

sites showed markedly lower MDF ($\beta \sim -11.75$ Hz, $p < 0.001$). PC2 $\times$ Muscle ($\beta \sim -2.64$ Hz, $p < 0.001$) indicated limb-size distribution affected ST but not BF. Participant variance was large (RMS Var ≈ 0.05 ; MDF Var ≈ 248), demonstrating substantial individual heterogeneity. **CONCLUSION:** These findings highlight key neuromuscular features that vary by exercise type and individual profile. Practitioners may optimize hamstring injury-prevention programs by selecting task-specific exercises and considering individual anthropometric and injury-history profiles when prescribing eccentric training. Supported by: This work was supported by JST BOOST, Grant Number JPMJBS2429.

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Duration Of Repeated Bout Effect On Contralateral Elbow Flexors Induced By Neuromuscular Electrical Stimulation

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PURPOSE: To examine how long the contralateral repeated bout effect (CL-RBE) induced by neuromuscular electrical stimulation (NMES) lasts. **METHODS:** Eight untrained adults (age: 25.3 ± 6.9 yrs; weight: 93.6 ± 23.7 kg; height: 170.1 ± 11.8 cm) participated. After familiarization, participants completed four experimental visits. During the 1st bout, muscle soreness via visual analog scale (VAS), muscle thickness using B-mode ultrasound, three maximal voluntary isometric contractions (MVIC), and a submaximal isometric trapezoidal contraction at 70% of MVIC were measured before (Pre; visit 1), after (Post; visit 1), and 2-day after (48 Post; visit 2) 45 transcutaneous electrical stimuli (NMES) applied to the biceps brachii (5 sec on/10 sec off) at maximal tolerable intensity. The 2nd bout (visit 3 [Pre and Post] and 4 [48 Post]) was performed a week later on the contralateral arm with the same experimental procedures. Surface electromyography (EMG) signals were recorded. EMG amplitude (N-EMG_{RMS}), MVIC (N-MVIC) and muscle thickness value were normalized to the Pre value. Separate two-way repeated measures analysis of variance (ANOVAs) (time [Pre vs. Post vs. 48 Post] $\times$ bout [1st bout vs. 2nd bout]) were used to examine N-MVIC, VAS, muscle thickness, N-EMG_{RMS}. Alpha was set at 0.05. **RESULTS:** For N-MVIC, the two-way ANOVA showed a significant time $\times$ bout interaction ($p = 0.043$). N-MVIC at Post during 1st bout ($82.69 \pm 4.26\%$, $p < 0.001$) and 2nd bout ($92.89 \pm 7.57\%$, $p = 0.033$) were lower than Pre (100%). Post N-MVIC during the 1st bout was lower than the 2nd bout ($p = 0.004$). For VAS and muscle thickness, no significant interactions or main effects for bout were found ($p > 0.05$). However, there was a main effect for time for VAS ($p < 0.001$) and muscle thickness ($p < 0.001$). VAS at Pre (0mm) was lower than at Post (15.4 ± 4.7 mm, $p = 0.041$) and 48 Post (21.7 ± 3.4 mm, $p = 0.001$). Muscle thickness at Post ($108.0 \pm 1.97\%$) was greater than at Pre (100%, $p = 0.014$) and 48 Post ($103.1 \pm 1.4\%$, $p = 0.023$). There were no significant interactions or main effects for N-EMG_{RMS} ($p > 0.05$). **CONCLUSION:** NMES-induced CL-RBE on maximal strength was limited to the day of stimulation. However, other muscle damage markers did not support the presence of CL-RBE, suggesting that each indirect muscle damage marker may involve a distinct mechanism contributing to NMES-induced RBE.

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How Age, Sex, And Lean Mass Influence Power In Trunk And Lower Extremity Exercises

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Increasing attention has been paid to strength differences between biological males and females. Currently, there is a dearth of evidence standardizing lean mass between sexes to compare power generation per unit of tissue. **PURPOSE:** To investigate power differences between sexes in lower body and trunk exercises holding lean mass constant. **METHODS:** We measured segmental body composition using DEXA and isotonic muscle power using Proteus in 86 subjects (68 male, 18 female). Proteus testing involved a single 6-repetition set of each exercise at 12 lbs of electromagnetic resistance. We exported peak power achieved during any repetition in vertical jump, lateral bound, and straight-arm trunk rotation. Lateral bound and trunk rotation were performed bidirectionally; we used the mean of both directions. Descriptive statistics characterized the sample. Linear regressions isolated the effect of sex on power holding age and relevant lean mass constant. Analyses were performed on SPSS version 29.0. **RESULTS:** Subject age was 43.0 ± 9.1 yr, lean leg mass (average of both limbs) was 23.5 ± 4.5 lbs, and lean trunk mass was 61.5 ± 12.2 lbs. Subjects achieved 122.9 ± 22.3 W in lateral bound, 131.6 ± 24.6 W in vertical jump, and 208.2 ± 42.5 W in trunk rotation. Holding age and lean leg mass constant, males produced an additional 16.5 W in lateral bound ($p = 0.033$). Without sex in the model, lean leg mass predicted power ($p = 0.013$); its significance was lost with the inclusion of sex ($p = 0.682$). Controlling for age and lean leg mass, males produced an additional 26.2 W in vertical jump ($p < 0.001$); without sex in the model, lean leg mass was significant ($p < 0.001$); it was insignificant when sex was held constant ($p = 0.428$). Adding total body mass ($p < 0.001$) to the model, age ($p < 0.001$), lean leg mass ($p < 0.001$), and sex ($\beta = 21.5$; $p = 0.002$) retained significance. Holding age and lean leg mass constant, males produced an additional 35.7 W in trunk rotation ($p = 0.004$). Lean leg mass ($p = 0.003$) lost significance ($p = 0.949$) when lean trunk mass ($p < 0.001$) was added to the model. Controlling for age ($p = 0.077$) and lean trunk mass ($p < 0.001$), sex was a trending predictor; males produced 20.6 W more power ($p = 0.069$; 95% CI of $\beta = -1.6, 42.9$). **CONCLUSION:** Controlling for age and lean mass, males across the lifespan generated more force in lower body and trunk exercises than females.

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Acute Blood Marker Responses To Low-intensity Blood Flow Restriction Exercise: Preliminary Data From An Ongoing 8-week Training Study.

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Skeletal muscle hypertrophy, primarily achieved through high-load resistance training (HLRT, 70-85% 1RM), has long been considered essential for stimulating muscle protein synthesis (MPS). However, recent evidence suggests that low-intensity resistance training combined with blood flow restriction (LI-BFR) may also promote molecular and hormonal responses linked to MPS. **PURPOSE:** The purpose of this study was to examine the acute effects of LI-BFR compared to HLRT on circulating markers associated with muscle growth and inflammation.

METHODS: Twelve healthy men (18-40 years) were randomly assigned to either a LI-BFR group (20% 1RM with occlusion) or a HLRT group (70% 1RM).