The Anatomy of Exercise & Movement
for the study of dance, pilates, sport and yoga

Jo Ann Staugaard-Jones
Introduction

This is a book about muscles and movement. Chapters center on specific joint areas, relating them to current concepts and myths in an informative and useful way. Content includes detailed material on location and actions of different muscles, with descriptions and illustrations of strength and stretch exercises for each joint area. Exercises cover a wide scope of fitness areas: weight-training, yoga, pilates, dance, and sports.

The book’s approach is unique because it can be used as a handbook, a resource for those who would like to know more about the human body without having to read a cumbersome textbook. The book is readable and interesting, for anyone from beginners, to teachers of movement, to a resource for exercise science and fitness enthusiasts and professionals.

There is a hunger for written material about movement that can be understood by a majority of the population. There are an increasing number of people who are interested in learning about their body, how it moves, and what can be done to improve it, without the fitness ‘hype’. This book is a “kinesiology made easier” approach that is valid and needed. Many students and teachers desire a book that is precise yet understandable, and relates directly to their own lifestyle. This text does just that.

My motivation for composing such a book comes from my movement teaching experiences, listening to students and what they desire. My graduate education in Exercise Science and Dance has led to over 30 years of college teaching. My background in sports and dance along with certifications in Pilates and Yoga has resulted in a broad range of teaching material, and a love for working with those people who are serious about being naturally healthy.

I feel this book can be read and enjoyed by anyone interested in the human body and its potential. Natural prevention is the key to a healthy body.

Jo Ann Staugaard-Jones, 2010
About the Author

Jo Ann Staugaard-Jones, professor and author, has taught movement workshops and master classes at universities such as Boston University, Colorado State University, Williams College, Cornell, Temple, University of Buffalo, Arizona State University, and Miami, as well as many Health Clubs, Yoga, and Pilates studios throughout the USA and abroad. She is a full professor of Dance and Kinesiology, a member of IADMS, the International Association of Dance Medicine & Science, a certified Shambhava Hatha Yoga Instructor, and a Power Pilates teacher. She received her undergraduate degree from Kansas University and her Master in Arts from New York University, and continues to reside in northwest New Jersey and Colorado. She is currently teaching interactive movement workshops across the US, and sponsors international holistic retreats through www.neatretreats.com. She can be reached at jojones3@verizon.net.

Exercise Notes

*The Anatomy of Exercise & Movement* is designed to provide a balance of theoretical information about muscles and movement, and Chapters 3–10 focus on a specific joint(s). To complement the material written about each joint(s), there are a series of both strengthening and stretching exercises where appropriate, and technique instructions on how to perform each exercise. To visually help the reader fully understand the nuances and muscles involved, where possible, the exercise has been illustrated. The difficulty of each exercise is indicated by *I* = *beginning*; *II* = *intermediate*; *III* = *advanced*.

The muscle information given may be too much for some people or not enough for others, but hopefully will aid anyone who wants to tone or strengthen certain areas. If one knows where the muscle is located and what exercise works it, then a specific exercise program can be designed. Stretching is always a great way to begin a workout, with dynamic stretching being most effective. Static stretching is best at the end of a workout, to relax and lengthen muscles.

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Example of text illustrations.

Kneel on the ground and reach forward with hands. Let the head fall forward and push the buttocks toward feet.
Pectoralis Major

Called the ‘chest’ muscle, the pectoralis major covers the front of the upper body from the clavicle, sternum, and ribs 1 through 6 to the humerus. Depending on which text is used, this muscle has either two or three sections. Two areas are described as clavicular and sternal, three are upper, middle, and lower.

Another multipennate muscle, the pectoralis major works only the shoulder joint. The pectoralis minor located under the major actually works a different joint, the shoulder girdle, explained in the next section.

The pectoralis major has an interesting ‘twist’: as it attaches distally to the humerus, the tendons of the two sections rotate, so that the top portion of the tendon (clavicular) ends up below the sternal portion on the humerus.

The twist of the tendon allows the action of inward rotation, as does a twist from the latissimus dorsi posteriory. The other prominent action from both sections of the pectoralis major is horizontal adduction, or bringing the arms from the side to the front (frontal to sagittal planes).

The two sections differ in the sagittal plane: the clavicular head flexes, while the sternal portion extends. This is hard to understand from a mechanical point of view, since the entire pectoralis major is noted as an anterior muscle. Usually muscles located anteriorly can only do actions toward the front of the body; extension is an action that is posterior, returning to or behind the body.

To further complicate the muscle, when the upper arm is 90 degrees (out to the side at shoulder level) the clavicular section can raise it higher by abducting. It can also lower it (adduction) along with the sternal portion, below 90 degrees.

Pectoralis Major Strengthening Exercises

Bench press, push-ups, throwing a ball, swimming, tennis.

Figure 5.9. Bench press.

Lie on a bench and hold a barbell above the chest with arms directly above the collar bone. Grip the bar with the hands wider than the shoulders; inhale and lower the barbell towards the chest. Exhale, extending the arms to push up to the ceiling, and return to the starting position.

Pectoralis Major Stretching Exercise

Figure 5.10: Bent arm chest stretch.

Stand with the arm extended and the forearm at 90 degrees to the ground. Rest the forearm against an immoveable object and turn shoulders and body away from the extended arm.