Title: Validation of digital twins to predict of bone strength

Tutor: Prof Marco Viceconti - https://www.unibo.it/sitoweb/marco.viceconti/en

Funding source:

Progetto ECORIC-Viceconti, per €34.416,00

Scientific Supervisor Prof. Marco Viceconti.

Research Project

Prof Viceconti's team has developed digital twin technologies to predict the minimum force required to fracture a patient's bone under given loading conditions. The candidate will design and conduct several studies to demonstrate such digital twin technology's predictive accuracy and robustness in selected clinical contexts.

Activity plan

The selected post-doc will mainly work on:

- Development of patient-specific finite element models to simulate different interventions and estimate the risk associated with the most common failure scenarios.
- Application of such digital twin technologies to investigate specific treatment options for selected musculoskeletal pathologies.

Place of work: all activities will occur at the department DIN's institutional sites.

Short description

The candidate should have a master's degree in mechanical or biomedical engineering or equivalent and is expected to contribute to developing digital twins in healthcare for risk stratification of new interventions to treat musculoskeletal diseases.

The evaluation is based on qualifications only (with the consequent obligation to attach two letters of presentation from professors/researchers from Italian/foreign universities or research institutes to the application form). The maximum score available to the Commission is 100 points. Candidates who have obtained at least 60 points will be considered eligible. Candidates will be evaluated according to the following criteria:

- Relevance of the PhD project to the project (max. 20 punti)
- Postdoctoral experience on topics related to the project (max. 50 punti)
- Publications and H-Index (max. 30 punti)

The ideal candidate would also have these additional qualifications:

- Documented experience in computational musculoskeletal biomechanics.
- Extensive knowledge of the finite elements method.

The candidate will have the opportunity to work in a multidisciplinary team coordinated by Prof. Marco Viceconti and in collaboration with a large national consortium.

Composizione della Commissione Giudicatrice:

- Prof. Marco Viceconti
- Dott. Marco Palanca
- Prof. Luca Cristofolini
- Dott. Giorgio Davico (Supplente)