Side Impact Child Dummy Development

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Overview

- Side Child Dummy Concepts
- Biofidelity Evaluation Preliminary Review
- Development of Certification Procedures
- Preliminary Durability Concerns
- Current Developments
- Future Work
- Concluding Remarks
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Side Child Dummy Concepts

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Side Child Dummy Concepts

NHTSA evaluating two dummies

- Q3s
- Hybrid III 3 year-old with modified head/neck (HIII-3Cs)
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Preliminary Biofidelity Eval

- Head Drop
  - Frontal & Lateral
- Neck
  - Frontal, Lateral, & Twist
- Shoulder
  - ISO & NHTSA impact tests
- Thorax
  - ISO test
- Abdomen
  - FTSS reference test
- Pelvis
  - ISO Test
Preliminary Biofidelity Analysis

Q3s
☑️
☑️
☑️
☑️

3Cs
☑️
☑️

head
neck
shoulder
thorax
abdomen
pelvis
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Certification Procedures

• Adapt procedures to use of Bench Seat to improve R&R in certification tests
• Develop Thorax with Arm Test
• Fabricate and investigate 3.8 kg impactor
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Preliminary Durability Concerns

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Durability Concerns

• Thorax cracking
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Current Developments

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Current Developments

• Improve Q3s thorax durability via materials
• Incorporate 3Cs neck design into the Q3s dummy
• Evaluate positioning tool to improve R&R for pelvis certification test
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Future Work

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Future Work

• Conduct sled tests for additional biofidelity assessment
• Assess new Q3s neck and improvements to thorax
• Conduct R&R testing for certification procedures using 3.8 kg impactor
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Concluding Remarks

- Q3s and 3Cs both legitimate options for use in possible CRS regulation