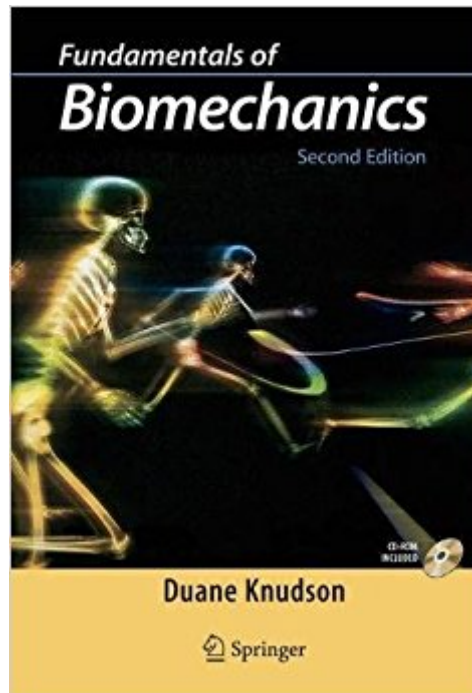




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# Fundamentals Of Biomechanics



## Synopsis

Blending up-to-date biomechanical knowledge with professional application knowledge, this second edition presents a clear, conceptual approach to understanding biomechanics within the context of the qualitative analysis of human movement. It develops nine principles of biomechanics, which provide an applied structure for biomechanical concepts, and the application of each principle is fully explored in several chapters. The book also offers real-world examples of the application of biomechanics, which emphasize how biomechanics is integrated with the other subdisciplines of kinesiology to contribute to qualitative analysis of human movement.

## Book Information

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## Customer Reviews

"Fundamentals of Biomechanics is an exceptionally well written and structured introductory text on the biomechanics of movement. It integrates mechanical and biological concepts in a way that enhances understanding of what students often find is a difficult area of study!!! Many students will be stimulated by the book while all will find it easy to read as [Dr. Knudson] has integrated the topics covered into a coherent unit." (Bruce Elliott, Professor of Biomechanics, The University of Western Australia, Australia) "Fundamentals of Biomechanics delivers everything it promises, and more. The challenge of teaching and learning biomechanics is understanding the two distinct fields that it comprises - biology and mechanics. In my experience, some students enter biomechanics with aptitude and interest in one of these fields and reluctance to the other. As a leader in biomechanics, Dr. Knudson seems to realize this and does an expert job of teaching these two fields in separate

parts of the textbook. The text is clearly written, and includes many helpful illustrations and examples." (Glenn S. Fleisig, Ph.D., Smith & Nephew Chair of Research, American Sports Medicine Institute, Birmingham, AL)"Fundamentals of Biomechanics is a wonderful and comprehensive treatment which meets the needs and interest of both students and educators! The text addresses the subject cohesively and solidly in a technical, yet very readable and effective manner... I'll use this text in my own summer course and recommend it to colleagues." Jani Macari Pallis, Ph.D., International Sports Engineering Association, San Francisco, CA "Duane Knudson's book, Fundamentals of Biomechanics, is an attempt to bridge the gap between quantitative and qualitative biomechanics. The book is remarkably well written, the structure is well designed and all the examples are carefully selected in order to enhance the understanding of the students. Additionally, the mechanical and biological concepts are exceptionally well integrated. This increases the spectrum of fields of application. The book should be read by students and professionals from all over the world. The reason is that Duane Knudson explains biomechanics for students, coaches, physiotherapists and medical doctors in comprehensive aspects of human movements clearly and simply with a biological and predominantly qualitative approach." (Dr. J  rgen Krug, Professor of Biomechanics and Training Theory, Institute of Kinesiology, University of Leipzig, Germany) --This text refers to the Hardcover edition.

Fundamentals of Biomechanics 2nd edition introduces the exciting world of how human movement is created and how it can be enhanced.   The book presents a comprehensive review of the major concepts of biomechanics and summarizes them in nine principles of biomechanics.   Throughout the text are numerous examples of applying these principles to the work of kinesiology professionals.   Specific case studies are presented in four application chapters: physical education, coaching, strength and conditioning, and sports medicine.   This text presents a clear, conceptual understanding of biomechanics and is designed to help students link their personal experience to biomechanical concepts.   Biomechanics instructors, researchers, and other professionals helping people to improve movement and decrease the risk of injury, as well as advanced students learning biomechanical principles in biomedical engineering, ergonomics, kinesiology, physics, and sports physiology will find Fundamentals in Biomechanics 2nd edition invaluable.

**Key Features:**Detailed examples of biomechanical principles and their application in the qualitative analysis of human movement in a variety of professionsOver 160 figures illustrating real human movementCase studies of actual movement technique examined by professionals in human movementExtensive use of graphs, photographs, illustrations, and citations to important

biomechanics literature  
Glossary of key terms and biomechanics research terminology  
Appendix of instructional lab activities  
Endorsements:"Fundamentals in Biomechanics delivers everything it promises, and more.Â The challenge of teaching and learning biomechanics is understanding the two distinct fields that it comprises - biology and mechanics.Â In my experience, some students enter biomechanics with aptitude and interest in one of these fields and reluctance to the others.Â As a leader in biomechanics, Dr. Knudson seems to realize this and does an expert job of teaching these two fields in separate parts of the textbook.Â The text is clearly written, and includes many helpful illustrations and examples."Glenn S. Fleisig, Ph.D., Smith and Nephew Chair of Research, American Sports Medicine Institute, Birmingham, AL"Fundamentals of Biomechanics is a wonderful and comprehensive treatment which meets the needs and interest of both students and educators!Â The text addresses the subject cohesively and solidly in a technical, yet very readable and effective manner...I'll use this text in my own summer course and recommend it to colleagues."Jani Macari Pallis, Ph.D., International Sports Engineering Association, San Francisco, CA  
About the Author:Dr. Duane Knudson is Associate Dean and Professor of biomechanics in the Department of Kinesiology at California State University, Chico.Â He earned his Ph.D. in biomechanics from the University of Wisconsin-Madison and has published extensively on the biomechanics of tennis and exercise.Â Dr. Knudson co-authored the first scholarly book on the qualitative analysis of human movement, and his research has earned him fellow status in the American College of Sports Medicine and the Research Consortium of AAHPERD.

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Straightforward. Excellent introduction.

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This is an exceptionally well written and structured introductory text on the biomechanics of

movement. It integrates mechanical and biological concepts in a way that enhances understanding of what students often find is a difficult area of study. One of the primary reasons students will understand the material covered is that concepts are presented in an applied manner. The reader is motivated to appreciate why an understanding of biomechanics will enhance their teaching/coaching effectiveness in a wide variety of occupations. The book presents mechanical and anatomical concepts to a level appropriate for an introductory course in biomechanics. When consideration is given to the material covered in the analysis and musculoskeletal sections, then it is apparent that the book has a wider appeal than is evident in many other texts. The application of biomechanics in sections specific to teaching, coaching, strength and conditioning, and sports medicine and rehabilitation is a particularly innovative aspect of this book. Finally Duane has been able to cover the theory of a very wide spectrum of topics in an applied manner. Many students will be stimulating by the book while all will find it easy to read as he has integrated the topics covered into a coherent unit. Bruce Elliott Professor of Biomechanics The University of Western Australia, Australia.

"Fundamentals of Biomechanics" delivers everything it promises, and more. The challenge of teaching and learning biomechanics is understanding the two distinct fields that it comprises - biology and mechanics. In my experience, some students enter biomechanics with aptitude and interest in one of these fields and reluctance to the other. As a leader in biomechanics, Dr. Knudson seems to realize this and does an expert job of teaching these two fields in separate parts of the textbook. The text is clearly written, and includes many helpful illustrations and examples. After mastering the material in the biological/structural and mechanical parts of the textbook, the student is then ready to start combining these two fields into scientific analysis of human movement. In the qualitative analysis part of the textbook, Dr. Knudson leads the students through some examples of the endless possible applications of their new biomechanics knowledge. With the foundations taught in this textbook, the student is prepared to advance into biomechanics and related fields. Glenn S. Fleisig, Ph.D. Smith & Nephew Chair of Research American Sports Medicine Institute

After reading this book, one feels it is possible to understand very complex concepts in Biomechanics without equations. It bridges the gap between biomechanical theories and everyday practice for undergraduate students and sport coaches. Starting with the "Nine Principles for Application of Biomechanics" the author leads the reader to every area of biomechanics through a logical structure with a lot of practical examples, comments boxes, clear figures and up-to-date

references. The inclusion of the end of each chapter of a recommended reading list, review questions and relevant or related Web links plus Laboratory Activities at the end of the book makes even more useful in the day to day work of teaching biomechanics or analysis of sport technique. This book will be an excellent textbook that teachers will recommend to the students with confidence. Raul Arellano Faculty of Physical Activity and Sports Science University of Granada

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