

The response of a restrained car occupant to deceleration patterns recorded at barrier impacts with European compact cars is studied by using a simple model in an analog computer. In order to illustrate the general influence of restraint characteristics and slack, the occupant is defined as one solid mass and restraints are characterized by linear load-elongation functions of different stiffness. Various degrees of slack are introduced by delaying the response until a predetermined displacement has occurred between occupant and vehicle. Peak accelerations and total displacements of the occupant as a function of slack are given. The substitution of actual deceleration-time patterns from barrier impacts by simpler functions of similar shape shows that average deceleration rather than single peaks of short duration in the input function govern the response of the restrained occupant.