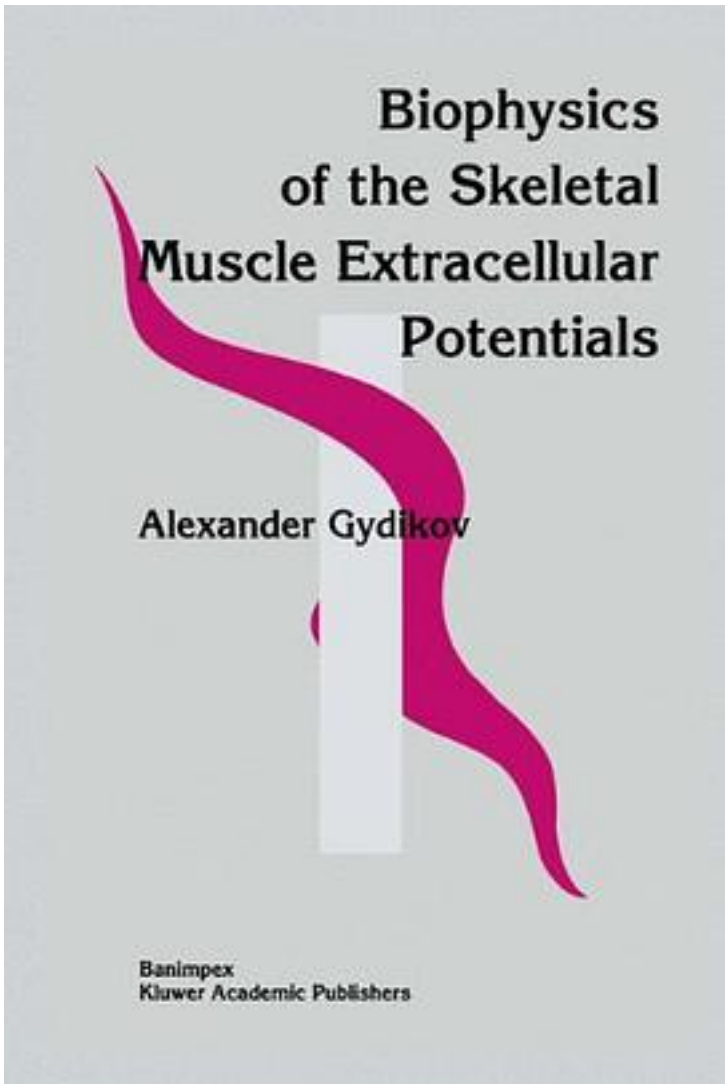
Biophysics of the Skeletal Muscle Extracellular Potentials



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The biophysics of excitable membranes and extracellular potential fields emerged at the end of the 18th century, together with electrophysiology, and has been used ever since as a basis for the development of electrophysiological investigations. This holds true even for the contemporary stage of initial discoveries concerning the molecular mechanisms of membrane excitability. The biophysics of ionic channels has gradually revealed the genesis of the ionic currents and of the biopotentials in different excitable structures. On the basis of electrodynamics, the extracellular potential fields in the living body, considered as a volume conductor, have been studied intensively. The knowledge accumulated constitutes the theoretical basis for interpretation of the electrophysiological data. Over a period of more than 15 years a group of Bulgarian investigators led by A. Gydikov has systematically studied the dependence between the intra- and extracellular potentials of the skeletal muscles. The present book summarizes these investigations. Using a great amount of factual material from experiments and model investigations on the skeletal muscle potentials, the author considers: (a) the extracellular potential field of single skeletal muscle fibres and their dependence of the parameters of intracellular action potentials, the geometric parameters of the fibres and of the volume conductor; (b) the potentials of single motor units; (c) the compound and reflex muscle potentials, and (d) the interference electromyogram. The comprehensive consideration of the biophysics of skeletal muscle potentials is of interest to a broad circle of specialists. The book summarizes contemporary knowledge in this field and presents a consistent theoretical basis of electromyography which is of great importance not only for the neurological clinic, but also for different fields of applied physiology.

作者介绍:

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