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## **Virtual Reality Technologies and the Creative Arts in the Areas of Disability, Therapy, Health, and Rehabilitation**

Cobb, S. V. G. ; Brooks, Anthony Lewis; Sharkey, P. M.

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## Health Informatics



Sajeesh Kumar • Ellen R. Cohn  
Editors

# Telerehabilitation

 Springer

*Editors*

Sajeesh Kumar, Ph.D.  
Department of Health Informatics &  
Information Management  
UT Health Science Center  
Memphis  
Tennessee  
USA

Ellen R. Cohn, Ph.D.  
School of Health and Rehabilitation  
Sciences  
University of Pittsburgh  
Pittsburgh  
USA

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## Foreword

*For those who like this kind of book, this is a book they will like.*  
– Abraham Lincoln

*Telerehabilitation*, the most recent evolution in the larger realm of “Telehealth,” is a rapidly evolving discipline. A contemporary visualization of a word describing a process preceded by the prefix *tele-* is almost certain to be based on electronic transmission; however, there is credible evidence that the practice of telehealth has roots in antiquity. Such means as signal fires and drum messages were used to warn of danger from plague and other health threats. The initiation of telehealth in the form of telemedicine in the ‘modern’ era is often attributed to Willem Einthoven who transmitted electrocardiograph signals via telephone in 1905. In contrast to these venerable historic events, my first occasion to see the term *telerehabilitation* in print was in a published comment by Katherine “Kate” Seelman circa 1992 near the beginning of her incumbency as Director of the National Institute on Disability and Rehabilitation Research (NIDRR). Kate, who is one of the distinguished contributors to this book, can reasonably be credited with initiating significant advances in telerehabilitation by making it a NIDRR research and development priority.

Presently viewed as an emerging discipline and area of practice in the larger and more familiar domains of telemedicine and telehealth, telerehabilitation is a rapidly developing technology that enables the extension of rehabilitation expertise and services to remote and underserved areas. Telerehabilitation is equally effective in providing specific health, medical and rehabilitation expertise from comprehensive medical centers of excellence to homes and small clinics in metropolitan areas effectively and efficiently.

The rate of development and expansion in a field of endeavor is generally proportional to its contribution to knowledge and practices. Telerehabilitation is still a nascent field, but intellectual and technical development are proceeding apace. The latter are reflected in a growing literature that has been enhanced with the establishment of the *International Journal of Telerehabilitation (IJT)*. The *IJT* was initiated by Dr. Ellen Cohn, Associate Dean for Instructional Development in the School of Health and Rehabilitation Sciences, and is published by the University Library System of the University of Pittsburgh and co-sponsored by the University Press. The *IJT* was launched with a Special Prepublication Issue in November, 2008.

As with most new endeavors, telerehabilitation is experiencing growing pains. A main deterrent to current expansion and development is gaining approval for reimbursement for services delivered to remote sites and patients. This is particularly true for the delivery of health care over political boundaries.

I believe the case for telerehabilitation has been elegantly presented in the course of articles by pioneering contributors to this field. *Telerehabilitation* provides a history, authoritative information and serves a foundation for future development.

In closing I shall paraphrase Abraham Lincoln's 'book review.' If you find telerehabilitation to be of interest and relevance, then *Telerehabilitation* is indeed a book you will like.

Pittsburgh, USA

Clifford E. Brubaker, Ph.D.

## Preface

Telerehabilitation (a subset of telehealth) is the use of telecommunications to deliver rehabilitation services at a distance. Who might benefit from telepractice? There are 50 million children and adults with disabilities, many of whom might be candidates for telerehabilitation services. Moreover, there are conservatively 430,000 potential providers of telerehabilitation (TR) in the USA.

Telepractice can bridge the gaps created by personnel shortages that exist in underserved and remote areas, as well as serve persons in urban settings who cannot easily leave their homes or offices to seek care. Given the mobile nature of our society, telerehabilitation can enable continuity of care while persons travel for work, vacation and/or education.

While the technical capacities to conduct telerehabilitation have surged ahead in the past 10 years, there has been slower, yet ongoing progress in the development of the policies (e.g., legislation; state licensure; reimbursement) that will be required to actualize wide-spread telepractice service delivery. Most promising is that consumers of all ages are increasingly adopting the electronic delivery of many kinds of services.

As book editors, we recognize that it is a weighty responsibility to put forth one of the first books on a topic as complex as telerehabilitation. We have taken that responsibility seriously – striving to make wise selections of the content and the outstanding authors therein, and to act as diligent stewards of their work. *We therefore dedicate this work, with gratitude, to our foreword and chapter authors.*

We appreciate the wise efforts of Springer's Senior Editor–Medicine, Grant Weston, and his superb production team, and are honored that this work resides within Springer's Health Informatics Series. The diligent efforts of Editorial Assistant Ms. Latika Hans in the pre-production phase cannot be overstated.

The expertise showcased in this book was drawn heavily from the American Telemedicine Association's Special Interest Group in Telerehabilitation. Moreover, the work of the editors and several chapter authors was supported in part by the Rehabilitation Engineering and Research Center on Telerehabilitation; H133E090002, National Institute on Disability and Rehabilitation Research (NIDRR); and US Department of Education, led by Principal Investigators



Drs. David Brienza and Michael McCue. Colleagues at the University of Pittsburgh's School of Health and Rehabilitation Sciences, under the leadership of Dean Clifford E. Brubaker, offered ongoing encouragement and support, and we thank them as well.

*Telerehabilitation* consists of 21 chapters, which, taken together, present a wide-angle view of telerehabilitation at a seminal time in its development. The book includes authors from multiple disciplines, as well as a consumer-based perspective. We trust that we have much to learn from each other, and humbly suggest that our authors' collective contributions will contribute to the current understanding of telerehabilitation, as well as elucidate the immense potential for telerehabilitation-based service delivery to benefit persons with disabilities.

Pittsburgh, USA  
Tennessee, USA

Ellen R. Cohn, Ph.D.  
Sajeesh Kumar, Ph.D.

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## Contributors

**Nancy A. Baker** Department of Occupational Therapy, School of Health and Rehabilitation Sciences, University of Pittsburgh, Pittsburgh, PA, USA

**David M. Brienza** Department of Rehabilitation Science and Technology, School of Health and Rehabilitation Sciences, University of Pittsburgh, Pittsburgh, PA, USA

**Anthony L. Brooks** Director SensoramaLab, AD:MT, School of ICT, Aalborg University, Esbjerg, Esbjerg, Denmark

**Janet E. Brown** American Speech-Language-Hearing Association, Rockville, MD, USA

**Clifford E. Brubaker** School of Health and Rehabilitation Sciences, University of Pittsburgh, Pittsburgh, PA, USA

**Jana Cason** Auerbach School of Occupational Therapy, Spalding University, Louisville, KY, USA

**S.V.G. Cobb** Human Factors Research Group, University of Nottingham, Nottingham, UK

**Ellen R. Cohn** School of Health and Rehabilitation Sciences, University of Pittsburgh, Pittsburgh, PA, USA

**Paco Dionisio** Technology and Health Department, The Italian National Institute of Health, Rome, Italy

**Donald B. Egolf** Department of Communication, University of Pittsburgh, Pittsburgh, PA, USA

**Daniele Giansanti** Technology and Health Department, The Italian National Institute of Health, Rome, Italy

**Philip Girard** Department of Clinical Initiatives, Defense and Veterans Brain Injury Center, Walter Reed Army Medical Center, Washington, DC, USA  
Manchester VA Medical Center, Manchester, NH, USA

**Nancy D. Harada** Department of Health Services,  
Fielding School of Public Health, Los Angeles, CA, USA

**Karen Jacobs** Department of Occupational Therapy,  
College of Health and Rehabilitation Sciences: Sargent College,  
Boston University, Boston, MA, USA

**Jongbae Kim** National Rehabilitation Center Research Institute,  
Seoul, South Korea

**Mark Krumm** Northeast Ohio Au.D. Consortium,  
Kent State University, Kent, OH, USA

**Sajeesh Kumar** Department of Health Informatics & Information Management,  
UT Health Science Center, Memphis, TN, USA

**Alan Chong W. Lee** Physical Therapy Program, Mount St. Mary's College,  
Los Angeles, CA, USA

**Giovanni Maccioni** Technology and Health Department,  
The Italian National Institute of Health, Rome, Italy

**Kristina Martinez** Tele-Rehabilitation Services, Henry M. Jackson  
Foundation CTR for Defense and Veterans Brain Injury Center,  
James A. Haley Veterans' Hospital, Tampa, FL, USA

**Michael McCue** Department of Rehabilitation Science and Technology,  
School of Health and Rehabilitation Sciences, University of Pittsburgh,  
Pittsburgh, PA, USA

**Sohrab Moeini** Department of Health Information Management,  
School of Health and Rehabilitation Sciences,  
University of Pittsburgh, Pittsburgh, PA, USA

**Sandra Morelli** Technology and Health Department,  
The Italian National Institute of Health, Rome, Italy

**Suzanne Paone** eHealth Services Information Services Division,  
University of Pittsburgh Medical Center, Pittsburgh, PA, USA

**Tammy Richmond** Go 2 Care, Inc., Los Angeles, CA, USA

**Katherine D. Seelman** Department of Rehabilitation Science and Disorders,  
School of Health and Rehabilitation Sciences, University of Pittsburgh,  
Pittsburgh, PA, USA

**Paul M. Sharkey** University of Reading, Reading, UK

**Grant Shevchik** Health-UPMC, University Center at Level Green,  
Level Green, PA, USA

**Jenifer Simpson** American Association of People with Disabilities,  
Washington, DC, USA

**Katie Ambrose Stout** Department of Tele-Health, Tele-Rehabilitation Chief,  
Kimbrough Ambulatory Care Center, Fort Meade, MD/Rosslyn, VA, USA

**Deborah Theodoros** Division of Speech Pathology, Telerehabilitation Research  
Unit, School of Health and Rehabilitation Sciences, The University of Queensland,  
St. Lucia, Brisbane, QLD, Australia

**Lyn R. Tindall** Physical Medicine and Rehabilitation, Department of Veterans  
Affairs Medical Center, Lexington, KY, USA

**Michael Towey** Voice and Swallowing Center of Maine,  
Waldo County General Hospital, Belfast, ME, USA

**Barbara A. Vento** Department of Communication Science and Disorders, School  
of Health and Rehabilitation Sciences, University of Pittsburgh,  
Pittsburgh, PA, USA

**Valerie J.M. Watzlaf** Department of Health Information Management,  
School of Health and Rehabilitation Sciences, University of Pittsburgh,  
Pittsburgh, PA, USA

**Jack M. Winters** Department of Biomedical Engineering,  
Marquette University, Milwaukee, WI, USA

