Measurement of Soft Tissue Elasticity in Vivo: Techniques and Applications

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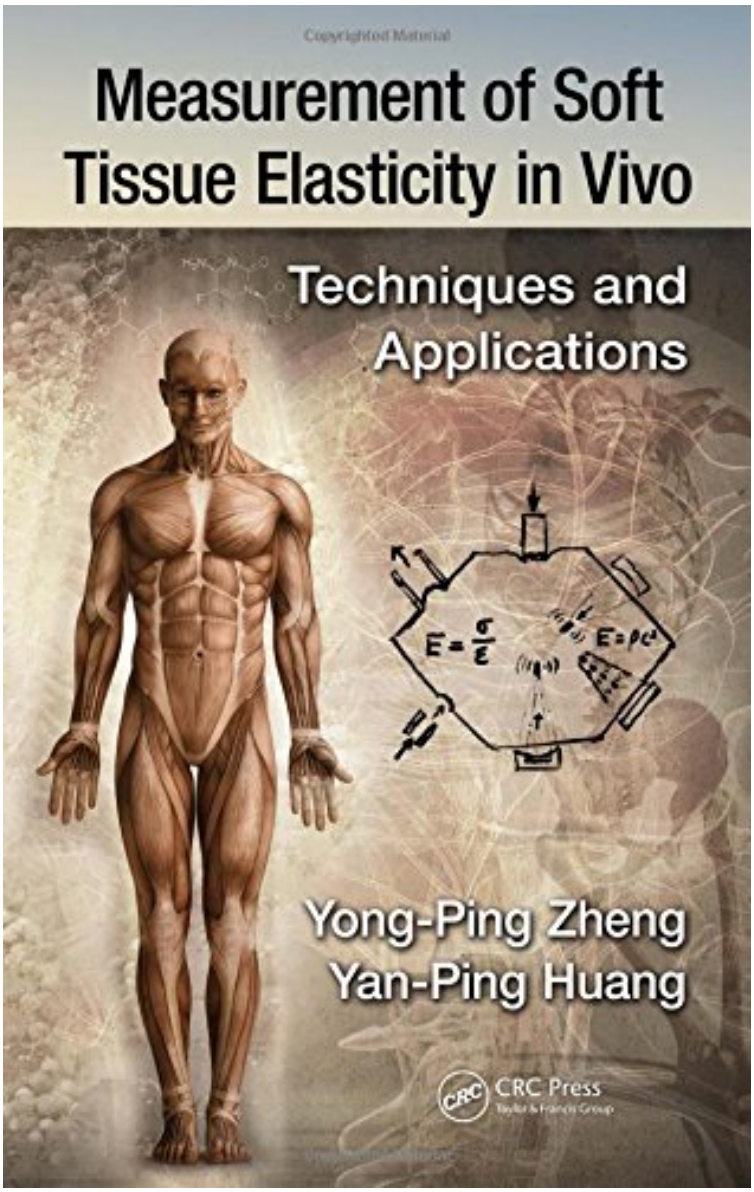

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Yan-Ping Huang, Yong-Ping Zheng : Measurement of Soft Tissue Elasticity in Vivo: Techniques and Applications before purchasing it in order to gage whether or not it would be worth my time, and all praised

Measurement of Soft Tissue Elasticity in Vivo: Techniques and Applications:

The product of 20 years of research, this book covers topics in soft tissue elasticity in vivo, from measurement techniques to clinical applications. It provides, for the first time, a single source that systematically introduces the various techniques for in vivo measurement of soft tissue elasticity in an effort to ease the difficulty between learning technical details and clinical applications of techniques. Measurement of Soft Tissue Elasticity in Vivo: Techniques and Applications presents an overview of the existing measurement methods, their physical principles, assumptions, advantages, and disadvantages. Clinical applications discussed include assessment of tissue fibrosis after radiotherapy, articular cartilage degeneration, muscle contraction, cancer staging, liver fibrosis progression, diabetic foot ulceration, cornea stiffening, and wound healing. Techniques covered include shear wave propagation methods, vibro-ultrasound methods, dynamic holography, ultrasound and other indentation methods, and OCT-based and other suction measurement methods. The book also proposes two critical directions for future research in the field. One is to standardize the terms, parameters, and test protocols used in different fields. The second proposal is to standardize one technique to dominate the field, while devices can be adapted to fit the measuring requirements of different tissues. In doing so, the results obtained for the same tissue by different clinicians can be comparable and a standardized protocol can be established. This book bridges the gap between the complexity of measuring techniques and simplicity and accuracy of their clinical use. Its comprehensiveness and clarity help new engineers in the field develop analytical methods and allow clinicians to use these techniques in their practice with greater confidence.

About the AuthorYong-Ping Zheng is a professor at Hong Kong Polytechnic University (PolyU), China, where he earned his PhD in biomedical engineering. He also served as the associate director of the Research Institute of Innovative Products at PolyU. He has served as the head of PolyUs Interdisciplinary Division of Biomedical Engineering since its establishment in 2012. His research interests include tissue elasticity measurement and imaging, biomedical ultrasound imaging, and wearable sensors for health care. He has published many papers on ultrasound for soft tissue assessment and is on the editorial boards of several journals. He is a senior member of IEEE, a fellow of the Hong Kong Institution of Engineers, and elected secretary of the World Association of Chinese Biomedical Engineers. He holds seven US patents and 10 Chinese patents, with eight more patents pending, many of which have been licensed to industry for commercialization. Yan-Ping Huang, PhD, is a teaching fellow at the Interdisciplinary Division of Biomedical Engineering, Faculty of Engineering at Hong Kong Polytechnic University, China. He earned his PhD in biomedical engineering from Hong Kong Polytechnic University and completed one year of postdoctoral training in the Department of Bioengineering at the University of Washington, Seattle. He has abundant research and collaboration experience in the field of BME related to the measurement of soft tissue elasticity in vivo and has published dozens of papers in the field.