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BOOK REVIEW

Title: **KINESIOLOGY**
Authors: Cooper, Adrian and Glasgow
Publishers: Year Book Medical for C. V. Mosby
Price: £13.50

"The teacher, rehabilitator, researcher and student of human movement will find this work to be a balanced blend of theory and application, thus providing a basic and holistic approach to the study of kinesiology (Biomechanics)". Thus do the authors preface this attractive and extensive text which is liberally punctuated by line drawings, photographics and graphic illustration. The result is perhaps just a little less than might be expected.

There are two major portions of text. "Moving in a gravitational world" deals with mechanical and anatomic considerations, muscle-bone, lever systems, innervation. "Analysing and improving performance" presents detailed notes on the application of theory to a very comprehensive series of activities including walking, running, jumping, throwing, striking, kicking, gliding, aquatic and airborne activities, fencing, 'and activities of daily living'.

An inevitable dilemma in the oft-cited 'holistic' approach is determining the relative weight to be accorded each element of the argument. In this case one has to say that the extent of anatomical and physiological detail provided is limited and probably inadequate to all but the most superficial study. On the other hand mechanical concepts are devoted much space primarily as a result of cataloguing so many examples of specific sports applications. It is a tribute to the style and the attractive presentation that a favourable impression results when one considers the risk of such repetition presentation.

A serious limitation in the appreciation of 'real' as opposed to 'model' biomechanical analysis is the failure to acknowledge the role of inertial forces in all realistic dynamic situations. The animal body is a complex heterogeneous geometric figure with the power to generate intrinsic forces which vary the relative position in space of its component parts thus altering with time the positions of centres of gravity and inertia as well as the dimensions of moment arms, radii of gyration, etc. Admittedly none of us have entirely adequate means of characterising these quantities but the present text runs a serious risk of encouraging students with limited mechanical understanding to believe that the simplistic models conventionally employed can be unquestionably accepted as *adequate* expressions of reality. It is highly unlikely that this is always the case and the inclusion of a cautionary statement here and there would be reasonable.

The authors use the terms "kinesiology" and "biomechanics" synonymously. It is a matter of definition but most contemporary bioengineers would consider that the mechanical properties of tissue components (e.g. bones, ligaments, tendons, cartilage, etc.) contribute fundamentally to any adequate biomechanical review of a body system. The essential characteristic of collagenous tissues which determines their mechanical properties (and therefore function) is their viscoelastic nature. Time-dependent phenomena, stress-relaxation and hysteresis get no mention in text, glossary or index.

The introductory chapter 'Tools for assessment, improvement and prediction of movement' is commendable in intent. The presentation is stimulating but what is provided is more a brief description of the principles involved and is adequate as a statement on how to set up, employ and evaluate the methods.

Most of the criticism that can be levelled at this book is a result of taking its title and prefacial 'blurb' at face value. Given the extent of current developments in the application of biomechanical principles to contemporary problems in medicine surgery, rehabilitation, quite apart from recreational and sports science, it would really be more realistic to consider it as 'a student's introduction to kinesiology' which would simultaneously forestall almost all the criticism and lead to unequivocal and unreserved recommendation.

J. MacGregor