EPOCh-COVER-CASPER workshop

Q10 Anthropometry

Munich, 29th and 30th November 2010

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The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 218744.

Introduction

1. Preparation study
2. Considerations & CANDAT
3. Mass. Target, realization and check
4. Stature. Target, realization and check
5. Place within Q dummy family

1. Preparation study

- EEVC [2008] and Johannsen [2004] show that protection in front and side impact for children >8 years should still be a main focus for improvement.
- Potential improvements of child seats, vehicles and their combinations are hard to check, as the current P10 does not allow in-depth research.
- So for this reason, the project of the Q"BIG" was started in the beginning of 2009.
- Research at the University of Surrey,UK [dissemination meeting Paris, June 2009], [Mertz, 2008] showed the differences in children around the age of 8-12, giving guidance to the design and size/mass selection.

2. Considerations & CANDAT

- Mass.
  - 32.0 kg = P10
  - 35.5 kg = 10.5 [50 percentile CANDAT]
  - 36.5 kg = 10.75 [50 percentile CANDAT]
  - 40.0 Kg = 11.6 year & 1500 mm [50 percentile CANDAT]
- Stature.
  - 1376 mm = P10
  - 1442.5 mm = 10.5 years [50 percentile CANDAT]
  - 1447 mm = mass of 36.0 kg [50 percentile CANDAT]
  - 1500 mm = 11.6 years [50 percentile CANDAT]
  - 1519 mm = 12 years [50 percentile CANDAT]

3. Mass
Realization and check to targets

At the Stakeholders meeting in Paris, June 2009 it was decided that the anthropometry of a 10.5 year old “CANDAT-child” would be the bases for the Q10 dummy.

Mass selection arguments

- Smaller gap between Q6 and “Q10,5” then Q6 and “Q150” cm
- To raise the bar for enhanced protection of children towards 35.5 kg. (P10=32 kg)
- 40 kg is not required, as a “range” of real children is assumed to be assessed sufficiently with a 35.5 kg dummy.

Result

Design	kg
Head	3.59
Neck	0.60
Upper torso	5.15
Lower torso	9.70
Arm + hand (each)	1,99
Leg +foot (each	6.24
Designed total mass	**35.5**

4. Stature
Realization and check to targets

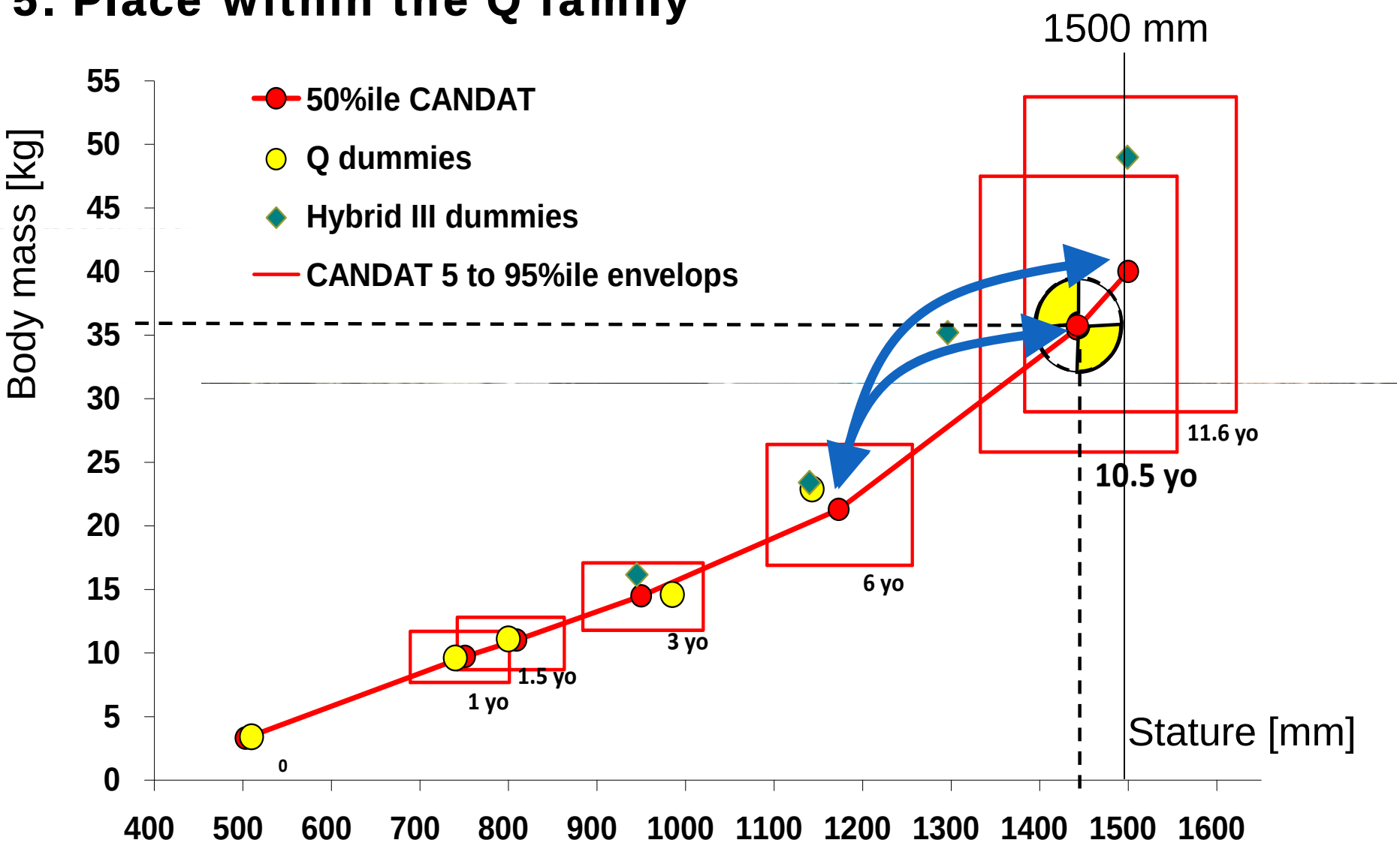
Size selection arguments

- Smaller gap between Q6 and “Q10,5” then Q6 and “Q150” cm
- To raise the bar for enhanced protection of children towards 150 cm. (P10 = 1376mm)
- 150 cm is not required, as a “range” of real children is assumed to be assessed sufficiently with a 1442.5 mm dummy.

Result

Design	Q10
Sitting height [mm]	748
Shoulder height @sitting mm	473
Shoulder breadth	270
Stature [mm]	**1441**

5. Place within the Q family



For more information

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Enabling Protection for Older Children