Numerical Approaches in injury biomechanics

1000

ricardo alves de sousa\*#, milan toma†
mariusz ptak§ and fabio fernandes\*

\* Center for Mechanical Technology an Automation,

Department of Mechanical Engineering,

University of Aveiro,

Campus de Santiago,

3810-183 Aveiro, Portugal

† Dept. of Osteopathic Manipulative Medicine

College of Osteopathic Medicine

New York Institute of Technology

Serota Academic Center, room 138

Northern Boulevard, P.O. Box 8000

Old Westbury, NY 11568

§ Faculty of Mechanical Engineering,

Wroclaw University of Science and Technology, Lukasiewicza 7/9,

50-371 Wrocław, Poland

**# corresponding organizer: rsousa@ua.pt**

**Key words:** injury, biomechanics, protective devices, road traffic accidents, sports injuries, crashworthiness, accident analysis

ABSTRACT

In any given accident, upon an impact, injuries may affect a single or several parts of the human body, starting from the head and the brain, which is a complex and vital organ, but also affecting legs, arms, ribs, etc. Different types of loads, its magnitude and locations may result in different injury outcomes.

Regarding accidents, a daily occurrence in many different activities and scenarios, from sports to traffic, from home to work environments, from accidents to criminal offences, the usual outcome is some kind of injury in the body, which could range from minor, soft ones to severe, lethal ones.

Numerical methods, such as the finite element, multibody, meshless, etc., have been continuously improved in order to provide better analysis of accident scenarios, evaluating their causes, their progressions and their outcomes and provide effective frameworks for their prevention.

In this MS it is expected to collect a set of contributions in the referred fields which may include, but not limited to the studies of human and environmental aspects prior to accidents; type and severity of accidents; design and implementation of passive and active protective devices; biomechanics of impact and resulting injuries; statistics and decision-making tools.