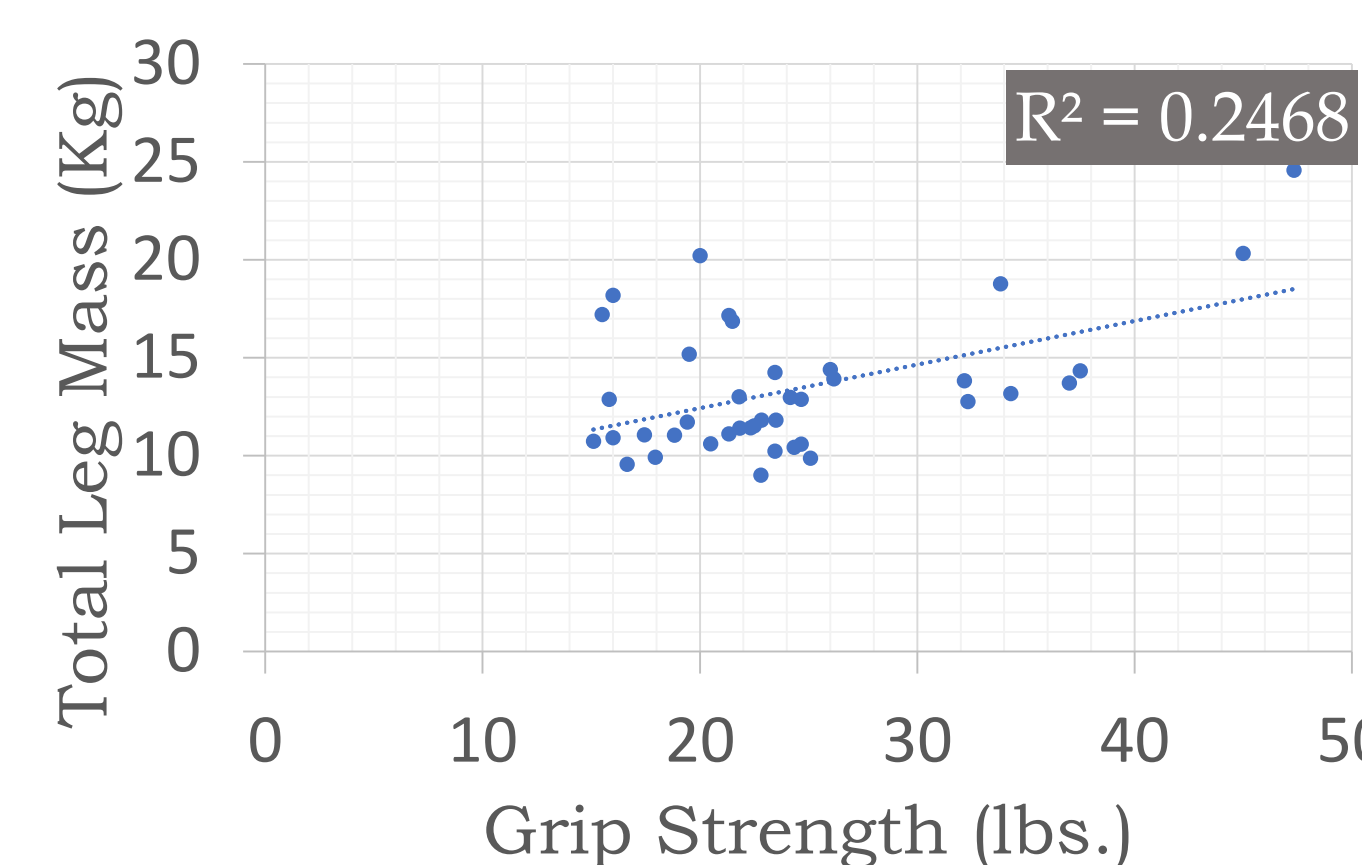
- After approval from the committee for the protection of human subjects, data were collected on 33 women and 11 men ranging in age from 47-83y (66.7±8.7y; 167.6±8.9cm; 80.3±22.4kg).
- Bone mineral density as well as total, lean and fat mass in the arms, legs, and trunk were measured using dual x-ray absorptiometry.
- After establishing body composition, volunteers completed a comprehensive functional performance testing battery.
- Speed, agility, and balance were assessed using a timed-up-and-go (time to complete) and a 10-meter walk test (time to complete and number of steps).
- Lower extremity strength and power were assessed by measuring the time to complete 6 sit-to-stands and the total number of sit-to-stands completed in 30s.
- Participants also completed grip strength assessments on the right and left arms.
- The average of three trials was used for analysis. Finally, metabolic endurance was estimated using total distance walked in 6-minutes (single trial).
- Pearson product-moment correlation coefficients were computed to establish the relationship between lean leg mass (LL), total leg mass (TLM), whole body mass (WBM) and whole-body lean mass (LM) and performance in the comprehensive functional testing battery.
- Alpha was set at $p < 0.05$, a priori.

METHODS (CONT)

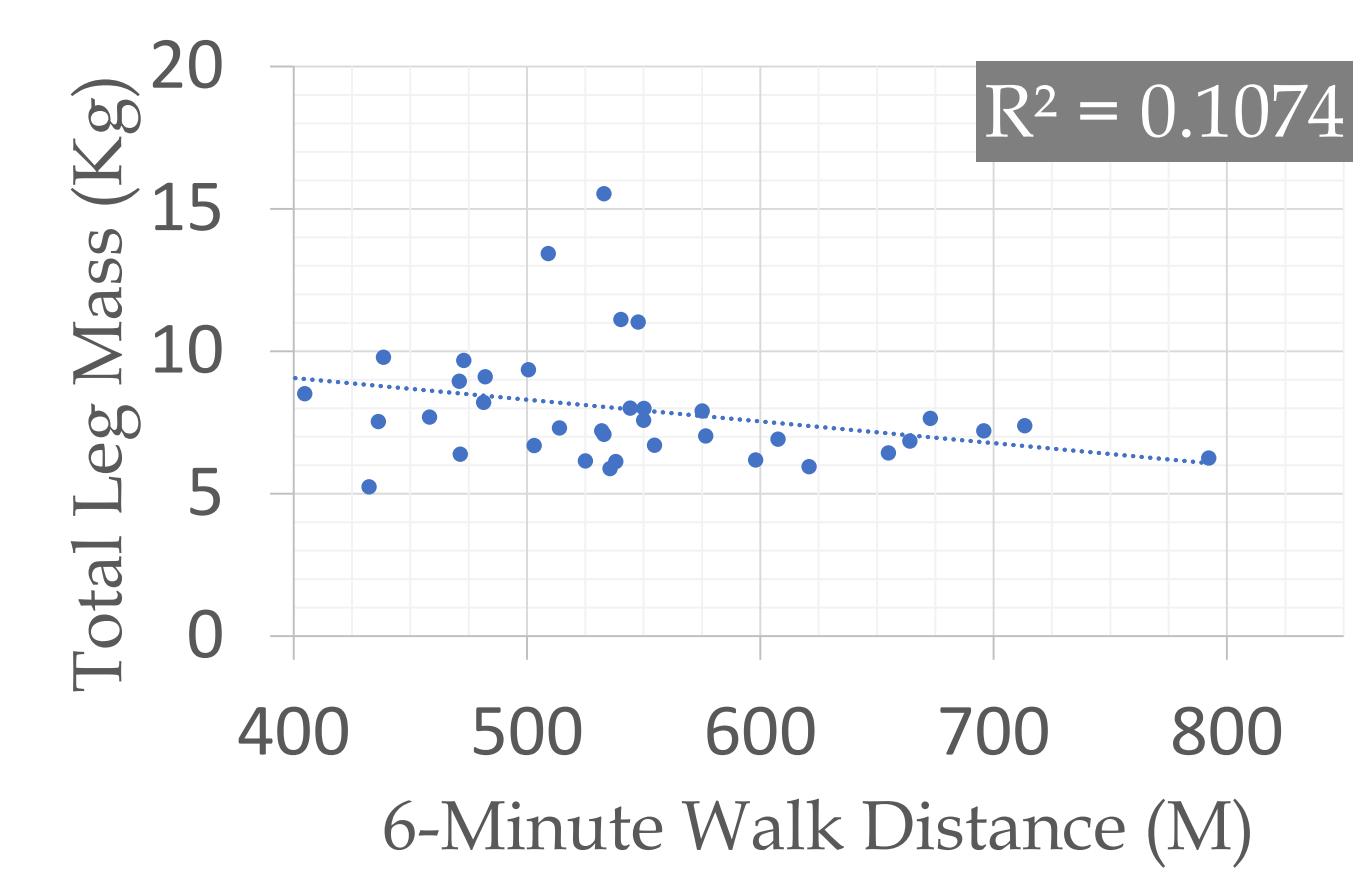
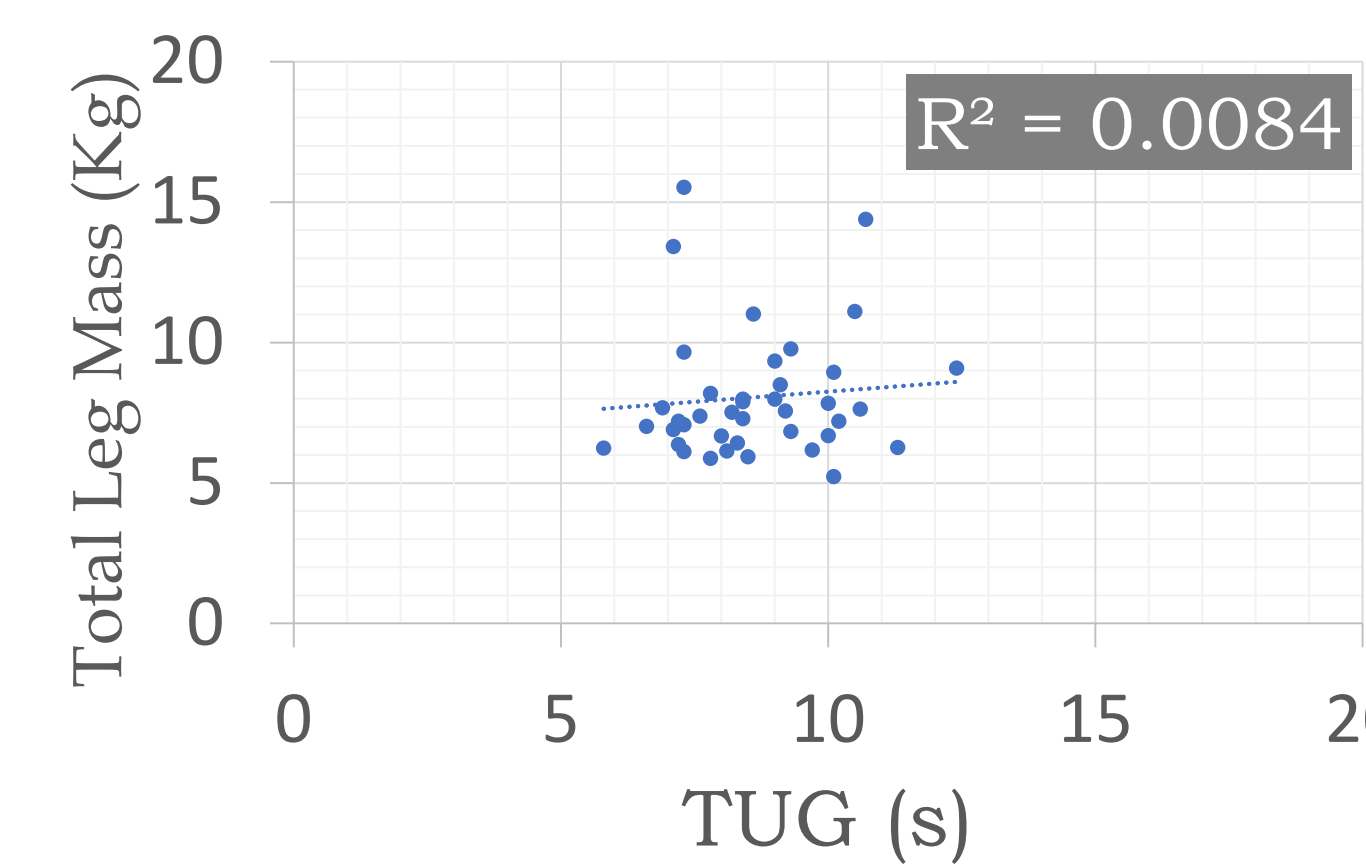
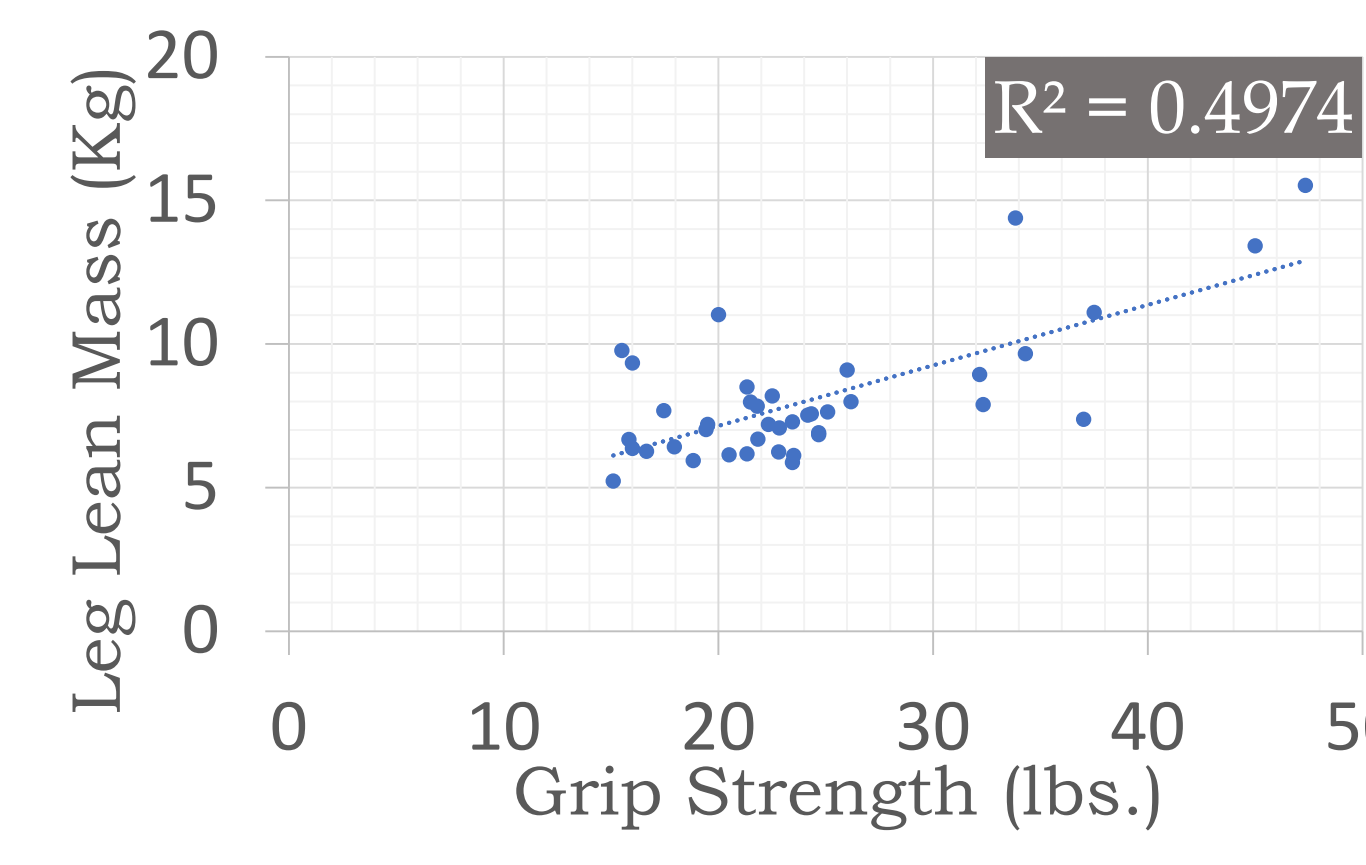


RESULTS

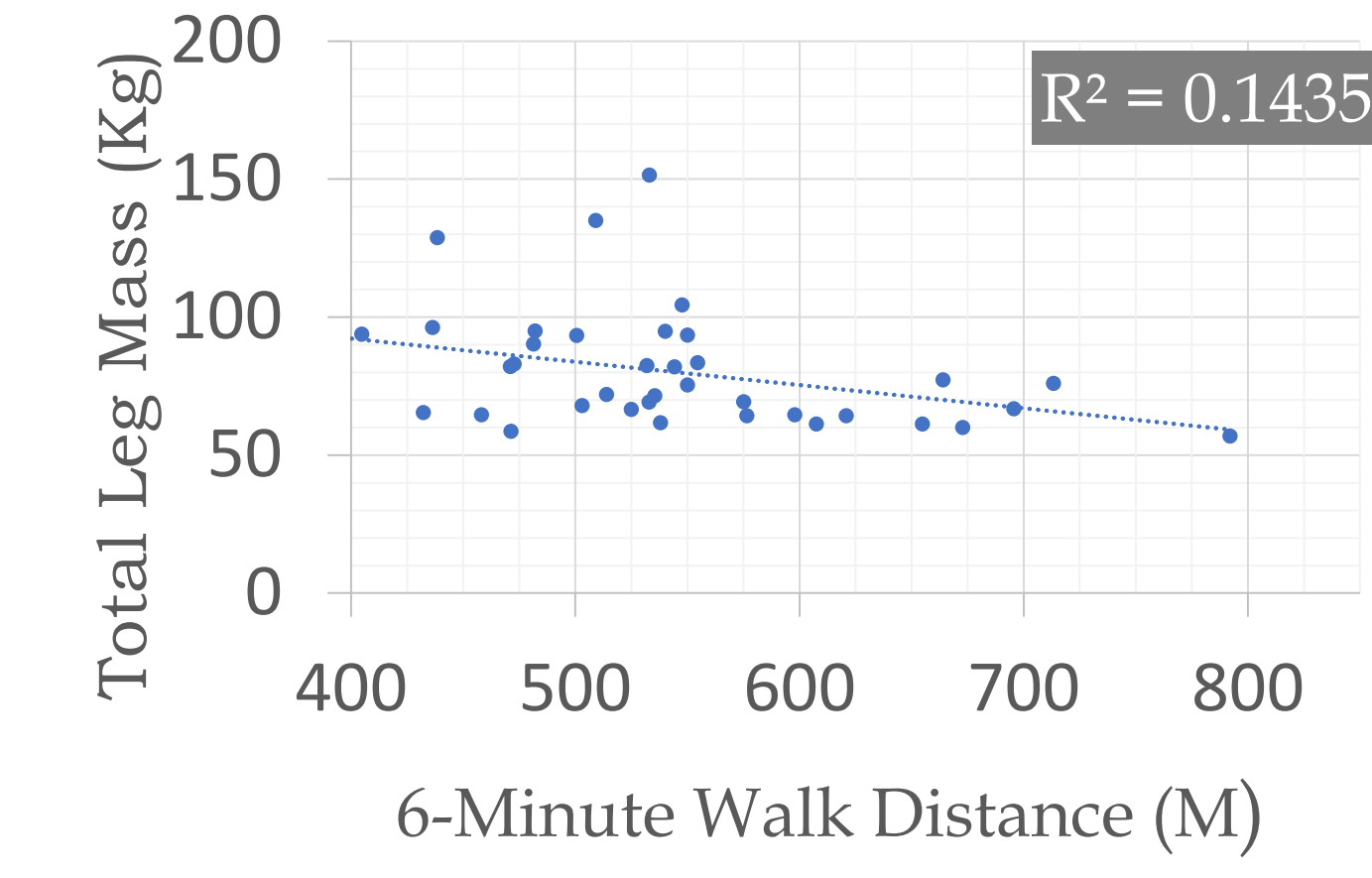
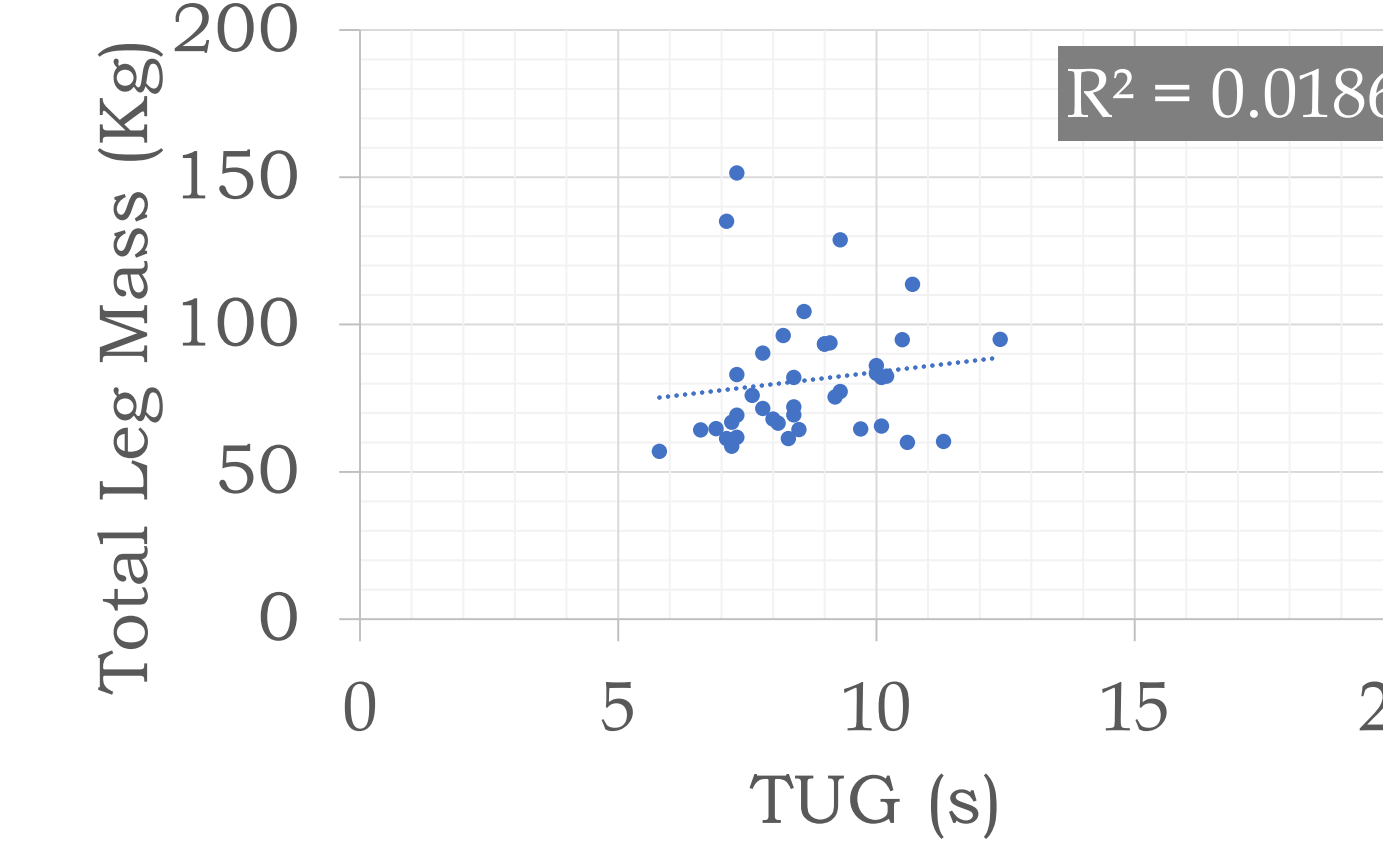
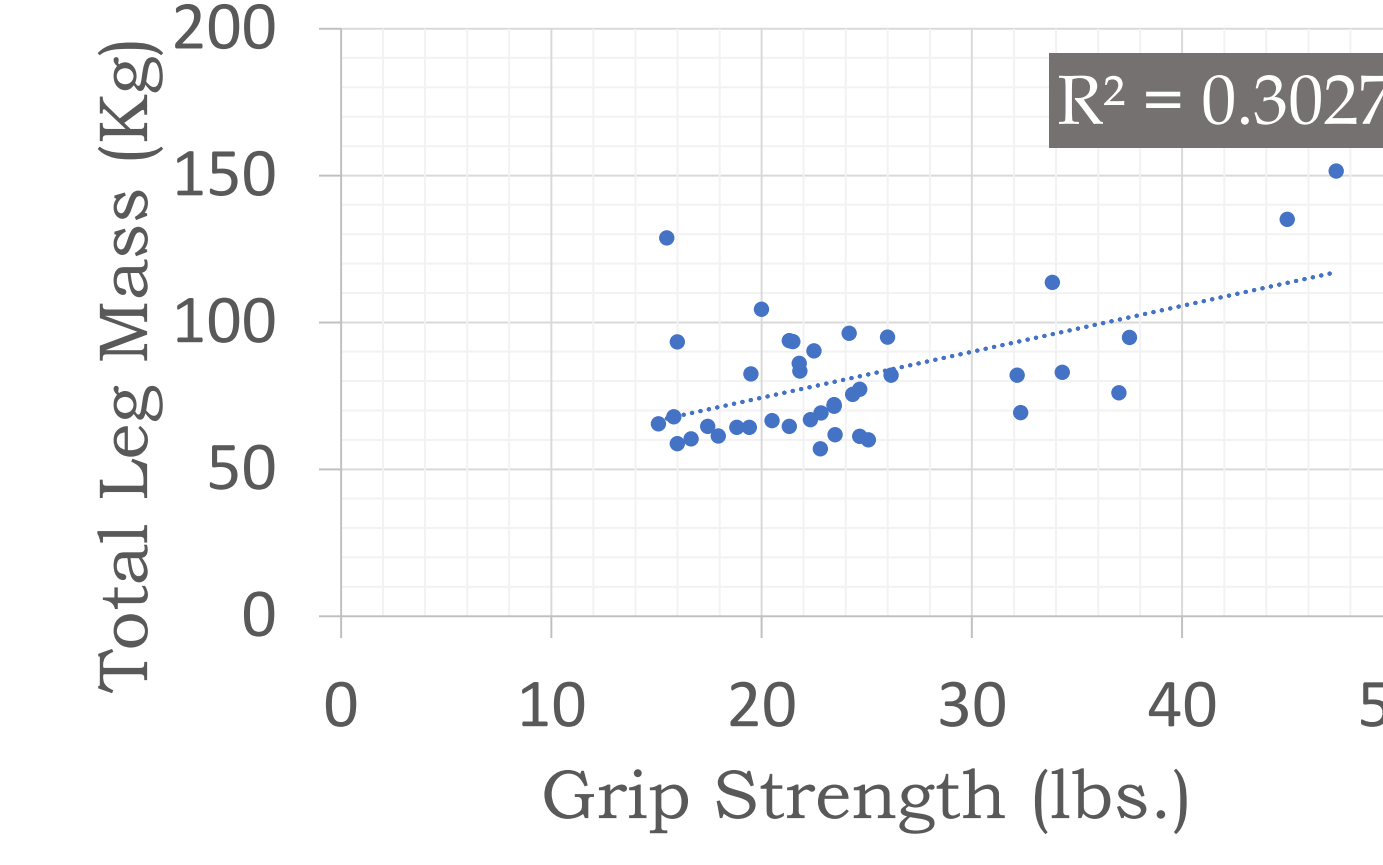
Total Leg Mass



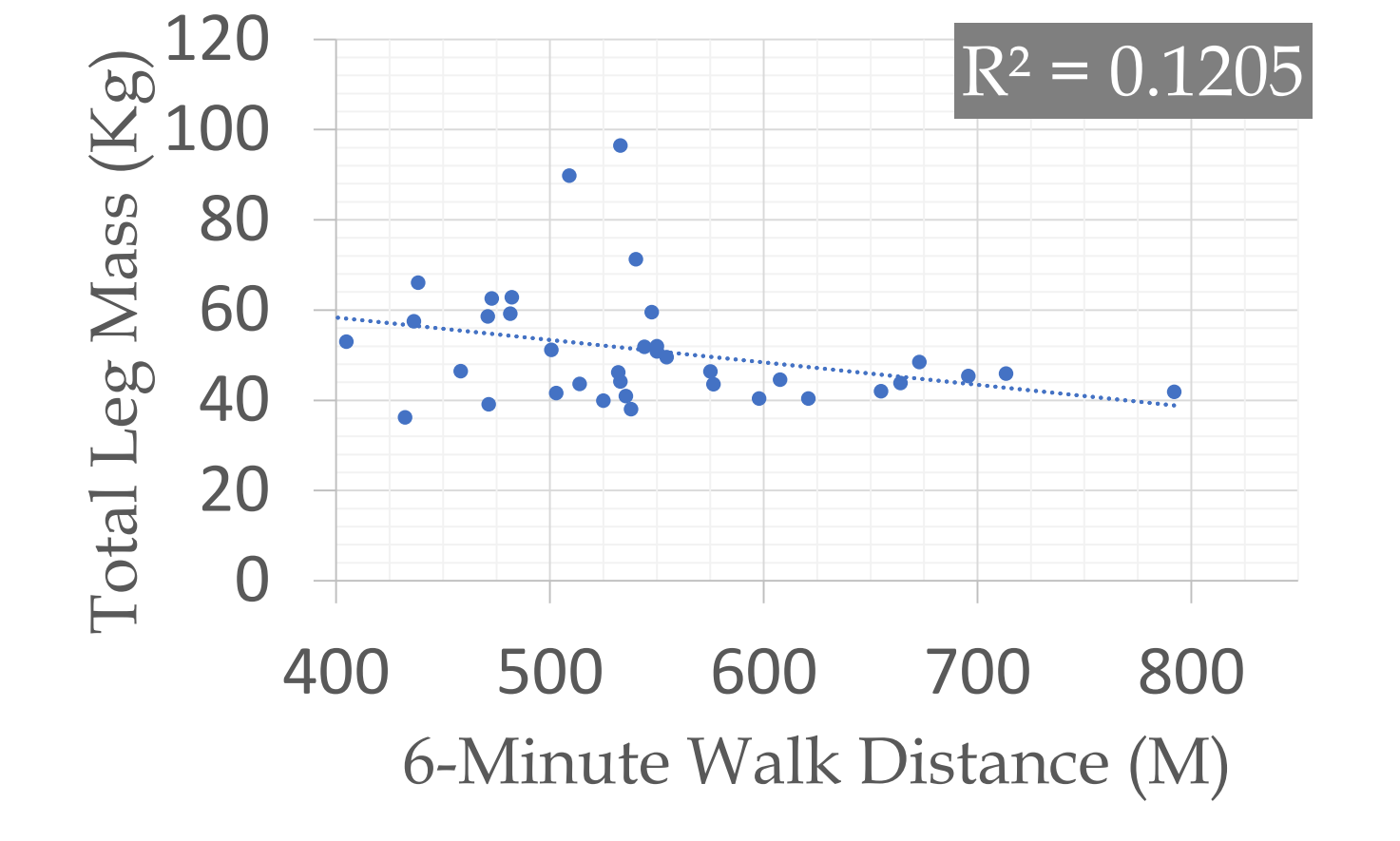
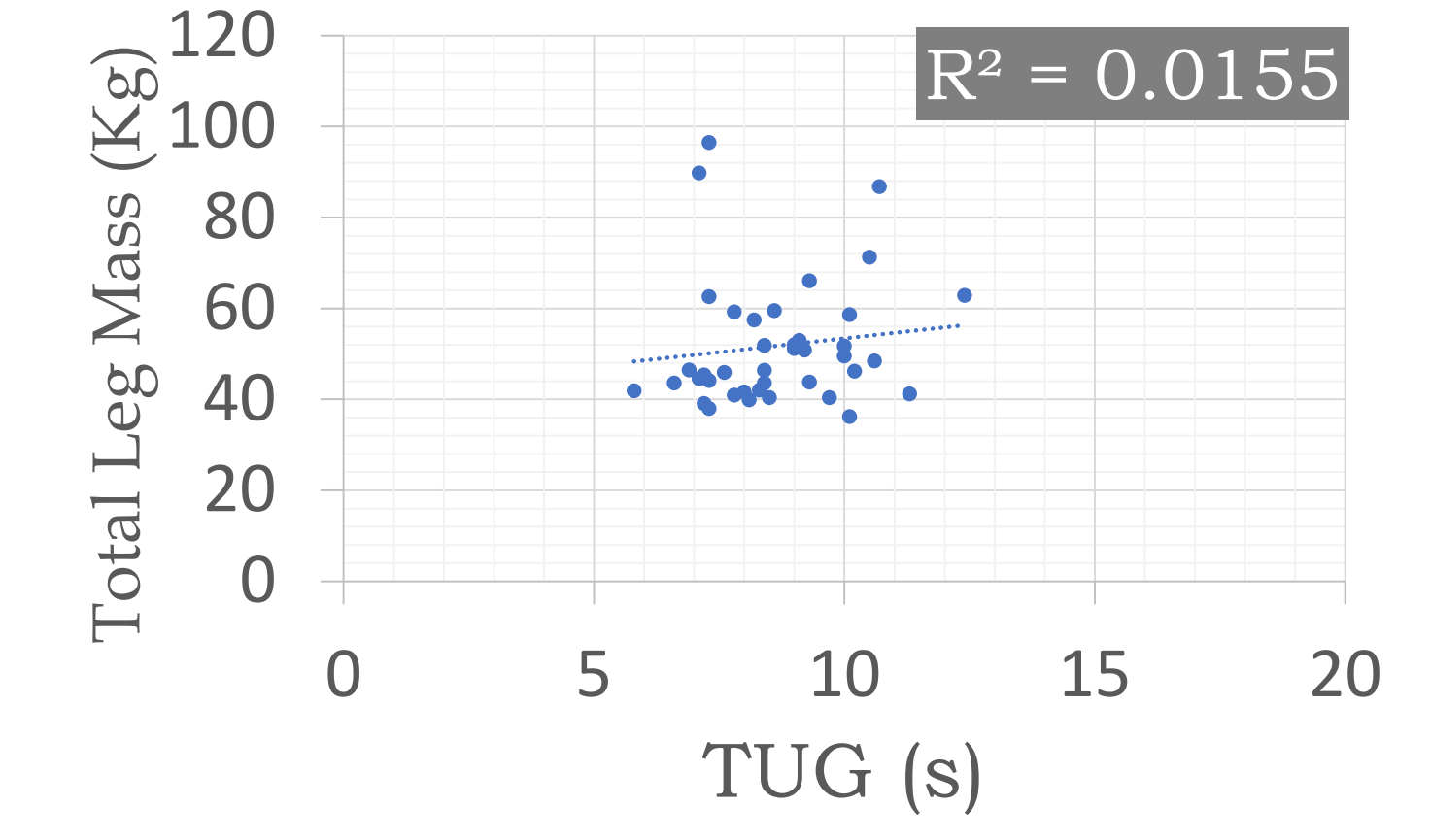
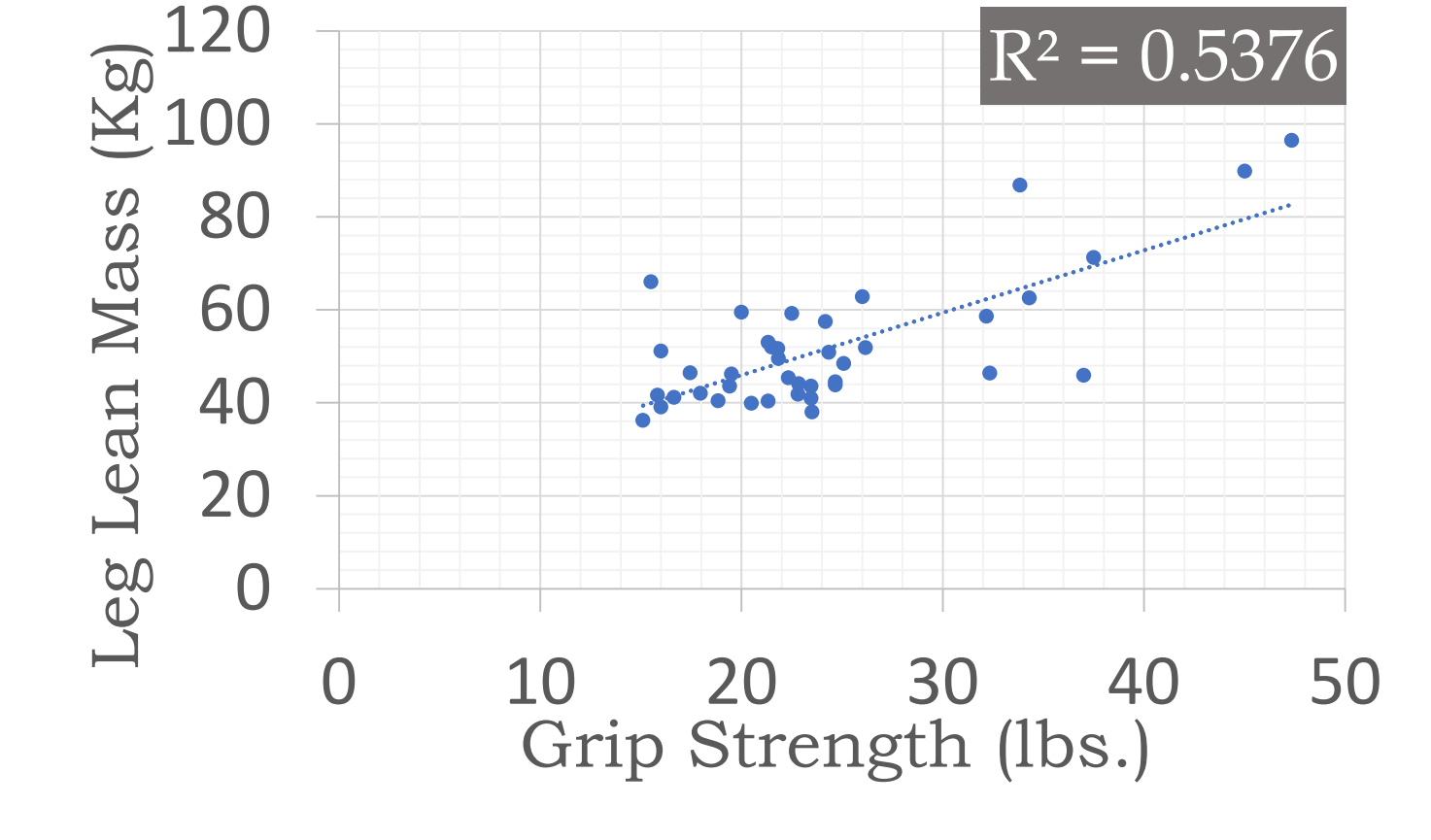
Leg Lean Mass



Whole Body Mass



Whole Body Lean Mass



CONCLUSIONS

- Leg and total body lean mass and whole-body mass were associated grip strength, and 10-meter walk time.
- There was a negative correlation with 6-minute walk time, probably due to the added metabolic demand of carrying more weight.
- The lack of correlation with timed-up-and-go and sit-to-stand performance is likely due to the significant balance and coordination associated with these two tests.

PRACTICAL APPLICATION

Lean and total body mass are associated with strength and low-skill functional performance measures; thus, maintaining or improving mass, especially lean mass may improve low-skill functional performance. Balance and agility exercises may be needed to improve timed-up-and-go and sit-to-stand performance in older, community dwelling adults.

