

HEAD AND NECK INJURY BIOMECHANICS

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ABSTRACT

Injury to head and neck systems represents a profoundly underestimated global public health issue. The sudden rise of micro-mobility such as e-scooters has been causing an alarming number of injuries and hospitalizations. At the same time, sports, cars, military and home accidents are sources of many different types of injuries. In fact, a more comprehensive understanding of injury-causing factors, encompassing diverse populations, human activities, and situations where excessive loads lead to harm, necessitates further elucidation. By delving into the biomechanics of injury and disability, we can aspire to achieve better protective measures against injury.

Injury causation entails examining the biomechanical responses of the human body, as well as the function and structure of cells and tissues, in response to dynamic loading. This analysis also investigates the mechanisms and tolerances of various body regions to injury. Research in this domain encompasses macroscopic motion analysis of human volunteers or surrogates, alongside microscopic measurements of cell and tissue function and structure. Computational and translational models are utilized to extend experimental findings to encompass a wide range of real-world environments.

This symposium welcomes computational studies and models - validated from experiments - that aim to identify and define injury mechanisms, quantify biomechanical responses, determine impact tolerance levels, and develop and employ injury assessment devices and techniques for evaluating injury prevention systems. Researchers are encouraged to submit contributions covering any aspect related to the biomechanics of head and neck injuries.