



2015 CLM Annual Conference
Palm Desert

Transportation Claims: Scope of Biomechanical Opinions regarding Medical Causation and Newer Technology for Claim

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Scott Schomaker, *Acuity Insurance*

I. What/Who is a Biomechanics Expert?

- Educational background
- Biomedical, biomechanical...the differences/similarities
- What to look for in the expert candidate's CV
- Considerations for retaining such an expert
- Accident reconstruction plus biomechanical analysis

Current Accident Investigation Tools

- Photographs
- 3D scanner
- Electronic data retrieval and preservation – strategies
- Sworn testimony
- Evidence gathering early on in the claim



Medical vs. Engineering Opinions

- Deciding on using one, or both experts
- How to handle seemingly “inconsistent” causation opinions between a medical and engineering expert

What a biomechanical expert can/cannot offer in a case

- Accident impact analysis
- Occupant kinematic analysis
- Injury causation analysis



Defending Attempts to Bar Opinions

- Purported “new or novel” scientific principles or methodologies
- Is your foundation lacking?



BIOMECHANICAL ENGINEERING



BIOMECHANICAL ENGINEERING

Role of the Biomechanical Engineer

- Bridges **engineering science** and the **medical arts**
- Principles of mechanics applied to a biological system (i.e. human body)
- Forms scientific basis for understanding how the human body reacts to its environment



BIOMECHANICAL ENGINEERING

What is Biomechanics NOT?

- No “Playing Doctor”
 - *Examine*
 - *Diagnosis*
 - *Prognosis*
 - *Treatment*



BIOMECHANICAL ENGINEERING

Types of Biomechanics...

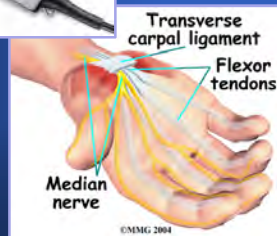
- Impact Biomechanics:
 - How the human body works
 - Responds to external forces
 - Becomes traumatically injured



BIOMECHANICAL ENGINEERING

Types of Biomechanics...

- Fatigue / Cyclic Biomechanics:
 - Repetitive task loading
 - Degenerative wear of bodily structures



BIOMECHANICAL ENGINEERING

What can be determined through biomechanics?

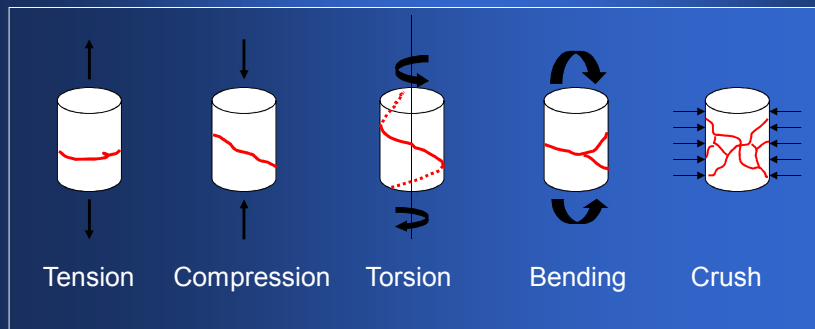
- Seatbelt Usage
 - Was it being worn or not?
 - Would it make a difference?
- Seating Positions
 - Who was driving?
- Multi-vehicle Collisions
 - Which impact caused the injury?



BIOMECHANICAL ENGINEERING

Impact Biomechanics – Injury Mechanisms

- Bone Injury Mechanisms
 - Fail differently depending upon loading applied



BIOMECHANICAL ENGINEERING

Impact Biomechanics – Injury Causation

- Injuries can be caused by:
 - Single loading event - Traumatic
 - Multiple loading events over period of time (e.g. degeneration)
- In order to cause an injury in a single event, both the ⁽¹⁾ mechanism and ⁽²⁾ loading beyond the structure's injury threshold must occur.

BIOMECHANICAL ENGINEERING

INJURY

Injury Description

Define load(s) required to produce injury

Define mechanism required to produce injury

LOADING

Accident Description

Loading present in accident

Mechanisms present in accident

Injuries consistent with loading/mechanisms present?

Yes, injury causation defined

No, injury causation not consistent with this event

ACCIDENT RECONSTRUCTION

Common steps in the process:

- Accident scene inspections
 - Photographs
 - Measurements
 - 3D laser scanning



ACCIDENT RECONSTRUCTION

Common steps in the process:

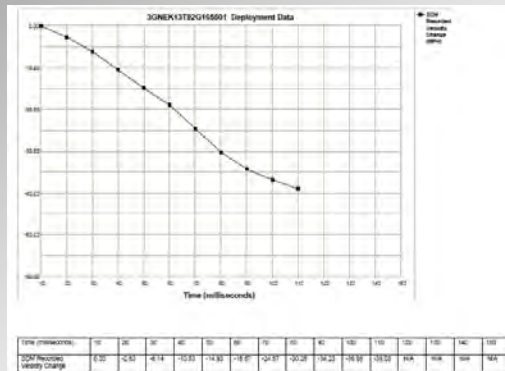
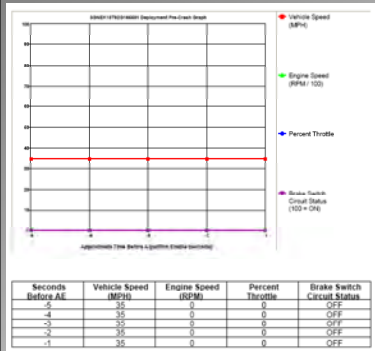
- Vehicle inspections
 - Photographs
 - Measurements
 - 3D laser scanning



ACCIDENT RECONSTRUCTION

Common steps in the process:

- Downloading airbag module data



ACCIDENT RECONSTRUCTION

Common steps in the process:

- Utilize data collected to perform analysis



ACCIDENT RECONSTRUCTION

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