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From human models to virtual trauma understanding, prevention and management

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ABSTRACT

In many fields such as healthcare (with its surgical and biomedical applications), transportation safety, or sports sciences, the use of numerical simulation has become in a few years an essential tool both for research and industry applications. However, this digital revolution is still in its early stages. The combination of numerical simulation and the analysis of large-scale data is expected to enable a deeper exploration of the complexity involved in modelling various phenomena.

For nearly two decades, the Laboratory of Applied Biomechanics has made a strong commitment to addressing the challenges of modelling the human body. These research efforts go far beyond the development of digital twins of the human body; they require the implementation of experimental approaches at multiple scales to understand the biomechanics and physiology of these complex structures and to obtain validation data.

Our research strategy is therefore centred on the Virtual Human not only to understand, prevent, and repair injuries, but also to improve healthcare. Finally, it brings together multidisciplinary approaches across life sciences, engineering sciences, biomechanics, and data science.