1. Record Nr. UNINA9910961079603321 Autore Reilly J. Patrick **Titolo** Applied Bioelectricity: From Electrical Stimulation to Electropathology / / by J. Patrick Reilly New York, NY:,: Springer New York:,: Imprint: Springer,, 1998 Pubbl/distr/stampa **ISBN** 1-4612-1664-8 Edizione [1st ed. 1998.] Descrizione fisica 1 online resource (XIX, 563 p.) Altri autori (Persone) ReillyJ. Patrick Disciplina 612.8 Soggetti Neurosciences **Biophysics** Biomedical engineering Human physiology Physiology Neuroscience Biomedical Engineering and Bioengineering **Human Physiology Animal Physiology** Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia "Adapted from Electrical stimulation and electropathology, Cambridge Note generali University Press, 1992"--Title page verso. "With 241 figures." Includes bibliographical references and index. Nota di bibliografia Nota di contenuto 1 Introduction -- 1.1 General Perspective -- 1.2 Electrical Exposure --1.3 Scales of Short-Term Reactions to Contact Current -- 1.4 Reactions to Electric and Magnetic Field Stimulation -- 1.5 Variables Affecting Thresholds -- 2 Impedance and Current Distribution -- 2.1 Dielectric Properties of Biological Materials -- 2.2 Skin Impedance -- 2.3 Total Body Impedance: Low-Frequency and DC -- 2.4 Impedance at Higher Frequencies -- 2.5 Impedance Through Foot Contact -- 2.6 High-Voltage and Transient Properties -- 2.7 Impedance of Domestic Animals -- 3 Electrical Principles of Nerve and Muscle Function -- 3.1 Introduction -- 3.2 Cellular Membranes -- 3.3 The Excitable Nerve Membrane -- 3.4 Action Potential Models for Cardiac Tissue -- 3.5

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Sommario/riassunto

Electric currents and electromagnetic fields have been applied to biological systems, particularly humans, with both therapeutic and pathological results. Applied Bioelectricity discusses biological responses to electric currents and electromagnetic fields, including medical applications and shock hazards. The book covers fundamental physical and engineering principles of responses to short-term electrical exposure and emphasizes human reactions, although animal responses to electricity are considered as well. The treatment covers reactions from the just-detectable to the clearly detrimental. An important new chapter discusses standards for human exposure to electromagnetic fields and electric current and demonstrates how these standards have been developed based on the principles treated in earlier chapters. J. Patrick Reilly is a member of the principal staff of the Johns Hopkins University Applied Physics Laboratory and is President of Metatec Associates.