



Practical ECG for Exercise Science and Sports Medicine

By Greg Whyte, Sanjay Sharma



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An essential reference for students and practitioners working with exercise electrocardiograms (ECGs), *Practical ECG for Exercise Science and Sports Medicine* guides readers from theory to applied interpretation of normal and abnormal ECG traces. The text is based on the authors' clinical experience, published research, and over a decade of dedicated study on the interpretation of ECGs from clinical patients to elite athletes both at rest and during exercise.

This resource offers clear protocols for ECGs with an emphasis on athletes. With over 70 ECG readouts to examine, readers can practice and refine their ECG interpretation skills and increase their understanding of heart conditions identifiable through ECG testing. Troubleshooting tips throughout the text provide quick solutions to problems that may occur during ECG testing, and detailed information on interpreting the ECGs is provided for numerous conditions that practitioners are likely to encounter in real-life practice.

Divided into three parts, *Practical ECG for Exercise Science and Sports Medicine* begins with an overview of heart anatomy and function and a review of the methods for monitoring heart rate and function. Part II of the text describes the ECG in detail at rest and during exercise, with an emphasis on measurement and interpretation. In particular, chapter 4 examines normal and abnormal ECG findings with a detailed discussion of cardiac abnormalities. Each abnormality is accompanied by a sample ECG trace. Chapter 5 focuses on the how the exercise ECG may be used as a tool in the identification of a variety of pathologies, including coronary artery disease and exercise-induced arrhythmias, and how the ECG can assist in the differentiation of pathologic and physiologic enlargement of the left ventricle.

A special focus on the athlete's heart follows in part III. Because physiologic adaptations associated with chronic physical training may mimic those observed in pathologic processes, part III discusses the anomalies often present in athletic individuals at rest and during exercise. This part also includes six case studies, which discuss specific problems encountered in dealing with athletes' hearts and provide in-depth examples of conditions identifiable through an exercise ECG.

Because the ECG is so widely used in the assessment of cardiac electrical function, morphology, and circulation, understanding a normal ECG at rest and during exercise and being able to interpret findings are becoming increasingly important for noncardiologists, including health professionals, sports medicine specialists, physiotherapists, clinical exercise physiologists, and sport and exercise scientists. With its straightforward approach, *Practical ECG for Exercise Science and Sports Medicine* is a valuable resource for those studying and working in the field of exercise, sports medicine, and sport science as well as health professionals working with athletic and sedentary individuals at rest and in exercise stress testing.

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Greg Whyte, PhD, FACSM, is a professor of applied sport and exercise science at Liverpool John Moores University in London. As one of British sport's foremost research scientists, Whyte has worked as a consultant physiologist in a large number of Olympic and professional sports and is currently the science consultant for England FA (World Cup 2010), the Commonwealth Games Committee for England (Delhi 2010), and British Rowing. From 2001 to 2004, Whyte served as the director of research for the British Olympic Association based at the Olympic Medical Institute, where he established the Centre for Sports Cardiology, which is dedicated to the investigation and treatment of sport-related cardiac issues. Whyte is now the director of the Centre for Sports Cardiology at the Centre for Health and Human Performance.

A former international modern pentathlete, Whyte competed in two Olympic Games and won European bronze and World Championship silver medals. He studied for his BSc (hons) at Brunel University, completed his MSc in human performance at Frostburg State University in the United States, and completed his PhD at St. George's Hospital Medical School and the University of Wolverhampton, where he was research coordinator. Whyte is a fellow of the American College of Sports Medicine (FACSM) and was chairman of the charity Cardiac Risk in the Young (CRY) from 1999 to 2009.

Sanjay Sharma, BSc (Hons), MD, FRCP (UK), FESC, was appointed consultant cardiologist and physician at University Hospital Lewisham and honorary senior lecturer in cardiology at Kings College Hospital London in 2001. In 2006 he took up the post of director of heart muscle diseases at Kings College in London and became professor of cardiology at St George's University of London in 2009. Sharma is medical director for Virgin London Marathon, consultant cardiologist for the CRY sports cardiology clinic at St George's Hospital, and cardiologist for the English Institute of Sport, the British Rugby League, and the British Lawn Tennis Association.

Sharma's interests include cardiovascular adaptation in athletes, sudden cardiac death in the young, and heart muscle diseases, for which he has an international reputation and has published over 100 scientific articles, including original papers in highly rated peer-reviewed journals. Sharma was awarded the status of fellow of the European Society of Cardiology and elected as a nucleus member of the Sport Cardiology section of the European Association of Cardiovascular Disease Prevention and Rehabilitation in 2008. Sharma leads the CRY screening program, which is the largest of its kind in the UK. Sharma has an active interest in medical education and is the lead tutor for the international teaching faculty for the Royal College of Physicians.

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