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Mechanical vibration — Description and determination of seated postures with reference to whole-body vibration

Vibrations mécaniques — Description et détermination des postures assises en référence à des vibrations transmises à l'ensemble du corps



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 108, *Mechanical vibration, shock and condition monitoring*, Subcommittee SC 4, *Human exposure to mechanical vibration and shock*.

This second edition cancels and replaces the first edition (ISO/TR 10687:2012) which has been technically revised.

This edition was created to clarify conventions and measurements and was updated with some of the latest research results.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Seated persons exposed to whole-body vibration carry a risk for musculoskeletal problems such as low-back problems and for spinal degeneration which is most likely increased by unfavourable postures. However, the biomechanical mechanism of this increase is not fully understood.

It is therefore necessary, as a first step, to determine the posture and ergonomic environment of a seated person with special focus on the spine.

This document is offering a collection of ideas on how to measure postures which are dynamic. To this end, this document summarizes descriptive quantities that

- are likely to be relevant for the assessment of adverse health effects due to whole-body vibration and unfavourable seated posture,
- can be determined using a variety of methods,
- are in accordance with the description of static, unfavourable seated postures as far as angles of body segments are concerned, and
- include additional information, e.g. the presence of arm- or backrests.

The whole set of quantities and conventions used can be reported in order to

- facilitate the comparison of seated postures,
- be able to compare different methods for the determination of the seated posture, and
- permit further investigation, e.g. in biomechanical laboratories, on the basis of the determined seated postures.

Due to limitations of the applied assessment methods, it might be necessary to combine different methods in order to be able to report a complete list of quantities.

This document does not specify sampling strategies or evaluation methods.