Control of Movement for the Physically Disabled

Dejan Popovic, Thomas Sinkjaer
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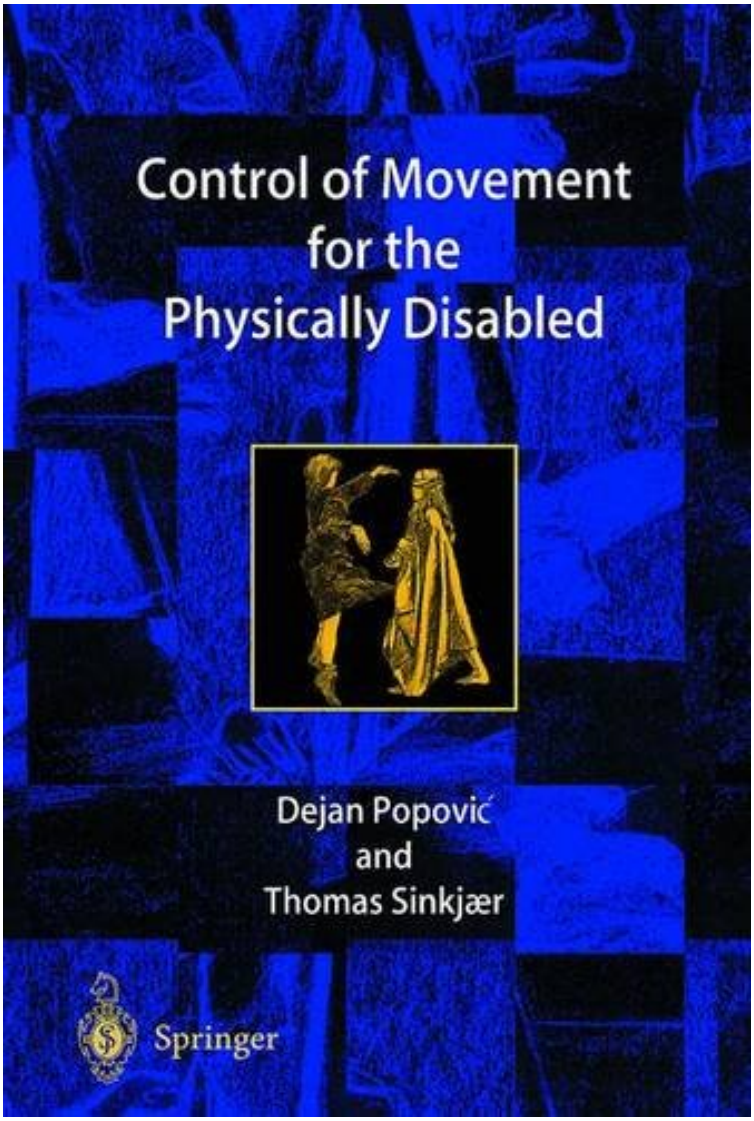

#4171766 in Books 2000-05-15Original language:EnglishPDF # 1 9.50 x 1.40 x 6.39l, .0 #File Name: 1852332794481 pages | File size: 72.Mb

Dejan Popovic, Thomas Sinkjaer : Control of Movement for the Physically Disabled before purchasing it in order to gage whether or not it would be worth my time, and all praised Control of Movement for the Physically Disabled:

0 of 0 people found the following review helpful. Five StarsBy CustomerVery good condition at a remarkable price.2 of 2 people found the following review helpful. A comprehensive book for graduate students and professionalsBy Amir KarnielIt is an unfortunate paradox that the advances in medical therapy and care and the increased life expectancy results in an expanding population of physically disabled persons. Many physically disabled suffer from neuronal damage (e.g., stroke or spinal cord injury) that prohibits or disturbs the control of movements; others are

amputees that lack a limb or part of a limb. The challenge to assist these patients with artificial motor control and artificial limbs is enormous; it requires a multidisciplinary expertise in medicine and engineering.From a control engineer perspective, the biological motor control system is amazing. Even the very basic ability to produce a stable walking pattern in rough unknown terrain, which is naturally generated by the biological motor control system, is an extremely difficult engineering endeavor, as any student who tried to stabilize an inverted pendulum can testify. The authors, Popovic and Sinkjaer, are both trained as engineers and are well known for their research in this field. In this book they cover an extremely large portion of the state of the art technology and theories in the field of motor control for the physically disabled. Other books contain more quantitative and qualitative examples about motor control. However, they do not thoroughly address the issues of rehabilitation technology.My main criticism is aesthetic; this book uses a "wide survey" style, which includes rapid transitions from one model to another and from one result to the other. This style occasionally prevents full appreciation of each model and result. In addition there are a number of poor quality figures and several cumbersome sentences especially in the very first chapter. As a result, the book is rather difficult to read in certain sections. In spite of these shortcomings, the book provides a comprehensive reference source, and it is certainly the definitive reference book in this field. I strongly recommend it for the biomedical engineering shelves of any medical and engineering library and for the researchers and students of this field.This is a short version of a detailed review. For further details see the June 2001 issue of Automatica, 37 (6) pp. 964-967. (Elsevier Science Ltd).

Restoring motor functions has been an exciting yet frustrating research topic for the last several decades. While significant progress has occurred in the design, construction, and low level control of rehabilitation devices, researchers are up against fundamental problems in multi-sensory processing and motor control.The aim of this book is to explore parallels in sensorimotor integration of rehabilitation devices and human extremities, addressing the basic question on how the next generation of rehabilitation devices should evolve. By bringing together experimental physiology, kinesiology, rehabilitation therapy, computer and electrical engineering, this book discusses a range of issues starting from natural and ending with artificial control.While the ultimate goal of capturing able-bodied versatility remains elusive, this book makes an important contribution to a better understanding and design of future rehabilitation methods and devices via a simple underlying message: a topic as complex as restoration of human movements would be best addressed by collaborative, interdisciplinary research, combining high level and low level views, drawing parallels between human studies, analytic and non-analytic approaches, and integrating sensory data with motor commands. The future will hold up the expectations only as researchers become aware of advances in parallel fields, and a common vocabulary emerges.