

## Abstract

The lap belt has been evaluated as a safety restraint for occupants of automotive vehicles by exposing anthropometric dummies and human volunteers to experimental crash decelerations. Air Force and Civilian automobile crash statistics provided typical configurations of accidents. Instrumented anthropomorphic dummies in salvage vehicles were used to duplicate selected accidents by collision into barriers, other vehicles, or by snubbing the vehicle with a cable going to an anchored hydraulic snubber. Electronically and optically recorded data from these experiments provided configurations for simulating crashes with human volunteers on a catapult powered sled on rails accelerated into a preset water inertia brake; a pendulum swing seat arrested by a snubbing cable; a seat propelled by a shock-cord catapult into mechanical pinch brakes; and finally, the salvage automobile decelerated by the hydraulic snubber.

For these various methods, parameters of exposure ranged from 10 g at 500 g per second rate of onset for .05 seconds, to 27 g at 2,000 g per second rate of onset lasting .005 seconds. Analysis of body displacements, decelerative forces and body reactions to restraint are presented. Recommendations are made for revision of automotive vehicle safety belt standards and modification of vehicle interiors.