

1. Record Nr.	UNINA9910438055403321
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Titolo	Preventive biomechanics : optimizing support systems for the human body in the lying and sitting position / / Gerhard Silber, Christophe Then
Pubbl/distr/stampa	Berlin ; ; New York, : Springer, 2012, c2013
ISBN	1-283-62701-9 9786613939463 3-642-29003-5
Edizione	[1st ed. 2013.]
Descrizione fisica	1 online resource (379 p.)
Altri autori (Persone)	ThenChristophe
Disciplina	620.820113
Soggetti	Biomedical engineering Biomechanics Impact - Physiological effect - Simulation methods
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 and index.
Nota di contenuto	Introduction and Historical Background -- The New Approach: BOSS-Procedure -- Fundamentals -- Extracorporal Supports -- Human Body Models (BOSS-Models) -- Applications-Mechanical Interactions -- Optimization Potential of the Method (Relationship between Perception and Biomechanical Injuries, 'Neuro-Biomechanics').
Sommario/riassunto	How can we optimize a bedridden patient's mattress? How can we make a passenger seat on a long distance flight or ride more comfortable? What qualities should a runner's shoes have? To objectively address such questions using engineering and scientific methods, adequate virtual human body models for use in computer simulation of loading scenarios are required. The authors have developed a novel method incorporating subject studies, magnetic resonance imaging, 3D-CAD-reconstruction, continuum mechanics, material theory and the finite element method. The focus is laid upon the mechanical in vivo-characterization of human soft tissue, which is indispensable for simulating its mechanical interaction with, for example, medical bedding or automotive and airplane seating systems. Using the examples of arbitrary body support systems, the presented approach

provides visual insight into simulated internal mechanical body tissue stress and strain, with the goal of biomechanical optimization of body support systems. This book is intended for engineers, manufacturers and physicians and also provides students with guidance in solving problems related to support system optimization.
