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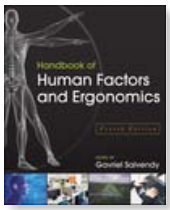

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Description | Table of Contents

The fourth edition of the Handbook of Human Factors and Ergonomics has been completely revised and updated. This includes all existing third edition chapters plus new chapters written to cover new areas. These include the following subjects:

- Managing low-back disorder risk in the workplace
- Online interactivity
- Neuroergonomics
- Office ergonomics
- Social networking
- HF&E in motor vehicle transportation
- User requirements
- Human factors and ergonomics in aviation
- Human factors in ambient intelligent environments

As with the earlier editions, the main purpose of this handbook is to serve the needs of the human factors and ergonomics researchers, practitioners, and graduate students. Each chapter has a strong theory and scientific base, but is heavily focused on real world applications. As such, a significant number of case studies, examples, figures, and tables are included to aid in the understanding and application of the material covered.

Table 4 Published ISO Standards and Standards under Development for Anthropometry and Biomechanics

Reference Number	Title
ISO 7250-1:2008	Basic human body measurements for technological design, Part 1: Body measurement definitions and landmark
ISO/TR 7250-2:2010	Basic human body measurements for technological design, Part 2: Statistical summaries of body measurements from individual ISO populations
ISO 11226:2000	Ergonomics: Evaluation of static working postures
ISO 11226:2000/Cor 1:2006	Corrigendum
ISO 11228-1:2003	Ergonomics: Manual handling, Part 1: Lifting and carrying
ISO 11228-2:2007	Ergonomics :Manual handling, Part 2: Pushing and pulling
ISO 11228-3:2007	Ergonomics: Manual handling, Part 3: Handling of low loads at high frequency
ISO/NP TR 12295	Ergonomics — Application document for ISO standards on manual handling (ISO 11228-1, ISO 11228-2 and ISO 11228-3) and working postures (ISO 11226)
ISO/NP TR 12296	Ergonomics — Manual handling of people in the healthcare sector
ISO 14738:2002	Safety of machinery: Anthropometric requirements for the design of workstations at machinery
ISO 14738:2002/Cor 1:2003	Corrigendum
ISO 14738:2002/Cor 2:2005	Corrigendum
ISO 15534-1:2000	Ergonomic design for the safety of machinery, Part 1: Principles for determining the dimensions required for openings for whole-body access into machinery
ISO 15534-2:2000	Ergonomic design for the safety of machinery, Part 2: Principles for determining the dimensions required for access openings
ISO 15534-3:2000	Ergonomic design for the safety of machinery, Part 3: Anthropometric data
ISO 15535:2006	General requirements for establishing anthropometric databases
ISO/TS 20646-1:2004	Ergonomic procedures for the improvement of local muscular workloads, Part 1: Guidelines for reducing local muscular workloads
ISO 15536-1:2005	Ergonomics: Computer manikins and body templates, Part 1: General requirements
ISO 15536-2:2007	Ergonomics: Computer manikins and body templates, Part 2: Verification of functions and validation of dimensions for computer manikin systems
ISO 15537:2004	Principles for selecting and using test persons for testing anthropometric aspects of industrial products and designs
ISO 20685:2010	Three-dimensional scanning methodologies for internationally compatible anthropometric databases

ISO 11228-1:2003 describes limits for manual lifting and carrying with consideration, respectively, of the intensity, frequency, and duration of the task. The limits recommended can be used in the assessment of several task variables and the health risk evaluation of the working population (Dickinson, 1995). This standard does not include holding of objects (without walking), pushing or pulling of objects, lifting with one hand, manual handling while seated, and lifting by two or more people. Holding, pushing, and pulling objects are included in parts 2 and 3 of ISO 11228, which are currently at the review stage. In conjunction with the ISO 11228 series, an application document (ISO/NP TR 12296) is under development. ISO/TS 20646-1:2004 present guidelines for application of various ergonomics standards related to local muscular workload (LMWL) and specify activities to reduce LMWL in workplaces. As part of development of new standards, in 2010, the ISO published a new standard, ISO 20685:2010, that addresses protocols for the use of three-dimensional (3D) surface-scanning systems in the acquisition of human body shape data and measurements defined in ISO 7250-1 that can be extracted from 3D scans.

2.3 Ergonomics of Human–System Interaction

The TC 159/SC 4 subcommittee develops the standards related to ergonomics of human–system interaction. The subcommittees are divided into 11 working groups, each dealing with a specific topic (see Table 2).

2.3.1 Controls and Signaling Methods

ISO 9355, *Ergonomic Requirements for the Design of Displays and Control Actuators*, provides guidelines for the design of displays and control actuators on work equipment, especially machines (see Table 5). A list of all parts of ISO 9355 is presented in Table 5. Part 1 describes general principles of human interactions with displays and controls. The other two parts provide recommendations on the selection, design, and location of information displays (part 2) and control actuators (part 3). Part 4 covers general principles for the location and arrangement of displays and actuators. No changes were made to these standards in the last five years. Currently these standards are in the review stages.