

Title: digital twins for precision medicine of musculoskeletal diseases

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

Funding source:

PNRR - PE6 - HEAL ITALIA - CUP J33C22002920006

Scientific Supervisor Prof. Marco Viceconti.

Research Project

Heal Italia is a national research project funded by the NextGenerationEU Recovery Plan. The general aim of the project is to apply precision medicine approaches by developing risk-based stratification algorithms. One of the key technologies for precision medicine is the so-called *digital twin*, subject-specific computer models used as clinical decision support systems. This research project aims to develop digital twins in healthcare to support the treatment of musculoskeletal pathologies, particularly the risk stratification of new interventions.

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 is expected to contribute to the development of digital twins in healthcare to be used for risk stratification of new interventions to treat musculoskeletal diseases.

The ideal candidate would have these qualifications:

- Master's Degree in Mechanical or Biomedical Engineering, or equivalent.
- 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
- Dott. Sara Oliviero
- Prof. Luca Cristofolini (Supplente)