
BioRID seating Observation from J-NCAP for GTR7

September 10, 2013



Purpose & Back ground

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To feed back to GTR Phase 2 seating procedure(from workshop @Bast)

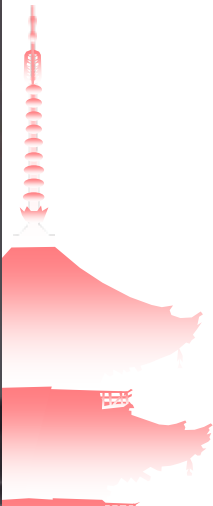
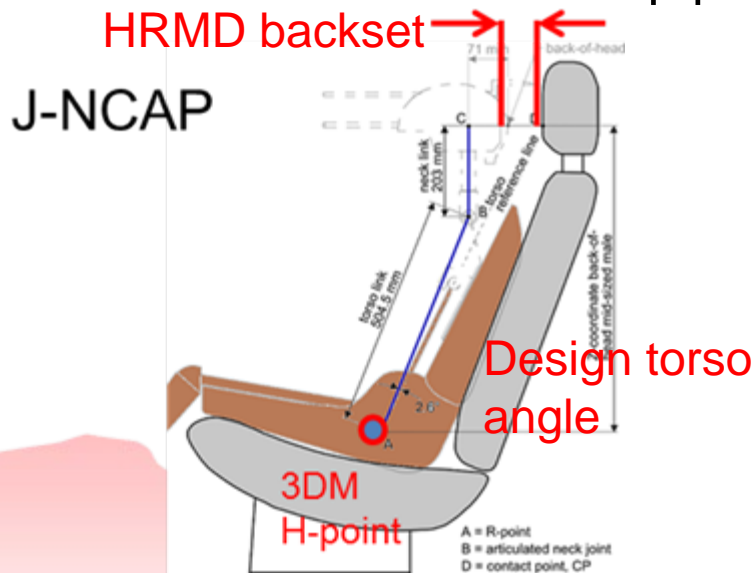
J-NCAP seating procedure (major points)

Design torso angle

3DM + HRMD measurements for BioRID seating position reference

Dummy positioning within tolerance

Hip point , backset , pelvis angle , head angle



Dummy setting data(2009-12) which was provided by NASVA were observed.

Comparison of dummy seating factors by test methodology

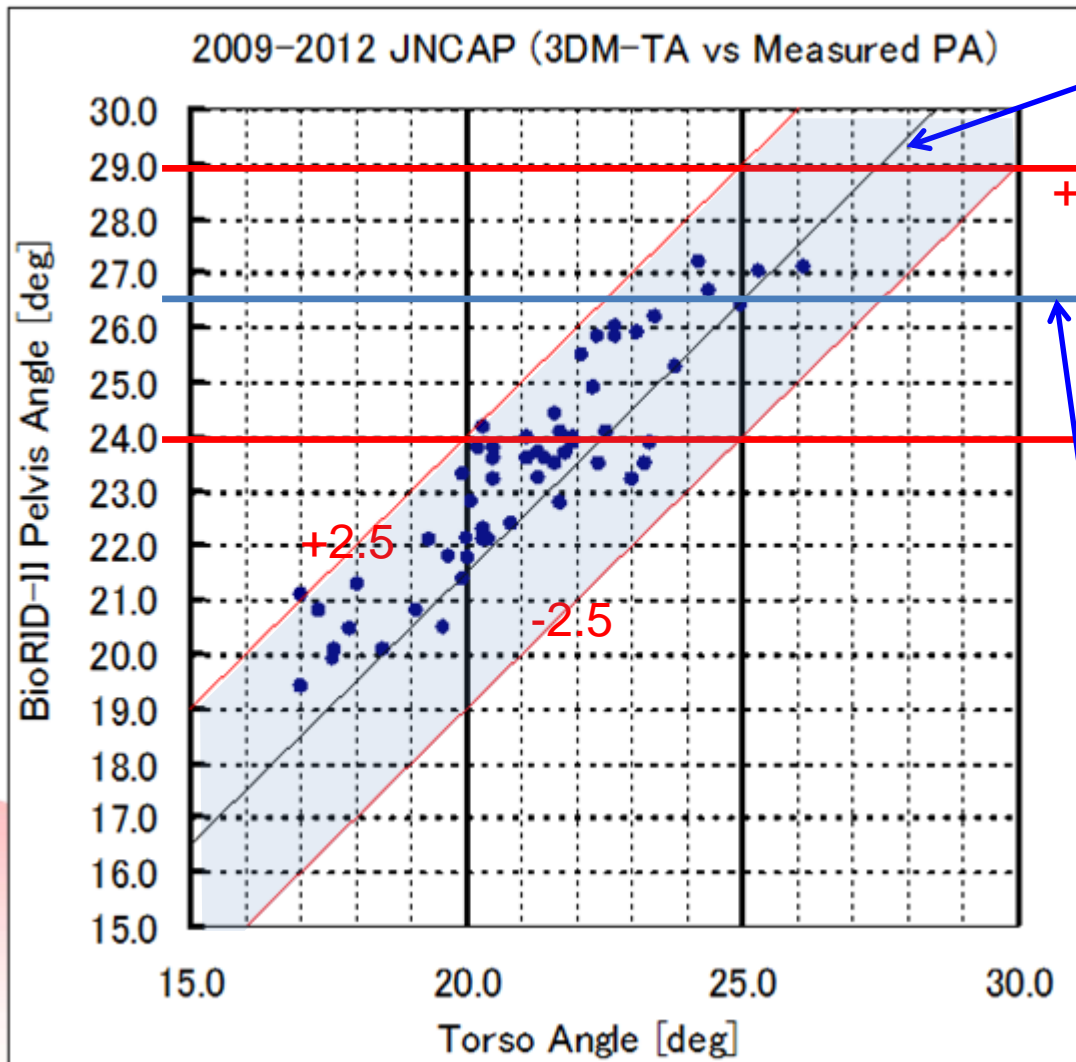
Dynamic test	Seat back angle	3DM	HRMD
J-NCAP (BR2)	Design torso angle	for dummy seating reference H-point	for dummy seating reference backset
GTR7 Ph2 proposal (BR2)	Design torso angle	for certifying design H-point only	Not use (Back of head /ref. Annex 1 table)
	No design angle specified (25deg.± 1)	for dummy seating reference H-point	To be discussed (Same as above)
EU-NCAP/IIHS (BR2)	25deg.	for dummy seating reference H-point	for dummy seating reference backset
GTR7 Ph1/2 (HY3)	25deg.	for dummy seating reference H-point	Not use

BioRID seating positioning & tolerance

Dynamic test	Seat back angle	Pelvis angle	H-point R ₅₀ -point	Head position	Head angle
J-NCAP (BR2)	Design Torso Angle	(ATA+1.5) ±2.5deg	±5mm (X) ±10mm (Z)	± 2 mm (Backset)	± 1 deg.
GTR7 Ph2 proposal (BR2)	Design Torso Angle	[ATA + 1.5] Alternatively [(26.5)] ±2.5deg	±10mm	R ₅₀ (Annex1) ±5mm	+3.5/-0.5 deg.
	No design angle specified	(26.5) ±2.5deg	±10mm	To be discussed	To be discussed
EU-NCAP /IIHS (BR2)	25deg.	(26.5) ±2.5deg	±10mm	±5mm (Backset)	± 1 deg.

Observation of pelvis angle (J-NCAP)

Condition : 3DM H-point, actual torso angle plus 1.5 deg



J-NCAP

Target pelvis angle
= actual torso angle +1.5deg
±2.5 degrees.

Gtr7 phase 2 latest text
3.2.6.5

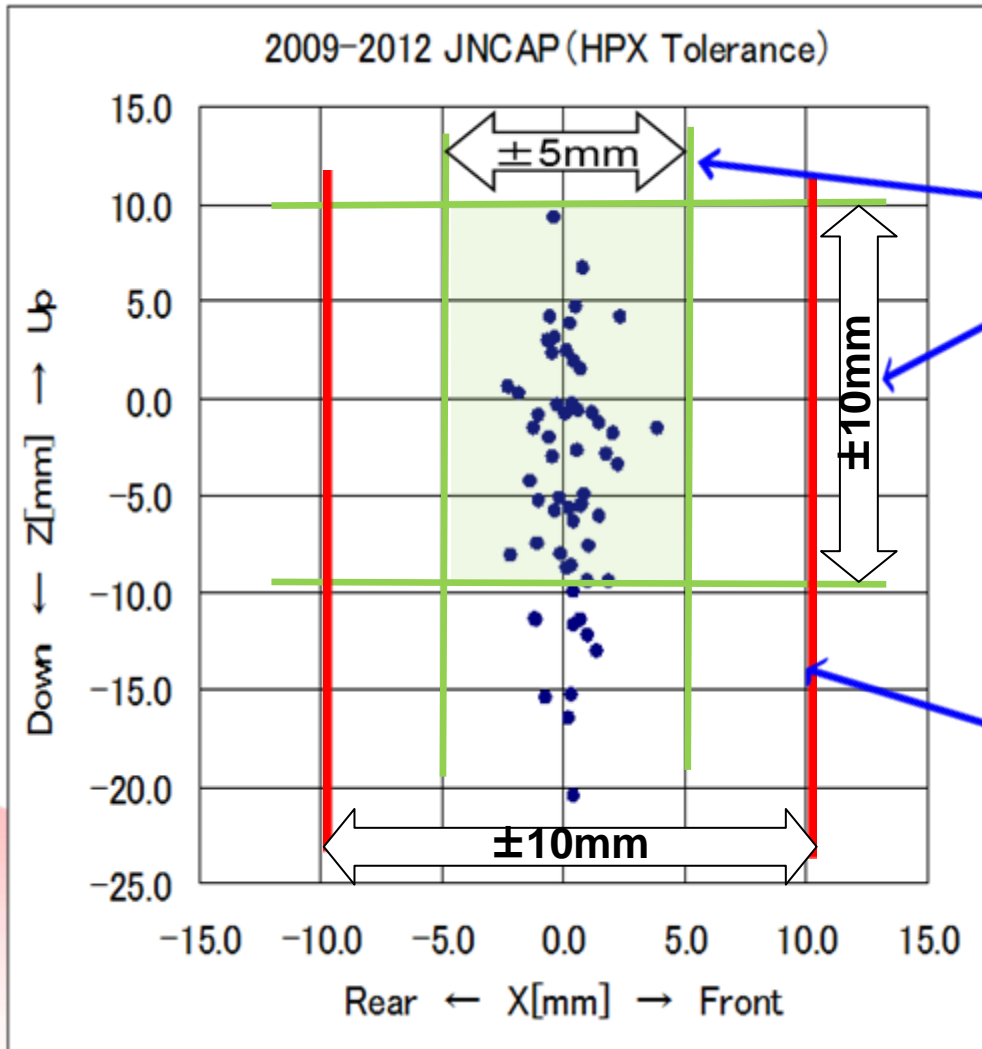
Alternatively

[Adjust the pelvis angle to 26.5
±2.5 degrees.]



Observation of H-point (J-NCAP)

Condition : 3DM H-point, head position (H-point)



J-NCAP

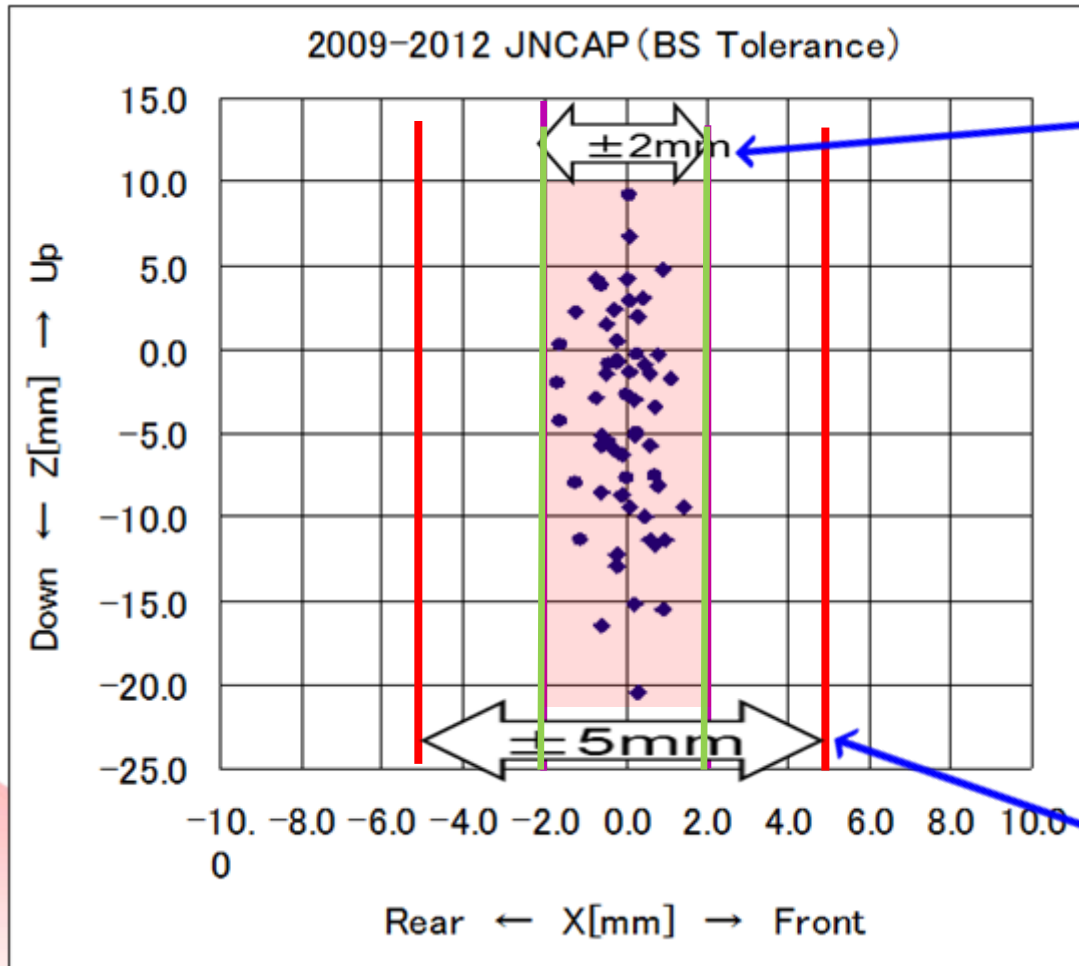
Target H-point
20mm forward
 $\pm 5\text{mm}$.
Z $\pm 10\text{mm}$

Gtr7 phase 2 latest text
3.2.6.6

H-point is positioned 20mm
 $\pm 10\text{mm}$ forward of R50-point

Observation of backset (J-NCAP)

Condition : 3DM H-point, head position (backset)



J-NCAP

Target backset
±2mm.

Gtr7 phase 2 latest text

3.2.6.7

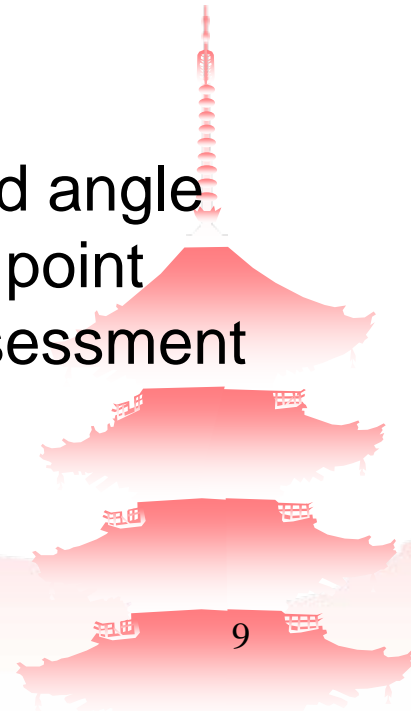
back of head
§3.2.5.2 with a tolerance
±5mm

<Summary>

J-NCAP dummy seating observation indicates a quit good acceptance of seating procedure regardless stringent tolerance, but few data of the Hip-point (Z) and head angle show out of tolerance.

<Future work>

The back of head, H-point, pelvis angle and head angle tolerance would be investigated by using R50- Hip point seating procedure with proposal dummy injury assessment values in repeatability test responses of view.



Thank you for your attention

END



Appendix



BioRID-II positioning tolerance background (Backset ,Hip point)

Tolerance 0mm test No B-01 to 05 Ave injury Value is 100%.

% 100± 5 100± 10 100± 20 100± 21~

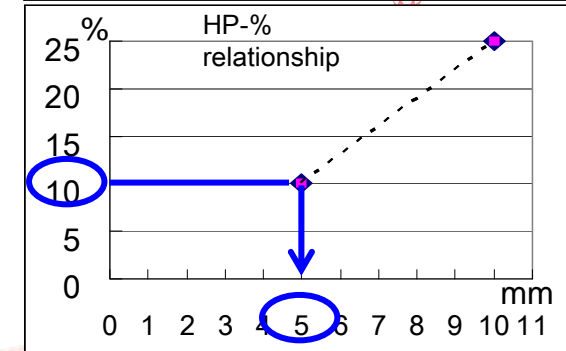
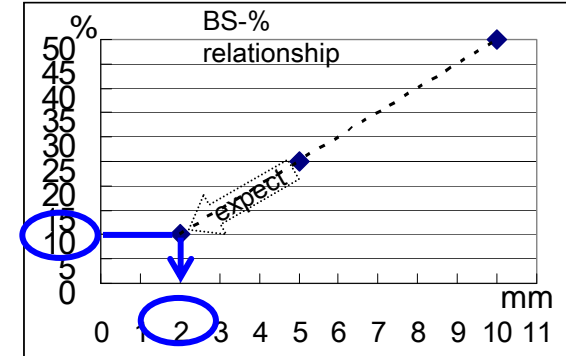
Test No.	HRCT	Hx Acc.	T1 Acc.	Upper FX	Upper FZ	Upper MY-Flx.	Upper MY-Ext.	Lower FX	Lower FZ	Lower MY-Flx.	Lower MY-Ext.	NIC	OC-T1
2008-B-01 ~ 05 (Ave)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2008-B-06 (BS +5mm)	107.0	115.0	96.4	126.6	122.5	106.6	100.0	115.5	129.0	137.5	119.0	129.1	100.0
2008-B-07 (BS +10mm)	103.9	111.2	99.1	145.1	117.7	108.2	100.0	121.7	139.7	140.5	126.0	130.1	112.3
2008-B-08 (HP -5mm)	101.0	101.7	93.7	110.0	94.9	106.8	100.0	98.1	101.1	112.0	103.5	94.2	100.0
2008-B-09 (HP -10mm)	101.9	103.9	94.5	124.0	100.9	106.9	100.0	104.6	104.7	106.5	110.8	112.2	99.6

< Head rear (Backset) variation >

- Tolerance +5mm : The value increase by about 25%.
- Tolerance +10mm : The value increase by about 50%.

< HP variation >

- Tolerance -5mm : The value increase by about 10%.
- Tolerance -10mm : The value increase by about 25%.



<J-NCAP suggested tolerance>

CV10% is one of acceptable value in R&R, so we propose Backset tolerance $\pm 2\text{mm}$, HP-X tolerance $\pm 5\text{mm}$.