



**Analytical solutions of viscoelastic impact problems:  
Application to impact testing of articular cartilage**

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*Abstract:* In recent years, a number of experimental studies have been conducted to investigate the mechanical behaviour and damage mechanisms of articular cartilage under impact loading (Verteramo and Seedhom, 2007; Burgin and Aspden, 2008). Some experimentally observed results have been explained using a non-linear viscoelastic impact model (Edelsten et al., 2010). At the same time, there is the need of simple mathematical models, which allow comparing experimental results obtained in impact testing with impactors of different masses and incident velocities. In the present study, we derive analytical solutions of linear viscoelastic impact problems modelling the main features of the blunt impact tests employed for assessing articular cartilage viability.

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