



FOREWORD



SECOND INTERNATIONAL CONFERENCE ON WHOLE-BODY VIBRATION INJURIES

Held in Siena (Italy), 7–9 November 2000

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The 2nd International Conference on Whole-Body Vibration Injuries, held in Siena (Italy), 7–9 November 2000, was organized by the Department of Prevention of the Local Health Unit 7 (AUSL 7) of Siena, in co-operation with the National Institute of Occupational Safety and Prevention (ISPESL) of Rome (Italy) and the University of Siena (Italy). The conference was sponsored by the European Commission under the BIOMED 2 Concerted Action BMH4-CT98-3291 (Vibration Injury Network).

The conference took a similar form to the 1st International Conference on Whole-Body Vibration Injuries held at the Institute of Sound and Vibration Research, University of Southampton, England, 15–17 September 1997 (see *Journal of Sound and Vibration* **215** 1998).

The vibration experienced by some vehicle and machine operators has long been suspected to be a cause of injuries. There is epidemiological evidence that occupational exposure to whole-body vibration is associated with an increased risk of low back pain, sciatic pain, and degenerative changes in the spinal system. There is, however, not yet sufficient data to outline a clear exposure–response relationship between whole-body vibration exposures and low back pain disorders.

There are guides, standards and proposed legislation intended to protect workers from excessive exposure to whole-body vibration and mechanical shock. Models have been developed to predict forces in the spine associated with vibration and shock. Biodynamic models have been developed to estimate risks of injury and optimize environments so as to minimize risks.

This conference provided a unique opportunity to exchange information on the potential for injury from whole-body vibration and mechanical shock, to increase understanding of the mechanisms of injury, to improve methods of investigating the effects of whole-body vibration and shock, and to disseminate understanding by means of preventing injury.

Eighty persons participated in the conference from 16 countries: Brazil, Canada, Denmark, Greece, Finland, France, Germany, Italy, Japan, Poland, Sweden, The Netherlands, United Kingdom, Ukraine, United States of America, Yugoslavia.

Researchers from various disciplines—biomechanics, physics, physiology, engineering and medicine—exchanged their ideas with respect to the state-of-the-art, the main criticisms of experimental and epidemiological data, and the future directions of research.

The main topics of the papers presented at the conference involved:

- epidemiology
- physiological measurements and pathological investigations
- biodynamic measurements, models and analogues

- measurement and evaluation of exposures
- seating dynamics
- guidelines, standards, and other preventative measures
- compensation and legal implications

Thirty-four papers were presented at the conference. Following independent review, 18 of the papers have been accepted for publication in this issue of the Journal of Sound and Vibration.

In addition to the benefits accruing to areas of biodynamics, modelling, clinical and epidemiological research, the advances in knowledge promoted by the papers have potentially important socio-economic implications. Such benefits were evident in a special session of the conference dedicated to preventative measures and the promotion of the transfer of knowledge from the laboratory to the field. Some of the results from work packages of the EU research project BIOMED 2 “Vibration Injury Network” identified preventative measures, including guidelines for whole-body vibration health surveillance, a survey of technical preventative measures to reduce whole-body vibration effects when designing mobile machinery, criteria for the recognition of whole-body vibration injury as an occupational disease, and a whole-body vibration database on the Internet.

The main effort of this conference was to summarize the current state of knowledge in the field of whole-body vibration injuries and identify practical implications for risk prevention.

The results of the conference confirmed that epidemiological data providing direct information on exposure–response relationships for spinal disorders induced by whole-body vibration are still limited. For this reason, emphasis was placed on the implications from experimental studies and clinical observations, the development of computational biomechanical models, and on research strategies to improve knowledge in the future.

Together, this approach should provide a framework to facilitate the development of future guidelines and improve standardization of the assessment of the risks of whole-body vibration at the workplace and develop vibration-specific preventative measures.

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