



## Principi biomehanike (*Principles of biomechanics*)

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The purpose of this book is to fill up a gap of more than twenty years from the first edition of a book written by the same authors (PRINCIPI I ELEMENTI BIOMEHANIKE, V. Nikolić and M. Hudec, Školska Knjiga, Zagreb 1988.). The new book is not only the second edition, it is a completely different book, expanded with new data and several additional chapters contribute new and important information on different important new areas of biomechanics.

Definition of biomechanics and related sciences, given by the authors, says enough about extensive area covered by this book: »Biomechanics is an interdisciplinary, multidisciplinary and multilevel science developed by synthesis of biology and mechanics, including all branches related to biology: from molecular biology, to macroscopic morphology, anthropology and almost all medical sciences, basic or clinical, and including all branches related to mechanics as: static, kinematics, dynamics, fluid dynamics, experimental and structural mechanics, mathematics and many other engineering sciences, interdisciplinary, close to, or overlapping with biomechanics, such as bioengineering, biophysics, ergonomics, biomaterials, robotics, bionics, etc. This interdisciplinary connection and combination was developed not as a mixture, but as a whole synthetic complex system giving to biomechanics or to bioengineering as a science or a profession, a new quality quite different from all its original component sciences.«

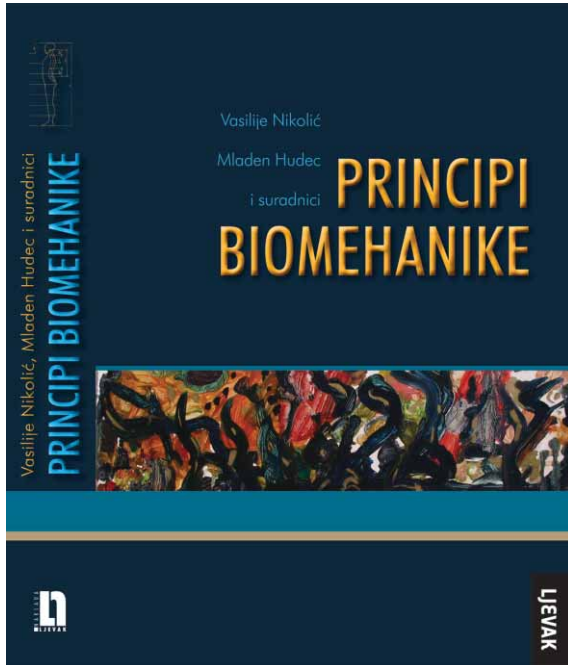
This book contains 27 chapters, 440 illustrations, written by two leading authors and 11 other contributors.

Biomechanics is included in many areas of biology, human and veterinary medicine, sport kinesiology, sport optimization as well as several branches of engineering.

Generally, it is well known that many biological professions and sciences, especially medical branches, progressed to recent levels owing only to the development of engineering sciences.

Conceptually the text of this book is divided into three parts. The first section is an introductory part with historical roots of biomechanics and chapters on fundamental engineering mechanics and basic biomechanics. The second section covers conception and methodology in biomechanics, and the third section covers the biomechanics of biological and anatomical tissues, structures and organs, as well as some topics from applied biomechanics.

Contents of the book: 1. Introduction, 2. Historical roots of biomechanics, 3. Elementary mechanics, 4. Static, 5. Elements and principles of kinematics, 6. Dynamics, 7. Material mechanics, 8. Approaches



and conceptions in biomechanical research, 9. Biomechanics and mathematics, 10. Radiological methods in quantification of skeletal conditions, 11. Methods in experimental biomechanics, 12. Acoustics and biomechanics of locomotor system; ultrasound in biomechanics, 13. Supporting system and electrical phenomena, 14. Mechanics of biological materials and cell biomechanics 15. Connective tissue structures, 16. Membranous structures, 17. Biomechanics of the skin, mucous membranes, subcutaneous and submucous tissues. 18. Visceral hollow tubular and parenchymatous organs. 19. Biomechanics of cartilage, 20. Bones, 21. Biomechanics of joints 22. Biomechanics of muscles, 23. Electrical properties of the muscles; electromyography in biomechanics, 24. Kinematics and kinesiology of locomotion, 25. Biomechanics of the nervous tissue and system, 26. Evolutionary char-

acteristics (peculiarity) of the circulatory system, 27. Fluid biomechanics. Each chapter is followed by an extensive list of references.

It is almost difficult to find another scientific or professional area which is, as biomechanics, although in intensive progress, so neglected in systematic reviews, textbooks and hand-books. This bibliographic poverty is especially seen in Croatia where biomechanics should find way to integrative processes in graduate, postgraduate and specialistic teaching programs of different branches, professions and occupations in biomedical, sport and engineering disciplines. In Croatia, graduate study of biomechanics is not available unlike, as it is well known, in numerous other countries.

This book is based on great experience of authors and contributors. Editor-in-Chief, Vasilije Nikolić, MD, PhD, FAMSC, Professor of anatomy and biomechanics and a surgeon has been involved in biomechanical research, and postgraduate teaching for more than 40 years.

Unfortunately, the late Mladen Hudec, Civil engineer, PhD, Professor of engineering mechanics was a longtime collaborator in the area of biomechanics of medically educated colleagues. Consequently this book presents experience and research not only of the authors and contributors of the book, but also of other Croatian authors, adding to the text a special quality and originality. Also, this book offer Croatian contribution to biomechanical sciences which has, until now, been inadequately known in the scientific world.

In summary, the book: *PRINCIPLES OF BIOMECHANICS (PRINCIPI BIOMEHANIKE)* is a unique, well organized extensive text and a useful source of informations for various scientists and students, either with medical, kinesiological or engineering educations, involved in biomechanical research or in graduate or postgraduate study of biomechanics.

*It will be useful to translate this book in English language, because the book could be interesting and useful also for people from other countries, and not only for people from neighboring states who, understand Croatian language.*