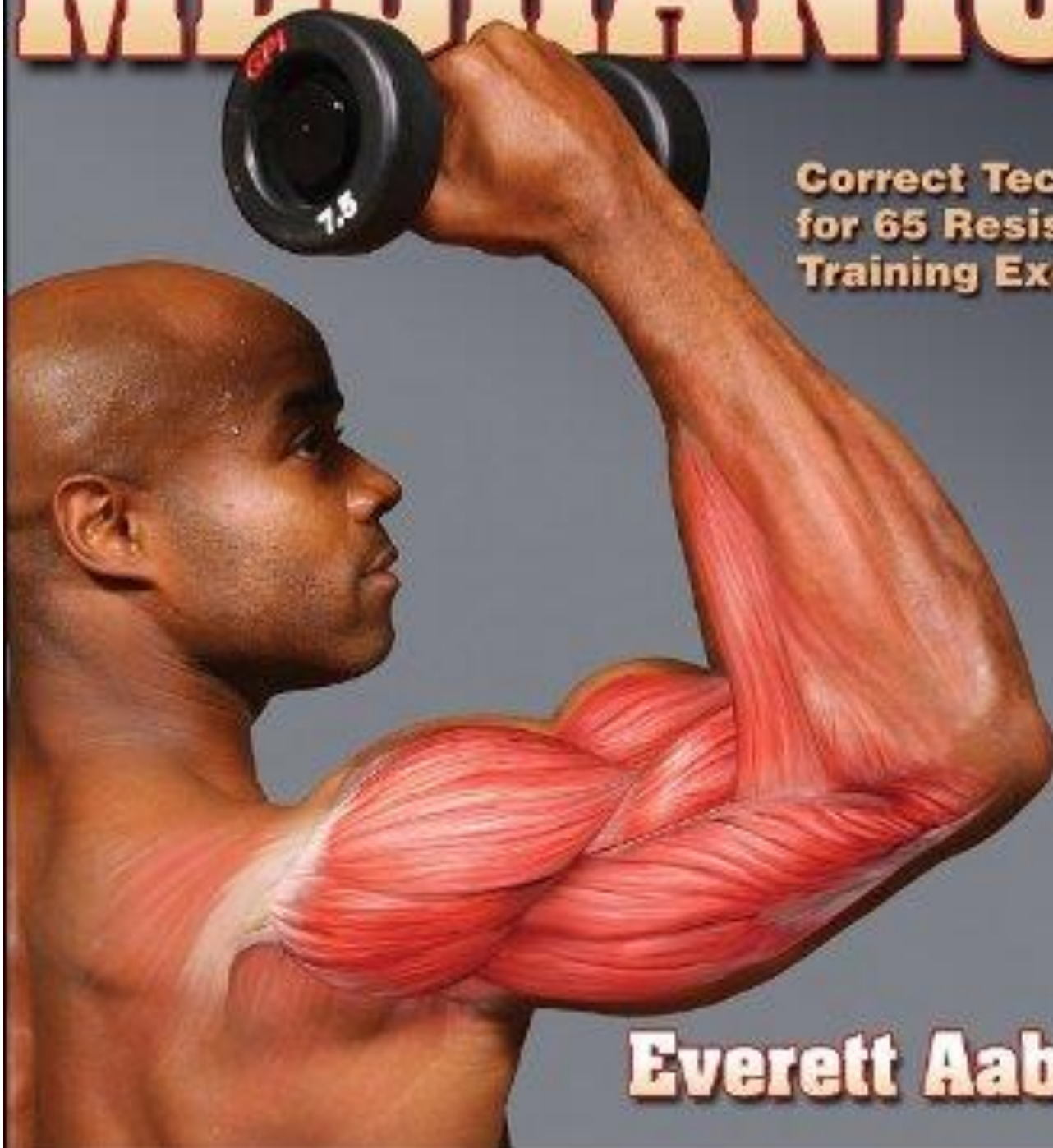


SECOND EDITION

MUSCLE MECHANICS

Correct Technique
for 65 Resistance
Training Exercises



Everett Aaberg

Preface **vii**

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Discusses the integrated actions of the control system, the active system, and the passive system in producing and expressing functional movement. Isolated joint mechanics are also presented in great detail to explain individual muscle action.

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Demonstrates how an understanding of the primary muscular subsystems and knowledge of targeting general movement patterns can be used to better select resistance training exercises to accomplish all performance and aesthetic goals.

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Optimal Exercise Technique 35

Details the seven most critical elements of proper exercise technique including goal identification, exercise motion, alignment, positioning, stabilization, tempo, and breathing.

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Includes 15 specialized exercises for targeting the core and trunk muscles.

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Compound Lower Body Exercises 81

Details 12 exercises that target general movement patterns and best develop the pelvic, hip, and leg muscles.

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Illustrates 15 exercises for isolating individual muscle groups of the pelvic, hip, and leg muscles.

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Upper Body Pushing Exercises 139

Provides 10 exercises that utilize pushing movement patterns for developing the scapular, shoulder, elbow, and wrist muscles.

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Shows how to use the principles of exercise selection and how to coordinate acute program variables such as intensity, volume, and recovery to design comprehensive and effective resistance training programs to meet your specific goals.

Anatomical Design and Function

Muscle Mechanics focuses on providing instruction on a collection of the safest and most efficient resistance training exercises possible based on the structure and function of the human body. Therefore, before learning any specific exercises and techniques for improving the performance or the aesthetics of the body, you should first gain a general understanding of how the body is constructed and designed to move. The human body is an extremely sophisticated machine with a very large number of components that combine to produce an infinite variety of postures and movements. These components are highly integrated and function together as interdependent systems and subsystems.

A contemporary view of functional anatomy often presented by authors and experts describes the body as being composed of three basic interdependent systems. These three systems are referred to as the *control system* (or sensorimotor system), the *active system* (or muscular system), and the *passive system* (or skeletal system). All three systems must work together synergistically to produce any motion or even to just stabilize the body in the presence of outside forces such as gravity. Therefore, since all exercise requires unique combinations of both movement and stabilization, any exercise will impress a training effect on all three systems, not just the targeted muscles. This makes technique more critical than many people realize. Every exercise performed will not only affect the body's "hardware," which consists of the joints and muscles of the active and passive systems, but will also imprint information on the "software," which consists of the programmable features of the control system.

To perform any body movement, whether voluntarily or through reflex actions, the control system issues commands to the active system to initiate the unique concert of muscle actions necessary for stabilizing and moving the passive system. These three systems are truly interdependent such that even automated actions such as breathing, coughing, sneezing, or flinching in response to pain all require specific integrated and coordinated actions. The following sections cover the movement responsibilities of each system, beginning with the passive-skeletal system, then the active-muscular system, and then the control-sensorimotor system. Figure 1.1 shows a schematic representation of these three systems and their interdependent relationships.