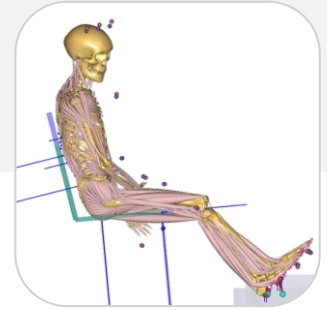
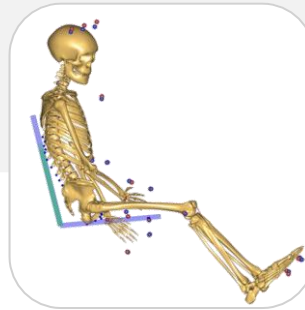
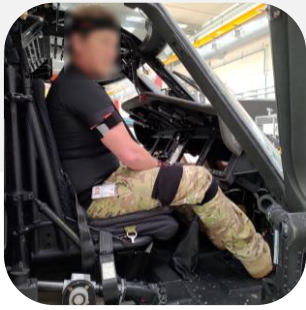


Analysis of seating comfort in MH-60R Seahawk helicopter

Spinal forces may be seen as an indicator for spine related issues in the long term. Adding lumbar support results in 16.8 % reduction in the compression force across the lumbar joints.

The more upright posture resulting from the lumbar support requires slightly higher muscle activation, which indicates that it is natural to attain a slouched posture without necessary support from the seat.



Real postures in MH-60R Seahawk helicopter

Motion data captured with Xsens Awinda

Data processed in the AnyBody Modeling System

Inverse dynamics analysis in AnyBody Modeling System

Pilots of the MH-60R Seahawk helicopters often spend several hours in the helicopter during missions. The current seat in the MH-60R Seahawk helicopter lacks lumbar support and results in discomfort for the pilots.

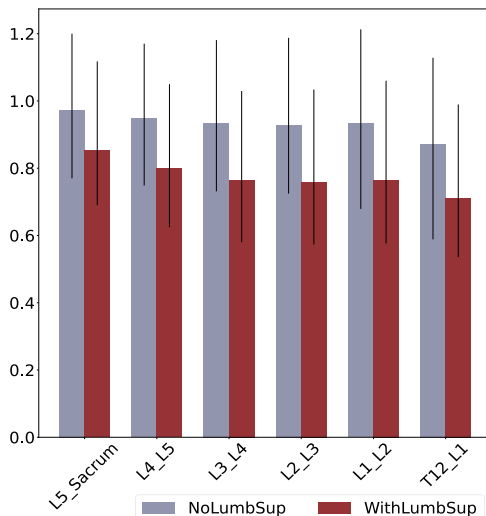
The Danish Ministry of Defence contracted AnyBody Technology to perform an analysis of the current seated posture to document and compare it to a seat with a virtual lumbar support.

Motion capture data of three subjects was captured for three different hovering tasks. Internal forces of the pilots' body in these cases was estimated by computer simulation and compared to the seat with virtually added lumbar support.

The lumbar support results in more upright posture of the trunk and a 16.8 % reduction in the compression force across the lumbar joints.

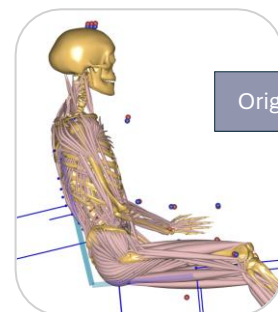
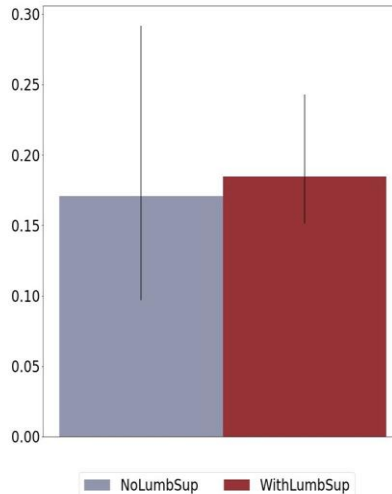
Mean across all subjects and trials and range

Compression Force (in Body Weight)

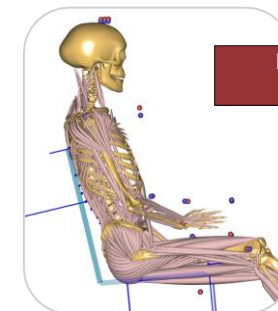


Mean across all subjects and trials and range

TrunkMuscleEnvelope



Original posture



Modified posture