

Pediatric Text and Archive

Salena Zellers Schmidtke

BioInjury, LLC

Southern Consortium for Injury Biomechanics

Pediatric Injury Biomechanics Data Archive & Textbook

Editors

Jeff Crandall, University of VA

David Meaney, University of Pennsylvania

Barry Myers, Duke University

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Objective

“**Gold Standard**” for the epidemiology of motor vehicle related childhood injury data as well as pediatric biomechanical property, geometry and tissue tolerance data.

Resource for

- * Researchers and Investigators
- * Computational Modelers
- * Future Rulemaking Upgrades
- * Injury Criteria Development
- * Child Dummy Development
- * Child Injury Intervention Design

Identify gaps in research to determine future research needs

Contents

- Chapter 1: Pediatric Anthropometry**
- Chapter 2: Epidemiology and Child Crash Dynamics**
- Chapter 3: Material Properties and Pelvis/ Extremities Experimental Data**
- Chapter 4: Head/Brain Experimental Data**
- Chapter 5: Neck Experimental Data**
- Chapter 6: Torso Experimental Data**
- Chapter 7: Anthropometry Datasets and Computational Models**

Chapter 1

Pediatric Anthropometry

Authors Kathleen Klinich and Matt Reed
University of Michigan Transportation Research Institute

- ❑ **Anthropometry of Children**
- ❑ **How Anthropometry changes as a Child Ages**
- ❑ **How Children Sit in Cars and Child Restraints**

Chapter 2

Epidemiology and Child Crash Dynamics

Authors Kristy Arbogast and Dennis Durban
Children's Hospital of Philadelphia

- **Epidemiological Field Studies**
- **Age-Dependent Occupant Kinematics & Crash Injury Dynamics**
 - **Crash type**
 - **Intervention**
 - **Anthropometry**

Chapters 3, 4, 5, 6 Experimental Data

Chapter 3: Material Properties

Pelvis/ Extremities

Author: **Johan Ivarsson**; Exponent/UVA

Chapter 4: Head/Brain

Author: **Susan Margulies**, U. Penn

Chapter 5: Neck

Author: **Roger Nightingale**; Duke

Chapter 6: Torso

Author: **Richard Kent**, UVA

- ❑ Critical review and analysis of experimental research on pediatric tissue
- ❑ Detailed description of the physical, material and structural properties
- ❑ Injury criteria, regulations and rulemaking related to each body region

Data Repository

- **Experimental Datasets of Pediatric Age-based Physical, Structural and Material Properties**
- **Stored in a secure Online Server managed through a dedicated Project Website**
- **Index with links to each individual reference**
- **Searchable based on a unique set of keywords**

- **For online publication, the datasets/documents linked directly from the references in the text**

Chapter 7

Anthropometry Datasets and Computational Models

Authors: King Yang (Wayne State), Bharat Soni (UAB)

Kathleen Klinich (UMTRI), Matt Reed (UMTRI)

- **Review and Analysis of state-of-the-art Computational Models of the Child occupant**
- **A Digital Child Database in the Data Repository**
- **Review innovative techniques and emerging areas of Computational Mechanics**

NHTSA Collaboration

Stephen Ridella

Chief, Human Injury Research Division

National Highway Traffic Safety Administration

Individual NHTSA Contributors for each Chapter

Agency Review of Material

Publication Dissemination

Options for Public Dissemination:

- **Hard Copy Book through a designated publisher**
- **Soft Bound Book published through SCIB**
- **3-ring Binder published through SCIB to allow for continual updates**
- **On-line Book with direct links to the datasets and documents referenced**

Datasets will be provided through the online database

Proposed Timeline

- **December, 2008** **Meeting between Project Manager and Authors to Finalize Work Plan for each Chapter**
- **January, 2008** **Begin Literature Review and Data Collection**
- **May, 2008** **Begin Writing**
- **August 1, 2008** **Draft 1: Section and Editors Review**
- **September 1, 2008** **Draft 2: NHTSA and Peer Review**
- **October 1, 2008** **Draft 3: Proof for Final Production**

Thank You

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