Abstract Submitted
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Characterization of Focal Muscle Compression Under Impact Loading[1] BEN BUTLER, Department of Physics, University of Cambridge, DAVID SORY, THUY-TIEN NGUYEN, Centre for Blast Injury Studies, Imperial College London, RICHARD CURRY, Blast Injury & Survivability Research Unit, University of Cape Town, JON CLASPER, WILLIAM PROUD, Centre for Blast Injury Studies, Imperial College London, ALUN WILLIAMS, Department of Veterinary Medicine, University of Cambridge, KATE BROWN, Department of Physics, University of Cambridge — The pattern of battle injuries sustained in modern wars shows that over 70% of combat wounds are to the extremities. These injuries are characterized by disruption and contamination of the limb soft tissue envelope. The extent of this tissue trauma and contamination determine the outcome in extremity injury. In military injury, common post-traumatic complications at amputation sites include heterotopic ossification (formation of bone in soft tissue), and severe soft tissue and bone infections. We are currently developing a model of soft tissue injury that recreates pathologies observed in combat injuries. Here we present characterization of a controlled focal compression of the rabbit flexor carpi ulnaris (FCU) muscle group. The FCU was previously identified as a suitable site for studying impact injury because its muscle belly can easily be mobilized from the underlying bone without disturbing anatomical alignment in the limb. We show how macroscopic changes in tissue organization, as visualized using optical microscopy, can be correlated with data from temporally resolved traces of loading conditions.

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