
Active Control of Vehicle Seat for Occupants Vibration Reduction

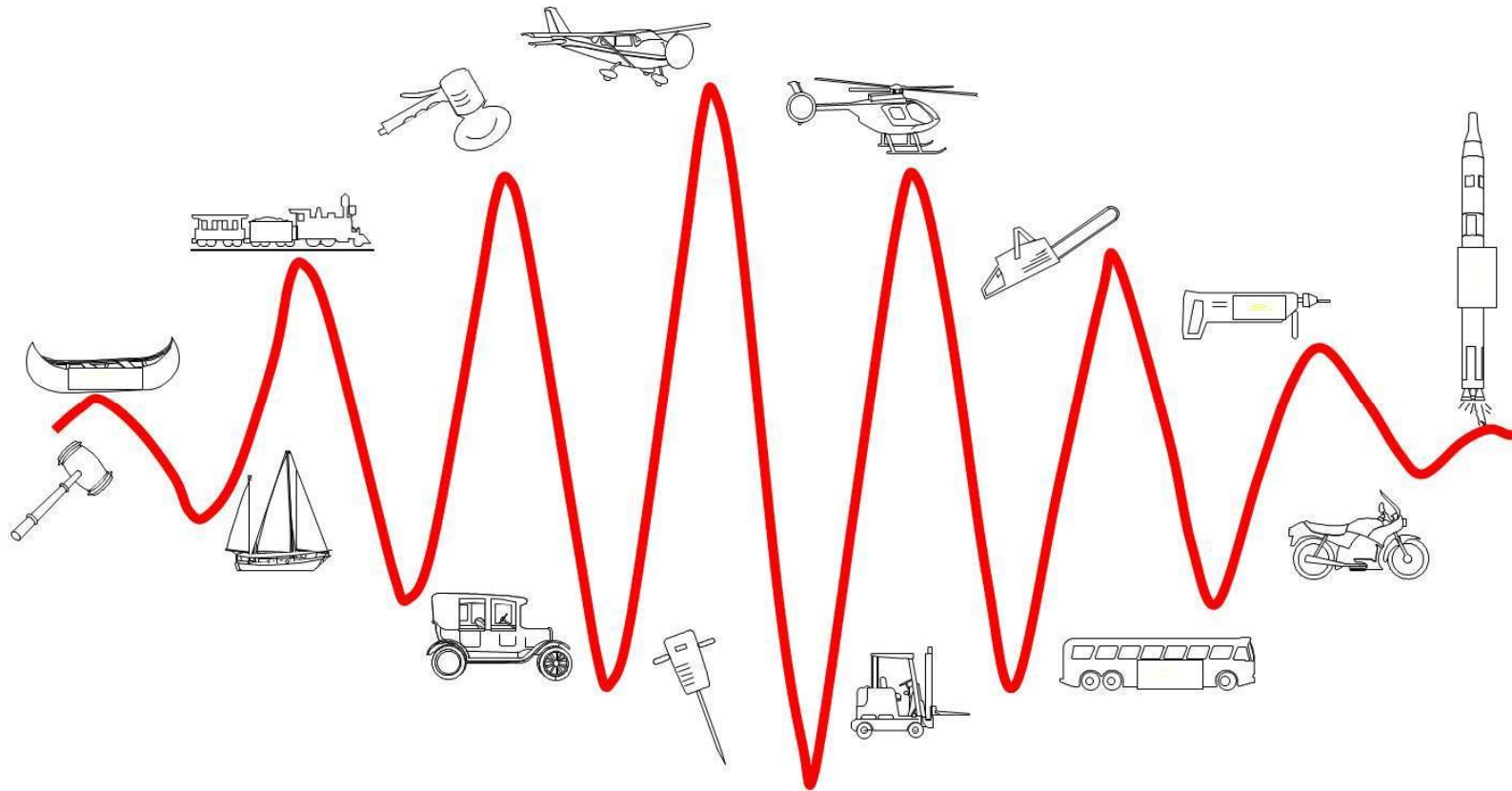
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UKACC PhD Presentation Showcase



Vibration is everywhere



47th UK Conference on Human Responses to Vibration Logo [online]. Available from:
<http://www.humanvibration.com/humanvibration/UK2012/index.html>, [Accessed 14 November 2012].

Whole-body Vibration (WBV)



Helicopter



Off-road vehicle

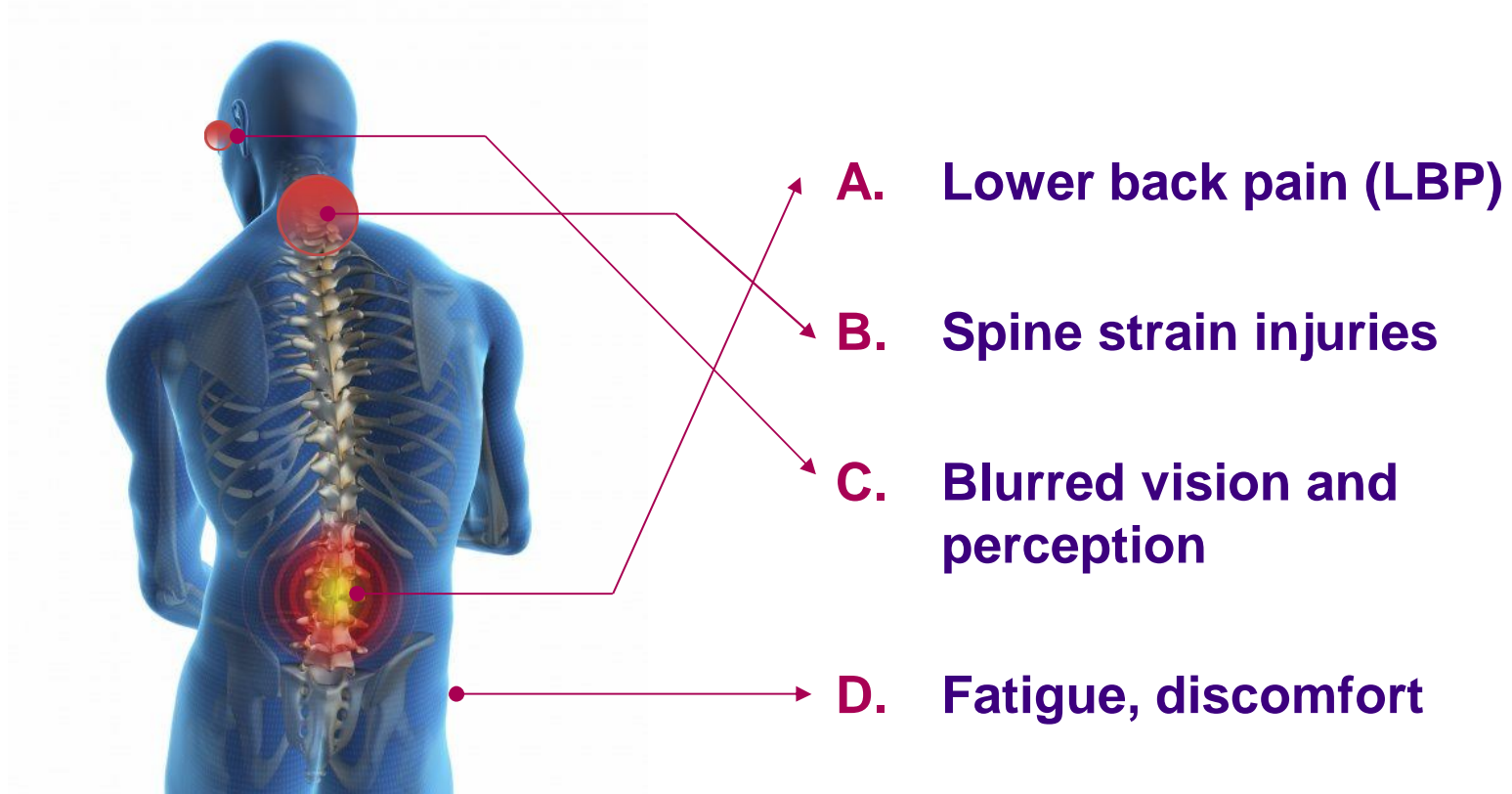


Lorry

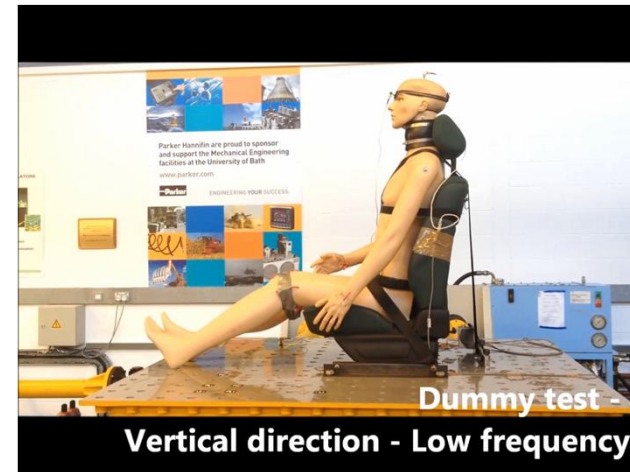
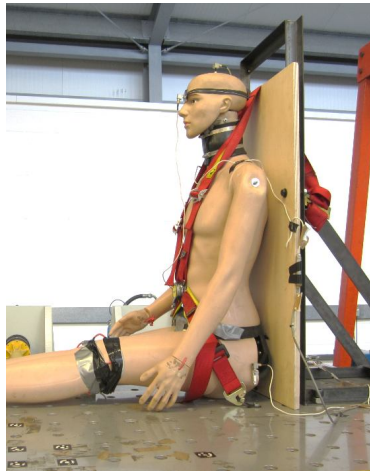


High-speed boat

Harmful effects of WBV



Vibration test dummy & Seat measurements



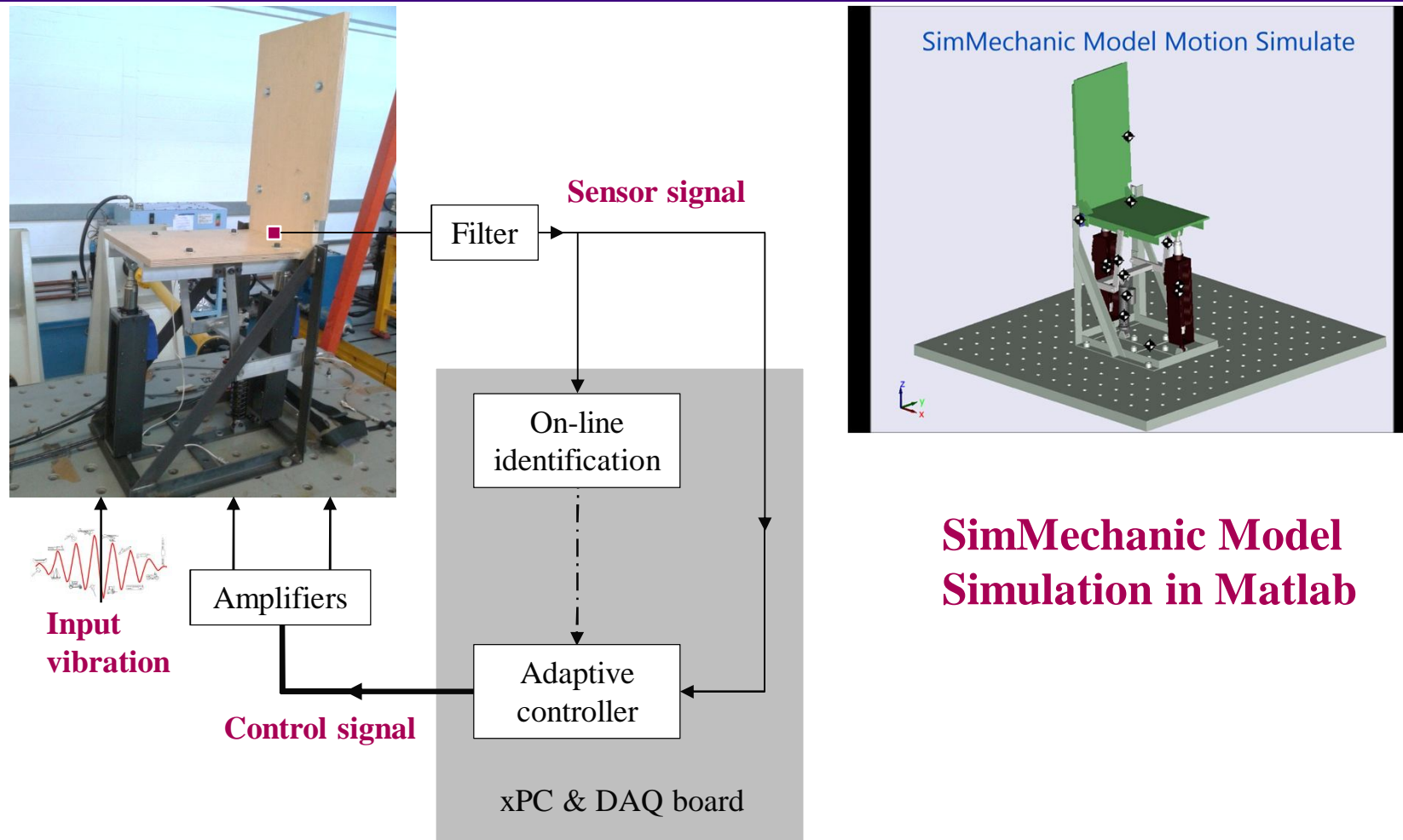
Improved *consistency* in behaviour
Avoid *safe* and *ethical issues*.

To represent the *dynamic response*
of a seated human subject.

Biodynamic functions

- *STHT (Seat-To-Head Transmissibility)*
- *DPMI (Driving-Point Mechanical Impedance)*
- *APM (Apparent Mass)*

Active seat & Control system



**SimMechanic Model
Simulation in Matlab**

Conclusions & future work

➤ **Conclusions:**

- *Whole-body vibration is harmful to humans.*
- *Experimental measurements of a test dummy and vehicle seat were conducted in the laboratory.*
- *The dynamic responses of the test dummy and seat were characterised.*
- *An experimental rig was built in order to investigate active seat vibration reduction.*

➤ **Future work**

- *Detailed testing programme on the experimental rig.*