



Preface

In the ever-expanding fields of allied health occupations, knowledge of the human body is tantamount. Indeed, professions in manual therapies are founded on the principles of science and the study of anatomy, physiology, and kinesiology. In the educator's quest for greater understanding of human anatomy, clinical tools such as cadaver studies help provide research for textbooks, in the hope that new comprehensible learning will take place from those texts. It is important that the student and professional have books, charts, and maps to guide them to learn the breadth and depth of the skeletal, articular, muscular, and nervous systems. Without them we would be unable to begin our explorations and develop our treatment goals.

This book has been written to assist and guide the student and the professional in their journey of anatomical study and manual therapy practice and to be a resource for continuing education. Its contents provide the information that will assist you in making science a foundation for therapeutic practices and encourage the development of your creative art for therapy. Science is the foundation of our art in manual therapy, and this text represents this philosophy on every page.

Structural Kinesiology was written over 60 years ago, and since then it has become a standard for teaching kinesiology to multiple students and occupations. R. T. Floyd used that book in his undergraduate work and later in his teachings. Like R. T., at the Downeast School of Massage (DSM), we used *Structural Kinesiology* as a text for years. We developed a handbook that was a useful tool for the student as an accompanying product. It was an outline, workbook, study tool, and technique detail all in one. It seemed logical to approach McGraw-Hill about writing an accompanying workbook. From workbook to actual text, the project grew to include DSM's dimensional massage therapy philosophy and accompanying techniques, but this project needed to add the aspect of kinesiology and physiology. With the addition of clinical flexibility and therapeutic exercise techniques, the capable McGraw-Hill staff has taken us on a whirlwind ride through textbook publication. The reviewers agreed there is a demand, indeed a niche, for this text within the science and manual therapy world.

We approached this book from a wide perspective of needs in multiple manual therapies, massage therapy and bodywork, athletic training, physical therapy, occupational therapy, and physical fitness. This book helps bridge the gap between basic anatomy and physiology courses and continuing education after graduation. Therapists will be able to use this text as a reference for their clients, for national exams, and for workshops with high science content. Kinesiology has not always been a part of every basic massage therapy program. Other professionals of manual therapies may not have had the appropriate textbooks to explore how massage therapy may enhance their practice. The information provided in this text will serve the expansion of education to the field of massage therapy as well as to additional manual therapies.

Our rationale with this text is to provide an advanced look at kinesiology and functional anatomy. Included are learning-intensive guides that will help students develop palpation skills, support their knowledge base of anatomy, and build a toolbox of techniques that provide a mechanism for specializing treatments. This text is a collective effort to explore the curriculum of kinesiology along with massage techniques, therapeutic exercises, and flexibility for multiple manual therapies.

This book is divided into chapters that provide a close anatomical look at each major joint of the body. Some chapters explore the skeletal structure and all the involved articulations, muscular attachments, functions, and nerve innervations. There are Clinical Notes featuring real-life examples about each muscle and its postural impact. Massage techniques, known as *dimensional massage*, are introduced to assist palpation skills, explore the structure, and develop a philosophical approach for treatment. Other chapters introduce students to specific, concentrated stretching and strengthening exercises as a modality, all of which follow the body's natural kinesthetic movements. Learning these techniques, known as *clinical flexibility and therapeutic exercise*, will help students understand anatomy from a *functional* standpoint—that is, how the muscles move the body in gravity—a focus that is often lacking in many curricula.

Dimensional Massage

The body is all connected; it has depth, width, and length. The joints in the body provide a network of anatomical structures designed for constant use. To properly relax and unwind soft tissue, the massage therapist must manipulate as many of these structures as possible. Each joint is a collection of muscles that work in groups and in paired opposition. By systematically working on specific muscles that share contraction and opposite action, dimensional massage helps to create balance in the joint structures. Dimensional massage encompasses an approach to technique and structure as well as to the sequence of the specific techniques for a particular soft-tissue problem. The techniques are a collection of soft-tissue manipulations that are designed to be efficient and sequentially specific to unwind the most resistant hypertonicities. Dimensional massage should provide the least amount of discomfort to the client in the therapeutic process, and if performed correctly, the techniques should be easy on the therapist's hands and body. Many dimensional massage techniques first utilize passive shortening of the length of the muscle to efficiently soften fibers. Other dimensional massage manipulations require rhythmically moving a joint at the same time as unwinding specific muscles or alternating clockwise and counterclockwise movements to joints or muscles. These "distractions" provide a mechanism for the client to give up "holding" patterns and for the soft-tissue fibers to release built-up tension. All techniques should be sequenced according to the individual structure of the client. Therapists need to build a large "tool belt" of many techniques to adapt to the wide variety of structures and repetitive actions that plague humanity. Dimensional massage provides a philosophical approach, sequence, and methodology of techniques for the massage therapist to utilize in a therapeutic practice.

Clinical Flexibility and Therapeutic Exercise

Clinical flexibility and therapeutic exercise (CFTE) is a modality that utilizes the body's natural movements to help restore muscle and movement function. While it involves assessment, muscle testing, and other clinical protocols, in its simplest form it is a method of stretching and strengthening the body in a clinical setting. One part of its components is the Active Isolated Stretching method, in which every joint is isolated and moved into a position for muscles to be lengthened. Because this method is active and the patient is always performing the movements, circulation is increased and muscles are strengthened. Much like massage therapy, increasing circulation is a goal in healing injuries. Yet this modality also induces muscle

reeducation and strengthening of muscles because of its active element, a beneficial component to patients of stroke. The dynamic element of this modality of manual therapy is its use of specific movement. CFTE utilizes every direction a muscle can move a joint: flexion, extension, rotation, and so on, and restores range of motion very quickly. The strengthening component offers specific isolation of muscles to better challenge them for strengthening, and it focuses on restoring imbalances within the body. From a learning standpoint for students, CFTE offers a different approach to learning muscle attachments and actions because it is the study of functional anatomy, kinesiology in its truest form.

Organization and Structure

This book has been designed for the student's optimal learning experience and is divided into four parts. Part One includes the first three chapters, which are in part a review for the reader and an introduction to the theory and principles of movement and kinesiology. Part Two takes the student through the upper extremities, starting with the shoulder girdle and following with the shoulder joint, elbow and radioulnar joints, and hand and wrist joints. After each joint and muscle chapter, there is a technique chapter specific to the area of the body just studied. The last chapter in Part Two concentrates on the concepts of muscular analysis and clinical flexibility of the upper extremities. Part Three isolates the trunk, spine, and head movements, joints, and muscles. It concludes with a special chapter on the structural perspectives of the head and neck, tension headaches, and techniques specific for this region. Part Four explores the structure of the lower extremities, starting with the hip and pelvic girdle and moving to the knee joint and the ankle and foot. Again, each chapter is followed by a technique chapter specific for the region. A muscular analysis of the lower extremities and clinical flexibility ends Part Four.

Features of the Book

All chapters are carefully designed with student learning in mind. Color photos and illustrations give depth and dimension to the visual education of the reader. Any book is more interesting in color, but in an anatomy text color raises learning to a higher level. Color helps students remember the art, and in a structural text that is a necessity.

Each chapter opens with special features designed to enhance learning:

- *Learning Outcomes* at the beginning of each chapter show important points for a quick understanding of the chapter's contents.

- The *Key Terms* list presents important words that are bolded and defined in the text. All the key terms are also defined in the Glossary at the end of the book.
- The *Introduction* assists the student to ease into the body of the chapter.

The chapters feature specific types of boxes that enhance the information in the text and capture the interest of the reader:

- *Clinical Notes* boxes are presented throughout the text to further student learning and interest in the content. The clinical notes link the structure being discussed to pathologies, postural issues, and anatomical facts by presenting information that is useful in practice. Each muscle has a Clinical Notes box as part of its description.
- *Muscle Specific* boxes include very useful information on the actual location of the muscles. This helps the student to have a visual snapshot of the locations of the agonist and antagonist muscles of each joint, matched with their actions.
- *Flexibility & Strength* boxes include all the movements of the described joint in detail. Some boxes feature accompanying pictures that provide a clear visual of the emphasized movements.
- *OIAI Muscle Chart* boxes present a brief description and color illustration of every muscle discussed in the text. The boxes are easy to see and refer to. Each box includes the origin, insertion, action, and innervation of the described muscle. A complete table of the muscles is also included to provide information on all the agonists and antagonists of the particular joint.
- *Treatment Protocol* boxes enable the student to prepare for the utilization of the techniques explained in the chapter.
- A *Technique* box gives definitions of hands-on applications in the text. Deep-tissue definitions are concise and easy to read, and tips are given on surface applications.

The muscle and joint chapters are organized by location of specific structures. Within chapters, the muscles are presented according to location and in groups based on action for better student learning. For example, all the flexors of the forearm that have action on the hand and wrist joints are grouped together, listed superficially to deep. This way, the student can unwrap the forearm layer by layer and learn the muscles according to location and action, an approach that helps with memorization skills. The discussion of each muscle includes an OIAI box, which provides an overview of key facts. In addition to the box there is a section on palpation of the muscle, designed to

enhance kinesthetic learning; a Clinical Notes box; and sections on muscle specifics, clinical flexibility, and strengthening relevant to the muscle. The Muscle Specifics section is filled with a variety of details and interesting facts pertinent to the movement, structure, and posture of the muscles. To assist the student in learning functional anatomy, the Flexibility & Strength boxes outline detailed joint and muscle movements in most of the muscle chapters. Learning is reinforced from a kinesthetic perspective by a specific focus on exercises to demonstrate muscle action. Clinical flexibility is further explored in special chapters on the upper and lower extremities.

The technique chapters contain postural information and discussions on pathology, treatment protocol, body mechanics, and technique definitions and sequences to support the dimensional massage applications. Each technique chapter has a section before the hands-on applications that discusses an appropriate protocol and sequence for the area of the body emphasized in the text. It includes tips on appropriate protocol, palpation skills, warm-up techniques, determination of pressure, passive shortening of tissues, the use of critical thinking, and more.

Hands-on applications are included in every technique chapter. The technique chapters follow each major anatomy chapter to expand the knowledge base, palpation skills, and practical skills of the student. All the photos for the techniques are in color.

Body mechanics are the basis for safely applying techniques in practice. Good body mechanics utilize ergonomically safe methods and practices of executing techniques to prevent injury, support self-care, provide balanced energy, and promote a long career in therapeutic practices. Appropriate body mechanics are emphasized throughout the text in the technique applications.

At the end of every chapter are Chapter Summary, Chapter Review, and Explore & Practice sections:

- Each *Chapter Summary* provides a concise review for the student. The summary repeats the main headings from the chapter and outlines the information in an organized manner. The summaries are easy to read and refer to.
- *Chapter Review* questions reinforce the concepts that the students have learned in the chapter. They include true or false, short answer, and multiple-choice questions. Answering the review questions is a helpful way for students to prepare for tests and exams.
- Each *Explore & Practice* section offers demonstrable and practical activities for student participation. The activities enable students to develop their palpation skills, practice techniques, and use critical-thinking skills to answer challenging

questions. They promote a kinesthetic learning style that is all-important in manual therapy education. Some Explore & Practice sections feature fill-in charts that draw on students' overall knowledge of the muscle concepts discussed in the chapter.

The book includes two appendixes. Appendix A lists numerous resources for additional reading. As a special addition, Appendix B presents a medical history questionnaire specific to head, neck, and shoulder pain that is useful for headache and migraine clients.

Worksheets at the end of the book enable students to become creative in a kinesthetic manner. On some worksheets, students locate and draw muscles on the applicable skeletal bones. Other worksheets enhance understanding of the movements of the joints. Worksheets are yet another way to utilize different learning styles.

A hardbound spiral cover allows the book to lie flat for easy reference while the student is studying or doing practical applications.

Packaged with the book are Muscle Cards that are designed after the detailed OIAI charts. Muscle Cards provide the students with a convenient tool that displays the origin, insertion, action, and innervation of each muscle studied in the text.

The Online Learning Center provides links to supplemental educational materials.

Online Learning Center (OLC), www.mhhe.com/dailkinesiology

The OLC consists of the Instructor's Manual, PowerPoint presentations, an image bank of all illustrations, and EZ Test for the instructor. McGraw-Hill's

EZ Test is a flexible and easy-to-use electronic testing program. The program allows instructors to create tests from book-specific items. It provides a wide range of question types, and instructors can add their own questions as well. Multiple versions of the test can be created, and any test can be exported for use with course-management systems such as WebCT, BlackBoard, or PageOut. EZ Test Online is a new service that gives instructors a place online where they can easily administer EZ Test-created exams and quizzes. The program is available for both PC and Macintosh operating systems.

The OLC also has a student section that consists of PowerPoint presentations, flashcards, and quizzes.

In Conclusion

Although we are targeting the massage therapy field, our expectation is that many health professional occupations will benefit from the content of this text. We expect that athletic trainers, physical therapists, kinesiologists, health club instructors, strength and conditioning specialists, personal trainers, physicians, and occupational therapists will be able to utilize the philosophy of our approach to exercise and flexibility. We strived to provide a real-world approach that clinicians might see in their practices. We hope that this book will serve the advancement of massage therapy and bodywork, as well as the supportive education of other health occupations.

Remember, science is the foundation of your art in manual therapies. It is this factual information that gives us the ability to perform our therapy on and with the human body. Knowledge only becomes more profound as you seek it again and again.