

Cambridge University Press  
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# Manual of Neurosonology

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Edited by

**László Csiba**

The Department of Neurology at the University of Debrecen in Debrecen, Hungary, and the European Society of Neurosonology and Cerebral Hemodynamics

and

**Claudio Baracchini**

The Stroke Center and Neurovascular Ultrasound Laboratory at the University of Padua School of Medicine in Padua, Italy



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## CAMBRIDGE UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning and research at the highest international levels of excellence.

[www.cambridge.org](http://www.cambridge.org)

Information on this title: [www.cambridge.org/9781107659155](http://www.cambridge.org/9781107659155)

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First published 2016

Printed in the United Kingdom by Clays, St Ives plc

*A catalogue record for this publication is available from the British Library*

*Library of Congress Cataloguing in Publication data*

Names: Csiba, László, editor. | Baracchini, Claudio, editor.

Title: Manual of neurosonology / edited by László Csiba and Claudio Baracchini.

Description: Cambridge, United Kingdom; New York : Cambridge University Press, 2016. |

Includes bibliographical references and index.

Identifiers: LCCN 2016003414 | ISBN 9781107659155 (pbk.)

Subjects: | MESH: Cerebrovascular Disorders—ultrasonography |

Ultrasonography, Doppler, Transcranial—methods

Classification: LCC RC386.6.U45 | NLM WL 355 | DDC 616.8/107543—dc23

LC record available at <http://lcn.loc.gov/2016003414>

ISBN 978-1-107-65915-5 Paperback

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## Contributors

### **Andrei V. Alexandrov**

Department of Neurology, University of Tennessee  
 Health Science Center, Memphis, TN, USA

### **Elsa Azevedo**

Alameda Professor Hernani Monteiro at the  
 Department of Neurology, Faculty of Medicine,  
 Hospital Sao Joao, Porto, Portugal

### **Galina Baltgaile**

Department of Neurology, Riga Stradins  
 University, Riga, Latvia

### **Claudio Baracchini**

Director of the Stroke Center and Neurovascular  
 Ultrasound Laboratory at the University of Padua  
 School of Medicine in Padua, Italy

### **Kristian Barlinn**

Department of Neurology, Carl Gustav Carus  
 University Hospital Dresden, Dresden, Germany

### **Eva Bartels**

Professor of Neurology at the Center for Neurological  
 Vascular Diagnostics, München, Germany

### **Natan M. Bornstein**

Professor of Neurology, Tel Aviv Sourasky Medical  
 Center, Department of Neurology, Tel Aviv, Israel

### **Pedro Castro**

Alameda Professor Hernani Monteiro at the  
 Department of Neurology, Faculty of Medicine,  
 Hospital Sao Joao, Porto, Portugal

### **Attila Csányi**

Head of Department of Neurology, Petz Aladár  
 Hospital, Győr, Hungary

### **László Csiba**

Professor and Chairman at the Department of  
 Neurology at the University of Debrecen in Debrecen,  
 Hungary

### **Massimo Del Sette**

Head of Neurology Unit, Galliera Hospital, Genova,  
 Italy

### **Ralf Dittrich**

Assistant Professor of Neurology at the Department of  
 Neurology, University Hospital of Münster, Münster,  
 Germany

### **Florian Doepp (Connolly)**

Department of Neurology, University Hospital  
 Charité, Berlin, Germany

### **Béla Fülesdi**

Professor and Chair of Department of Anesthesiology  
 and Intensive Care, University of Debrecen, Hungary

### **Alexander Gur**

Senior Neurologist, Department of Neurology,  
 Barzilai Medical Center, Ashkelon, Israel, and Senior  
 Lecturer in Neurology, Ben-Gurion University of the  
 Negev, Beer Sheva, Israel

### **José Gutierrez**

Department of Neurology, Columbia University  
 Medical Center, New York, NY, USA

### **Susanna Horner**

Assistant Professor of Neurology at the Department of  
 Neurology, Medical University of Graz, Graz, Austria

### **Manfred Kaps**

Director at the Neurologischen Klinik,  
 Universitätsklinikum Giessen und Marburg, and  
 Professor of Neurology at the Department of  
 Neurology, Justus-Liebig-University, Giessen, Germany

### **Aristeidis H. Katsanos**

Department of Neurology, University of Ioannina,  
 School of Medicine, Ioannina, Greece

### **Henrich Kele**

Neurologie Neuer Wall Dr. Bredow & Partner,  
 Hamburg, Germany

## Contributors

**Vendel Kemény**

Head of Sonodent Kft, Balatonfüred, Hungary

**Jürgen Klingelhöfer**

Professor at the Department of Neurology, Medical Center Chemnitz, Chemnitz, Germany

**Christos Krogias**

Department of Neurology, St. Josef-Hospital, Ruhr University, Bochum, Germany

**Stephen Meairs**

Professor of Neurology at the Department of Neurology, University Medicine Mannheim, Heidelberg University, Mannheim, Germany

**Csilla Molnár**

Department of Anesthesiology and Intensive Care, University of Debrecen, Hungary

**José-Manuel Moltó Jordà**

Senior Neurologist, Certified Neurosonologist, Hospital Virgen de los Lirios, Alcoi (Alacant), Spain

**José C. Navarro**

Department of Neurology and Psychiatry, University of Santo Tomas Hospital, Jose Reyes Medical Center, Institute of Neurosciences St Luke's Medical Center, Manila, Philippines

**László Németh**

Head of Department of Neurology, Kanizsai Dorottya Hospital, Nagykanizsa, Hungary

**Kurt Niederkorn**

Deputy Head Section of General Neurology and Head of Neurosonology, Department of Neurology, Medical University Graz, Graz, Austria

**László Oláh**

Head of Neurosonology Laboratory, Department of Neurology, University of Debrecen, Debrecen, Hungary

**E. Bernd Ringelstein**

Universitätsklinikum Münster, Münster, Germany

**Tatjana Rundek**

Departments of Neurology and Public Health Sciences, University of Miami Miller School of Medicine, Miami, FL, USA

**Valentina Saia**

Neurologist, University of Florence, Florence, Italy

**Stephan J. Schreiber**

Department of Neurology, Charité Universitätsmedizin Berlin, Berlin, Germany

**Mario Siebler**

Neurology Department, Mediclin, Essen-Kettwig, Germany

**Péter Siró**

Department of Anesthesiology and Intensive Care, University of Debrecen, Debrecen, Hungary

**Erwin Stolz**

Professor of Neurology and Head of the Department of Neurology at the Justus-Liebig-University, Giessen, Germany, and Caritasklinikum Saarbruecken, St. Theresia, Saarbruecken, Germany

**Mathias H. Sturzenegger**

Professor of Neurology, University Department of Neurology, University Hospital Bern, Inselspital, Bern, Switzerland

**Ekaterina Titianova**

Clinic of Functional Diagnostics of Nervous System, Military Medical Academy, Sofia, Bulgaria

**Georgios Tsivgoulis**

Second Department of Neurology, "Attikon" Hospital, University of Athens, School of Medicine, Athens, Greece, and International Clinical Research Center, St. Anne's University Hospital Brno, Brno, Czech Republic

**José M. Valdeuza**

Professor of Neurology and Director, Center of Neurology, Segeberger Clinic Group, Bad Segeberg, Germany

**Ildikó Vastagh**

Department of Neurology, Semmelweis University, Faculty of Medicine, Budapest, Hungary

**Edoardo Vicenzini**

Neurosonology/Stroke Unit, Department of Neurology and Psychiatry, Sapienza University of Rome, Rome, Italy

**G.-Michael von Reutern**

Professor of Neurology, Neurologische Praxis am ambulanten kardiologischen Zentrum, Bad Neheim, Germany

**Uwe Walter**

Professor, Department of Neurology, University of Rostock, Rostock, Germany



## Foreword

Ultrasound is a reliable, safe and relatively inexpensive imaging technique which plays an indispensable and integral role in the evaluation of patients with cerebrovascular disease. It provides a unique diagnostic perspective in cerebrovascular disorders, with extremely high temporal resolution and excellent spatial display of extracranial arteries, brain structures and cerebral vessels. Ultrasound therefore provides a unique diagnostic perspective and has several important advantages compared with traditional computed tomography, magnetic resonance and invasive angiographic approaches.

Carotid ultrasound is capable of monitoring the development of atherosclerosis from early asymptomatic changes to the morphological changes associated with the unstable carotid artery plaque. It is possible using ultrasound to visualize arterial and venous blood flow characteristics, brain perfusion and vessel wall anatomy and thrombus formation. It can also detect and monitor emboli with their origin from unstable atherosclerotic plaques or emboli which arise during invasive cardiovascular examinations and surgery.

Cerebrovascular ultrasound studies also have an important role during patient follow-up. It has played an integral part in prospective randomized clinical trials, both in epidemiological and in interventional

studies. Technological developments and the standardization of examination procedures have made important contributions regarding patient care including stroke prevention, acute stroke treatment, including sonothrombolysis, and interventional and surgical management.

The *Manual of Neurosonology* was initiated by the European Society of Neurosonology and Cerebral Hemodynamics (ESNCH) and includes contributions from experienced ESNCH members who are all international experts. It is mainly intended for clinicians who use cerebrovascular ultrasound in the assessment and treatment of cerebrovascular disease. However, it also includes other important neurosonological applications such as orbital ultrasound, brain parenchyma imaging and ultrasonography of the peripheral nerves which are gaining increasingly important roles in patient management.

The *Manual of Neurosonology* provides a comprehensive and authoritative work on the principles, practice and future developments of neurosonology which will provide an excellent reference in neurosonology for clinicians and clinical neuroscientists.

David Russell, MD  
Founding President of the ESNCH