Contents

Part I  ACL Injury: The Clinical Problem

1 ACL Injury Epidemiology .............................................................. 3
   Patrick Vavken and Martha M. Murray

2 History of ACL Treatment and Current Gold Standard of Care ........................................ 19
   Martha M. Murray

3 ACL Clinical Outcomes .............................................................. 29
   Carolyn M. Hettrich and Kurt P. Spindler

4 ACL Treatment in the Skeletally Immature Patient ........................................ 41
   Patrick Vavken and Martha M. Murray

Part II  ACL Injury: The Biologic Problem

5 The Biology of the Normal ACL .................................................. 63
   Martha M. Murray and Braden C. Fleming

6 The Role of Inflammation and Blood Cells in Wound Healing ........ 73
   Linda H. Chao and Martha M. Murray

7 The ACL Response to Injury ....................................................... 91
   Martha M. Murray

8 The Biology of Impaired Healing of Joint Tissues .......................... 101
   Martha M. Murray

Part III  Translational Medicine: In Vitro and In Vivo Models

9 Translational Medicine ............................................................... 115
   Patrick Vavken
10 In Vitro Models of ACL Injury
Patrick Vavken and Braden C. Fleming

11 In Vivo Models of ACL Injury (Central Defect, Porcine, Ovine, Canine)
Benedikt Lorenz Proffen and Martha M. Murray

12 Tissue Engineering of Ligaments and Tendons
Patrick Vavken and Martha M. Murray

13 Outcome Assessment for ACL Tissue Engineering
Patrick Vavken, Martha M. Murray, and Braden C. Fleming

Part IV Stimulating Healing of the ACL Using Tissue Engineering

14 Scaffolds and Biologic Additives for ACL Surgery
Ryu Yoshida and Martha M. Murray

15 Use of Biologics to Treat Partial ACL Tears
Martha M. Murray

16 Can We Get a Complete ACL Tear to Heal?
Carla Maria Haslauer and Martha M. Murray

17 The Effects of Platelets and Their Concentration on ACL Healing
Patrick Vavken

18 The Effects of WBCs and RBCs on Ligament Healing
Linda H. Chao and Martha M. Murray

19 Safety of the Bio-enhanced Repair
Elise M. Magarian and Martha M. Murray

20 Reinnervation and Revascularization in Engineered ACL Healing
Benedikt Lorenz Proffen and Martha M. Murray

21 Bio-enhancement of ACL Graft Healing
Braden C. Fleming

22 The Effects of Age and Skeletal Maturity on Healing of the Anterior Cruciate Ligament
Linda H. Chao and Martha M. Murray

Conclusion

Index
The ACL Handbook
Knee Biology, Mechanics, and Treatment
Murray, M.M.; Vavken, P.; Fleming, B. (Eds.)
2013, XI, 317 p., Hardcover
ISBN: 978-1-4614-0759-1