Head-Up : co-designing novel neck orthosis for neck weakness in MND

LANGLEY, Joe, REED, Heath, STANTON, Andrew, MCDERMOTT, Chris, HERON, Nicola, CLARKE, Zoe, JUDGE, Simon and SHAW, Pamela

Published version

LANGLEY, Joe, REED, Heath, STANTON, Andrew, MCDERMOTT, Chris, HERON, Nicola, CLARKE, Zoe, JUDGE, Simon and SHAW, Pamela (2012) Head-Up : co-designing novel neck orthosis for neck weakness in MND. In: RAatE 2012, 26 November 2012, University of Warwick.

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Sheffield Teaching Hospitals NHS
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Excellence as standard

smith&nephew
Corporate

Motor Neurone Disease

Introduction

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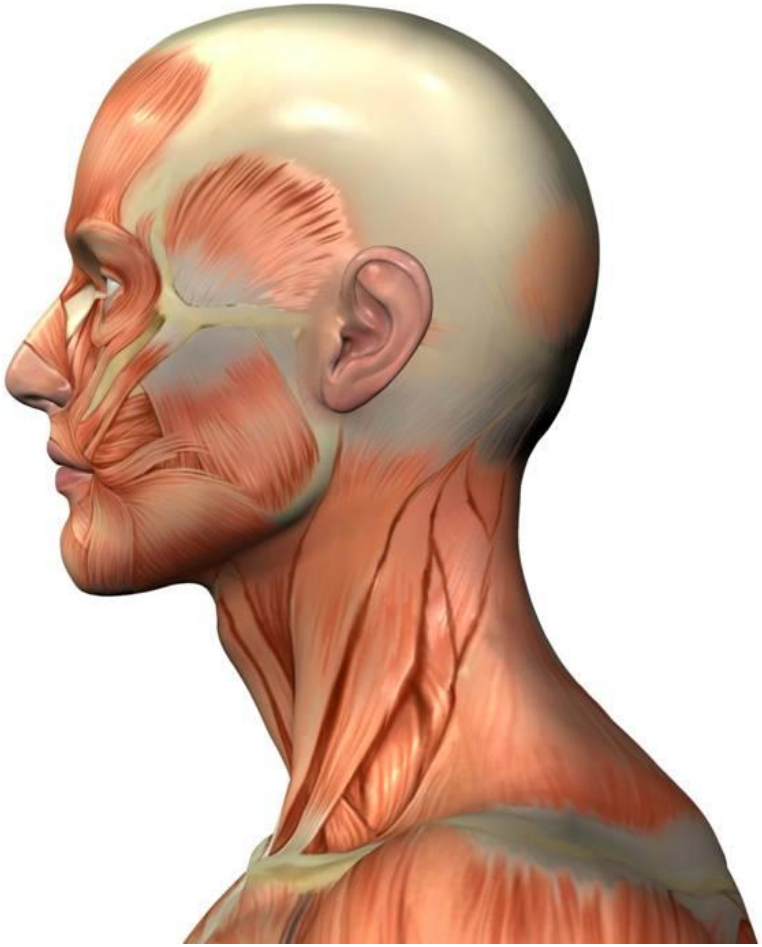
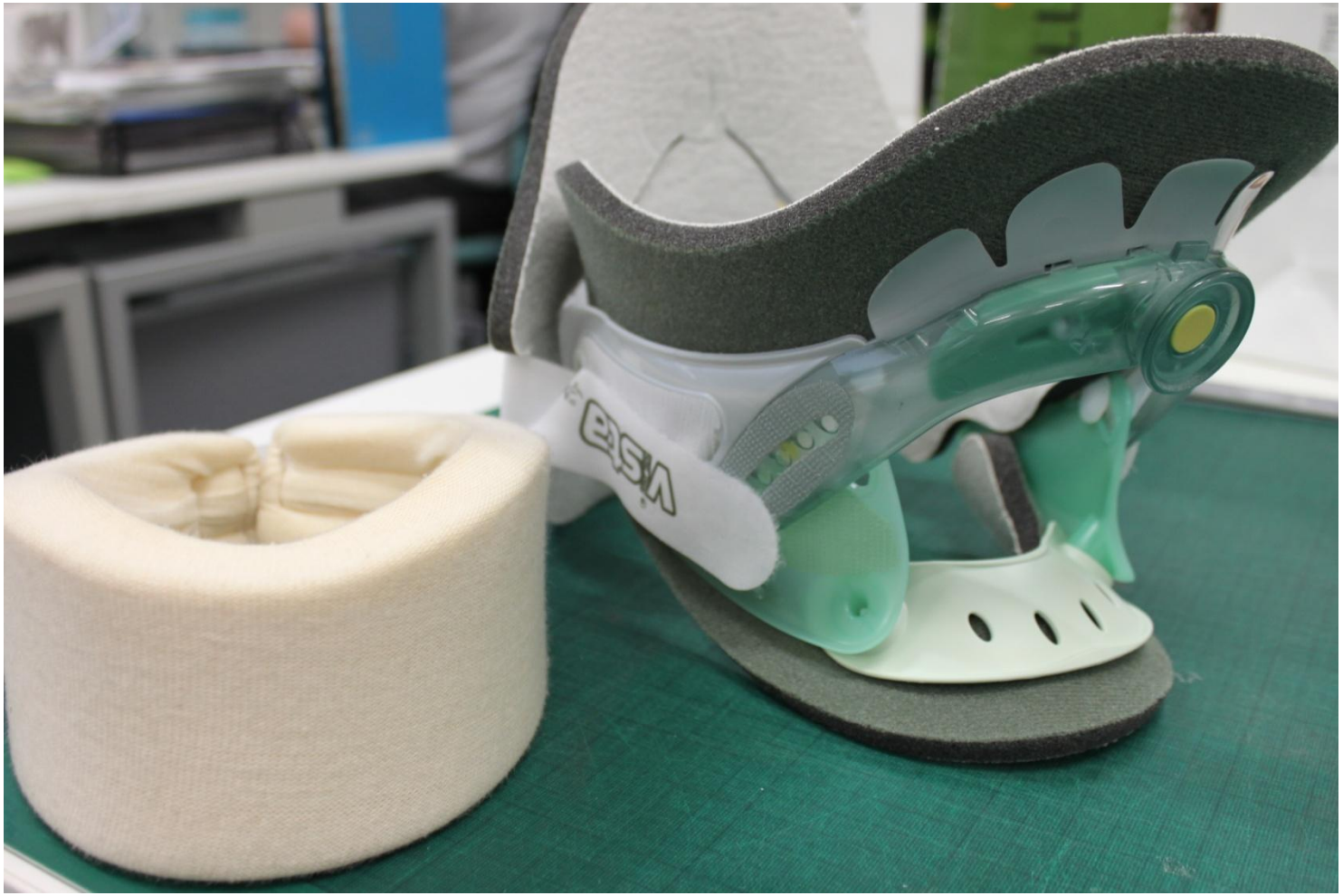


Introduction

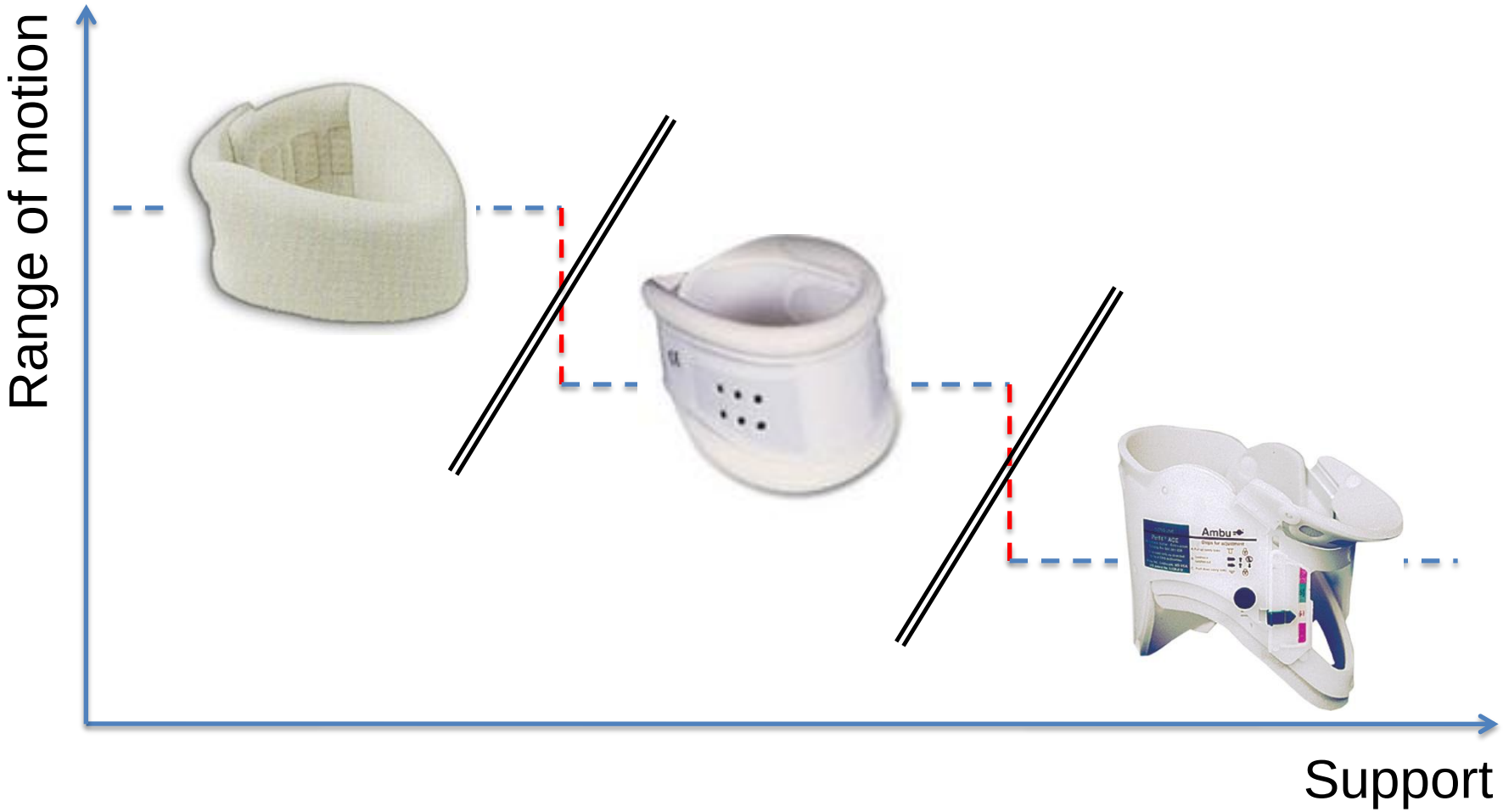
Current Provision



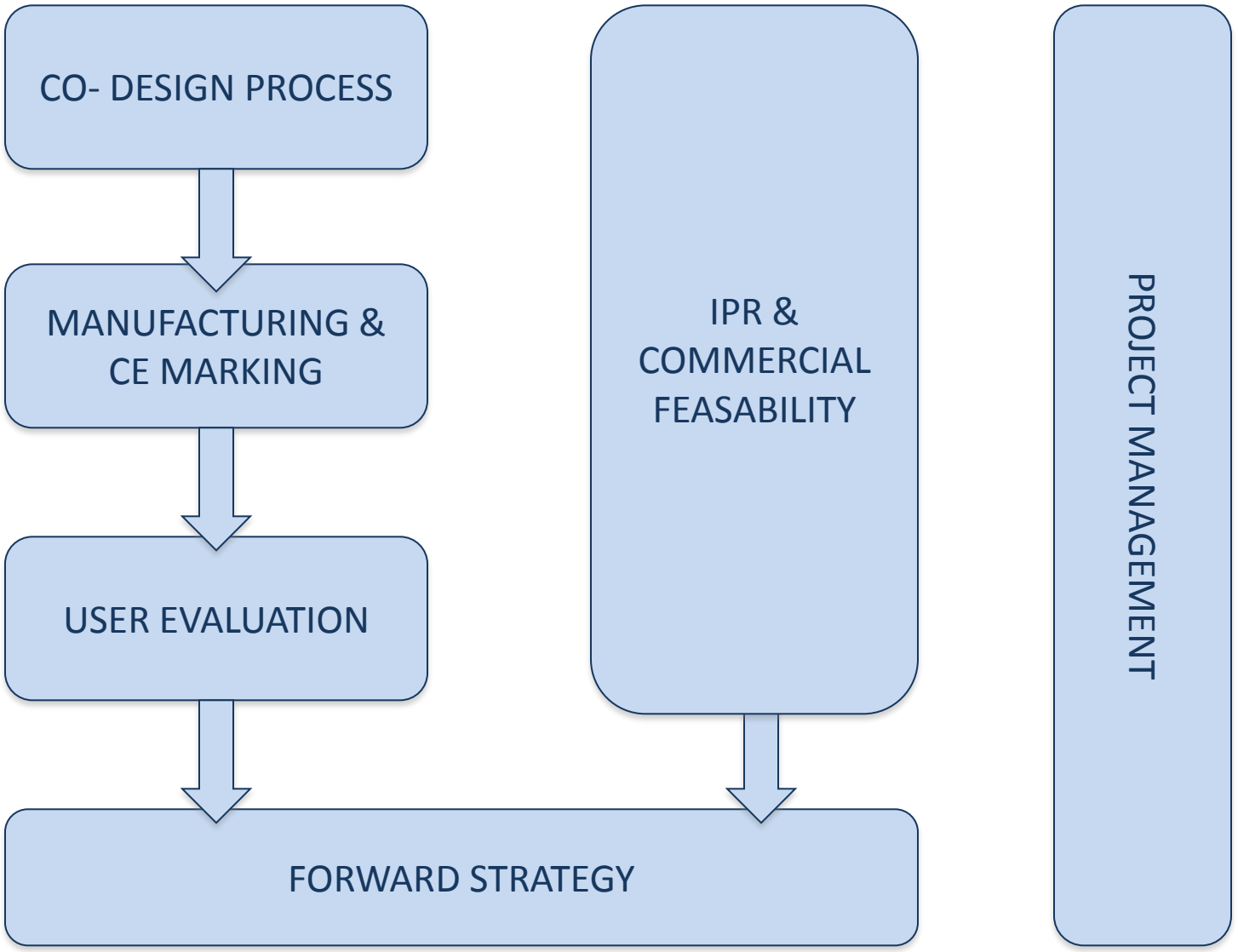
Current Provision

Current Provision

Disease progression



Project Plan



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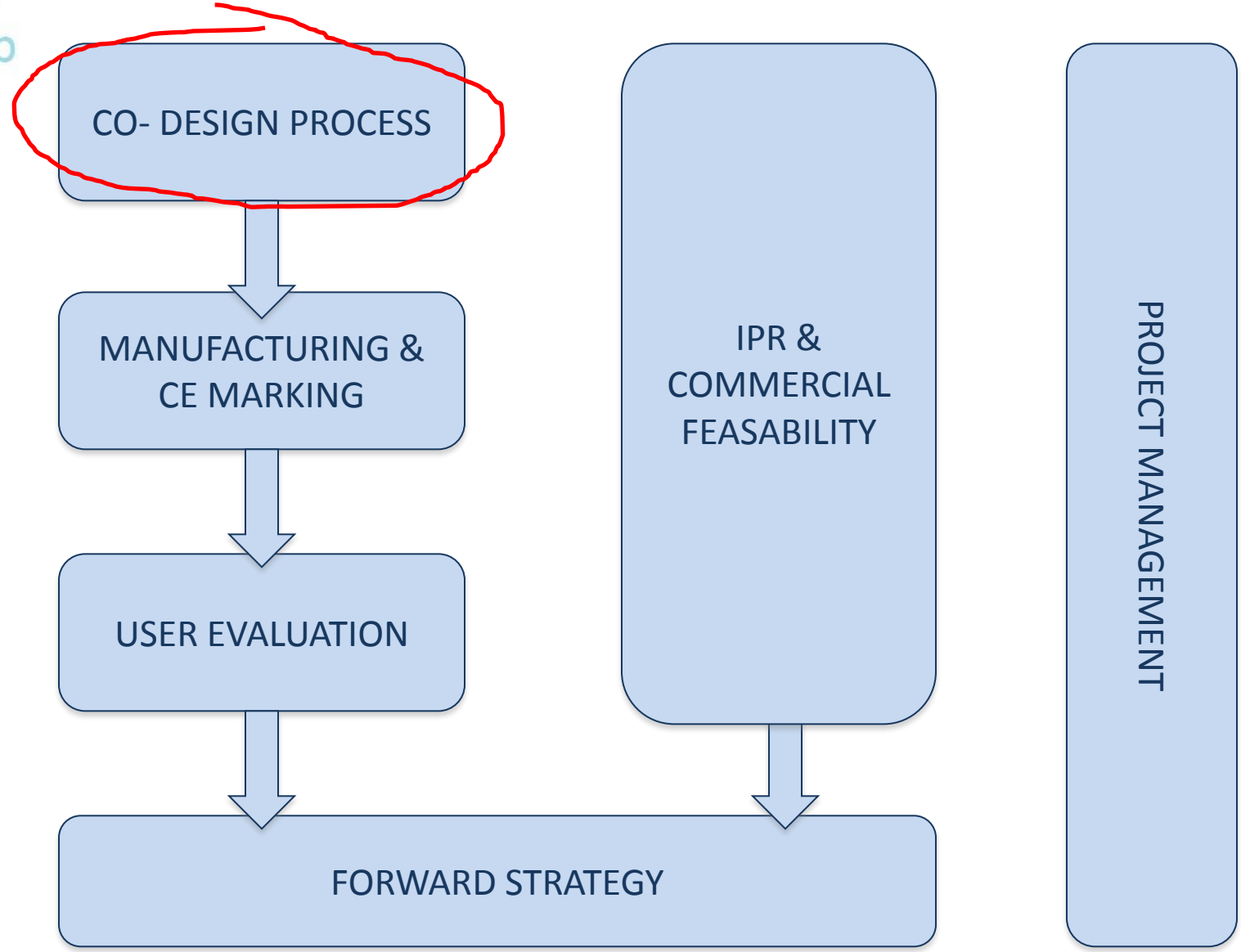


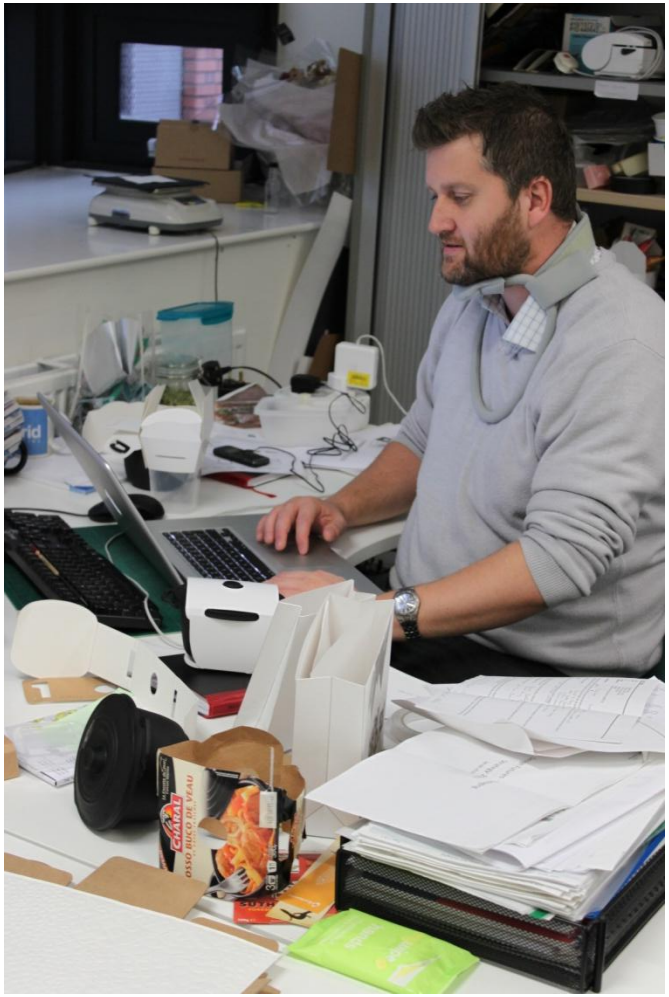
Co-design

Comfort and pain means different things to different people

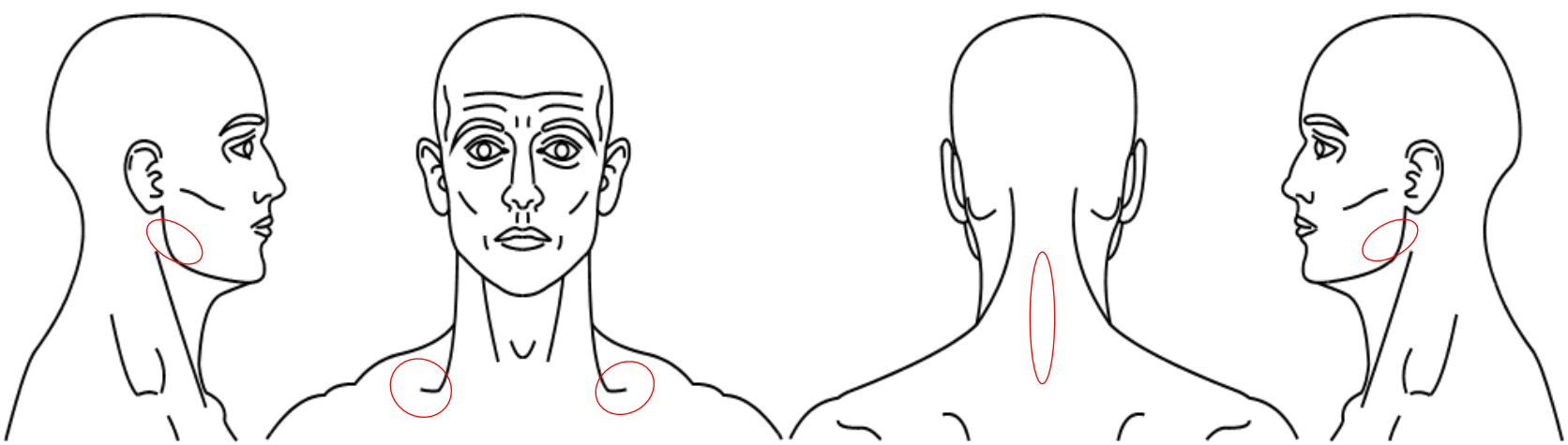
How do we compare the subjective feedback from different people when you only have a small group of carers and patients?

Comfort Assessment

Comfort Assessment

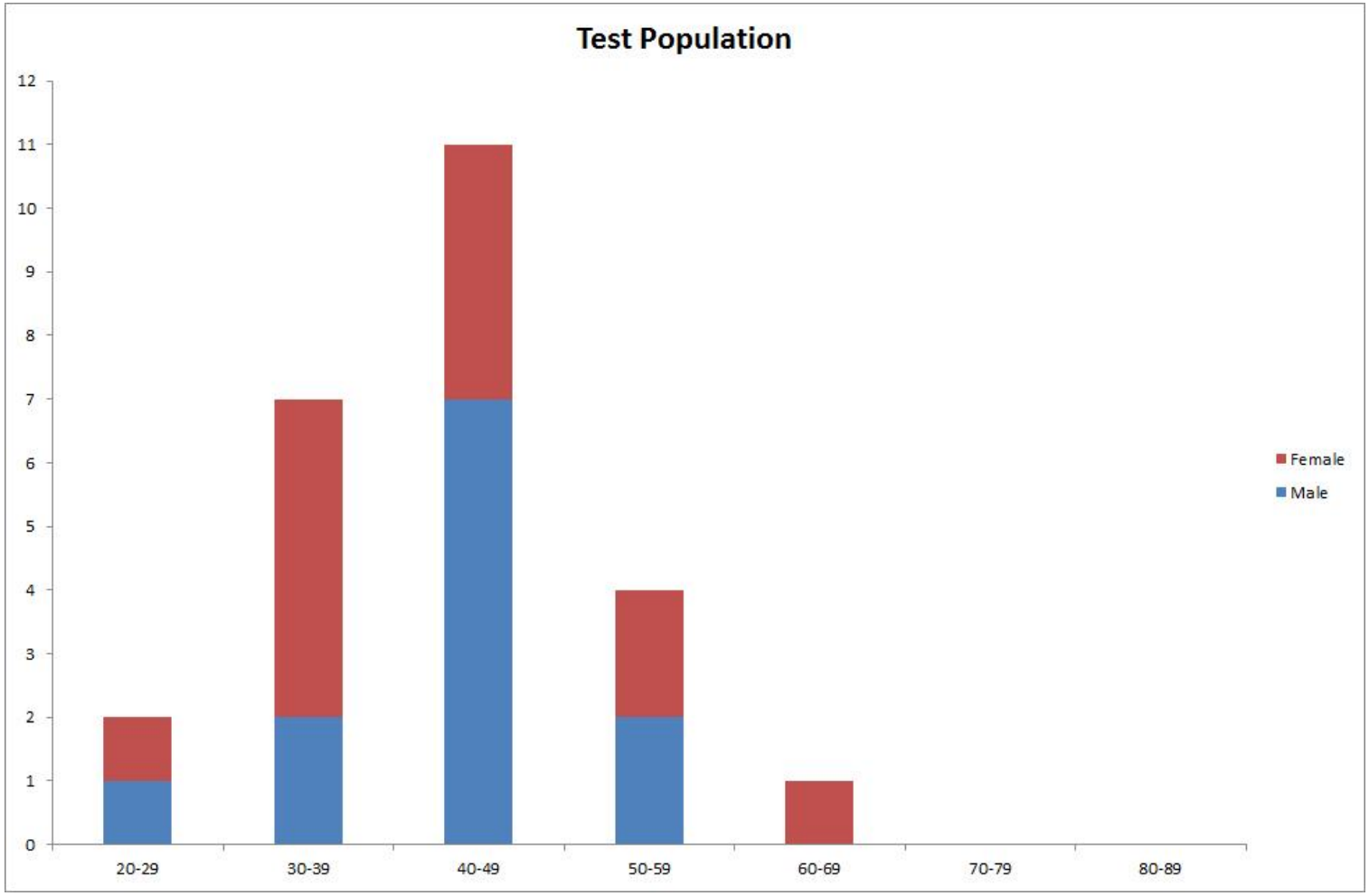


Comfort Assessment

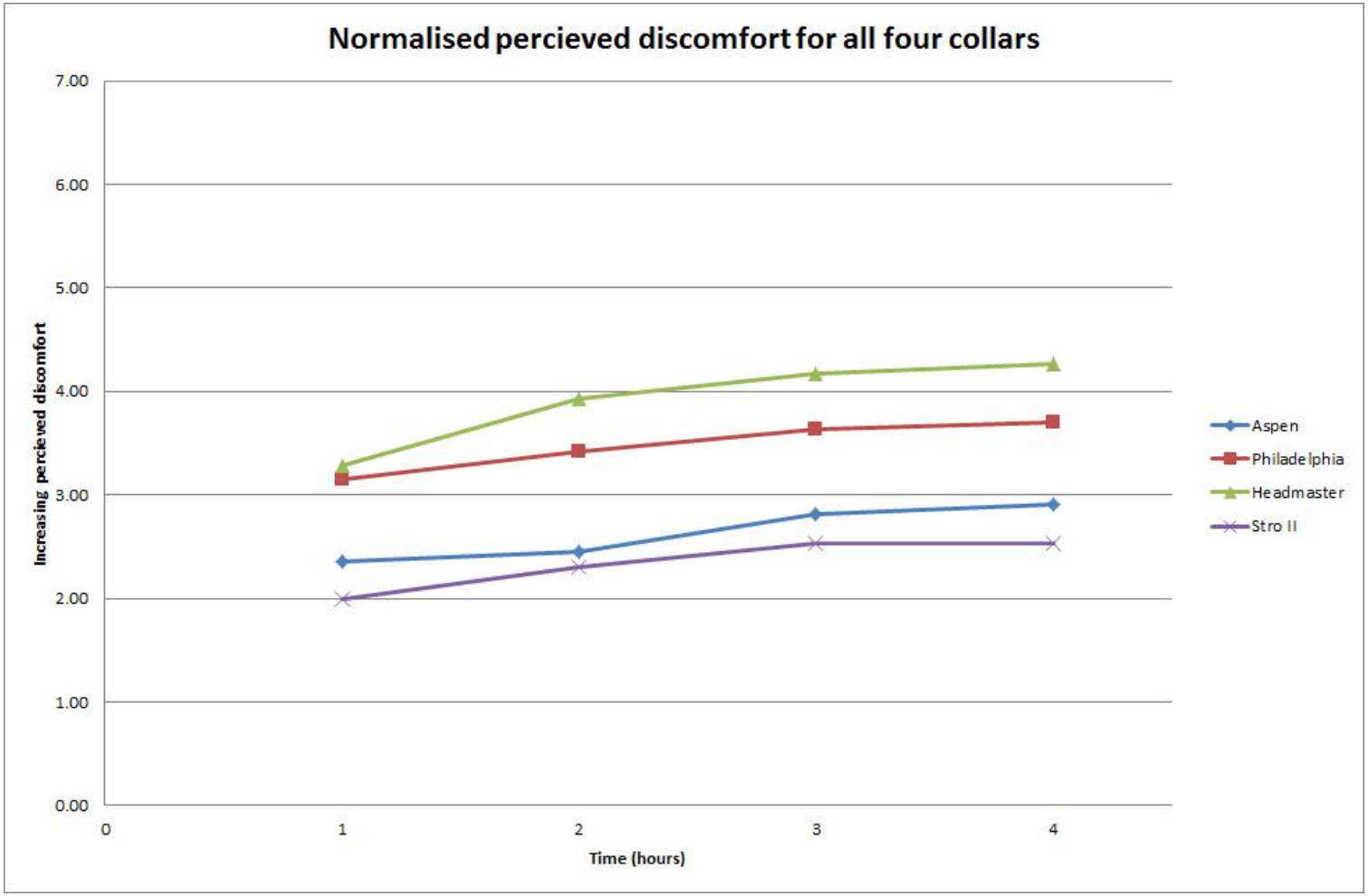


No discomfort | A little discomfort | Very uncomfortable | Extremely uncomfortable | A little painful | Very painful | Severe Pain

Comfort Assessment



Comfort Assessment



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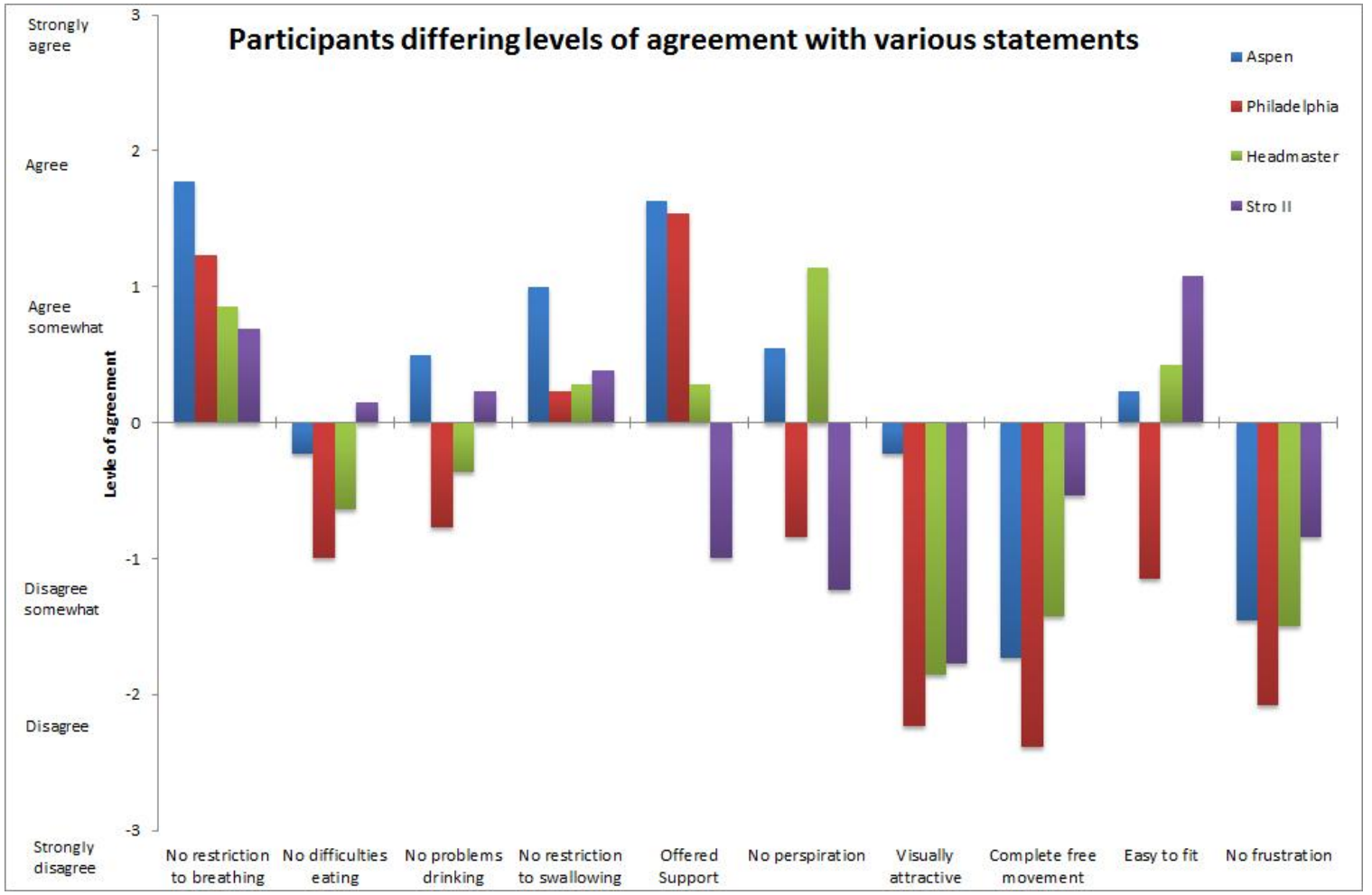
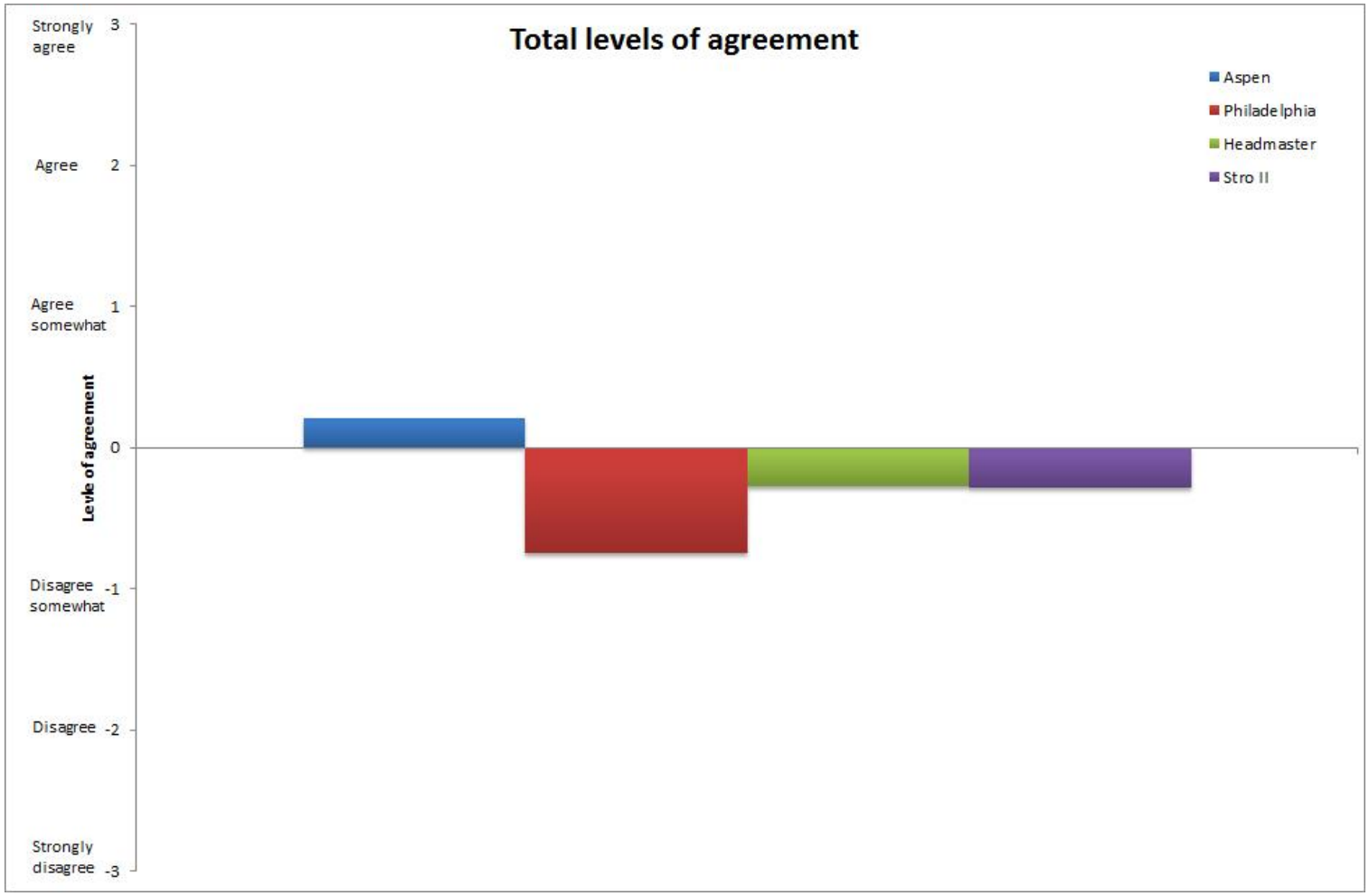


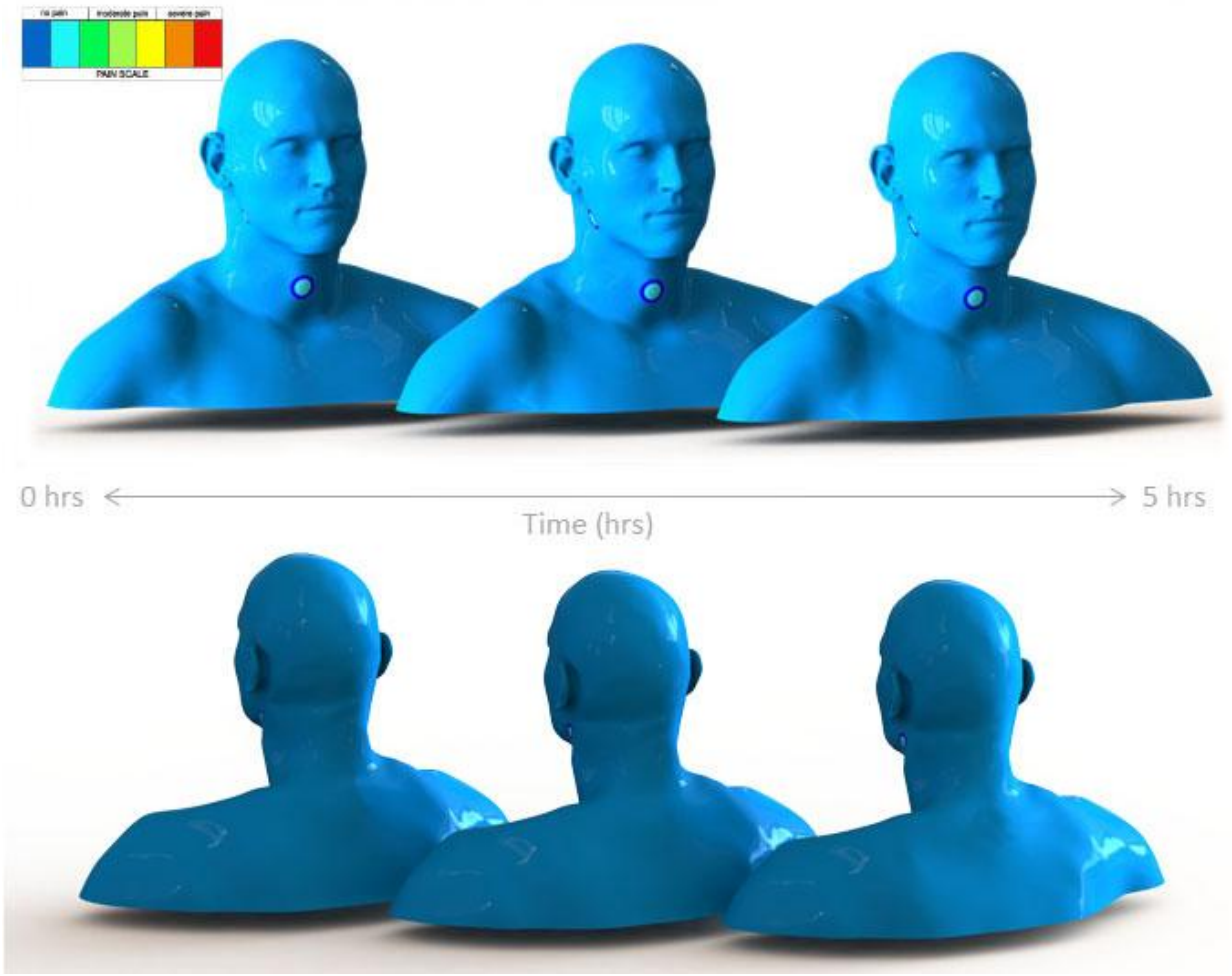
Comfort Assessment



Results

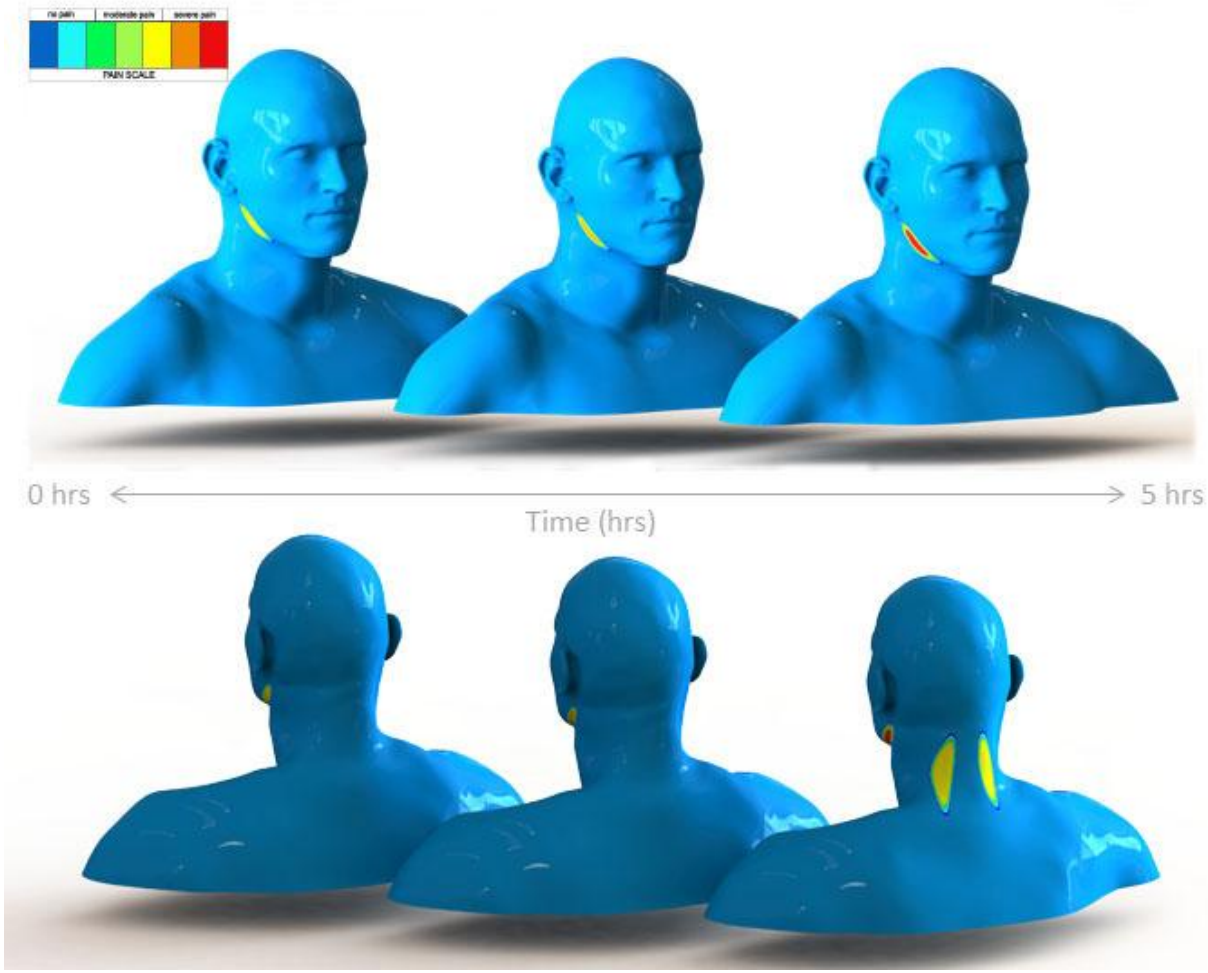
Results

Stro II

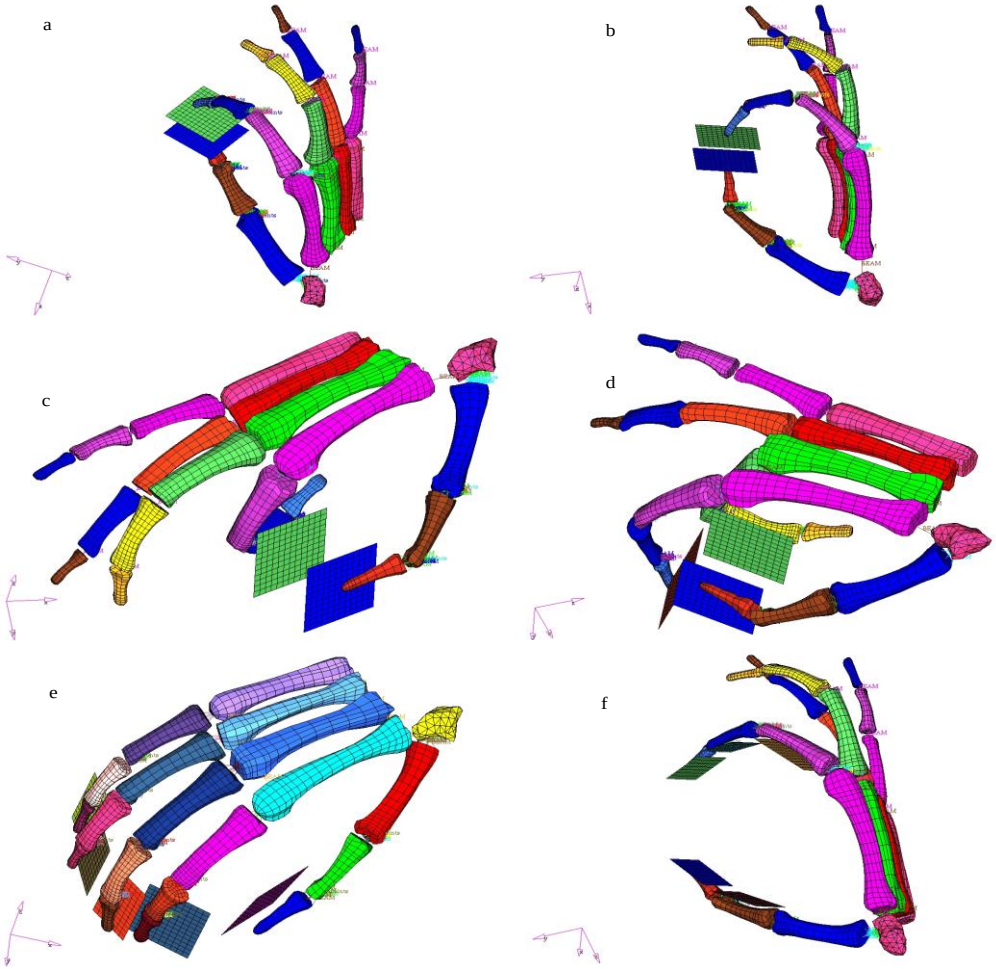


Results

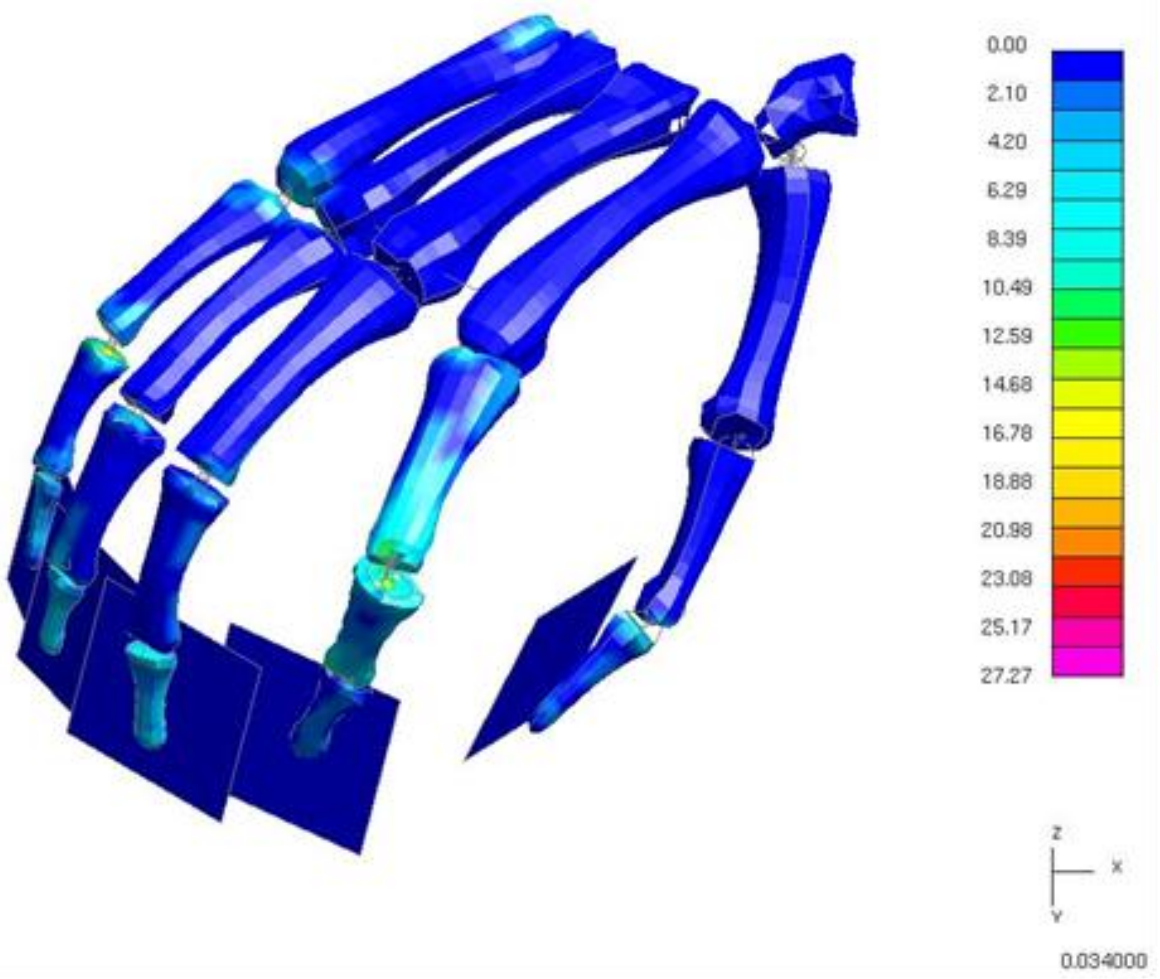
Philadelphia



Neck Weakness

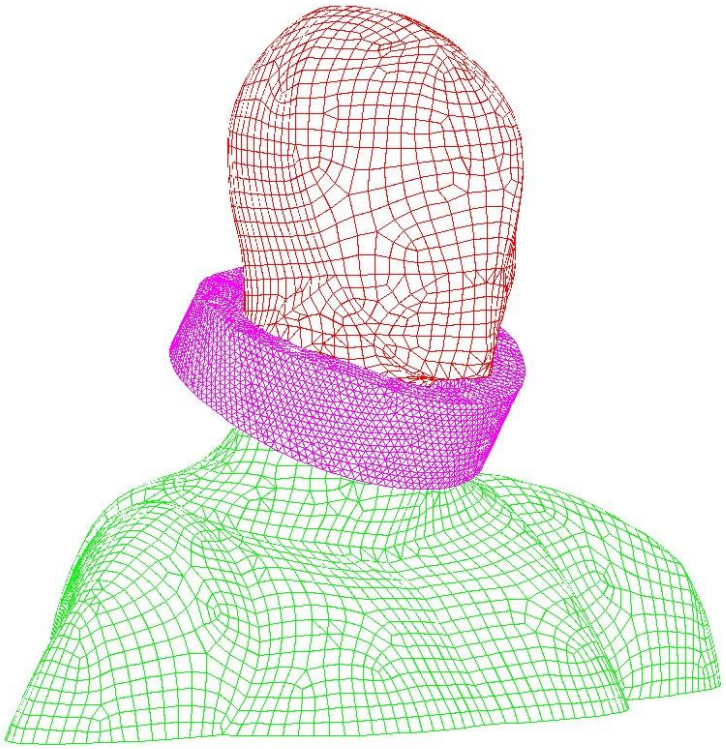


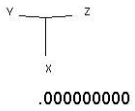
Neck Weakness



FEA

D3PLOT: M1 + M2





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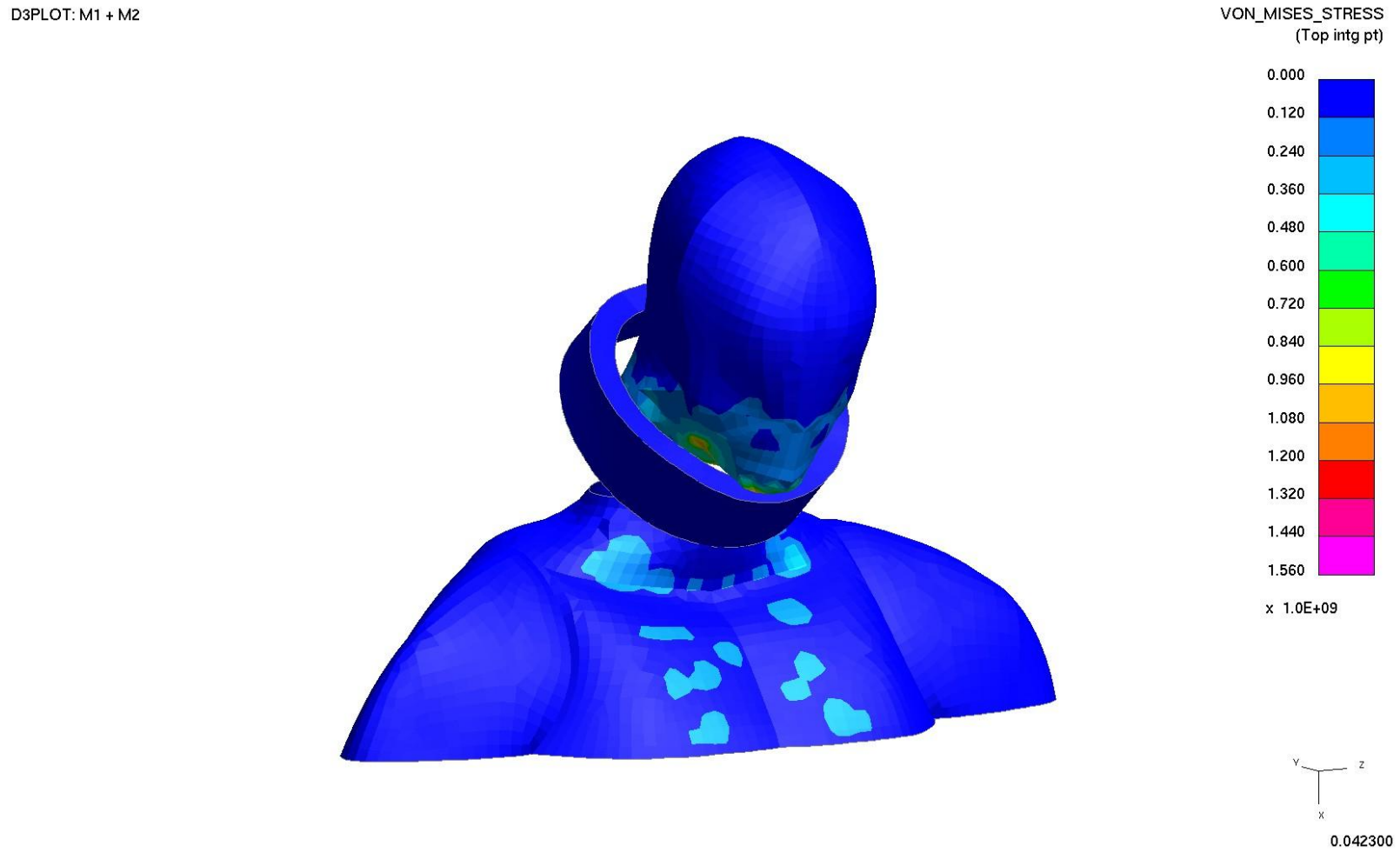
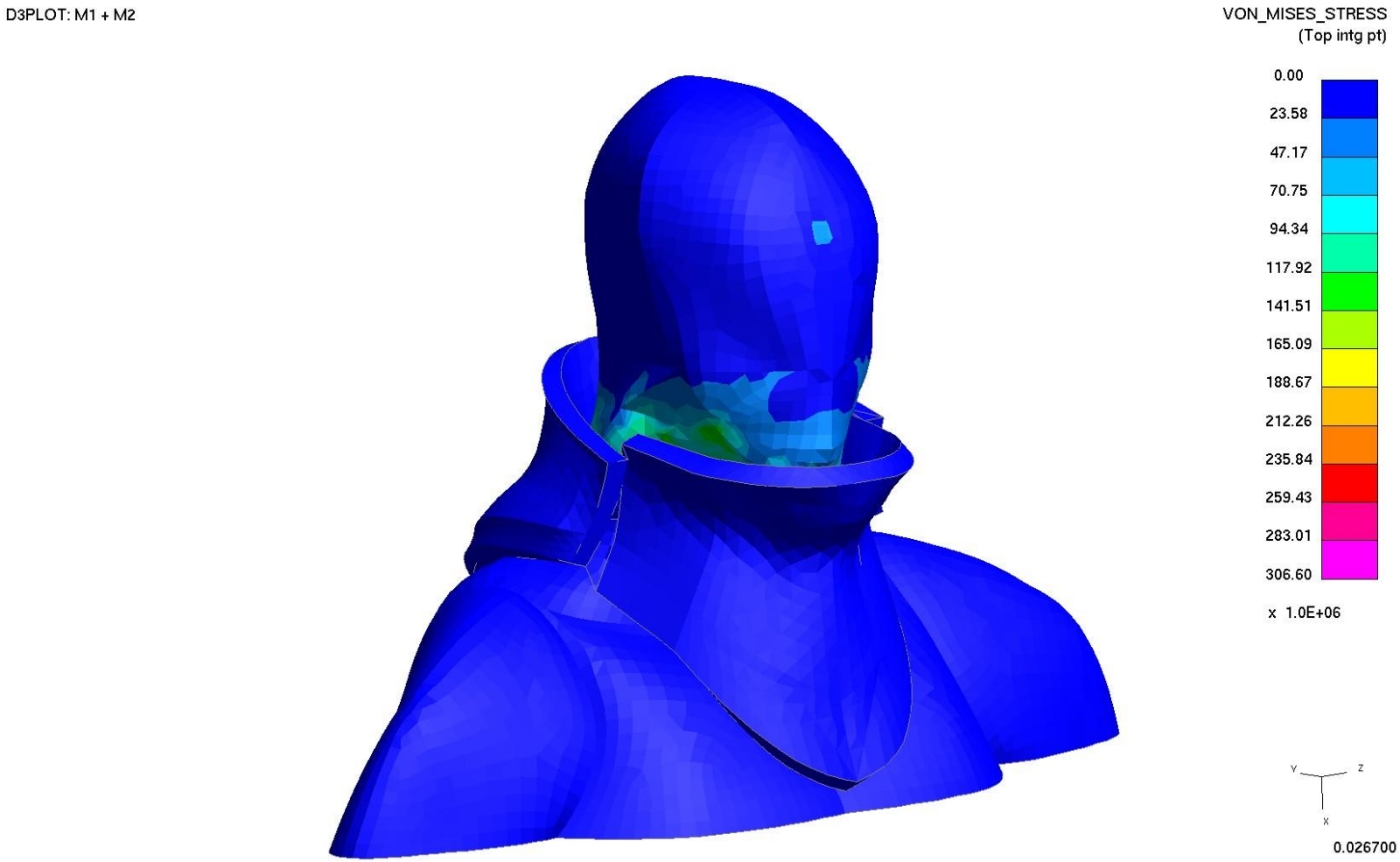
FEA


D3PLOT: M1 + M2
VON_MISES_STRESS
(Top intg pt)
0.000
0.120
0.240
0.360
0.480
0.600
0.720
0.840
0.960
1.080
1.200
1.320
1.440
1.560
x 1.0E+09
Y
Z
X
0.042300

FEA


D3PLOT: M1 + M2
VON_MISES_STRESS
(Top intg pt)
0.00
23.58
47.17
70.75
94.34
117.92
141.51
165.09
188.67
212.26
235.84
259.43
283.01
306.60
x 1.0E+06
Y
Z
X
0.026700

Conclusions

- All collars increase discomfort against time
- Trade-off between movement and support
- Unintuitive fitting

Conclusions

- Developed 'empathetic' methodology
- Visual recording method for pain and discomfort
- Relating subjective user feedback to numerical models

“Although I cannot move and I have to speak through a computer, in my mind I am free.”

- Stephen Hawking

Contact Details

Thank you

Dr Joe Langley

j.langley@shu.ac.uk

www.lab4living.org.uk