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# Suggestions for new BioRID certification procedures

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# Background

- A certification procedure should exclude crash test dummies that does not perform as intended in seat performance evaluation tests.
- Therefore, dummies should preferably be certified in conditions similar to those used in these seat evaluation tests.
- The certification sled pulse should be close to the horizontal acceleration of the BioRID lower torso.
- These conditions varies with impact conditions and the seat tested.

# Background...

- Analysed nine BioRID IIg sled test:
  - Using new production seats considered either soft or stiff.
  - Using the Euro-NCAP 16 kph high and Euro-NCAP 24 kph sled pulses.
  - Analysis of peak and duration of T8, L1 and Pelvis x-accelerations (local coordinate system).

# Results of data analysis

Pulse	Seat	Peak acceleration (g)			Duration (ms)	Summarized BioRID IIg values	
		T8	L1	Pelvis		Pelvis	Peak acc. (g)
16 high	Soft 1	11.7	12.4	11.8	85	9.6	95
16 high	Soft 2	8.4	7.4	7.9	125		
16 high	Soft 3	7.9	6.9	11.8	75		
16 high	Stiff 1	10.6	11.9	14.6	75	12.2	87
16 high	Stiff 2	13.5	14.9	11.2	100		
16 high	Stiff 3	10.3	9.8	13.3	85		
24	Soft 1	14.7	9.5	15.0	110	14.7	110
24	Stiff1	13.8	15.1	15.7	90	15.1	95
24	Stiff 2	16.4	16.1	13.5	100		

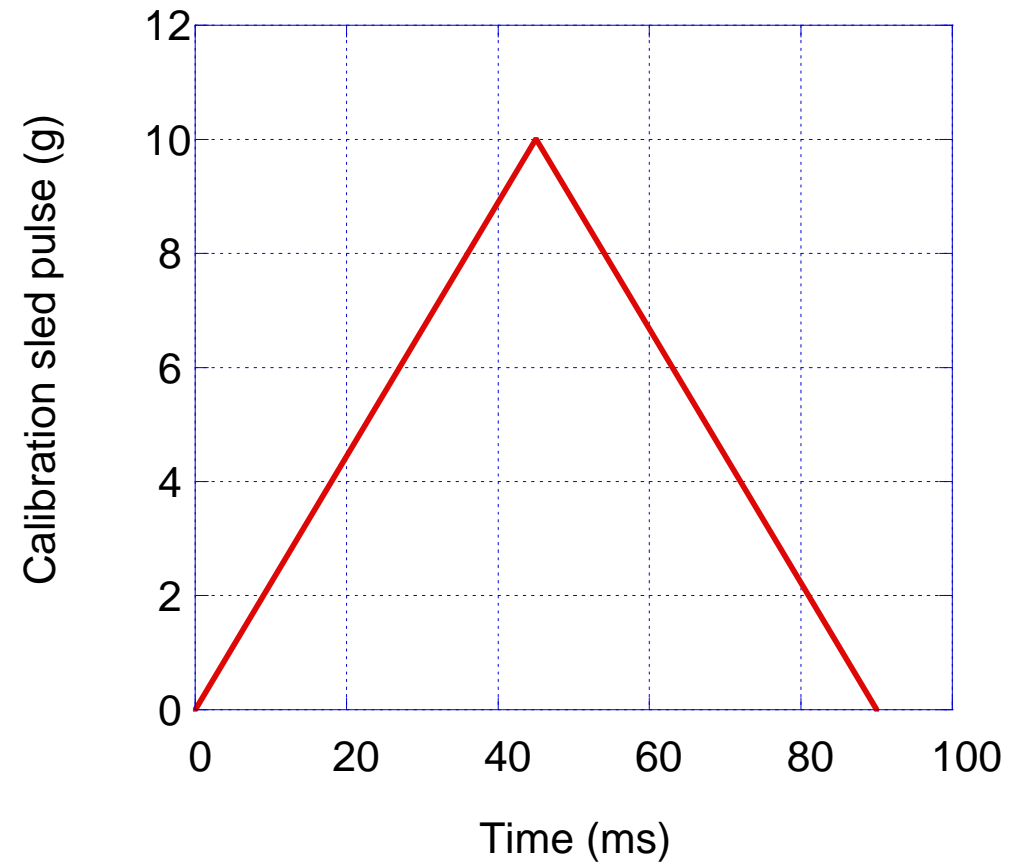
# New versus Old certification sled characteristics

## New

- Sled  $\Delta v = 16$  kph
- Sled acc. duration 90 ms
- Peak acceleration 10 g

## Existing

- Sled  $\Delta v = 9$  kph
- Sled acc. duration 30 ms
- Peak acceleration 17 g



# Additional

- Will require larger pendulum mass and length of sled track.
- Head restraint to reduce excessive wear and compression of the rubber blocks in the neck region
- Parallel to the existing low speed certification procedure for an interim period