




EPOCH – COVER – CASPER workshop

EPOCH Project Overview

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Introduction

1 The Project

2 Project Objective

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The Project -

Enabling Protection for Older Children - EPOCH

7th FRAMEWORK PROGRAMME

- THEME 7
- Transport (including AERONAUTICS)
- Collaborative Project

The Partners

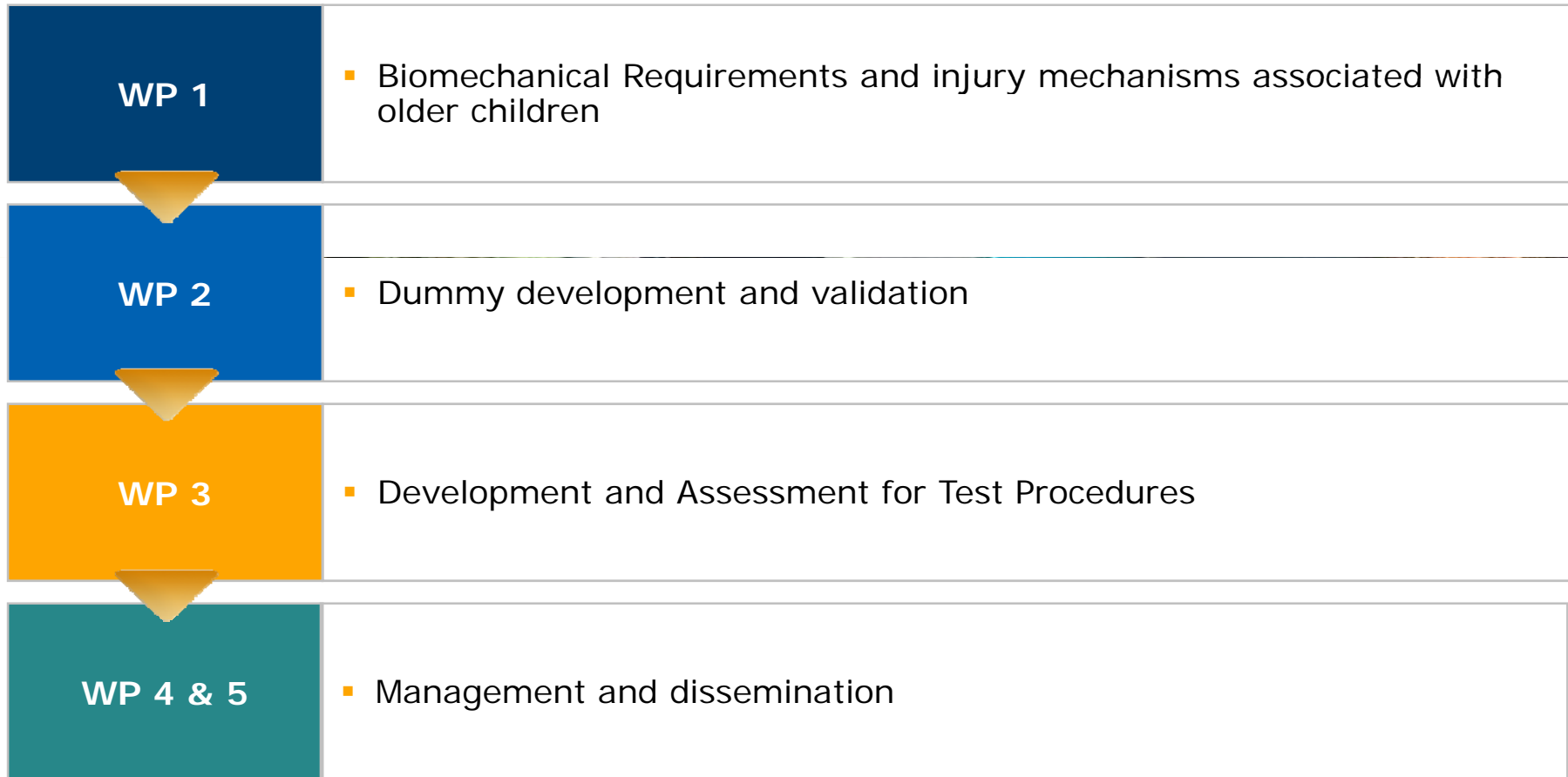


Project Objective

- Enable Protection for Older Children
 - Produce a 10/12 year old prototype dummy
 - Extend the NPACS testing and rating protocols for older children
 - Make proposals for dummy use in UN-ECE Regulation



Work Packages



Work Package 1

Biomechanical Requirements and injury mechanisms associated with older children

Task 1.1 Establishment of injury mechanisms

- Review of latest literature and current research relating to older children.
- Review accident data from work of CREST, CHILD, NPACS, EEVC
- Identification of injury priorities and loading conditions
- Summarise injury mechanisms and prioritise for front and side impacts

Work Package 1

Biomechanical Requirements and injury mechanisms associated with older children

Task 1.2 Development of biomechanical requirements

- 10 or 12 years old Q10 or Q12 dummy
- Biofidelity requirements
- Instrumentation requirements
- Functional requirements
- Application related requirements
- Methods to assess compliance

Work Package 1

Biomechanical Requirements and injury mechanisms associated with older children

Task 1.3 Specification of injury criteria

- Review injury risk factors from literature
- Develop scaling factors
- Develop risk functions using EEVC approach

Work Package 2

Dummy development and validation

Task 2.1 Dummy concept design

- A concept will be developed that complies with the Design Brief (Task 1.2).
- Concept development will cover
 - Structural components of all body regions.
 - Sensor design and Q dummy commonality aspect
 - Instrumentation packaging and integration aspects
 - In dummy data acquisition system integration
 - Dummy dedicated test equipment

Work Package 2

Dummy development and validation

Task 2.1 Dummy concept design

- Concept trade-off study
 - performance and failure analysis using FEA-techniques
 - requirement compliance analysis
 - manufacturing analysis.

Work Package 2

Dummy development and validation

Task 2.2 Production of prototype dummy

- Engineering release package
 - Dummy and test equipment drawings
 - Bill of material / Routing
 - Tooling drawings and hardware
 - Mould / patterns
 - Technical documentation (preliminary manuals and user instructions)
- 2 prototypes

Work Package 2

Dummy development and validation

Task 2.3 Prototype evaluation

- The dummy will be evaluated for:
 - Biomechanical performance
 - Anthropometric requirements check
 - Verification against performance corridors
 - Repeatability verification (impactor testing)
 - Sensitivity assessment (impactor testing)
 - Durability assessment (impactor testing)
 - Functionality assessment (resonance, posture etc.)
- Dummy validation report

Work Package 2

Dummy development and validation

Task 2.4 Submarining research

- Research injury associated with submarining
- Analyse the whole body kinematics associated with submarining
- Investigate new techniques for the assessment of dummy submarining during dynamic testing
- Report on the mechanism of submarining in older children and how this can be assessed during dynamic testing

Work Package 3

Development and Assessment for Test Procedures

Task 3.1 Development and assessment of requirements for NPACS

- Specification of dummy physical capabilities
 - NPACS test procedures
 - restraint loading
 - Durability
 - sensitivity to seat design

Work Package 3

Development and Assessment for Test Procedures

Task 3.1 Development and assessment of requirements for NPACS	<ul style="list-style-type: none"> ▪ Develop test matrices <ul style="list-style-type: none"> ▪ assess performance of the dummy for NPACS tests ▪ Physical assessment of the dummy <ul style="list-style-type: none"> ▪ NPACS tests (up to 129 tests)
	<ul style="list-style-type: none"> ▪ Specification of 5 band rating system for application of NPACS results

NPACS testing	TRL	IDIADA
Restraint loading	12 side impact	10 front impact
Sensitivity to good and poor seats	12 side impact	15 front impact
Durability	40 side impact	40 front impact



Work Package 3

Development and Assessment for Test Procedures

Task 3.2 Development and assessment of requirements for ECE R44	<ul style="list-style-type: none"> ▪ Specification of dummy physical capabilities <ul style="list-style-type: none"> ▪ UN-ECE R44 testing <ul style="list-style-type: none"> ▪ restraint loading ▪ Durability ▪ sensitivity to seat design
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ECE R44 testing	TRL	DOREL
Restraint loading		12
Sensitivity to good and poor seats		12
Durability		40
P & Q comparison testing	50	



Work Package 3

Development and Assessment for Test Procedures

Task 3.2 Development and assessment of requirements for ECE R44

- Develop test matrices
 - recommendations for assessment of submarining
 - assess performance of the dummy for R44 tests
 - comparison of P10 and the new dummy
- Physical assessment of the dummy
 - R44 tests (up to 114 tests)
- Specification of measurement limits for R44

Work Package 3

Development and Assessment for Test Procedures

Task 3.3 Assessment of potential impact of dummy on restraint design

- Cost benefit analysis
 - test results
 - potential benefits from accident reductions
 - interests of all stakeholders
 - benefits to society
 - disbenefits to industry
- Potential impact on regulations and other testing schemes e.g. consumer schemes such as NPACS and EURONCAP

For more information
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Enabling Protection for Older Children

