**modeling the load SHARE between viscoelastic porcine ligaments**

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**Abstract.** A former analytical elastic model, of the load share between porcine knee ligaments, was enhanced with the inclusion of the viscoelastic effect. Experimental tests were executed with the following knee porcine ligaments: lateral collateral ligament (LCL), anterior cruciate ligament (ACL), posterior cruciate ligament (PCL) and medial collateral ligament (MCL). The objective was to estimative the load share between porcine knee ligaments, in both elastic and viscoelastic phases, for the following main mechanical variables: longitudinal forces and displacements, and its respective longitudinal stresses and strains. Differently of the pure elastic model, where little experimental results were needed, for this more complete analytical model, which include elastic and viscoelastic phases, not only extensively experimental results were needed but they must, also, be extrapolated. The preliminary conclusions show that significant load share rearrangement occurs between ligaments in elastic and in viscoelastic phases. Probably, this fact explains why newly operated knee ligaments, which are apparently tight just after the operations, can evolve, in a couple of weeks, to a flaccid ligament.

**Keywords:** knee ligaments, analytic model, viscoelasticity, load share