PROGRAM FOR
WBV 2017
The 6th International Conference on Whole-Body Vibration Injuries

June 18th-21st 2017, Gothenburg, Sweden

From research to practice, from practice to research.
Sunday June 18th

Location: AMM, Occupational and Environmental Medicine, Medicinaregatan 16 A

**Pre-conference course – 09.00-16.00**

Methods for collecting and assessing vehicle operators’ exposures to whole body vibration.

*Course leader:* Professor Peter W Johnson, USA  
*Faculty:* Per Jonsson PhD Sweden  
*Contact during the course day:* Adnan Noor, mobile phone +46 31 7863205.  
*Clothing:* Outdoor, not too elegant, outfit will be suitable.  
*Location:* The library, to the right from the main entrance.

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>9:00</td>
<td>Coffee</td>
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<tr>
<td>(3h 30m)</td>
<td>Fundamentals of whole body vibration. (PWJ)</td>
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<td>Relevant research – If we have time. (PWJ)</td>
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<td>Standards &amp; regulations. (PJ)</td>
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<td>Equipment</td>
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<td>Using the correct hardware and how to install equipment. (PWJ)</td>
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<td>Collecting field-based whole body vibration data: <strong>ferocious minibus-ride!</strong></td>
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<td>12:30 (1h 45m)</td>
<td>Lunch 13.00 at restaurant “Jungman Jansson” – road trip to the coast.</td>
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<tr>
<td>14:15 (1h 45m)</td>
<td>Data analysis of whole body vibration exposure data. (PWJ)</td>
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<td>Various exposure metrics used to characterize WBV exposures. (PWJ)</td>
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<td>16:00</td>
<td>Course Wrap Up.</td>
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**Reception for all participants – 17.00-19.00**

Registration & Mingle with light food and drinks.  
*Location:* At the kitchen area, 1 floor up.
Monday June 19th

Location: Wallenberg Conference Centre, Medicinaregatan 20 A

Registration – 08.15
Registration will be open during most of the day.

Posters – on display Monday-Tuesday

1. Association between alternative cumulative lifetime vibration doses and low back outcomes - Massimo Bovenzi (M Schust)
2. Development of a multidisciplinary evidence-based guideline on decreasing exposure to whole-body vibration in order to prevent low back pain - Carel Hulshof
3. Optimization of the contact damping and stiffness coefficients to attenuate vertical whole body vibration - Massimo Cavacece
4. Metrological characterization of low-cost systems for the evaluation of posture at the workplace - Marco Tarabini
5. Sickness absence among workers exposed to whole body vibrations – a prospective study - Adnan Noor
6. Positive health effects of exposure to whole body vibration - Mats Hagberg
7. Study of Impact Exposure on Humans Working Onboard High-Speed Boats - Carl-Magnus Ullman
8. Comparing whole body vibration exposures across active and passive truck seats - Fangfang Wang (Pete Johnson)
9. Lumbar disc herniation in a bus driver – a case report - Per M. G. Jonsson
10. Occupational LBP of mobile machinery operators: field measurement campaign of whole-body vibration, static positions and body movements - Maël Amari

Conference Day 1

09.00 Opening (Mats Hagberg)

Theme I: Vibration and Shock - Chair/Co-chair: Carel Hulshof/ Ronnie Lundström

09.15 Predicting discomfort caused by whole-body vibration and mechanical shock - Michael Griffin (keynote)

09.45 Adaptation of muscle activity and upper body kinematics after mechanical shocks in seated position - Börje Rehn

10.00 Seated postural reactions depends on the complexity of the mechanical shock - Tobias Carl Stenlund
10.15 - 10.45  Coffee

**Theme 2: Marine** - Chair/Co-chair: Subhash Rakheja/Börje Rehn

- **10.45**  Boat seat testing – lessons from other industries
  - Thomas Gunston (keynote)

- **11.15**  Musculoskeletal pain and performance impairments in marine personnel
  - Riccardo Lo Martire

- **11.30**  Monitoring and characterizing vibration and shock conditions aboard high-speed craft
  - Manudul Pahansen de Alwis

- **11.45**  Engineering for balance between working conditions and hull loads at high-speed operation at sea
  - Karl Garme

- **12.00**  Whole-body vibration exposure during occupational use of high-speed craft: a comparison of standardized assessment methods
  - Francesco Picciolo

12.15 – 13.15  Lunch – Exhibition – Posters

**Theme 3: Mining** - Chair/Co-chair: Antonio Moschetto /Tohr Nilsson

- **13.15**  Whole-body vibration exposure and interventions in mining
  - Tammy Egers (keynote)

- **13.45**  Whole-body vibration exposures and back pain among miners in the subarctic region: A cross-sectional analysis
  - Hans Petterson

- **14.00**  Vibration toolkit: An occupational health intervention focused on vibration exposure in the mining industry
  - Mallorie Leduc

- **14.15**  Use of a free iOS application to measure and evaluate whole-body vibration at coal mines
  - Danellie Lynas

14.30 – 15.00  Coffee

**Theme 4: Health economic and WBV & Driving I**
- Chair/Co-chair: Michael Griffin/Hans Pettersson

- **15.00**  Reducing risk and costs associated with back pain among bus and truck drivers – Successful interventions
  - Peter Johnson (keynote)

- **15.30**  Development of a multi-body model of the seated human body to predict spinal forces during vertical whole-body vibration
  - Yi Qiu

- **15.45**  About the risk of exposure to whole-body vibrations among motorized driver trucks in logistics. Supply of an occupational health service
  - Mathieu Chauvet

- **16.00**  Whole-body vibration of drivers and co-drivers in trucks
  - Christian Freitag

16.15 – 16.30  Fruit

**Theme 5: Driving II** - Chair/Co-chair: Massimo Bovenzi /Lars Gerhardsson

- **16.30**  Understanding working conditions of long-haul drivers: a crucial step
  - Alice Turcot
16.45 Analytical and experimental studies on human comfort in a combat vehicle (cv) during steady state runs and firing - Sujatha Chandramohan

17.00 Thin and lightweight suspension seat for small trucks using polyurethane foam as suspension - Kazuhiro Kato

17.15 New hydraulic AVC Seat for vibration protection of agricultural operators - Antonio Moschetto

17.30 Determination of vibration and stress induced by random excitation in different parts of the human body using finite element method - Jahnvi Chinnagangu

Pause – 17.45-18.30

Tour of Occupational & Environmental Medicine, or a walk to the Botanical Garden

Pre-dinner drink – 18.30-19.00

Conference Dinner – 19.00-21.00

Tuesday June 20th

Location: Wallenberg Conference Centre, Medicinaregatan 20 A

Conference Day 2

08.30 Coffee

Theme 6: Back pain I - Chair/Co-chair: Subhash Rakheja/Tohr Nilsson

09.00 Low back pain and exposure to whole-body vibration and mechanical shocks - Massimo Bovenzi (keynote)

09.30 Lumbar and cervicocranial symptoms in a car test driver - a case report - Lars Gerhardsson

09.45 Does professional driving, including exposure to whole-body vibration, increase the risk of lumbosacral radiculopathy? - Carel Hulshof

10.00 Whole-body vibration and lumbar disc herniation - Jens Wahlström

10.15 – 10.45 Coffee

Theme 7: Back pain II - Chair/Co-chair: T Edgers/ Jens Wahlström

10.45 Meta-analysis of health effects of whole-body vibration - Tohr Nilsson (keynote)

11.15 A cost-utility analysis of bus driver seating alternatives: Assessing the health and claims costs of whole-body vibration exposures - Katherine Gregersen
11.30 Evaluation of multi-axial suspension seat in reducing whole-body vibration exposure and associated muscle loading in low back muscle in agricultural tractor application - Jeong Ho Kim

11.45 Active and passive seat dampening systems – effects on fatigue development in lower back - Charlotte Lewis

12.00 A musculoskeletal spine model for predicting spinal muscle forces of a human body exposed to whole-body vibration - Suzan Cansel Dogru

12.15 – 13.15 Lunch – Exhibition

Theme 8: Seating I - Chair/Co-chair: Michael Griffin/ Helena Sandén

13.15 Vibratory sensation evaluation of a seated human - Gen Tamaoki

13.30 Gender and anthropometric effects on whole-body vibration power absorption of the seated body - Pierre Marcotte

13.45 A multi-body dynamic model of seat-occupant system for predicting seat transmissibility with combined vertical, fore-and-aft and pitch vibrations - Hui Zhou

14.00 Equivalent comfort contours for fore-and-aft, lateral, and vertical whole-body vibration in the frequency range 1 to 10 Hz - James Arnold

14.15 Vehicle-specific seat suspension using kineto-dynamic design optimization - Subhash Rakheja

14.30 – 14.50 Coffee

Theme 9: Seating II - Chair/Co-chair: T Egers/ Per Jonsson

14.50 Characterizing whole-body vibration exposures during neonatal ground transport - Dawn M. Ryan

15.05 Combined exposures of whole-body vibration and awkward posture - Nastaran Raffler

15.20 Vibration exposure standards are not relevant for impact exposure - Johan Ullman

15.35 – 15.45 10 min. break

Theme 10: Modelling - Chair/Co-chair: Thomas Gunston/ Mats Hagberg

15.45 Biomechanical adjustments to shock-induced vibrations during running - Delphine Chadefaux

16.00 Resonant frequency identification at the foot when standing in a natural upright position during vertical vibration exposure - Katie Goggins

16.15 Evaluation of vibration transmitted to the feet when standing on different outsole and insole material - Marco Tarabini

16.30 Muscular activation in vibration perturbed human walking - Antonio Moschetto
Inter-subject variability and intra-subject variability in walking and running forces - Massimo Cavacece

Wrap & juice

Excursion to Hällered Proving Ground – 17.30-22.30
Meeting 17.30 sharp outside the entrance of Wallenberg Conference Centre.

Wednesday June 21st
Location: Ingegerd Ericsson, Academicum, Medicinaregatan 3
09.10 – Joint walk from Occupational and Environmental Medicine to Ingegerd Eriksson.

Round Table Discussion - 09.30-12.00
Is health surveillance for whole body vibration exposure appropriate today (2017)? What type is appropriate if any? Roles for occupational health care?
Chair: Carel Hulshof

Background
In 2001 Guidelines for Whole-Body Vibration Health Surveillance Appendix W1E to Final Report May 2001 stated: “It is suggested that periodic medical examination should be made available at least every two years to all workers who are exposed to WBV.”
(resource.isvr.soton.ac.uk/HRV/VINET/pdf_files/Appendix_W1E.pdf)

In 2005 HSE UK stated: “Health surveillance for WBV is not appropriate since it fails to meet the criteria listed in regulation 7(2). It is not considered that any methods exist for the detection of changes in peoples’ backs which can reliably indicate the early onset of changes (which may cause low back pain) that are specifically related to workplace factors.”
Whole-body vibration The Control of Vibration at Work Regulations 2005 Guidance on Regulations (www.hse.gov.uk/pUbns/priced/1141.pdf)

Aim
To identify whether there is new knowledge since 2001 and 2005 to justify health surveillance of workers exposed to whole-body vibrations. What type is appropriate if any? Roles for occupational health care?

Outcome
Summary of discussions to be published as a short note either in the ICOH web or in a scientific journal