

# **Perspectives on symptoms and functioning in workers exposed to hand-arm vibration**

Maria Edlund

Department of Occupational and Environmental Medicine,  
Institute of Medicine, Sahlgrenska Academy at University of Gothenburg

## **ABSTRACT**

Exposure to hand-arm vibration (HAV) is common among workers, and many of these workers are affected with vascular, neurological and/or muscular disorders referred to as hand-arm vibration syndrome (HAVS). Injuries are mainly irreversible and no curative treatment exists. Consequently, there is need for adequate examination methods to detect early symptoms and to correctly describe the injury and its influence on the individual, in order to prevent (further) injury and to decide on relevant rehabilitation and compensation. The aim of this thesis was to investigate symptoms and functioning in workers exposed to hand-arm vibration. The symptoms in focus were primarily neurological; effects on functioning involved physical capacity such as work ability and hand grip strength.

The first study involved exposed patients who were clinically examined and who performed physical capacity tests (hand/finger strength, manual dexterity). Measures of work ability and psychological mood were obtained from questionnaires. The result was an association between work ability and both psychological mood and age. This may indicate the importance of also recognizing psychological mood when examining patients with HAVS. The subsequent three studies were conducted on a cohort of workers. They were followed from 1992 to 2008 concerning HAV exposure and symptoms of numbness. Measurements of grip strength and tremor were performed in 2008. A survival analysis with respect to numbness (as a symptom of neurological injury) was conducted. The result indicated a dose-response relationship between HAV and numbness. However, no exposure-response associations could be detected between HAV and grip strength or tremor. In conclusion, this demonstrates the importance of keeping HAV exposure doses low to reduce injuries, and using clinically relevant tests on exposed workers/patients. The results may also contribute to further define/delimit HAVS.

**Keywords:** hand-arm vibration syndrome, hand-arm vibration exposure, grip strength, work ability, numbness, physical capacity

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Maria Edlund

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- III. Edlund M, Burström L, Lundström R, Nilsson T, Wastensson G, Hagberg M. "Grip strength measurements among hand-arm vibration exposed workers". Manuscript. 2014.
- IV. Edlund M, Burström L, Hagberg M, Lundström R, Nilsson T, Sandén H, Wastensson G. "Quantitatively measured tremor in hand-arm vibration-exposed workers". *Int Arch Occup Environ Health*. 2014 Jul 5. [Epub ahead of print]

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