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## Preface

Transcranial magnetic stimulation (TMS) is no longer a novel experimental method. TMS is an established therapeutic and diagnostic technique in clinical practice. Hundreds of clinical patients a year undergo TMS to treat their medication-resistant depression or to establish detailed cortical motor and language maps prior to surgical or other therapeutic interventions. In addition, TMS is a valuable neuroscientific tool, and many patients and healthy volunteers enroll each year into research studies that utilize TMS to characterize cortical reactivity and plasticity, evaluate corticospinal and cortico-cortical connectivity, explore causal relations between brain activity and behavior, assess the impact of pharmacologic and other interventions, etc. According to PubMed, more TMS studies have been published in the last 5 years than in the previous 20 years, and 2013, at the writing of this preface, was on track to break the 1,000 papers in a year mark. Clinical trials are currently underway around the globe exploring the effects of TMS in diverse disease states including autism, epilepsy, migraine, tinnitus, stroke recovery, schizophrenia, Parkinson's, and Alzheimer's disease.

As with any tool, the rapidly growing use of TMS is a mixed blessing. On the one hand, an expanded TMS practitioner base allows for more, better, and deeper exploration of the technological, scientific, diagnostic, and therapeutic possibilities. On the other hand, as the number of TMS users grows, it becomes more and more difficult to maintain a keen grasp of foundational and emerging methodologies. Without care, the TMS research field can easily divide into a number of "camps" with each utilizing and purporting the benefits of their own devices, stimulation protocols, and methodologies. Fractionation based on informed practice and therapeutic evolution is not necessarily a bad thing; however, fractionation due to non-standardized or incoherent education and communication is potentially dangerous for the future of TMS.

This book aims to enable new and existing practitioners to learn and follow established TMS protocols. We describe many tried and true techniques: from single to multiple pulse TMS paradigms; from clinical to academic pursuits; from electromyographic to neuroimaging measurements. We hope that this work will serve not only as a good methodological introduction to those new to the TMS field, but also as a source of continual reference for experienced practitioners.

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