



Book Reviews

Injury and Repair of the Musculoskeletal Soft Tissues, Edited by Savio L.-Y. Woo and Joseph A. Buckwalter, American Academy of Orthopaedic Surgeons, Park Ridge, IL 60068, 548 pp., 1988, \$75.00.

REVIEWED BY Y. C. FUNG¹

This truly delightful book is a result of cooperation of MD's and PhD's. For the first time, in-depth studies of the basic science aspects of soft tissue biomechanics are described side by side with clinical aspects of injury and repair. In this book, the word "in-depth" governs. Discussions are unhurried. Presentations are thorough. Data are up-to-date. Information is state-of-the-art. For a multi-authored book, the style is remarkably uniform throughout. The lists of references are generous. I find every section well written, which reflects a high level of achievement of the field, and a high standard of writing by the writers and editors.

This book was created in response to the need to deal with injuries caused by motor vehicle and work-related accidents, competitive sports and vigorous recreational activities. The editors, one PhD. (Savio Woo) and one MD (Joseph Buckwalter) were asked by the Committee on research of the AAOS, NIAMS, and ORS to organize a workshop to deal with this need. 52 persons participated in the workshop and in the writing. The soft tissues were divided into nine groups: (1) tendon; (2) ligament; (3) tendon, ligament, and joint-capsule insertions to bone; (4) myotendinous junction; (5) skeletal muscle; (6) peripheral nerve; (7) peripheral vessel; (8) articular cartilage, (9) meniscus. Drs. Richard Gelberman, Cyril Frank, Wayne Akeson, William Garrett, Arnold Caplan, Gören Lundberg, Andrew Weiland, Lawrence Rosenberg, and Steven Arnoczky served as group leaders to prepare the manuscripts. This results in 9 sections, 12 chapters. Each group of tissues is described in one section and one chapter, except that section 2 (ligament) has two chapters and section 8 (articular cartilage) has three chapters. Three topics, ligament, muscle, and cartilage, are treated at greater length (about 80 pages each), other chapters are about 35 to 60 pages in length.

As it is indicated in the title, the repair process of various tissues is given emphasis in this book. This process is described thoroughly, and it is particularly delightful to read. I feel grateful that so much is known. Yet still one feels that many pieces of quantitative information are missing. The authors are well aware of this. In fact, every Section is ended with a discussion of "Future Directions of Research," and in every discussion of future directions the need of quantitative information is emphasized.

I learned a great deal from this book. But no book meets everybody's specific needs. To me, I wish there were more

data on the *strength* of the soft tissues. I wish there were more clear indications on what level of stress or strain causes what injury, and the relationship between the observable degree of injury and the patient's trauma. I wish there was greater emphasis on biomechanics. Biomechanics of normal ligament and cartilage are dealt with thoroughly in this book. Biomechanics of other tissues did not receive as much attention. And the biomechanics of the process of injury and the course of repair, the main topic of this book, was essentially missing. The development of the biomechanics of failure, injury, and repair is still in infancy. To explain what I mean, one needs only to compare our status with some better developed engineering disciplines. In the theory of failure of engineering materials, we can see the well-developed theory of dislocation, mathematical theory of vacancies, theories of yielding and plastic flow, theory of creep, and corresponding extensive body of experimental work. Biological tissues are more complex than engineering materials. It can grow and repair. I predict that when fully developed the biomechanics of injury and repair will be more comprehensive, more refined, more powerful than their corresponding mechanics of the engineering materials. I will predict that great advances in this field would come in the future with the development of the biomechanics of injury and repair. Most of the future directions pointed out by the authors of various sections can be cast in the language of biomechanics, a language that is especially suited to reveal the quantitative relationship between the many factors that claim our attention.

I strongly recommend this book to all people who are interested in injury and repair of the bodies of man and animals.

The Genetics of Mental Retardation, E. K. Hicks and J. M. Berg, 22 papers by 23 authors, Kluwer Academic Publishers, 3300 Dordrecht, The Netherlands, 1988, U.S. \$69.

REVIEWED BY Y. C. FUNG

What does a bioengineer have to do with mental retardation? The answer is two fold: 1) Prenatal and postnatal testing and diagnosis involves technical problems of instrumentation, recording, analysis, interpretation, and cost-effectiveness. 2) Medical ethics comes to the forefront. No problem in society is more sensitive to ethics than genetic testing and genetic counseling. This book brings out these two aspects very well. The book is a product of the third international Workshop of the Bishop Bekkers Foundation. It is divided into three sections. 1) Prenatal diagnosis. 2) Postnatal diagnosis. 3) Genetic counseling. Throughout the book the ethical questions are discussed.

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Muscle, ligament and tendon injuries frequently occur during activities such as sports, and may be due to tissue degeneration. These injuries are more frequent in particular parts of the body, such as the tendons located in the shoulder, elbow, knee and ankle. What treatments are available? Several treatment options are available. These include conservative methods, such as physical therapy, and surgery, for example to repair torn tendons.Â They produce growth factors that assist in repair and regeneration of tissue. It is possible that if a high concentration of platelets is applied to an injury, healing may progress faster. Platelet-rich therapy involves the production of a platelet-rich (concentrated) fraction of the patient's own blood.