
Contents

Preface to the Second Edition..... ix
Editor..... xiii
Contributors xv

Section I: General

Chapter 1 Theories of occupational musculoskeletal injury causation3
Shrawan Kumar

Chapter 2 Anthropometry and biomechanics: anthromechanics.....41
Karl H.E. Kroemer

Chapter 3 Mechanical exposure assessment in the design of work89
W. Patrick Neumann and Richard Wells

Section II: Tissue Biomechanics

Chapter 4 Tissue mechanics of ligaments and tendons109
Savio L-Y. Woo, Tan D. Nguyen, Noah Papas, and Rui Liang

Chapter 5 Ligament sprains and healing.....131
*Richard S. Boorman, Nigel G. Shrive, Linda L. Marchuk,
and Cyril B. Frank*

Chapter 6 Bone biomechanics and fractures149
Stefan Judex, Gavin Olender, William C. Whiting, and Ronald Zernicke

Chapter 7 Determinants of muscle strength169
Walter Herzog

Section III: Upper Extremity

Chapter 8 Functional anatomy of the upper limb (extremity)205
Anil H. Walji

Chapter 9 Hand grasping, finger pinching, and squeezing.....271
Sheik N. Imrhan

Chapter 10	Hand tools	287
<i>Anil Mital, Anand Subramanian, and Arunkumar Pennathur</i>		
Chapter 11	Biomechanics of gloves	333
<i>Ram R. Bishu, V. Gnaneswaran, and Dahai Liu</i>		
Chapter 12	Work and activity-related musculoskeletal disorders of the upper extremity	345
<i>Richard Wells and Peter Keir</i>		
Chapter 13	ACGIH TLV for hand activity level.....	359
<i>Thomas J. Armstrong</i>		
Chapter 14	Biomechanical models of the hand, wrist, and elbow in ergonomics	373
<i>Richard E. Hughes and Kai-Nan An</i>		
Section IV: Shoulder and Neck		
Chapter 15	Biomechanical modeling of the shoulder anatomy	395
<i>Krystyna Gielo-Perczak and John Rasmussen</i>		
Chapter 16	Whiplash injuries: in vitro studies	405
<i>Narayan Yoganandan, Brian D. Stemper, Frank A. Pintar, and Raj D. Rao</i>		
Chapter 17	Whiplash injuries: in vivo studies	443
<i>Robert Ferrari</i>		
Section V: Low Back		
Chapter 18	Low back disorders	469
<i>Edgar Ramos Vieira</i>		
Chapter 19	Models in manual materials handling.....	495
<i>Jeffrey C. Woldstad, M.M. Ayoub, and James L. Smith</i>		
Chapter 20	Revised NIOSH lifting equation.....	531
<i>Thomas R. Waters</i>		
Section VI: Whole Body Biomechanics		
Chapter 21	Whole body vibration	565
<i>Judy Village and James B. Morrison</i>		
Chapter 22	Cumulative load and models.....	597
<i>Shrawan Kumar</i>		
Chapter 23	Posture.....	633
<i>Stephan Konz</i>		
Chapter 24	Biomechanics in work seating design.....	647
<i>Jörgen Eklund</i>		

Chapter 25 Biomechanics during ladder and stair climbing and
 walking on ramps and other irregular surfaces.....657
Andrew S. Merryweather and Donald S. Bloswick

Chapter 26 Slips, trips, and falls679
Raoul Grönqvist

Index.....711