Decision Making in Small Animal Orthopaedic Surgery

Sumner-Smith

DECISION MAKING IN SMALL ANIMAL ORTHOPAEDIC SURGERY

G. Sumner-Smith, B.V.Sc., M.Sc., F.R.C.V.S.

Professor, Ontario Veterinary College, University of Guelph, Guelph, Ontario, Canada; Veterinary Consultant, Labor für Experimentelle Chirurgie Forschungsinstitut, Davos, Switzerland

1988

B.C. DECKER INC • Toronto • Philadelphia

Publisher

B.C. Decker Inc.
3228 South Service Road
Burlington, Ontario L7N 3H8

B.C. Decker Inc.
P.O. Box 30246
Philadelphia, Pennsylvania 19103

Sales and Distribution

United States and Possessions	**The C.V. Mosby Company** 11830 Westline Industrial Drive Saint Louis, Missouri 63146
Canada	**The C.V. Mosby Company, Ltd.** 5240 Finch Avenue East, Unit No. 1 Scarborough, Ontario M1S 4P2
United Kingdom, Europe and the Middle East	**Blackwell Scientific Publications, Ltd.** Osney Mead, Oxford OX2 OEL, England
Australia	**CBS Publishing Australia Pty. Limited** 9 Waltham Street Artarmon, N.S.W. 2064 Australia
Japan	**Igaku-Shoin Ltd.** Tokyo International P.O. Box 5063 1-28-36 Hongo, Bunkyo-ku, Tokyo 113, Japan
Asia	**CBS Publishing Asia Limited** 10/F, Inter-Continental Plaza Tsim Sha Tsui East Kowloon, Hong Kong

Decision Making in Small Animal Orthopaedic Surgery ISBN 0–941158–80–2

© 1988 by B.C. Decker Incorporated under the International Copyright Union. All rights reserved. No part of this publication may be reused or republished in any form without written permission of the publisher.

Library of Congress catalog card number: 87–71769

10 9 8 7 6 5 4 3 2 1

Decision Making in Small Animal Orthopaedic Surgery

Veterinary Titles

Allen/Kruth:
Consultation in Small Animal Cardiopulmonary Medicine

Auer/Morris:
Orthopaedic Radiology of the Foal

Binnington/Cockshutt:
Decision Making in Small Animal Soft Tissue Surgery

Farrow:
Decision Making in Small Animal Radiology

Farrow:
Emergency Small Animal Radiology

Horney:
Decision Making in Large Animal Alimentary Tract Surgery

Latshaw:
Veterinary Developmental Anatomy: A Clinically Oriented Approach

Sumner-Smith:
Decision Making in Small Animal Orthopaedic Surgery

Thomson:
Special Veterinary Pathology

试读结束，需要全本PDF请购买 www.ertongbook.com

for Jack and Candy

CONTRIBUTORS

ALLEN G. BINNINGTON, D.V.M., M.Sc.

Diplomate A.C.V.S., Associate Professor, Ontario Veterinary College, University of Guelph, Guelph, Ontario, Canada

JOANNE R. COCKSHUTT, D.V.M., M.Sc.

Assistant Professor, Ontario Veterinary College, University of Guelph, Guelph, Ontario, Canada

JON F. DEE, D.V.M., M.S.

Diplomate A.C.V.S., Hollywood Animal Hospital, Hollywood, Florida, U.S.A.

LARRY G. DEE, A.B., D.V.M., Dip. A.B.V.P.

Diplomate A.C.V.S., Hollywood Animal Hospital, Hollywood, Florida, U.S.A.

CRAIG W. MILLER, D.V.M., M.V.Sc.

Diplomate A.C.V.S., Assistant Professor, Ontario Veterinary College, University of Guelph, Guelph, Ontario, Canada

W. DIETER PRIEUR, Dr. med. vet.

Director, A.O. Vet Zentrum, Institute Straumann Waldenburg, Switzerland; Adjunct Professor, School of Veterinary Medicine, Michigan State University, East Lansing, Michigan, U.S.A.

GEOFF SUMNER-SMITH, B.V.Sc., M.Sc., F.R.C.V.S.

Professor, Ontario Veterinary College, University of Guelph, Guelph, Ontario, Canada; Veterinary Consultant, Labor für Experimentelle Chirurgie Forschungsinstitut, Davos, Switzerland

PREFACE

In the area of small animal orthopaedics, the neophyte is often overwhelmed by the recent explosion in the literature. As a result, it is often difficult for the uninitiated to find a "critical path" through the textual material, and, thus, difficult for him or her to make treatment decisions based on their reading.

Recently trained veterinary surgeons, however, have been exposed to the Problem Oriented Medical (POM) approach in their handling of case records, and consequently, rather than employing the somewhat hit-and-miss technique of previous generations of surgeons, tend to apply this approach in their everyday practice. In addition, the advent of computers, which now are used in all aspects of learning, has reinforced the critical pathway approach because they solve problems in much the same manner. Thus, in a busy clinical environment, the use of decision making texts has much to advocate it because their use can lead the surgeon to perform the required task and ensure that no signs, relevant to the diagnosis and treatment, are missed. To quote Dryden:

> Errors, like straws, upon the surface flow;
> He who would search for pearls must dive below.
>
> John Dryden
> 1631 – 1700

However, even with its leads and clean pathways of thought, there is a danger, inherent in this type of text, in that their use encourages the reader to remain an empiricist, and I warn that such texts add to the application of knowledge, but not to the art of orthopaedic surgery. This latter element, which is essential to the development of good judgment, comes with diligent study and even more with time and experience.

ACKNOWLEDGEMENTS

To the publisher, Mr. Brian Decker and his staff, I wish to extend my thanks for their invitation to edit this book. My initial reaction was that the task would be simple , one taking only a few weeks. How wrong I was! The style of the Decision Making series requires an entirely different approach from the one used in preparing a normal manuscript. My Associate Medical Editor at B.C. Decker was Mrs. Agnes McIvor who, with tolerance and good humor, suffered my peccadillos and kept me on the proper path. To this lady my special thanks are due.

Lloy Osburn and Dr. Clive Eger produced the figures nearly all of which are original. Their contributions have added much to the text. Finally, it will become obvious to the reader that, without the labors of the contributors, the book would never have seen the light of day. To these colleagues my heartfelt thanks.

Geoff Sumner-Smith
Everton, August 1987

CONTENTS

LOCOMOTION

ARTHROSES

FRACTURE MANAGEMENT

FORELIMB DISORDERS

Hind Limb Disorders

试读结束，需要全本PDF请购买 www.ertongbook.com

Disorders of the Spine

Injury of the Cranium

Teeth

Trauma to Musculoskeletal Tissue

Appendices

INTRODUCTION

The production of a multiauthored book is not without its tribulations. One of these is the possible overlap of information. In this text there are a few areas of overlapping, but I have left them in place, believing that the reader might enjoy and benefit from slightly different views on the same topic.

The text may be employed in two ways. The first is in the emergency situation when a clinician may feel the need for a guiding hand to pilot a route through a maze of problems; in such situations the text must be used in conjunction with its soft-tissue counterpart. Secondly, in chronic conditions the text should serve a useful role in providing a check list and hence permit the clinician to ensure that nothing has been overlooked.

If time is taken to study the system presented in this book, it may well reward the reader when time is not of the essence. In normal circumstances, its place is close to the emergency room.

NORMAL LOCOMOTION

Geoff Sumner-Smith

A. A stride is considered to be a whole cycle from one point of that cycle back to the same point. We speak of the Stance Phase (retraction) and the Swing Phase (protraction); the Contact Point, when the foot touches the ground and the Lift Point, when it leaves the ground (Fig. 1). The forelimbs support and arrest the body; the hind limbs propel the body, but they also initiate deceleration, particularly of the faster gaits. The gait patterns are shown in Figure 2.

B. The walk is a slow symmetrical rotatory gait with either two, three, or four legs supporting the body. Short-coupled, long-legged dogs sometimes walk with the ipsilateral limbs nearly together in the Swing Phase.

C. The trot is a two-beat gait in which the diagonally opposite limbs alternately support the body. This is an extremely useful gait with which to examine an animal for lameness. Toy dogs tend to use the trot as their "normal" gait unless they are walking extremely slowly.

D. The pace is a gait adopted by some large and giant breed animals, although a slow pace may be seen in some smaller animals. Although some dogs pace preferentially, they will also trot. The pace is said to be less tiring, but it probably permits less overall speed than does the trot.

References

Adrian MJ, Roy WE, Karpovich PV. Normal gait of the dog: an electrogoniometric study. Am J Vet Res 1966; 27:90–95.

Alexander RM. Animal mechanics. London: Sidgwick & Jackson, 1968.

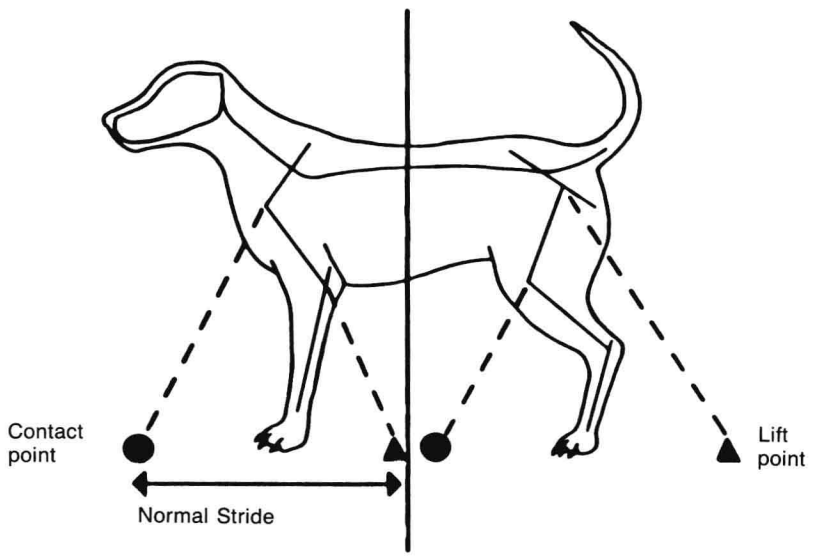
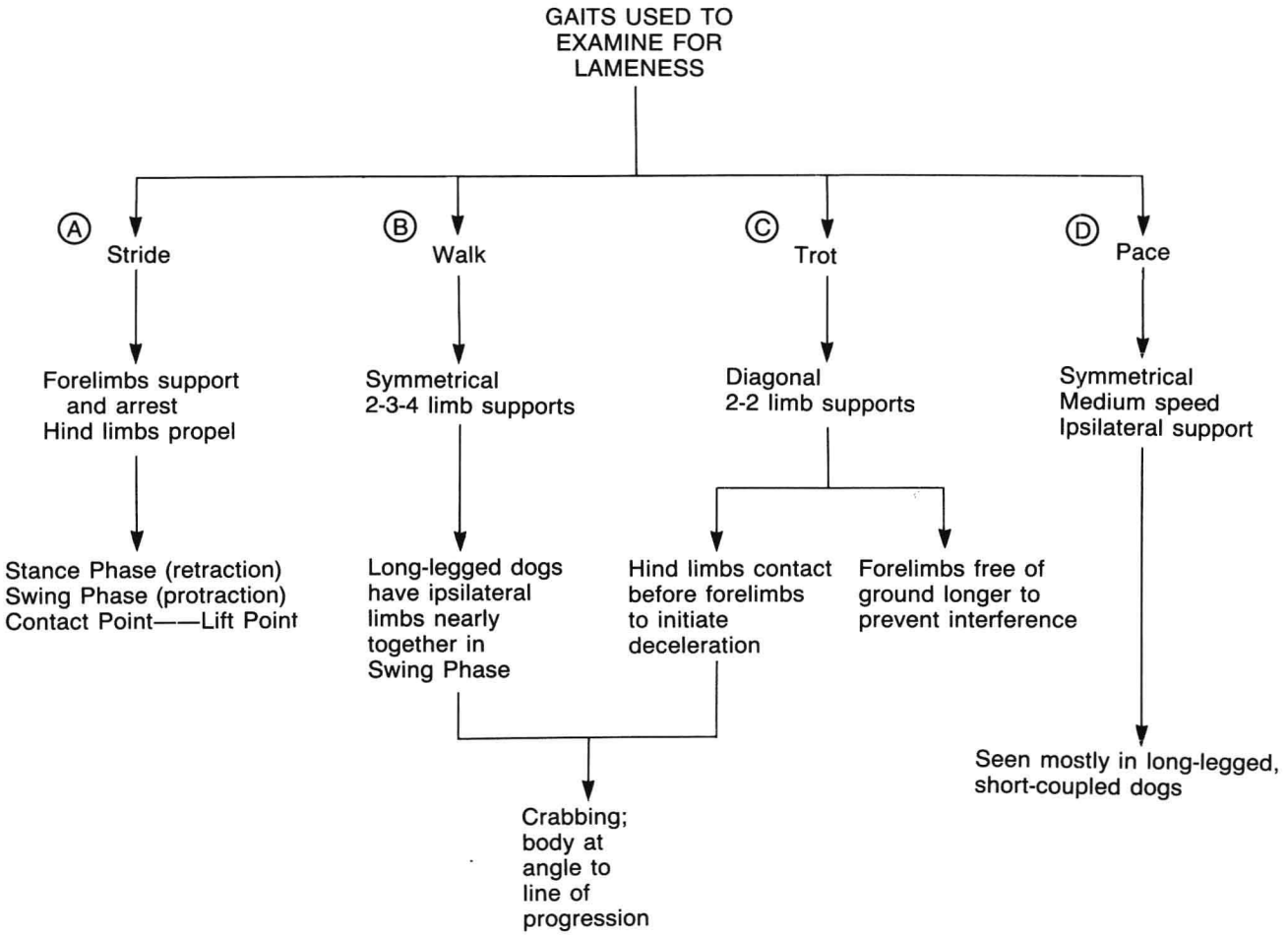


Figure 1 Contact Point and Lift Point in a normal stride.



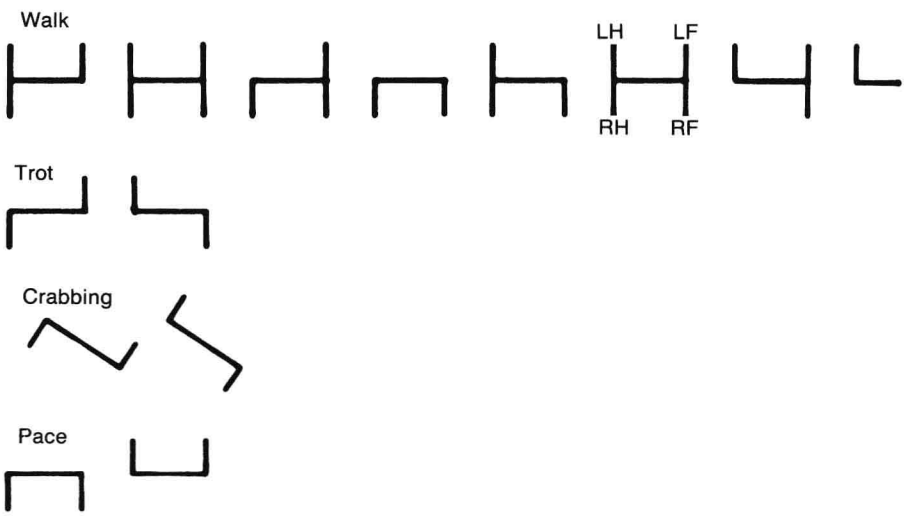


Figure 2 Gait patterns.

FORELIMB ACTION

Geoff Sumner-Smith

A. The forelimb is attached to the body by the muscles of the thorax, and is literally slung between the scapulae. Such a joint is known as a synsarcosis. A cat's clavicle does not form a true arthrodeal joint with other bones. It is vestigeal and is embedded within the pectoral group of muscles. The synsarcosis is an ideal joint to absorb the concussion produced when the forelimbs hit the ground, and it allows the forelimb to move nearly 180 degrees on the thoracic wall. The normal angles of the joints of the forelimb are shown in Figure 1. The scapulohumeral joint angle changes very little during the stride of the forelimb in either the walk or trot, although it also absorbs some of the concussion at the Contact Point through the first half of the Stance Phase (Fig. 2).

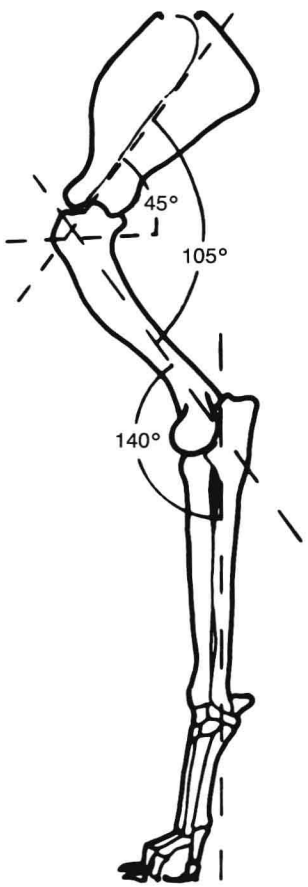


Figure 1 The normal angles of the joints of the forelimb taken from spark pen analyses of forelimb action.

B. The elbow joint is a complex mechanical component of the forelimb; three bones are involved, each articulating with the other two. The radius and ulna form a hinge with the humerus and are also capable of a small amount of supination and pronation with one another. The hinge joint shows little change of joint angle until the end of the Stance Phase.

C. The carpus functions for the most part as a hinge joint, although all of the components do move among themselves. For the purposes of locomotion the radial, carpal, and intercarpal joints are considered as one. The "combined joint" is flexed at the beginning of the Swing Phase and is somewhat hyperextended at the end of that phase (Fig. 3).

D. The foot consists of many joints between the various components of the phalanges, but for the purposes of locomotion and assessing lameness, they are considered as an integral unit, each element of the unit having an effect on the whole. Surprisingly the metacarpal pad is the first to contact the ground and the first to leave it; the final traction is applied by the toe nails.

TABLE 1 Locomotion: Action of Forelimb Joints

	Location of Joint	*Type of Joint*	*Joint Action During Locomotion*
Ⓐ	Shoulder	Synsarcosis	Absorbs concussion Allows 180° range of movement Little change in joint angle throughout a stride
Ⓑ	Elbow	Ginglymus/plane	Little change in joint angle until the end of the Stance Phase
Ⓒ	Carpus	Ginglymus/plane	Flexed at the beginning of the Swing Phase Hyperextended at the end of the Swing Phase
Ⓓ	Foot	Gliding/plane	Metacarpal pad contacts ground first and leaves ground first in every phase

试读结束，需要全本PDF请购买 www.ertongbook.com