

BioRID2 seating position proposal 1

JAMA

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About the posture of BioRID2

【Background】

At the 14th headrest Global Technical Regulation Informal conference held in September, 2013,

- ① head angle tolerance inclining forward +3.5 degree- backward tilting- 0.5 degree or ± 1 degree
- ② pelvis initial angle 26.5-degree or design Torso +1.5 degrees
- ③ though the dynamic testing possible torso angle 20-30 degrees or other angle were discussed. But It did not become a conclusion.

【Purpose】

JAMA propose to GTR7IG about seating position.

【1-1】 Changing injury value by angle of head and pelvis

Seat Condition

Torso angle 21 degrees (seatback UR 0-5step)

Tested with GTR7-ph2 latest (R-point & adjust rear head position way)

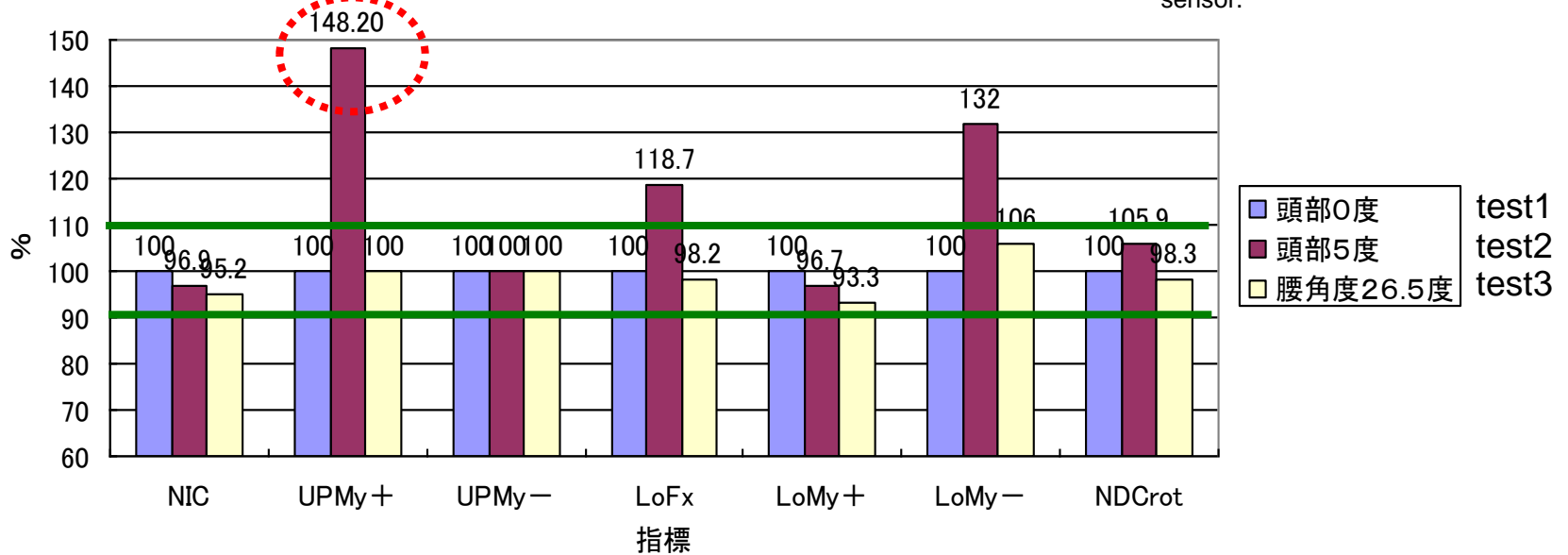
Dynamic sled test menu

degree	Head angle	Pelvis angle
test1	0	22.5(design torso+1.5)
test2	5 forward tilt	22.5
test3	0	26.5

【1-2】 Changing injury value by angle of head and pelvis

Injure value change % (test1 is 100%)

UPFx is erased because the value is mini then the ratio grew too much.
NDCrot was measured by angle velocity sensor.



<Head forward tilt 5deg>

UPMY+ has increased 48% from head 0 to 5 degree. 10% a degree of changing.

So Head angle ± 1 degree tolerance is better.

There is opinion that sensitive criteria should not use.

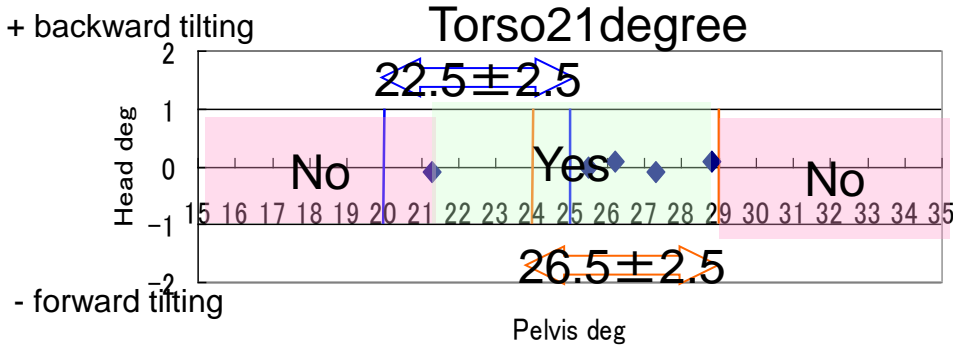
The head backward tilt test was tried ,but the head angle return to 0 degree ,so JAMA was not able to do the test.

<Pelvis 26.5>

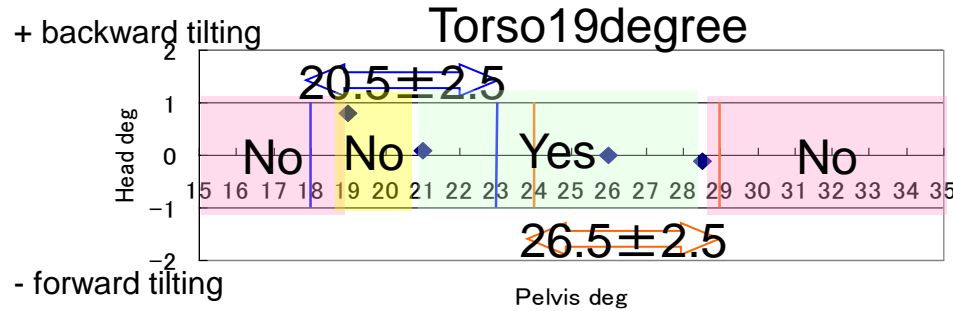
The change of the injury value was little (within 10%).

Both the design torso + 1.5 degree and 26.5 degree pelvis angle are acceptable.

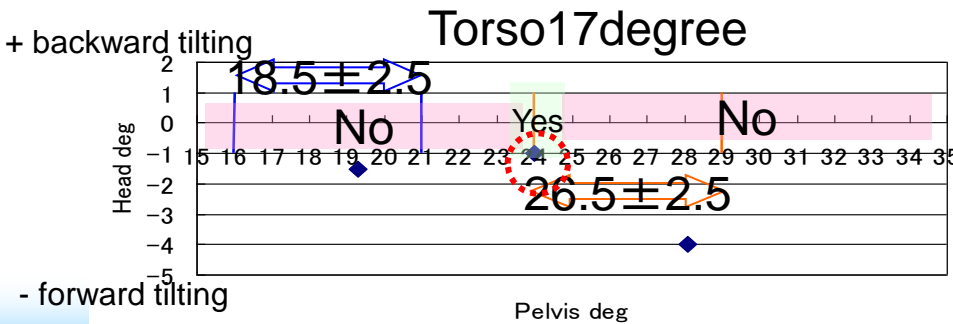
【2-1】 JAMA Bio-RID2 seating mini WS



Torso21
Green area means possible to install dummy.
Both of 22.5 and 26.5 deg are OK.

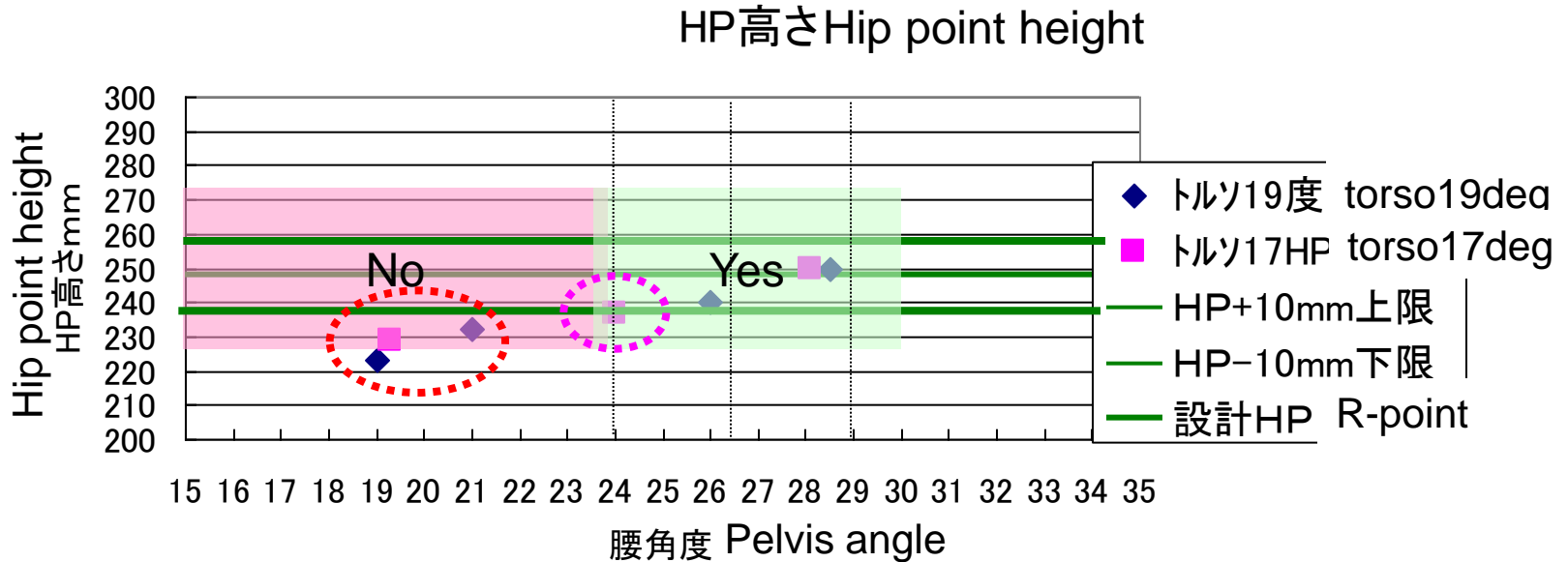


Torso19
Yellow No area needs pushing pelvis rearward.
20.5 deg is possible **but 26.5 is better.**



Torso17
Green area is very narrow.
Difficult to keep head angle ± 1 deg.

【Result】 Hip point height
 JAMA has checked Hip point height.



Design Hip point Z is 248mm, 3DM measured Hip point is 249mm. It's very close.

〈Result〉 Hip point Z came off -10mm in under 24 degree of pelvis angle.
 Over 24 degree, it was in ± 10 mm tolerance.

< **JAMA propose** >.

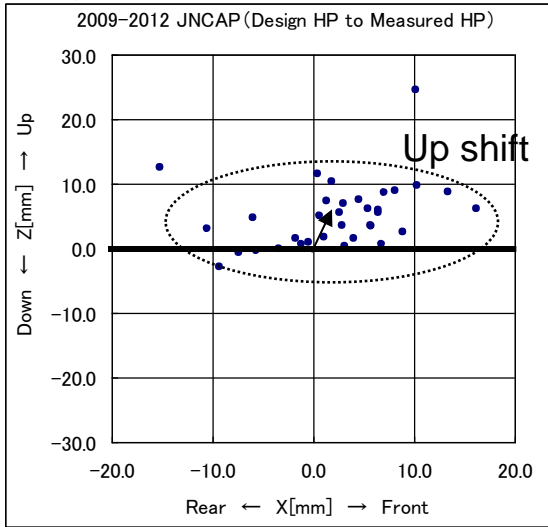
The pelvis angle is 26.5 ± 2.5 degree in any torso angle test.

But Hip point Z at pelvis 24 degree is -10mm, so we should care in case of come off tolerance.

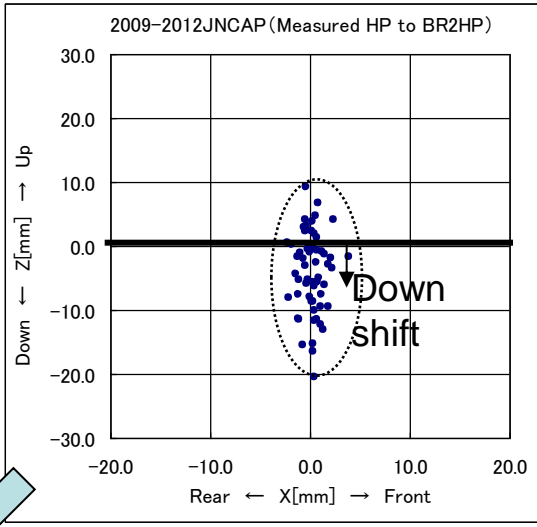
【Result】 Hip point height

JAMA investigated JNCAP BioRID-II Hip point positioning tolerance data

Design HP 0mm to 3DM HP(withHRMD)

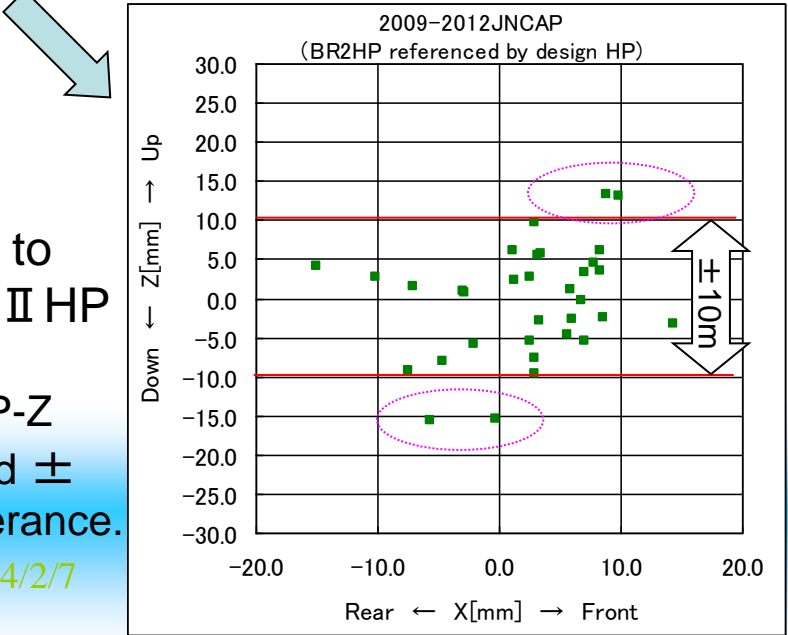


3DM HP(withHRMD) to BioRID-II HP



Design HP is 0mm. X and Z is 3DMHP(withHRMD)

3DMHP is 0mm. X and Z is BioRID II HP(X is 20mm corrected)



R-point to BioRID II HP are exceed ± 10 mm tolerance.

2014/2/7

JNCAP data says Hip point Z come off ± 10 mm.

< JAMA propose >
 if come off 10mm tolerance, try dummy seating again,
 if come off 3 times, use 3rd dummy Hip point.

【Summary】

	JAMA Propose	Supplementation
Head angle	Continue study	
Pelvis angle	26.5 ± 2.5 degree	
Hip point Z	± 10mm.	if come off 3 times, use 3rd dummy position.
Test torso angle	<p style="text-align: center;">Continue study</p> <p>a seat back angle of 20° (torso angle) is really border line for getting the head leveled. It depends on the seat type.</p>	

Thank you