

Influence of the ATD pelvis on the lumbar loads in a horizontal-vertical test scenario

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Test setup uncertainties are undesirable effects that can have negative influence on the outcome of test results. In addition the validation of a test using finite element simulation can be challenging, if the effects are unknown or not eliminated by a series of tests. One of the major reasons for scattering in a horizontal-vertical test is the ATD. Recently the behavior of the dummy pelvis skin and foam has become a focal point of interest. In the presentation results of a simple linear impactor test setup that can be used to analyze the dynamic behavior of the pelvis are shown. Pelves of different age and load history were chosen for the linear impactor tests. From the study a worst case pelvis is identified. The material properties of the pelvis are adapted using reverse engineering. The influence of the worst case pelvis on the results of a horizontal-vertical 14g dwn simulation using a full rigid and an economy class seat are shown.