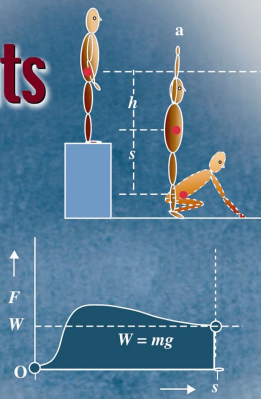


## Examine fundamental human movement using a quantitative biomechanical analysis

### Biomechanical Analysis of Fundamental Human Movements

Arthur E.  
Chapman



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February 2008!

**Audiences:** An upper-undergraduate or graduate-level text for students in advanced biomechanics courses. A reference for professionals studying human movements, such as biomechanists, motor behaviorists, ergonomists, safety equipment designers, and rehabilitation specialists.

Unlike previous biomechanics texts that have taken a mechanical concept and identified activities in which the concept is implicated, *Biomechanical Analysis of Fundamental Human Movements* takes a contrary approach by focusing on the activities and then identifying the biomechanical concepts that best facilitate understanding of those activities. This two-color text is an invaluable tool for those pursuing the study of advanced quantitative biomechanics. It presents a clear introduction to the principles that underlie all human motion and provides a complete study of fundamental human movements and their components.

Teachers of human movement, safety equipment designers, rehabilitation specialists, and students performing advanced research in the area of human biomechanics will appreciate the scientific and mathematical focus in the text. This focus allows readers to gain an understanding of human biomechanics that will enhance their ability to estimate or calculate loads applied to the body as a whole or induced in individual structures.

*Biomechanical Analysis of Fundamental Human Movements* begins with a discussion of the principles of biomechanics and then continues into more

advanced study involving the mechanical and mathematical basis for a range of fundamental human activities and their variations, including balance, slipping, falling, landing, walking, running, object manipulation, throwing, striking, catching, climbing, swinging, jumping, and airborne maneuvers. Each activity is analyzed using a specific seven-point format that helps readers identify the biomechanical concepts that explain how the movements are made and how they can be modified to correct problems. More than 140 figures illustrate the points of analysis throughout the text, providing readers with a clear depiction of both the mechanics and mathematics involved in human movements.

The logical and sequential presentation of concepts in *Biomechanical Analysis of Fundamental Human Movements* is complemented by pedagogical elements that reinforce and expand the readers' understanding. Within each chapter, key points and highlight boxes summarize critical information, and recommended readings provide easy access to related reference material. In addition, the text features more than 60 problems with answers, categorized by mechanical concept, for readers to test their understanding of biomechanical analysis.

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## About the Author

**Arthur E. Chapman, PhD**, is professor emeritus in the School of Kinesiology at Simon Fraser University in Burnaby, British Columbia, Canada, where he has taught and researched since 1970. Chapman has published more than 35 articles and presented more than 45 papers for refereed conferences, seminars, and workshops throughout the world.

Chapman is a founding member of both the Canadian Society of Biomechanics and the International Society of Biomechanics. He received his PhD in biomechanics in 1975 from the University of London, England. A 1965 Fulbright scholar, Chapman was also selected as the Rosenstadt Research Professor for the University of Toronto in 1992.

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