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Mathematical model for isometric and isotonic muscle contractions

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## ACCEPTED MANUSCRIPT

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## 1 Highlights

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- The mathematical model describes passive and active mechanical responses of muscles.
- It is formulated within a rational mechanical frame work.
- It is tested with isometric and isotonic data from murine extensor digitorum muscle.
  - It provides a measure of the muscle rest length.
- It captures experimental observations with only 3 scalar parameters.

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