**INTRODUCTION**

Neuromuscular economy (NME) reflects the percentage of maximal voluntary muscle activation required to move an absolute load and may be improved with resistance training. In older adults, a significant relationship has been observed between NME and strength. However, it is unknown whether this relationship is also present in untrained adult men.

**PURPOSE**

To determine the relationship between NME and strength and power in untrained adult men.

**METHODS**

Maximal unilateral isometric (ISO) knee extension strength and maximal isotonic unilateral leg press (LP) and leg extension (LE) strength was assessed in the dominant leg of nineteen previously untrained adult men (22.5 ± 3.5 y; 177.9 ± 9.6 cm; 84.3 ± 16.6 kg). NME was calculated from vastus lateralis (VL) electromyography (EMG) amplitude values obtained during a 3-stage trial on a cycle ergometer at 75 (NME75), 100 (NME100) and 125 (NME125) watts, that were normalized to maximal values obtained during ISO. Mean (MJP) and peak (PJP) jump power was determined from 3 maximal unilateral countermovement jumps. Pearson correlation coefficients and stepwise linear regression were computed to assess the relationship between variables with significance set at p < 0.05.

**RESULTS**

- Participants were placed on a cycle ergometer and instructed to pedal at 75, 100 and 125 watts, respectively.
- EMG signals were obtained with a differential amplifier sampled at 1,000 Hz and then band-pass filtered from 10 Hz to 500 Hz and expressed as root mean square (RMS) amplitude values by software.
- Stepwise regression indicated that NME75 is the single best predictor of LP (R²=0.39, SEE=6.4 kg, p=0.006) and ISO (R²=0.52, SEE=14.8 kg, p<0.001). NME125 was the best predictor of LP (R²=0.70, SEE=23.6 kg, p=0.004) and PJP (R²=0.21, SEE=340.9 watts, p=0.044), and NME125 was the best predictor of MJP (R²=0.26, SEE=14.8 watts, p=0.024).

**CONCLUSION**

In this sample of untrained adult men, NME of VL was significantly correlated to measures of isotonic and isometric strength and endurance in young adults, it is unknown if there is any relationship present in young adults.

**FUTURE PROSPECTS**

Further study is needed to determine the extent of neuromuscular economy in terms of strength and power in young adult men.

**REFERENCES**


2. While the relationship between neuromuscular economy and strength has been observed in older adults, it is unknown if there is any relationship present in young adults.

3. Furthermore, neuromuscular economy of the vastus lateralsis does appear to be inversely correlated with measures of strength and power in elderly men. This indicates that stronger individuals will need to recruit less muscle mass than their weaker counterparts to complete an absolute workload.

4. The predictive ability of neuromuscular economy in terms of strength and power appears to be variable depending on the intensity at which neuromuscular economy is measured.