

# COGNITIVE REHABILITATION MANUAL

TRANSLATING EVIDENCE-BASED  
RECOMMENDATIONS INTO PRACTICE

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This information is not meant to replace the advice from a medical professional. You should consult your health care provider regarding specific medical concerns or treatment.

“A concise and precise manual that is excellent for therapists, professors and students in the field of cognitive rehabilitation.”

ADA LEUNG, PhD  
UNIVERSITY OF ALBERTA, EDMONTON, AB (CAN)

“Bible for new and intermediate cognitive rehabilitation therapists.”

JESSICA MARTINEZ, OTR  
SCRIPPS, ENCINITAS, CA (USA)

“This Manual was just what I was looking for. It provides me with a step-by-step approach to provide quality treatments. The decision trees keep me focused and on the right path.”

MERRI VITSE, COTA/L  
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MAYO CLINIC, ROCHESTER, MN (USA)

“Useful for both experienced professionals in cognitive rehabilitation and for a first approach.”

PAOLO BOLDRINI, MD  
OSPEDALE CA' FONCELLO, PIAZZALE OSPEDALE  
TREVISO (ITA)

“The Cognitive Rehabilitation Manual is a comprehensive collection of evidence-based research practices organized in a clear manner. The information is presented in a format that will benefit both seasoned professionals and entry level clinicians working with patients who present with cognitive/communication deficits.”

DAVID J. HAJJAR, MS, CCC-SLP  
CROTCHED MOUNTAIN FOUNDATION, GREENFIELD, NH  
(USA)

“This manual has moved the post-acute brain injury industry significantly forward by providing clear guidelines for delivering ‘best practice’ cognitive rehabilitation.”

SID DICKSON, PhD, ABPP  
PATE REHABILITATION, DALLAS, TX (USA)

“The CRM has the potential to unite allied health practitioners, and revolutionize the way in which they provide comprehensive, holistic cognitive rehabilitation to survivors of acquired brain injury.”

MICHAEL FRAAS, PhD  
OAK PARK, IL (USA)

“The manual is well aimed at ACBIS qualified staff and clinical psychologists and occupational therapists. It covers many of the well-researched and presented single or small-n case studies and the larger group outcome studies up to the present. It is certainly evidence-based in my view and it succeeds in translating the disparate evidence base in the clinical literature to workable recommendations for staff on the ground.”

DR BRIAN WALDRON  
ACQUIRED BRAIN INJURY, DUBLIN (IRL)

“Dr. Haskins and his team provided a very in-depth and precise perspective to cognitive remediation therapy and the goals and objectives needed to meet these needs.”

JEFFREY A. FALLERONI, MSCCC/SLP  
REMEDIATION, PITTSBURGH, PA (USA)

“Cognitive rehabilitation is a dynamic practice between the clinician and the client, not fitting into a typical treatment protocol. This manual provides the kind of support that clinicians need to develop effective and evidence-based treatment plans.”

JESSICA PETERSEN, OTR/L  
MAYO CLINIC, ROCHESTER, MN (USA)

“The Cognitive Rehabilitation Manual is a landmark volume translating decades of research into clearly described procedures indispensable for working clinicians. This manual is an invaluable guide to the evidence-based practice of cognitive rehabilitation for clinicians with or without strong research backgrounds.”

JAMES F. MALEC, PhD, ABPP-CN, RP, FACRM  
REHABILITATION HOSPITAL OF INDIANA, INDIANAPOLIS,  
IN (USA)

“Thoughtfully organized, practical, and invaluable — this manual provides step-by-step techniques for delivering cognitive therapies. This promises to be an essential guide to the delivery of cognitive rehabilitation services for persons with brain injury.”

RONALD T. SEEL, PhD  
SHEPHERD CENTER, ATLANTA, GA (USA)

“The *Cognitive Rehabilitation Manual; Translating Evidence-Based Recommendations into Practice* is a guide for clinicians who want to effectively deliver evidence-based rehabilitation interventions in everyday clinical practice. The Brain Injury Interdisciplinary Special Interest Group (BI-ISIG) of the American Congress of Rehabilitation Medicine (ACRM) is committed to fostering the use of empirically supported interventions to improve the lives of individuals with brain injury. A series of reviews, which are published in the *Archives of Physical Medicine and Rehabilitation* (Cicerone et al., 2000; 2005; 2011) have reviewed the scientific literature and put forth standards and guidelines for clinical practice based on the quality of evidence available for each intervention. The *Cognitive Rehabilitation Manual* operationalizes or “translates” these guidelines into step-by-step procedures that can be used by clinicians who treat individuals with brain injury.

The volume is organized into six chapters. The introductory chapter compiles the clinical wisdom of the authors into a practical roadmap for structuring and implementing cognitive rehabilitation interventions. Treatment considerations and patient factors that may influence the course of treatment are discussed, and a guide to goal-setting that is applied throughout the manual is introduced. Subsequent chapters present practical guides for the implementation of evidence-based interventions for impairments in each of the following areas: Executive Functions, Memory, Attention, Hemispatial Neglect, and Social Communication. The content of each chapter draws from empirically-supported rehabilitation interventions included in the Cicerone et al. reviews (2000; 2005; 2011) and the collective clinical experience of the authors of the *Cognitive Rehabilitation Manual*.

Wherever possible, step-by-step guidelines for implementing each intervention and setting relevant individual goals are provided, along with clinical recommendations for tailoring and modifying the intervention according to patients’ needs. In cases where in-depth treatment manuals exist, full references and links to these materials are provided. Additional appendices include rubrics for goal-setting in each of these domains of functioning, and handouts or worksheets that can be used to record and evaluate progress.

The *Manual* is ideally suited for clinicians who have had some formal training in cognitive rehabilitation and who have experience working with individuals with brain injury (e.g., traumatic brain injury, stroke). The interventions described can be readily used by occupational therapists, speech and language therapists, psychologists, and other rehabilitation professionals.

The *Cognitive Rehabilitation Manual; Translating Evidence-Based Recommendations into Practice* is a significant contribution to the field of brain injury rehabilitation. Never before have research outcomes been made so accessible for use in everyday clinical work. This important volume will raise the bar in cognitive rehabilitation by aiding clinicians in delivering high-quality, empirically-supported interventions to improve the lives of the patients we serve.

KRISTEN DAMS-O’CONNOR, PhD  
MOUNT SINAI SCHOOL OF MEDICINE, NEW YORK, NY (USA)

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## Preface

This manual was developed by a sub-group of the Cognitive Rehabilitation Task Force of the Brain Injury Interdisciplinary Special Interest Group (BI-ISIG) of the American Congress of Rehabilitation Medicine (ACRM). It is modeled on a manual that was developed by Edmund Haskins, Ph.D., at Hook Rehabilitation Center in the Community Health Network in Indianapolis, Indiana. The current manual reflects the evidence-based treatment recommendations put forth by the BI-ISIG Cognitive Rehabilitation Task Force of ACRM and the clinical experience and expertise of the authors as discussed in the Introduction (see Section 1.1).

## Dedication

Cognitive rehabilitation is by some standards a relatively new field. Anyone who has worked with a person with brain injury and their family is aware of the importance of cognitive recovery to them. While the humanitarian recognition of the need to promote recovery of cognitive functions following brain injury is not new, the scientific basis for cognitive rehabilitation is.

Nonetheless, while the history of science in cognitive rehabilitation may be recent, the number and sophistication of empirical studies have accelerated remarkably over the last 30 years such that we now have the scientific evidence to guide clinical practice. Without the contributions of Leonard Diller, PhD and Keith Cicerone, PhD, we would not be at this historical intersection.

*Lance E. Trexler, PhD  
Donna Langenbahn, PhD  
J. Preston Harley, PhD  
July 19, 2011*



**Leonard Diller, PhD** having started at the [Rusk] Institute of Rehabilitation Medicine at NYU Medical Center in 1952, is now approaching his 60th year in rehabilitation. He assumed a leadership role at Rusk as the new field of medical rehabilitation sought to assess and meet the clinical and functional needs of individuals with disability, to train clinicians and researchers, and to gain a foothold in cultural and political arenas. In this context, Dr. Diller built a psychology program where clinical observation, beginning with the patient, fueled intervention protocols and research, and the research, in turn, sought to validate obtained results. His approach to the problem of brain injury treatment and research was direct and elegant, backed by scientific logic: develop a standard task sensitive to the problem, elucidate behavior by examining task response style, determine task conditions that increase or decrease the problem, and develop a methodology to increase awareness and enable the individual to overcome the problem while performing a skilled activity. In sum, he taught us that neuropsychological knowledge and process could help us design and guide rehabilitation procedures. This methodology formed the basis for an astoundingly prolific research output, much of it seminal research in the area of acquired brain injury, and caused him to be regarded as “the founder of scientifically-based cognitive rehabilitation.”<sup>1</sup> Innumerable individuals with brain injury, family members, clinicians, and researchers have benefited from Dr. Diller’s gifts, and those who know him are awed by his enduring encyclopedic knowledge, kindness, and humility.

*Innumerable individuals with brain injury, family members, clinicians, and researchers have benefited from Dr. Diller’s gifts, and those who know him are awed by his enduring encyclopedic knowledge, kindness, and humility.*

<sup>1</sup>Goldstein, G. (2009). Neuropsychology in New York City (1930-1960), *Archives of Clinical Neuropsychology*, 24, 137-143.





**Keith Cicerone, PhD** has been a clinician and researcher for over 30 years, and as such, has improved the quality of life for thousands of patients who have suffered brain injuries. It is clearly evident from his numerous publications and research that Dr. Cicerone had the wisdom to listen and learn from his patients. His concern for the well-being of individuals with brain injury has not been limited to clinical care. At the same time, he committed himself to improving the science behind his clinical practice. He has made significant contributions to the development of national policies recognizing cognitive rehabilitation as an effective treatment for individuals with

brain injuries. In addition to conducting his own research, Dr. Cicerone led the American Congress of Rehabilitation Medicine, Brain Injury-Interdisciplinary Special Interest Group's evidence-based reviews, which were published in the *Archives of Physical Medicine and Rehabilitation* in 2000, 2005 and 2011. The present work is primarily based upon the findings and recommendations of these three publications. His leadership and commitment in the establishment of guidelines for cognitive rehabilitation have made it now possible to offer clinical practitioners of cognitive rehabilitation treatment strategies that are based upon scientific, empirical evidence.



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## TRANSLATING EVIDENCE-BASED RECOMMENDATIONS INTO PRACTICE

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# 1. Introduction: Principles of Cognitive Rehabilitation

## 1.1 Functions and Structure of this Manual

This manual was developed to guide clinicians who conduct cognitive rehabilitation for individuals with acquired brain injury. The clinical protocols contained herein reflect the recommendations made by the Cognitive Rehabilitation Task Force of the Brain Injury Interdisciplinary Special Interest Group (BI-ISIG) of the American Congress of Rehabilitation Medicine (ACRM). These researchers have conducted several systematic reviews of the cognitive rehabilitation literature (see Cicerone et al., 2000, 2005, 2011) and have recommended treatment approaches and strategies that have sufficient empirical evidence of efficacy in ameliorating cognitive impairments following brain injury.

The treatment strategies recommended by the BI-ISIG Cognitive Rehabilitation Task Force have been graded based on the strength of empirical evidence to support their use. Specifically, the term “Practice Standard” is used to designate those strategies which have shown “substantive evidence” of effectiveness.” These are offered with the strongest recommendation. The term “Practice Guideline” designates those that have shown “probable effectiveness,” and these are given the next strongest recommendation. The term “Practice Option” designates those treatment strategies believed to have shown “possible effectiveness” but require further research evidence for stronger recommendation (Cicerone, Dahlberg, Malec et al., 2005).

The BI-ISIG recommendations contained herein are based on empirical evidence as well as clinical experience and judgment to create a manual that fosters the application of high-quality, evidence-based interventions. In this manual, we have taken the committee’s recommendations and developed detailed protocols to instruct and guide clinicians in their implementation. Accordingly, the manual includes protocols for the treatment of the following areas: executive functioning, memory, attention and concentration, visual neglect, and social communication. Each protocol draws heavily from one or more studies that formed the basis of the BI-ISIG recommendations. In addition to presenting global strategies, each protocol includes a section describing suggested methods for implementing these strategies and guidelines for setting specific tactical goals.

As previously noted, the techniques, interventions, procedures or training strategies herein presented (except in one instance as noted) were all included in the Cicerone et al., 2000, 2005, 2011 reviews and the interventions in the systematic reviews were based on treatment for people with traumatic brain injury or stroke. While driven by research as cited, the Introduction reflects the professional consensus of the authors and editors. We also present in the Introduction stages of treatment (Acquisition, Application, and Adaptation) which were clearly used in the research of Sohlberg and Mateer (1987a), but these stages of training were not explicitly utilized in the treatment methodologies of other studies. These stages of treatment are included as useful guides to clinical application. Lastly, the Manual provides suggested methods for goal setting at the end of each chapter and in Appendix A. While the authors and editors felt that these were very useful clinically to practicing therapists, they were not part of the treatment methodologies of the studies in the Cicerone et al., 2000, 2005, or 2011 reviews.

The evidence for rehabilitation of disorders of executive functions, memory and attention includes specific protocols as well as more “complex” programs of treatment characterized by multiple steps, sequences, and highly organized protocols. The chapters on Executive Functions and Memory have a section on “Complex Evidence-Based Programs” and group treatment protocols are included in these sections as well. Throughout the current volume, when a proprietary treatment manual is available from