

Achieving BioRID II-UN R&R

BACKGROUND

- Concerns about the repeatability and reproducibility of the BioRID IIg dummy during 2000's
- Global Technical Regulations (GTR) 7 Informal Working Group (IWG) / Technical Evaluation Group (TEG) worked for years on addressing concerns
- The European Commission funded a project led by David Hynd with testing at BAST using a reproducible laboratory seat to investigate causes of dummy to dummy differences
 - “David Hynd, Paul Depinet & Bernd Lorenz (2013) The Repeatability and Reproducibility of the BioRID IIg in a Repeatable Laboratory Seat Based on a Production Car Seat, Traffic Injury Prevention, 14:sup1, S95-S104, DOI: 10.1080/15389588.2013.806987”
- Key findings for lack of reproducibility
 - Variation in original certification sled (unguided)
 - Pelvis stiffness variation
 - Jacket stiffness variation
 - Cervical, thoracic, and lumbar bumpers
 - Worn vertebrae pin holes

BACKGROUND

- Follow up study at BAST to confirm acceptable R&R
 - Used same laboratory seat
 - Compared 4 dummies
 - Select and shown to have poor R&R in this test setup
 - Refurbished following recommendations for improvements
 - Retested in same conditions
 - Results presented at 11th GTR7 IWG session 10DEC2012 in document GTR7-11-01
 - All critical measurement channels demonstrated acceptable repeatability and reproducibility
- GTR 7 IWG / TEG developed MR1 documents
 - Final recommended design and maintenance requirements
 - Certification tests and corridors
 - Drawings
 - All considered important to maintain R&R
 - See https://unece.org/sites/default/files/2022-02/ECE_TRANS_WP.29_1101a3e_1.pdf

KEY RECOMMENDATIONS INCLUDED FOR R&R

- Design and maintenance checklists
- Spine setup process and measurement requirements
- Annual test to check jacket and pelvis stiffnesses
- Front neck bumpers must be replaced every 12 months
- All other bumpers (lumbar, thoracic, remaining neck bumpers) must be replaced every 24 months
- Test equipment requirements and procedures for spine certification
- C4 accelerometer mount must never be used

FIND OUT MORE

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