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Titolo	Advances for Prosthetic Technology : From Historical Perspective to Current Status to Future Application // by Robert LeMoine
Pubbl/distr/stampa	Tokyo : , : Springer Japan : , : Imprint : Springer, , 2016
ISBN	4-431-55816-0
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (145 p.)
Disciplina	620
Soggetti	Biomedical engineering Automatic control Robotics Mechatronics Orthopedics Biomedical Engineering and Bioengineering Control, Robotics, Mechatronics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Amputations and prostheses, a topic of global concern -- Ankle-foot complex and the fundamental aspects of gait -- Prosthetic gait asymmetry and discomfort while walking with a transtibial prosthesis -- Testing and evaluation strategies for the powered prosthesis, a global perspective -- Passive transtibial prosthesis and associated prosthetic components -- Energy Storage and Return (ESAR) prosthesis -- Architecture of a powered prosthesis system: actuators, sensors, and control -- Transtibial powered prostheses: single and dual actuator configurations -- The MIT inspired powered prosthesis leading to the commercialized BiOM powered prosthesis, a precedence in transtibial prosthetic technology -- Future and advanced concepts for the powered prosthesis.
Sommario/riassunto	This book focuses on the advances in transtibial prosthetic technology and targets research in the evolution of the powered prosthesis such as the BiOM, which was derived from considerable research and development at the Massachusetts Institute of Technology. The concept

of the book spans the historical evolution of prosthetic applications from passive to new and futuristic robotic prosthetic technologies. The author describes the reasons for amputation, surgical procedures, and an historical perspective of the prosthesis for the lower limb. He also addresses the phases and sub-phases of gait and compensatory mechanisms arising for a transtibial prosthesis and links the compensatory mechanisms to long-term morbidities. The general technologies for gait analysis central to prosthetic design and the inherent biomechanics foundations for analysis are also explored. The book reports on recent-past to current-term applications with passive elastic prostheses. The core of the book deals with futuristic robotic prostheses including their function and major subsystems, such as actuator technology, state machine control, and machine learning applications. Finally, the envisioned future trends in the prosthetic technology space are presented.
