response. However, rather more important was the finding that whatever the length of the nitrate free interval the therapeutic effects became somewhat attenuated within eight hours of the start of treatment and appreciably so after 12 hours. There was therefore a point in testing a shorter nitrate free interval because important therapeutic effects do not seem to last for over 12 hours of continuous therapy. Waters et al were also unable to show therapeutic effect during the intervening treatment when they tested 12 and 16 hours after patch application and though Schaer et al showed significant effects at four and eight hours it was clear from inspecting their data that these were rather statistically significant than those at four hours. It thus seems likely that tolerance develops so quickly during transdermal therapy that it limits its efficacy as a day long prophylactic agent.

The study reported by Fox et al rather supports our findings because treatment had very little influence on the circadian pattern of silent ischaemia—so one would expect if treatment had only been effective during the first few hours.

It is certainly not justified to conclude that the significant treatment effects demonstrated between three and five hours after application indicate that tolerance has been "avoided". Our results supported by data from other studies suggest that while the effects measured at 3–5 hours may have remained significantly better than those during placebo treatment, they are likely to be significantly worse than those seen after only 30–60 minutes of treatment and significantly better than those measured after eight hours or more. In other words, it seems likely that tolerance is a gradual but continuous process beginning from the moment that treatment is initiated.

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Novel exercise protocol suitable for use on a treadmill or a bicycle ergometer

Six—In their letter Dr Essamri and colleagues correctly state that the standardisation of exercise tests is now a major issue (British Heart Journal 1991;64:405–6) but the new standardised exponential exercise protocol (STEEP) devised by Dr Northridge and colleagues (British Heart Journal 1990;64:313–6) is a useful protocol. In our own subjects the rating of perceived exertion (RPE) was significantly lower in the first STEEP protocol than in the new one (mean RPE 25) and the new protocol was performed at a lower heart rate and work rate (mean heart rate 60 bpm and mean work rate 100 W).


during the last six minutes of exercise. Such differences are expected because the cardio-pulmonary responses to exercise vary according to the mass of active muscle: at a given submaximal work rate, VO2 max tends to be higher with cycle ergometry, whereas peak heart rate and VO2 max tend to be higher on treadmill exercise. Standardisation of work rate according to lean body mass and endurances might therefore be expected to reduce these differences, but to expect cycle ergometry and a motorised treadmill to be equivalent is unrealistic.

Dr Essamri and colleagues also suggest that the relatively slow rise in VO2 over the first minutes of the STEEP makes it an unsuitable basis for the prediction of VO2 max from VO2 at submaximal work rates. However, such extrapolations are always subject to large errors and maximal tests are preferred when VO2 max is to be determined.

However, in the graphs presented by Dr Northridge and Dr Essamri we note that VO2 max continues to increase steeply and functionally over time, and that the subjects who reach VO2 max at 90% of time, may effect the exercise of the continued step rise in VO2 may be to amplify the effects on measured VO2 max. The idea of small changes in exercise duration due to variations in motivation and encouragement.

The debate between proponents of the cycle ergometer and proponents of the motorised treadmill is likely to continue for many years—the advantages and disadvantages of each are balanced and preferences often differ on a geographical basis. As it is unlikely that cardiologists in all countries will agree to standardise on one or other form of exercise testing, the STEEP is a useful attempt to bridge this divide.

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BOOK REVIEW


This book is in many ways a testimony to the extraordinary progress in the subject over the past two or three decades. Indeed, 30 years ago there would have been little worth writing save for the six chapters on clinical arrhythmias and for the relatively few chapters that were substantially influenced by the advent of clinical electrophysiological studies.

The editors, two leaders in the field, and researchers of the highest calibre, have provided a book that will serve as a valuable reference to all who work in the field of electrophysiology. It is clear, however, that some of the authors have devoted an inordinate amount of time to the preparation of their work, and this has resulted in an average length of 250 pages. The book is presented in a very readable format, with numerous tables and graphs. The text is concise and to the point, making it easy to follow. The authors have included a wide range of topics, from basic principles to the latest developments in clinical practice.

The book is divided into four sections: Basic Principles, Clinical Arrhythmias, Electrophysiological Techniques, and Therapy. Each section is further divided into chapters, each of which is devoted to a specific topic. The chapters are well organized and include an introduction, a discussion of the topic, and a summary of the key points.

Overall, this is a well-written and comprehensive book that will be an invaluable resource for anyone working in the field of cardiac electrophysiology. It is highly recommended for anyone who wants to stay up-to-date with the latest developments in this rapidly evolving field.