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Titolo	Biomechanical analysis of the ligaments of the hindfoot: constitutive formulation and parameters identification for numerical modelling [Tesi di dottorato]
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Sommario	<p>The biomechanical behaviour of the hindfoot ligaments is investigated by means of a combined experimental and computational approach. To interpret the typical features of ligaments mechanical response, as anisotropic configuration, geometric non-linearity, non-linear elasticity and time-dependent behaviour, a specific fiber reinforced visco-hyperelastic model is provided. In order to define the constitutive parameters, analytical and numerical models that interpret tensile tests are defined. Model and experimental results are compared by a cost function, whose minimization leads to the optimal set of parameters. In detail the analytical method offers a preliminary set of constitutive parameters. Numerical models that consider the complex histo-morphometric configuration of samples are defined and numerical analyses that interpret the experimental conditions are performed. The analyses assume several sets of constitutive parameters, which are estimated starting from the preliminary set. The minimization of the discrepancy between numerical and experimental results entails the definition of a reliable set of parameters. Once constitutive parameters are evaluated, the biomechanical behaviour of the ligaments of the hindfoot is evaluated in several physiological conditions such as dorsiflexion, plantarflexion and inversion of the foot. This work offers the possibility to interpret and analyse the</p>

ankle joint trauma such as the ligaments rupture.

Localizzazioni e accesso

http://memoria.depositolegale.it/*/http://paduaresearch.cab.unipd.it/4934/1/Forestiero_2012_01_31.pdf
