**experimental characterization of porcine ligaments**

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**Abstract.** Porcine knee ligaments were experimentally tested using a professional material testing machine. Both, elastic and viscoelastic characterization were accomplished. Four porcine ligaments were utilized: the lateral collateral ligament (LCL), the anterior cruciate ligament (ACL), the posterior cruciate ligament (PCL) and the medial collateral ligament (MCL). The results of load versus time were obtained by the material testing machine outputs and, simultaneously, the strain versus time output, thorough the bonding of strain gages on porcine ligaments and the utilization of a dedicated A/D acquisition system. The elasticity behavior was determined by analyzing the results of growing the load up to a relatively low load target. The viscoelasticity behavior was obtained through the realization of relaxation experimental tests, that consist in a sequence of imposed strains, followed by ligaments relaxations. The preliminary results show that describing a porcine ligament by only its elastic behavior is insufficient, as the viscoelastic (non-linear) behavior controls its overall behavior.

**Keywords:** knee ligaments, analytic model, viscoelasticity, experimental tests