Abdominal Pressure Twin Sensors
For the Assessment of Abdominal Injury Risk in Q dummies

Prepared by Jean Bloch and Cédric Taurelle
Background and timeline

- Research phase: Development of APTS (V1, V2 and V3) by IFSTTAR (pre 2014...)
- 2014: Transfer from IFSTTAR to TRANSPOLIS for production, certification and sale (license)

2014-2015: Development of production and certification facilities at Transpolis

- June 2014: first 50 mm APTS (Q3, Q6, Q10) are distributed by Transpolis
- Sept 2014: first 30 mm APTS (Q1.5) are distributed by Transpolis
- Abdomen drilled by Transpolis (discussion on integration with Humanetics)
- Improvement / better control of production and certification steps
  \(\Rightarrow\) Improved reliability and reproducibility (diameter, weight, sealing...)

In isolated certification test
(using previously proposed procedure):
APTS50: (n=19) CV=6.3% on pressure, 5.2% on displacement
APTS30: (n=9) CV=6.1% on pressure, 6.9% on displacement
All within 13% of target
Feedback and current work

- More than 200 tests performed (Mostly Q3 and Q10).
- Q-Series dummies systematically equipped with APTS for one of the users.
- No failure occurred

- Q3: Humanetics integration issue (Heidelberg Meeting 2014): 50mm too big
- One user: Issue in Q3 test: Interactions between APTS and chest deflection sensor because of the length of 50 mm diameter.

Work on integration: discussions ongoing with Humanetics
- Several tests were performed on several Q10 blocks (biofidelity like, certification)
  ⇒ Results are quite encouraging
  ⇒ Same tests to plan with other abdomens sizes

Need for intermediate size for Q3 and Q6 -> 40 mm diameter APTS
Current Work (cont’d)

40mm APTS:
- Design finalized
- Mold manufacturing -> ongoing, available early July
- 2nd half of July: certification tests on first APTS 40 mm
- **APTS available for sled testing at users that would be interested** (July-August…)

Refinement of manual and certification procedures
- Isolated APTS, in abdomen...
- Finalization of process & documentation ongoing

Report on progress and results at next GRSP IG meeting
CONTACTS

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Transpolis presence at future events:
- GRSP IG, September 2015
- IRCOBI 2015 – 9th-11th September 2015 (Lyon, FRANCE www ircobi org)
- CRASH MEETING by Humanetics -- 24th-25th September 2015