This monograph presents a comprehensive overview of electrocardiography from the aspect of wireless and mobile monitoring and its potential for personalized health management. Personalized healthcare diagnostic procedures and treatments are tailored to individual patients and therefore more efficient. The main advantage of wireless and mobile ECG systems, compared to traditional ECG devices, is the ability to generate ECG measurements by a single or a few wireless and non-obstructive personal sensors. In addition, the sensors are potentially multifunctional in the sense that, besides ECG, they can also measure other physiological and biochemical parameters, e.g., heart rate, respiration, ballistocardiogram, blood pressure, blood oxygen saturation, body temperature, posture, or physical activities, thus providing insight into the medical status of the monitored person.

Body sensors can be used for both inpatient and outpatient monitoring, thus enabling cardiac monitoring and diagnostic decisions to be made during normal everyday activities. Since the employment of remote and outpatient monitoring technologies also reduces the costs of health care, it is evident that such an approach could become widely applicable in the near future—for patients and those who care for their health. The spectrum of book topics covers the implementation and efficient application of user-friendly mHealth systems. The target audience comprises biomedical engineers, medical doctors, students, industrial experts, and health managers developing mHealth solutions. The book may be interesting and useful also for the wider public in the parts where basic principles of mobile monitoring and their benefits for users are presented.

We are grateful to all our colleagues who have contributed to this book through discussions, clinical work, or by reading the material, in particular to Prof. Borut Geršak, M.D., Ph.D., to Assist. Prof. Jurij Matija Kališnik, M.D., Ph.D., and many other medical professionals who have collaborated in our joint projects. Many thanks to Dr. Monika Kapus-Kolar for carefully proofreading the text and resolving many formal and linguistic inconsistencies. We are indebted to the Jožef Stefan Institute for support and constructive research spirit. We acknowledge the financial support from the Slovenian Research Agency under the grant P2-0095 and the EkoSMART project, grant No. C3330-16-529007, financed by the European
Regional Development Fund. Additionally, Ivan Tomašić thanks the Swedish Knowledge Foundation (KKS) for their support through projects CCOPD, reference number: 20160029, and the Embedded Sensor Systems for Health research profile.

Ljubljana, Slovenia
March 2017

Roman Trobec
Ivan Tomašić
Aleksandra Rashkovska
Matjaž Depolli
Viktor Avbelj
Body Sensors and Electrocardiography
Trobec, R.; Tomašić, I.; Rashkovska, A.; Depolli, M.; Avbelj, V.
2018, XIV, 122 p. 48 illus., Softcover
ISBN: 978-3-319-59338-8