ABSTRACT

Individuals that are physically active have greater cardiorespiratory fitness and skeletal muscle strength than those that are physically inactive. Although VO$_2$\text{max} is commonly used to estimate cardiorespiratory fitness, in older adults, leg strength may also influence VO$_2$\text{max}. The PURPOSE of this study is to examine the relationship between VO$_2$\text{max} and leg strength in physically active vs. physically inactive older adults. METHODS: Twenty-four older adults (12 physically active (PA; 62.1±5.0 yrs), 12 physically inactive (PI; 63.9±5.1 yrs)) performed a two-stage treadmill test to estimate VO$_2$\text{max}. Leg strength was assessed by 8-repitation maximum (8RM) tests of leg curl, leg press, calf raise, and leg extension. Correlations between VO$_2$\text{max} and leg strength were assessed and reported significant if $p<0.05$. RESULTS: PA participants had a higher leg press 8RM ($p=0.02$), leg curl 8RM ($p=0.003$), calf raise ($0.004$), leg extension ($p=0.01$), than PI participants. In the PA participants, there was a correlation between estimated VO$_2$\text{max} and leg curl ($R^2=0.34$; $p=0.049$), calf raise ($R^2=0.41$; $p=0.03$), and leg extension ($R^2=0.40$; $p=0.03$). In the PI participants, there was no correlation between estimated VO$_2$\text{max} and all leg strength measure ($p\geq0.05$). CONCLUSION: These data show that there is a positive relationship in PA older adults between the estimated VO$_2$\text{max} and leg curl, leg extension and calf raise 8RM.