

Neck Injury Biomechanics



List of Chapters:

Preface

Acknowledgments

Introduction

Hybrid III Dummy Neck Response to Air Bag Loading

Effect of Seat Stiffness in Out-of-Position Occupant Response in Rear-End Collisions

A Sled Test Procedure Proposal to Evaluate the Risk of Neck Injury in Low Speed Rear Impacts Using a New Neck Injury Criterion (NIC)

Female Volunteer Motion in Rear Impact Sled Tests in Comparison to Results from Earlier Male Volunteer Tests

The RID2 Biofidelic Rear Impact Dummy: A Validation Study Using

Human Subjects in Low-Speed, Rear-Impact, Full-Scale Crash Tests Neck Injury Criterion (NIC)

Head-Neck Kinematics in Dynamic Forward Flexion

Influence of Seat Geometry and Seating Posture on NICmax Long-Term AIS 1 Neck Injury Predictability

The Mechanisms of Early Onset C5/C6 Soft-Tissue Neck Injury in Rear Impacts

An Energy Based Analysis for Neck Forces in Frontal Impacts

Anatomy of the Human Cervical Spine and Associated Structures

Research Study on Neck Injury Lessening with Active Head Restraint Using Human Body FE Model

The Effect of Whiplash Protection Systems in Real-Life Crashes and their Correlation to Consumer Crash Test Programmes.

Initial Assessment of the Next-Generation USA Frontal NCAP: Fidelity of Various Risk Curves for Estimating Field Injury Rates of Belted Drivers

Change of Velocity and Pulse Characteristics in Rear Impacts: Real World and Vehicle Tests Data

Human Head and Neck Kinematics after Low Velocity Rear-End Impacts—Understanding “Whiplash”

Strength and Response of the Human Neck

Injury Risk Curves for Children and Adults in Frontal and Rear Collisions

High-Speed X-Ray Assessment of the Bony Kinematics of the Cervical Spine During Frontal Impacts

Inertially-Induced Cervical Spine Injuries in the Pediatric Population

Neck Injuries in the UK Co-Operative Crash Injury Study

Neck Injury Biomechanics

A Study of Current Neck Injury Criteria Used for Whiplash Analysis. Proposal of a New Criterion Involving Upper and Lower Neck Load Cells

On the Structural and Material Properties of Mammalian Skeletal Muscle and Its Relevance to Human Cervical Impact Dynamics

The Dynamic Responses of the Cervical Spine: Buckling, End Conditions, and Tolerance in Compressive Impacts

Biomechanical Response of Head/Neck/Torso and Cervical Vertebral Motion to Lateral Impact Loading on the Shoulders of Volunteers

Cervical Injury Mechanism Based on the Analysis of Human Cervical Vertebral Motion and Head-Neck-Torso Kinematics during Low-Speed Rear Impacts

Upper Neck Response of the Belt and Air Bag Restrained 50th Percentile Hybrid III Dummy in the USA's New Car Assessment Program

Dynamic Characteristics of the Human Cervical Spine

Head/Neck/Torso Behavior and Cervical Vertebral Motion of Human Volunteers During Low Speed Rear Impact: Mini-sled Tests with Mass Production Car Seat

Biofidelity of Anthropomorphic Test Devices for Rear Impact

Biomechanical Investigation of Injury Mechanisms in Rollover Crashes from the CIREN Database

Head/Neck Kinematic Response of Human Subjects in Low-Speed, Rear-End Collisions

Assessment of 3- and 6-Year-Old Neck Injury Criteria Based on Field Investigation, Modeling, and Sled Testing

Responses of Human Surrogates to Simulated Rear Impact: Velocity and Level Dependent Facet Joint Kinematics

Rear-End Collisions—A Study of the Influence of Backrest Properties on Head-Neck Motion using a New Dummy Neck Human Subject Kinematics and Electromyographic Activity during Low Speed Rear Impacts

Analysis of Head Impacts Causing Neck Compression Injury

Performance of Seats with Active Head Restraints in Rear Impacts

Biofidelity of Rear Impact Dummies in Low-Speed Rear-End Impact—Comparison of rigid seat and mass-production car seat with human volunteers

On the Role of Cervical Facet Joints in Rear End Impact Neck Injury Mechanisms

Biomechanical Assessment of Human Cervical Spine Ligaments

Table I

Bibliography

Table II

About the Editor