DOES MASS INFLUENCE PREDICTED MUSCLE ACTIVATIONS IN UPPER LIMB ISOMETRIC TASKS?

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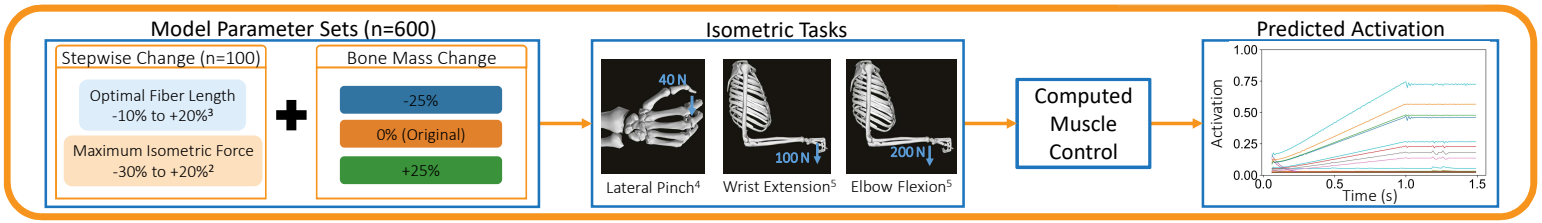
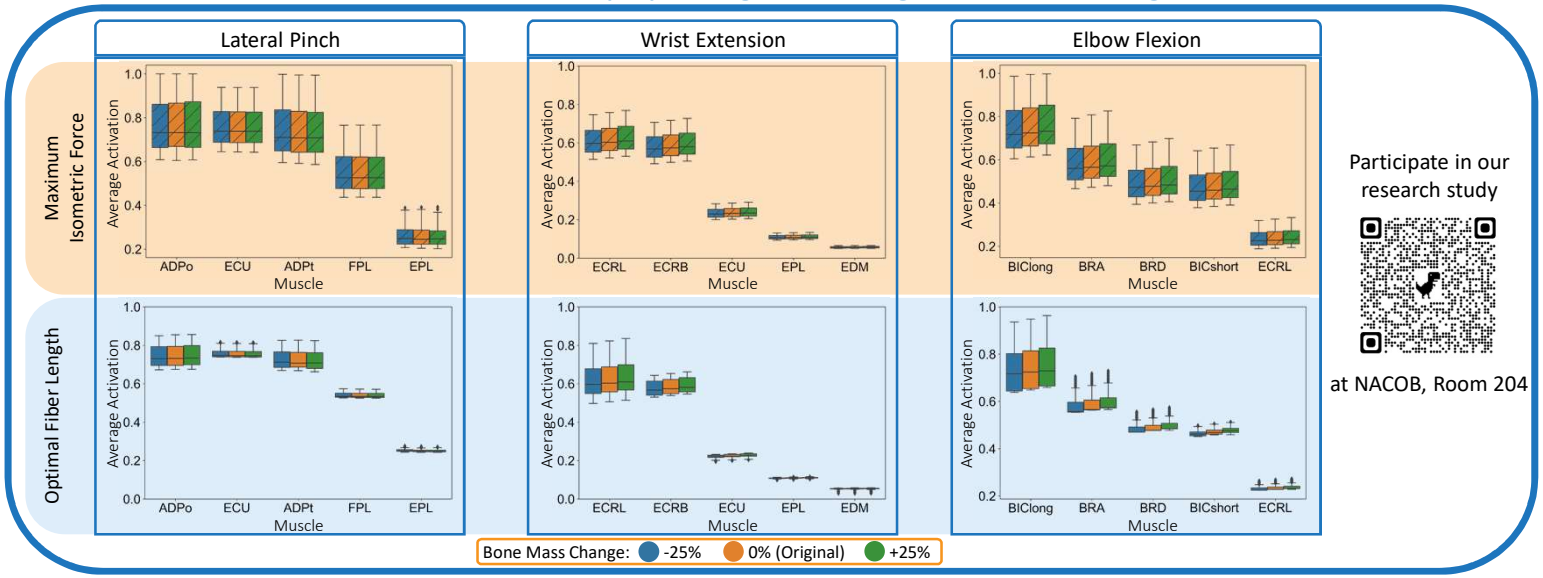
Sensitivity analysis can show how individual parameters influence predictions.

- Mass scaling of musculoskeletal models is considered essential to improve predicted muscle activity[1]
- For upper limb models it is unknown:
  1. How accurate subject-specific bone masses should be
  2. If the bone mass interacts with optimal fiber length and maximum isometric force

Objective: Characterize how model mass influences simulations of upper limb isometric tasks.



Muscle activations showed no physiological changes due to changes in bone mass.



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This study suggests that changes in mass do not meaningfully alter predicted activations for isometric upper limb tasks.

- It may be appropriate to skip customizing bone mass for subject-specific upper limb models used for isometric tasks.
- Further work needs to explore the influence of bone mass for dynamic upper limb tasks and additional grips.

Funding: 1. NIH NIBIB Trailblazer Award (R21 EB030068), 2. NSF Graduate Research Fellowship

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