Biomechanics of Lower Limb Prosthetics

Mark R. Pitkin
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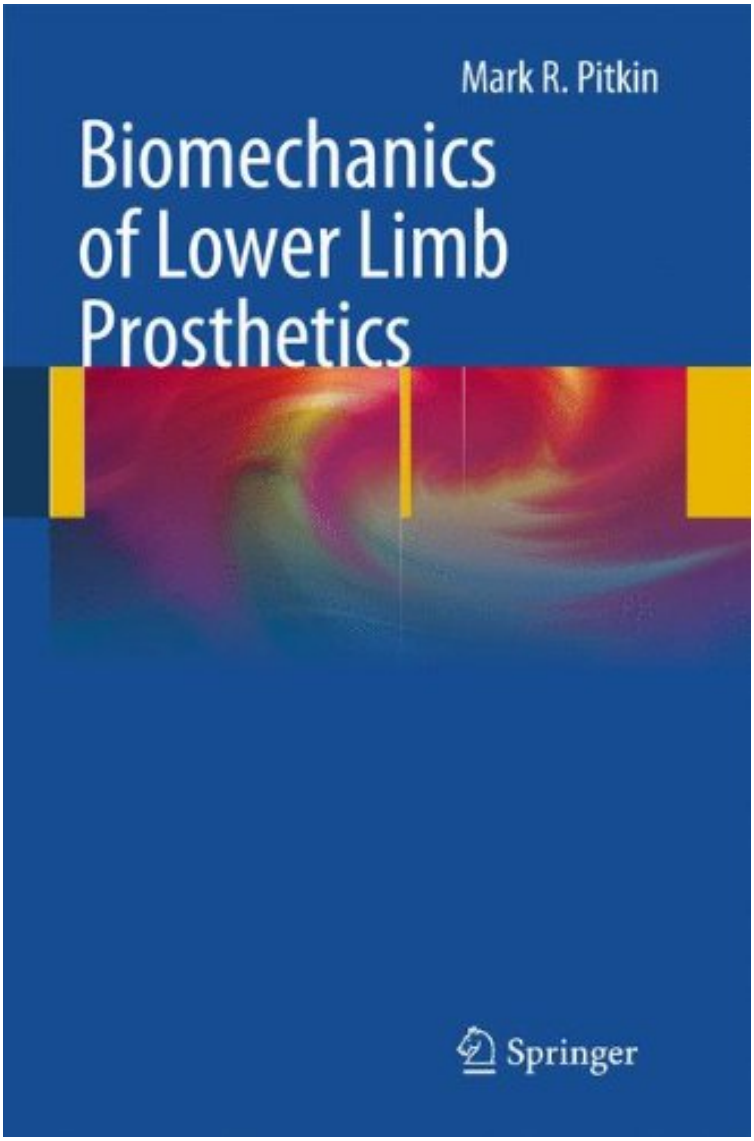

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Mark R. Pitkin : Biomechanics of Lower Limb Prosthetics before purchasing it in order to gage whether or not it would be worth my time, and all praised Biomechanics of Lower Limb Prosthetics:

2 of 3 people found the following review helpful. Excellent BookBy Serge OstrovskiI am interested in prosthetics and look around for the literature which is scientifically sound and at the same time is easily readable. The Biomechanics of Lower Limb Prosthetics meets both of my criteria. There are many good books on biomechanics, physiology, and engineering. However, I saw no books that unite these disciplines providing clear guidance on how to design the lower

limb prostheses. To do this, Prof. Pitkin introduces an effective process for good prosthesis designs that would account among other things for comfort of amputees and objective characteristics of their performance. The book is based on the authors original concept of gait in healthy individuals which can be replicated in amputee gait if the artificial joints possess the required characteristics of ballistic synergy. The book gives a step-by-step description of the classical design process with relevant mathematical modeling, mechanical testing, and biomechanical evaluations in amputees wearing these devices Another important feature of the book for the educational purposes is that the outline of the prosthetic design presented in the book can be applied to any new construction of limb prosthesis and for objective evaluations and comparisons of different types of prostheses in terms of their impact on amputees comfort/discomfort. That makes the book a useful tool in research and teaching of in the field of Prosthetics and Orthotics2 of 3 people found the following review helpful. Informative and InterestingBy Sarah BallatoriDr. Pitkin's book highlights the prevalence of lower limb amputations, after which he continues with a discussion of the importance of understanding biomechanics of lower limbs prosthetics. He presents information in a comprehensible and thorough fashion. It is clear that, thanks to researchers like Dr. Pitkin, the world of prosthetics is evolving at a fast pace to meet the needs of lower limb amputees. Highly recommended.0 of 1 people found the following review helpful. Great book for learning about human gaitBy John F. AubreyI was lucky enough to actually have Dr. Pitkin as a professor. The book was very helpful for the class. It's written in a such way that makes it very easy to read, not like many textbooks which get too caught up in doling out information that they forget that people still have to actually be able to read the book.

Foreword from a Clinical Biomechanist, Applied Physiologist and Prosthetist teaching graduate students in Prosthetics Orthotics. While there are many books on Biomechanics, arguably the quintessential science of limb prosthetics, none addresses the fundamental principles in sufficient detail and depth to be practically useful to the prosthetist, rehabilitation specialist or researcher. Dr. Pitkins monograph is an exemplary collection of theoretical principles from his research and o- ers, presented in its clinical and applied biomechanics form. The textbook provides an excellent overview of the many facets of lower limb prosthetic design and engineering for the ardent clinician researcher and student. The book delves into many of the basic concepts that are required knowledge for the clinician and the scientist to have as the foundation for their work. Dr. Pitkin has an e- quent manner in which he reflects on the history and literature to tell the storied evolution of prosthetic design . He takes the reader on a journey to consider his theories, which have substantive foundations to contemplate. By the end of chapter one, we have the basic h- tory and an appreciation for the rationale behind the rolling joint ankle with evidence to support his theoretical views.

From the reviews:The textbook delivers an excellent overview of the various facets of lower limb prosthetic design and engineering. It can be useful to the professionals who develop the prostheses and who prescribe them. The monograph by Professor Pitkin already has been and will be a must component of the curriculum in biomechanics, rehabilitation and prosthetics as an important source of ideas and methodology, especially for young devoted professionals. (Konstantin Shcherbina, Prosthetics and Orthotics International, February, 2014)This book describes how biomechanical principles and theories can be applied to the development and testing of new prosthetic componentry. clinicians will find that the book helps them understand the basis of hypothesis testing and the various tools, including force plates, socket interface measurements, and computer models, available to researchers to evaluate prosthetic componentry and biomechanical ideas. Researchers and students will find value in the experiences of the author in the development and testing of the rolling joint technology . (Laura A. Miller, Doodys Service, January, 2011)Pitkins work serves as a foundation for designing and manufacturing contemporary lower limb prosthetics. Biomechanics of Lower Limb Prosthetics is well written and easy to read, considering its heavy emphasis on biomechanical principles and theories. the book does summarize current understanding of basic movement concepts, measurements, and challenges for future design and so should appeal to the academician and prosthetist and serve as an invaluable tool for prosthetic research. (Brian M. Kelly, Journal of the American Medical Association, Vol. 304 (21), December, 2010)From the Back CoverThe most outstanding feature of "Biomechanics of Lower Limb Prosthetics" is the demonstration of the practicality of biomechanics, when applied to lower limb prosthetics. Several original concepts are described, one of which, "rolling technology," has been implemented in prosthetic devices, while the principle of "reciprocal anti-resonance in locomotion" addresses future studies. A concept of anthropomorphicity presented by the author is a key tool in planning the design of an artificial limb or its components. Measurement procedures and equipment used in biomechanical laboratories are presented. The book demonstrates how the analysis of biomechanical data is a tool in the decision-making process of a prosthetic designer and clinician. The author shares his experience in the development of a protocol for biomechanics subject trials used in NIH-supported studies.About the AuthorMark R. Pitkin, Ph.D., D.Sc., is presently a Research Professor of Physical Medicine and Rehabilitation at the Tufts University School of Medicine, Boston, MA, and Director of Center for Human Performance at the New England Sinai Hospital, Stoughton, MA.Dr. Pitkin graduated Summa Cum Laude from St. Petersburg University (Russia) inMechanics. He received his Ph.D. from the Central Institute for Prosthetic Research,Moscow, and the Doctor of Technical Sciences (D.Sc.) degree from LETI University,St. Petersburg. Dr. Pitkin's book, "Biomechanics

of Lower Limb Prosthetics," Springer, 2010, "serves as a foundation for designing and manufacturing contemporary lower limb prosthetics as an invaluable tool for prosthetic research" (JAMA: jama.ama-assn.org/content/304/21/2418.extract).InDr. Pitkin nextbook, "Biomechanics for Life. Introduction to Sanomechanics, Springer, 2911, the reader will find a new approach to improving health. The focus of sanomechanics is on exercising with an understanding of the biomechanical consequences of one's movements, based on the author's theory of the floating skeleton, postulating a hydraulic connection between joints. The theory explains the greater or lesser success of any exercise, appealing to the ability of the human skeleton to absorb and transform forces and moments from the body segments and the environment. This ability vanishes with age and illness; and the deeper our understanding of the nature of skeletal functioning, the better we shall be able to improve, protect, and prolong our skeleton's health. This book, with its multidisciplinary analysis of proven facts and new hypotheses, can be useful to researchers, practitioners, and students in the health professions, and to anyone who is interested in understanding the role of biomechanics in improving their well-being.