

# Contents

<i>Foreword</i>	ix
<i>Preface</i>	xi
<i>About the Editor</i>	xiii
<i>List of Contributors</i>	xv

## **I: STANDARDIZATION EFFORTS IN HUMAN FACTORS AND ERGONOMICS**

<b>1.</b> An Overview of the International Standardization Efforts in Human Factors and Ergonomics	3
<i>B. Sherehiy, D. Rodrick, and W. Karwowski</i>	
<b>2.</b> Positioning Ergonomics Standards and Standardization	47
<i>J. Dul and H. J. de Vries</i>	
<b>3.</b> Ergonomics Performance Standards and Regulations—Their Scientific and Operational Basis	79
<i>T. J. Smith and O. Merhi</i>	

## **II: NATURE OF HF/E STANDARDS AND GUIDELINES**

<b>4.</b> National Standardization Efforts in Ergonomics and Human Factors	111
<i>H. A. Priest, K. A. Wilson, and E. Salas</i>	
<b>5.</b> Overview of National and International Standards and Guidelines	133
<i>C. Stuart-Buttle</i>	
<b>6.</b> Balancing Stakeholder Representation: An Example of Stakeholder Involvement in Ergonomics Standardization	149
<i>H. Willemse, H. J. de Vries, and J. Dul</i>	
<b>7.</b> Some Ergonomics Standards in Ancient China	157
<i>P.-L. P. Rau</i>	

## **III: ENGINEERING ANTHROPOMETRY AND WORKING POSTURES**

<b>8.</b> Standards in Anthropometry	169
<i>A. Seidl and H. Bubb</i>	

9. Evaluation of Static Working Postures  
*N. Delleman and J. Dul*
10. Evaluation of Working Postures and Movements in Relation to Machinery  
*N. Delleman and J. Dul*
11. Standards on Physical Work: Demands in the Construction Industry  
*H. F. van der Molen and N. J. Delleman*
12. Safety of Machinery—Human Physical Performance: Manual Handling of Machinery and Component Parts of Machinery  
*K. G. Schaub*

#### **IV: DESIGN AND EVALUATION OF MANUAL MATERIAL HANDLING TASKS**

13. Repetitive Actions and Movements of the Upper Limbs  
*E. Occhipinti and D. Colombini*
14. Ergonomics of Manual Handling—Part 1: Lifting and Carrying  
*K. G. Schaub*
15. Ergonomics of Manual Handling—Part 2: Pushing and Pulling  
*K. G. Schaub and P. Schaefer*
16. Recommended Force Limits for Machinery Operation: A New Approach Reflecting User Group Characteristics  
*P. Schaefer and K. G. Schaub*
17. Guidelines for the Prevention of Work-Related Musculoskeletal Disorders: The Italian Experience  
*E. Occhipinti, D. Colombini, and A. Grieco*
18. Assessment of Manual Material Handling Based on Key Indicators: German Guidelines  
*U. Steinberg, G. Caffier, and F. Liebers*

#### **V: HUMAN-COMPUTER INTERACTION**

19. Standards, Guidelines, and Style Guides for Human-Computer Interaction  
*T. Stewart*
20. Human Factors Engineering of Computer Workstations: HFES Draft Standard for Trial Use  
*T. Albin*
21. Practical Universal Design Guidelines: A New Proposal  
*K. Yamazaki, T. Yamaoka, A. Okada, S. Saitoh, M. Nomura, K. Yanagida, and S. Horino*
22. Virtual Environment Usage Protocols  
*K. M. Stanney, D. A. Graeber, and R. S. Kennedy*
23. Location and Arrangement of Displays and Control Actuators  
*R. W. Proctor and K.-P. L. Vu*

#### **VI: MANAGEMENT OF OCCUPATIONAL SAFETY AND HEALTH**

24. The Benefits of Occupational Health and Safety Standards  
*D. A. Coelho and J. C. de Oliveira Matias*

- 25.** World Trends in Occupational Health and Safety Management Systems **441**  
*P. K. Nag and A. Nag*
- 26.** European Unions Legal Standard on Risk Assessment **471**  
*K. Frick*
- 27.** ILO Guidelines on Occupational Safety and Health Management Systems **493**  
*D. Podgorski*

## **VII: SAFETY AND LEGAL PROTECTION STANDARDS**

- 28.** Printed Warning Signs, Tags, and Labels: Their Choice, Design, and Expectation of Success **509**  
*C. A. Cacha*
- 29.** Record Keeping and Statistics in Safety and Risk Management **525**  
*C. A. Cacha*
- 30.** User Needs in Standards—Older People and People With Disabilities **533**  
*A. Ferguson*

## **VIII: MILITARY HUMAN FACTORS STANDARDS**

- 31.** The Role of Human Systems Integration Standards in the Modern Department of Defense Acquisition Process **541**  
*J. McDaniel and G. Chaikin*

## **IX: SOURCES OF HUMAN FACTORS AND ERGONOMICS STANDARDS**

- 32.** Sources and Bibliography of Selected Human Factors and Ergonomics Standards **569**  
*D. Rodrick and W. Karwowski*

- Author Index* **591**  
*Subject Index* **603**