

USE OF NOVEL AUTOMATED PLASTER SHEARS (CASTERPILLAR) TO REDUCE HAND ARM TRANSMITTED VIBRATION AMONGST ORTHOPAEDIC PRACTITIONERS

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Introduction: Orthopaedic surgeons and plaster room technicians routinely use vibrating plaster saws. The Health and Safety Executive (HSE) suggest that vibration should be treated much like radiation, in that exposure should be limited to as low as reasonably possible, to minimise the risk of developing hand-arm vibration syndrome (HAVS).

Aim: The purpose of this study was to compare the level of hand arm transmitted vibration between a hand held plaster saw and a novel powered shear designed to cut plaster (Casterpillar).

Methods: Fibreglass and plaster of Paris (POP) casts were prepared as per BOA Casting Standards. Measurements were undertaken by a Health and Safety Consultant using a 3-axis accelerometer attached to each tool. Cuts in both types of cast were undertaken by three orthopaedic surgeons using each device for a minimum of 60 seconds.

Results: The Casterpillar tool produced less vibration than the traditional tool for both fibreglass (0.8Wh, SD 0.06 vs 7.7Wh, SD 0.15, $p < 0.01$) and POP (1.0Wh, SD 0.05 vs 7.4Wh, SD 0.15, $p < 0.001$) casts. Whilst use of a plaster saw for a period of more than 54 minutes per working day would require health surveillance based on HSE guidelines, it was not possible to reach this limit during a working day using the Casterpillar.

Conclusion: The Casterpillar produces significantly less vibration compared to a traditional plaster saw and is a viable alternative tool for plaster room staff at risk of HAVS. Further investigation is necessary to determine whether such staff breach vibration guidelines in using traditional plaster saws.