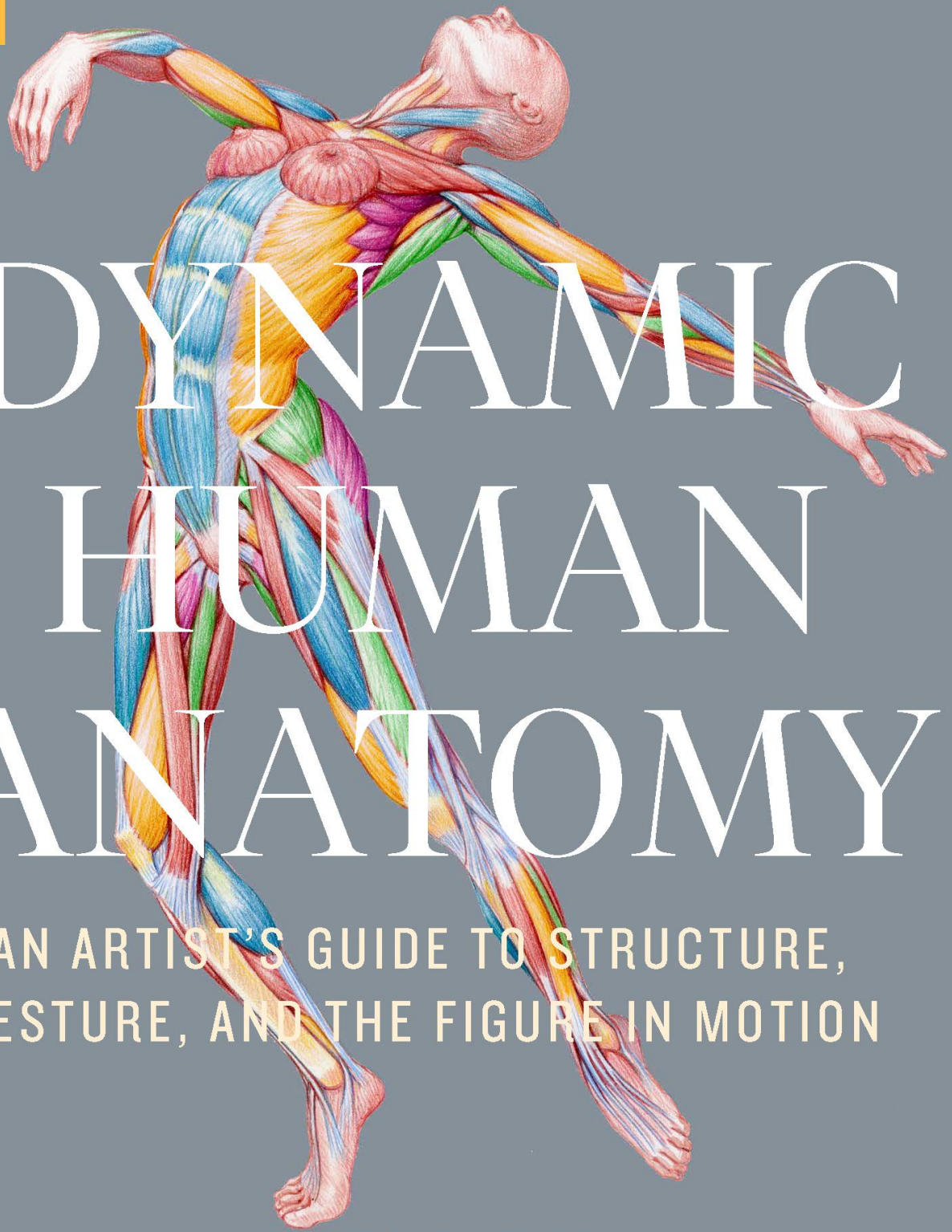
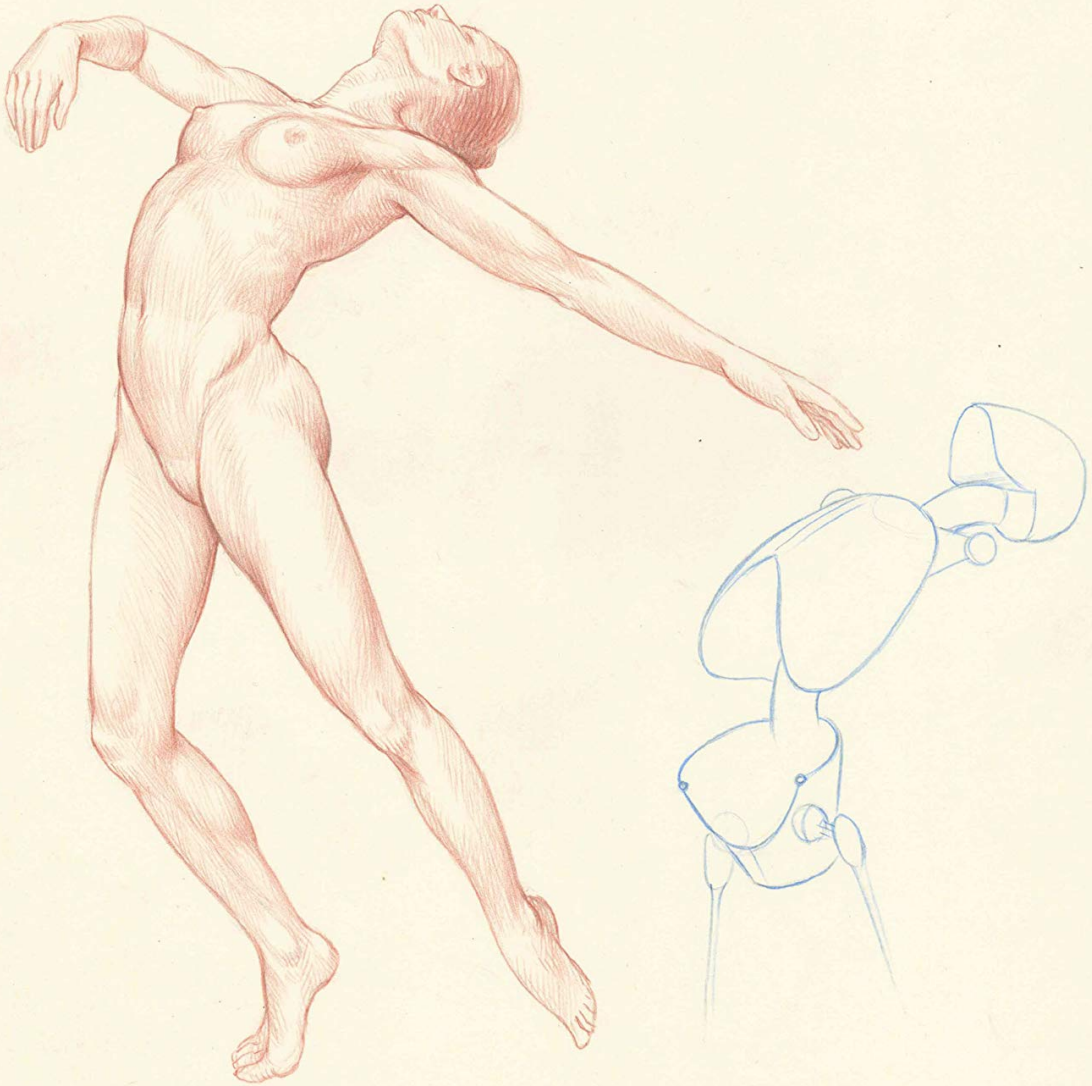
STUDIO



DYNAMIC HUMAN ANATOMY

AN ARTIST'S GUIDE TO STRUCTURE, GESTURE, AND THE FIGURE IN MOTION

ROBERTO OSTI
AUTHOR OF *BASIC HUMAN ANATOMY*



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ROBERTO OSTI

MONACELLI STUDIO

FINDING GEOMETRIC PATTERNS IN A POSE

Encasing or subdividing a pose with geometric shapes can be very useful in measuring the figure and establishing the compositional characteristics of the pose. In the examples here, the poses are visualized as sets of triangles. These geometric visualizations—whether of triangles, squares, rectangles, or circles—can be fairly arbitrary.

EXERCISE

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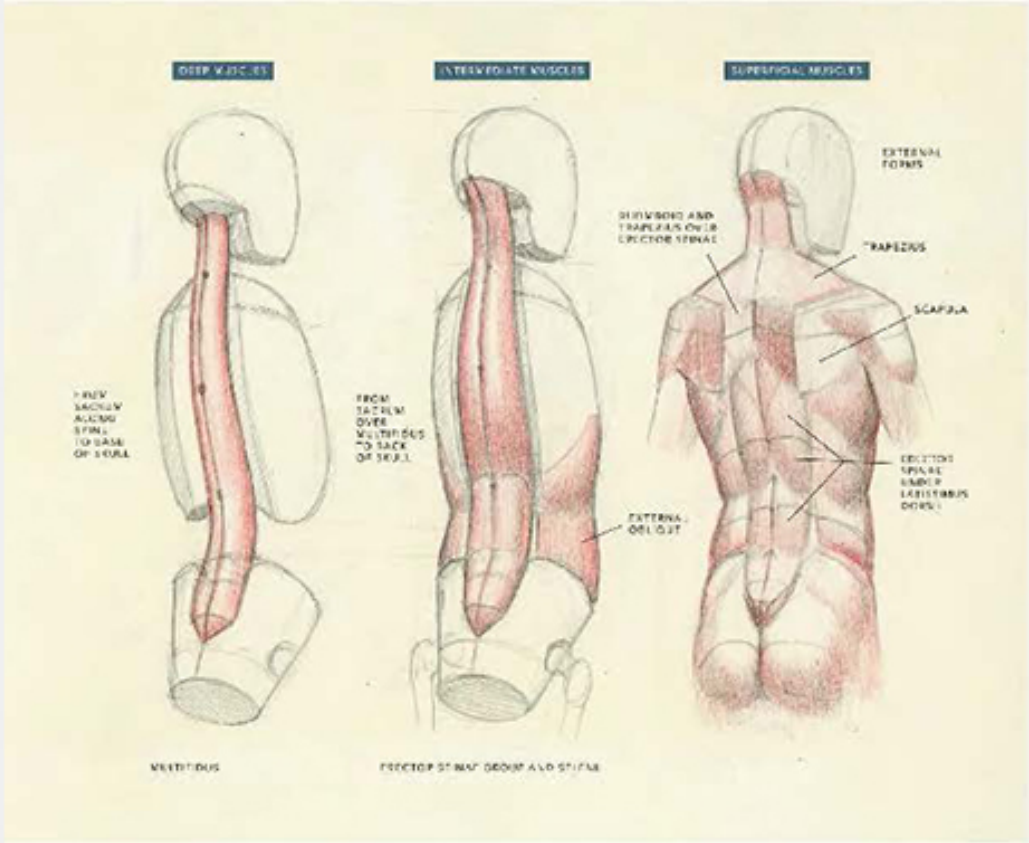


ABOVE: Layering of the muscles of the back

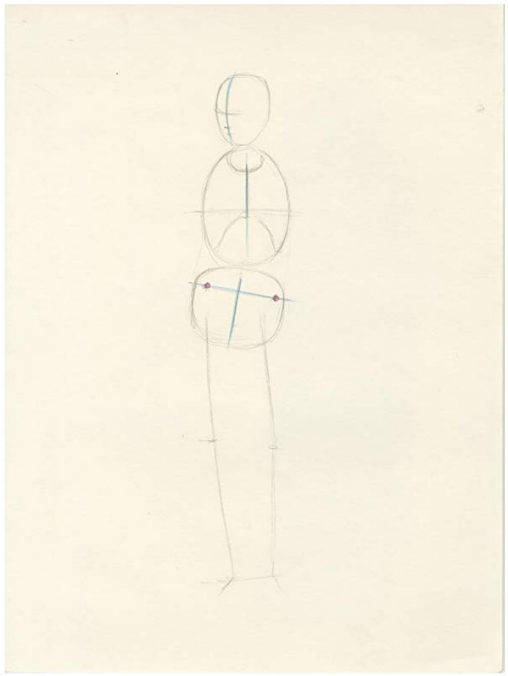
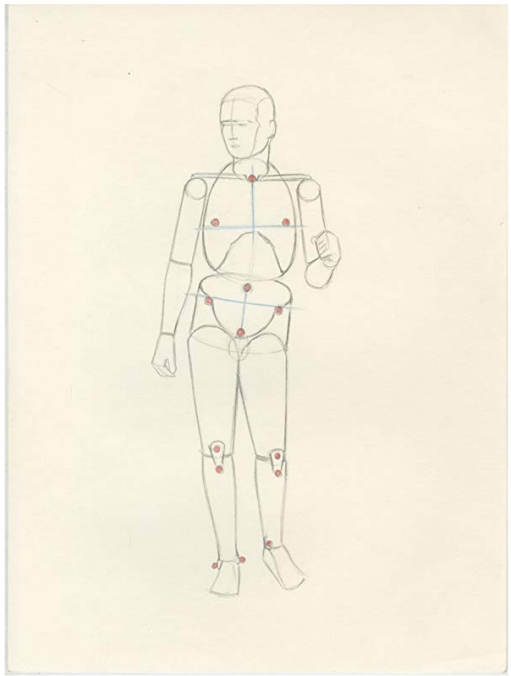
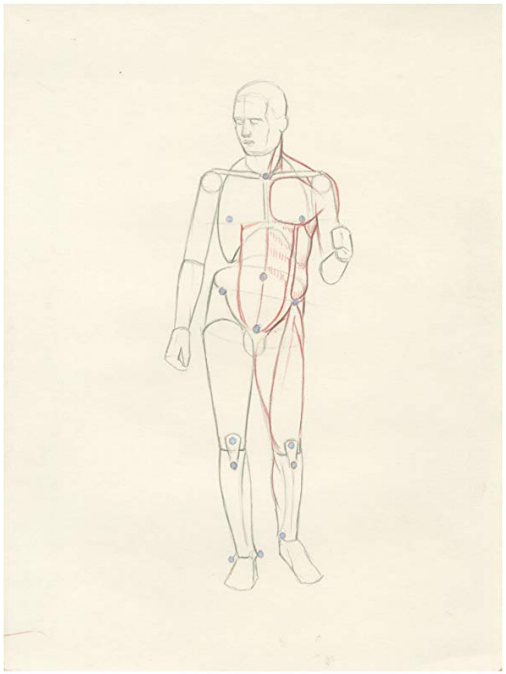
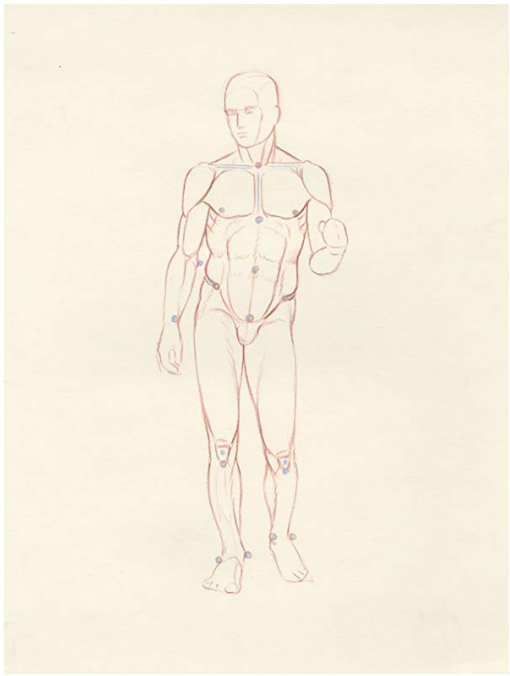
The multifidus is a deep muscle that goes from the sacrum to the base of the skull, running on the side of the spine. The erector spinae group, simplified here in a single form, is added as over the multifidus, whose action is still visible under the tendons of the erector spinae.

LANDMARKS OF THE BACK— FEMALE-MALE COMPARISON

A woman's wider pelvis, narrower hips, and more pronounced angle between ribcage and hips create a posture different than that of the male figure, which appears straighter and has a more discernible distinction between the ribcage, waist, and pelvis.

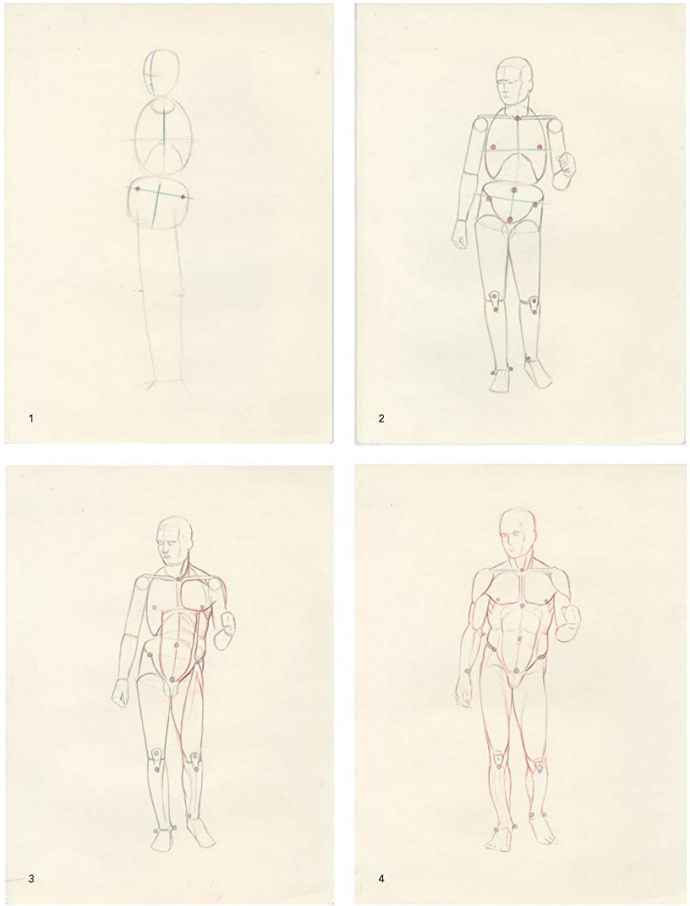
BELOW LEFT AND CENTER: Landmarks of the back, three-quarters posterior view, female figure

BELOW RIGHT: Landmarks of the back, three-quarters posterior view, male figure

ABOVE AND OPPOSITE: Sequence of Doryphoros from landmarks to external forms

With the "reverse dissection" shown above, I wanted to establish whether there is a correspondence between the skeletal and muscular structures in the Doryphoros. As you can see, it is indeed possible to reconstruct a structurally and proportionally sound skeleton using the landmarks. The muscular volumes can then be added to obtain a complete rendering of the external forms. In my opinion, this proves that the artist who created this work had a complex understanding of muscular and skeletal structures.



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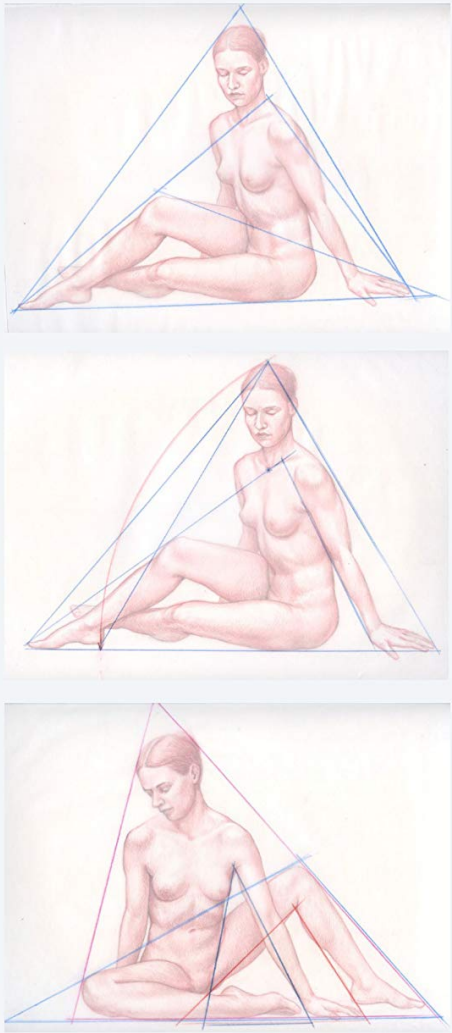

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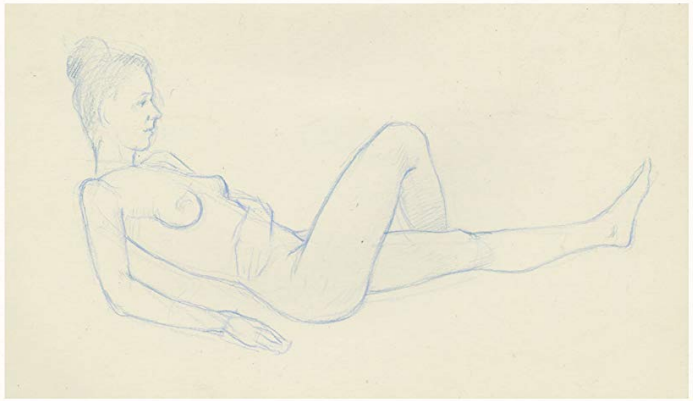
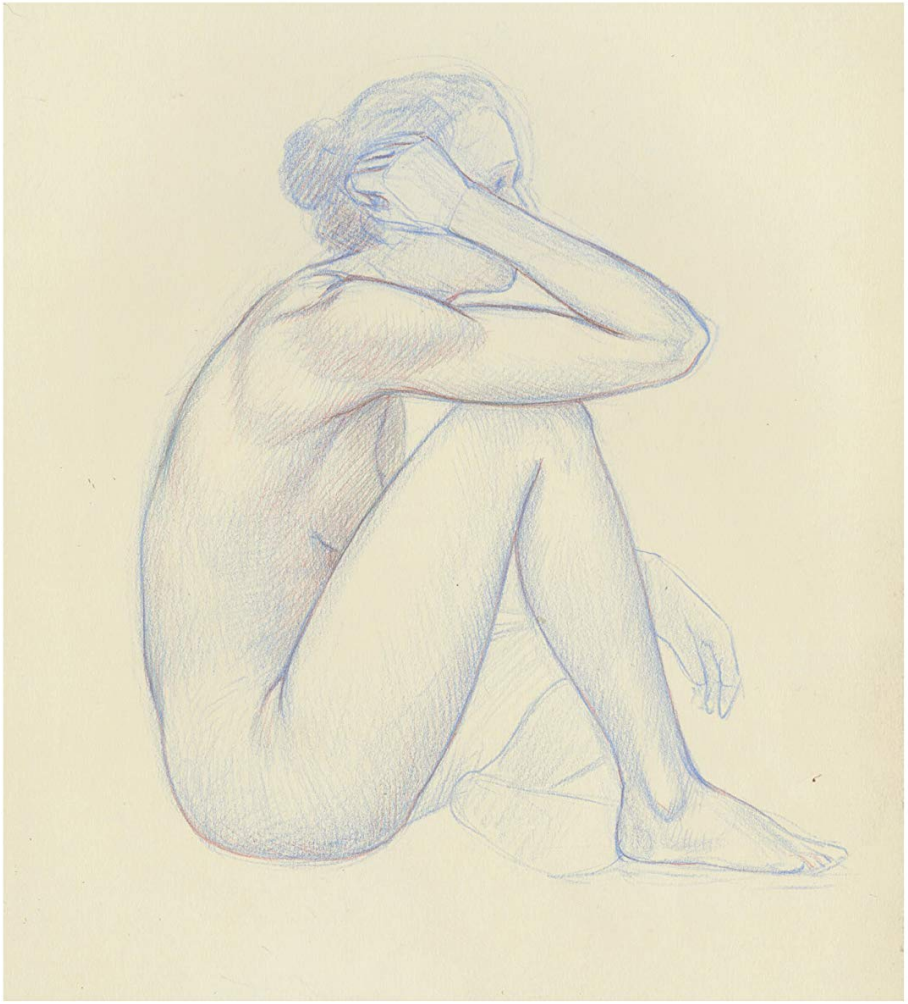


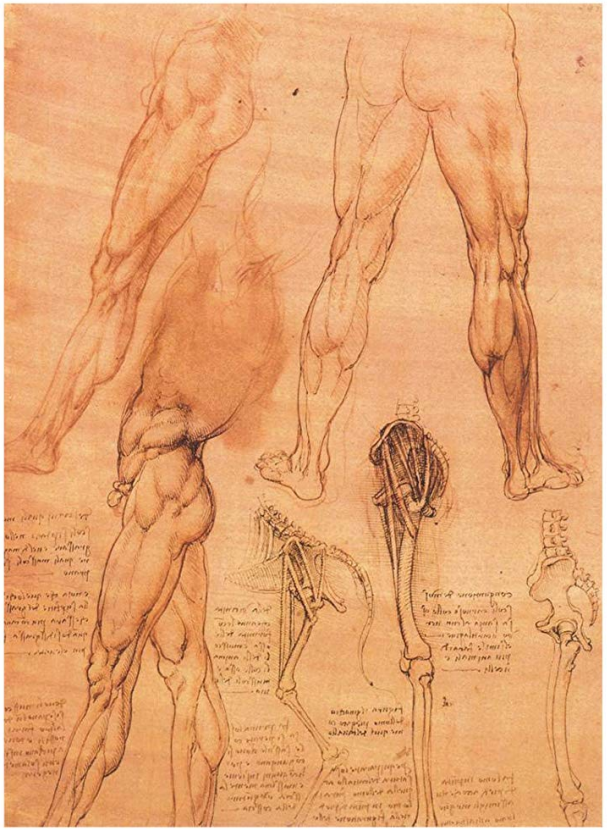


A CONTEMPORARY MASTER OF ANATOMICAL FORM

BELOW: Brian Booth Craig, *Jess*, 2015, bronze, 34 × 10 × 8 inches (86 × 25 × 20 cm). Courtesy of the artist.

These works by Brian Booth Craig is a perfect example of mastery of anatomical forms in movement. In *Jess*, the structural, anatomical, and dynamic aspects of the human body are captured and synthetized in a beautiful, elegant pose. Viewing the sculpture from the back, we can appreciate the graceful torsion of the erector spinae muscles as they stem from the sacrum and are directed toward the back of the head. In the front view, the iliac spine, the tensor fascia latae, the beginning of the sartorius, and the rectus femoris are clearly distinguishable at the level of the pelvis. In fact, all the muscles in this artwork are perfectly positioned, but the anatomical aspect of this work is secondary to the dynamism and aesthetic of the figure, which is the real subject of the artwork.

A vehicle for the transmission of cultural values



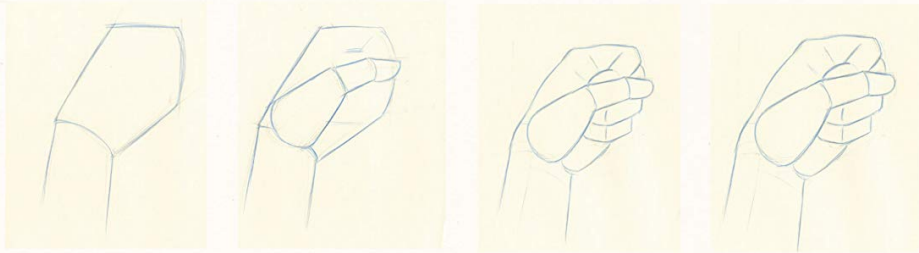
ABOVE: Leonardo da Vinci, *The Leg Muscles and Bones of Man and Horse*, c. 1506–8, pen and ink on orange-red prepared paper, inches (28.2 x 20.4 cm). Royal Collection Trust, RCIN 912625.

When artists study the body through dissection, preparing an écorché (flayed model), or examining a textbook, they become acquainted with the body's parts, what they look like, their locations, and what they are called. But after taking the body apart, today's artists must also put it back together through an artwork. This indispensable operation transforms the human body into a signifier, a vehicle for the transmission of cultural values. The drawing by Leonardo above shows this process of transcendence: the legs in this small masterpiece are anatomically correct—all the muscles are accounted for—but that is secondary to the pose, the stance, and sense of life that these powerful legs convey.

DEMONSTRATION

A MIXED APPROACH TO DRAWING THE HAND

In this mixed approach, you start with an envelope (the main volume), move quickly to boxes representing the forms, and from there to the line drawing and tonal rendering.

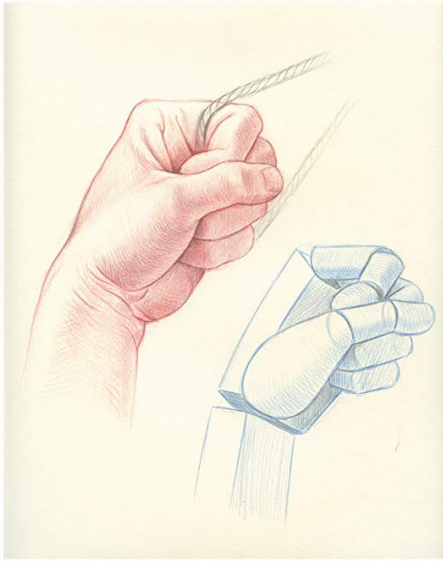


1
Draw the main volumes with envelopes.

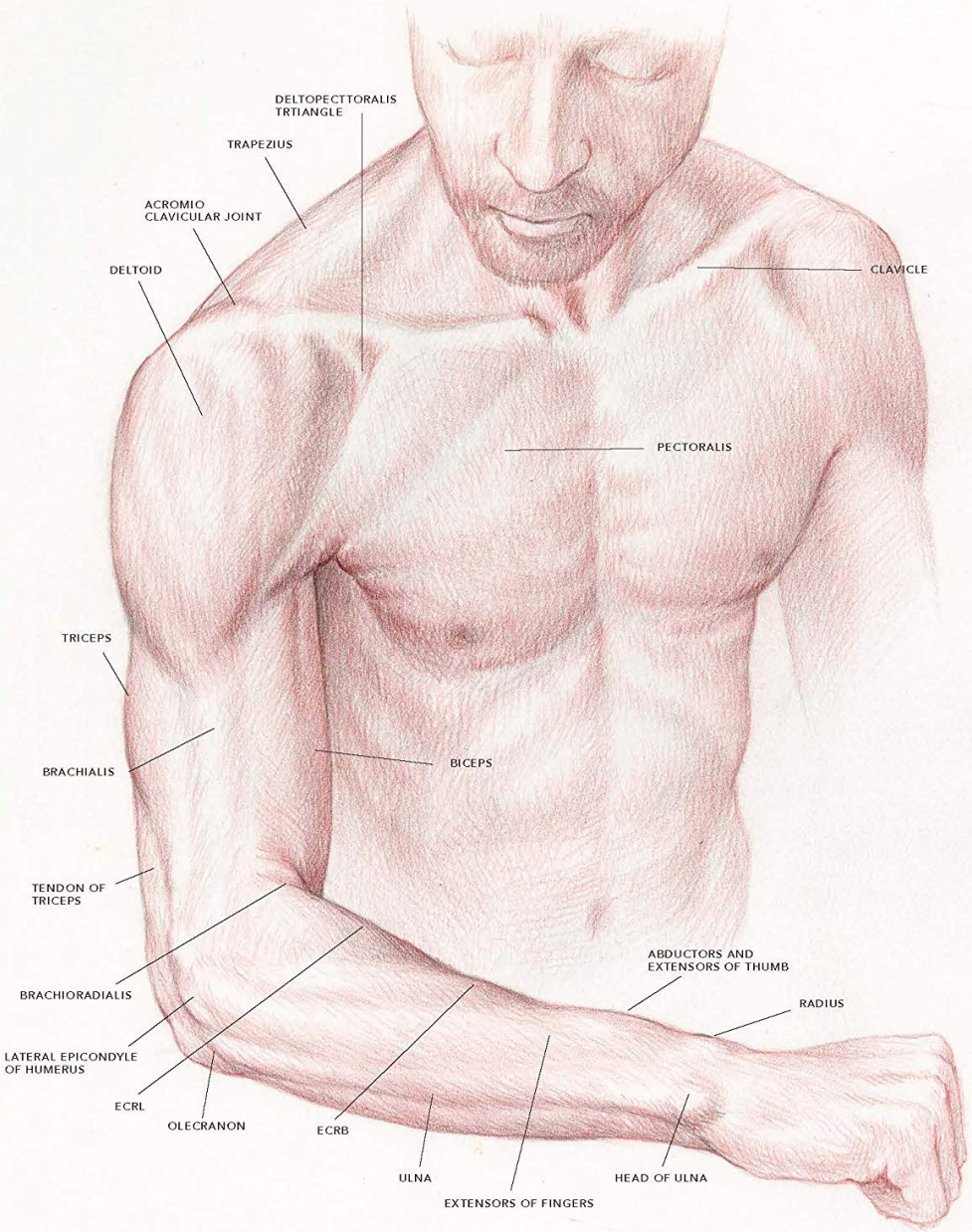
2
Add the volumes of the thumb, and compare measures.

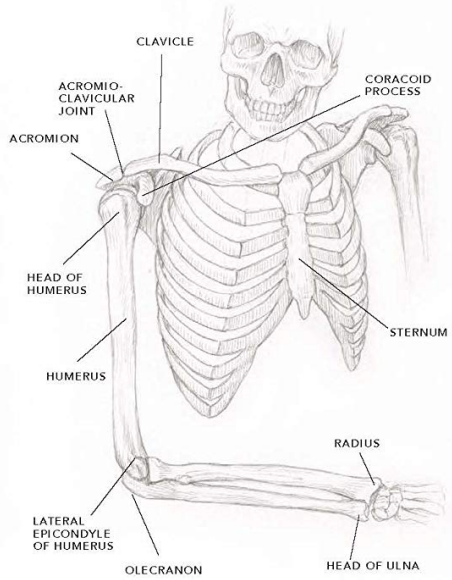
3
Rough in the line drawing.

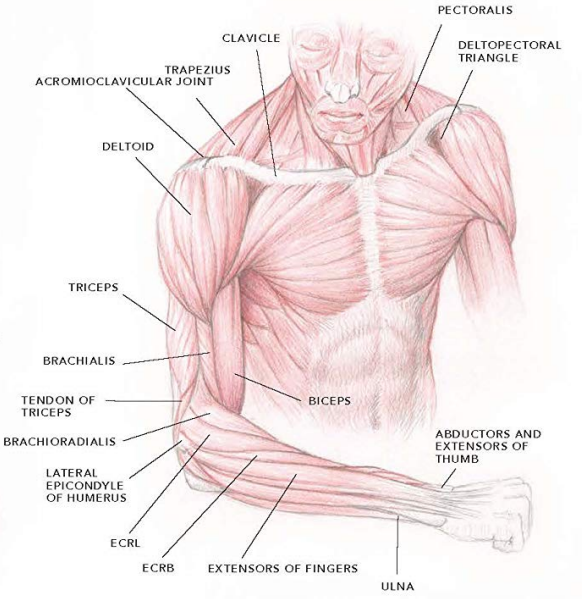
4
Refine the line drawing and start the tonal rendering.



5
Here is the fully developed drawing (left) along with a stereometric study. The stereometric study need not be part of your sequence, but it can be very useful in revealing the effect of the light on the form before rendering the hand tonally.



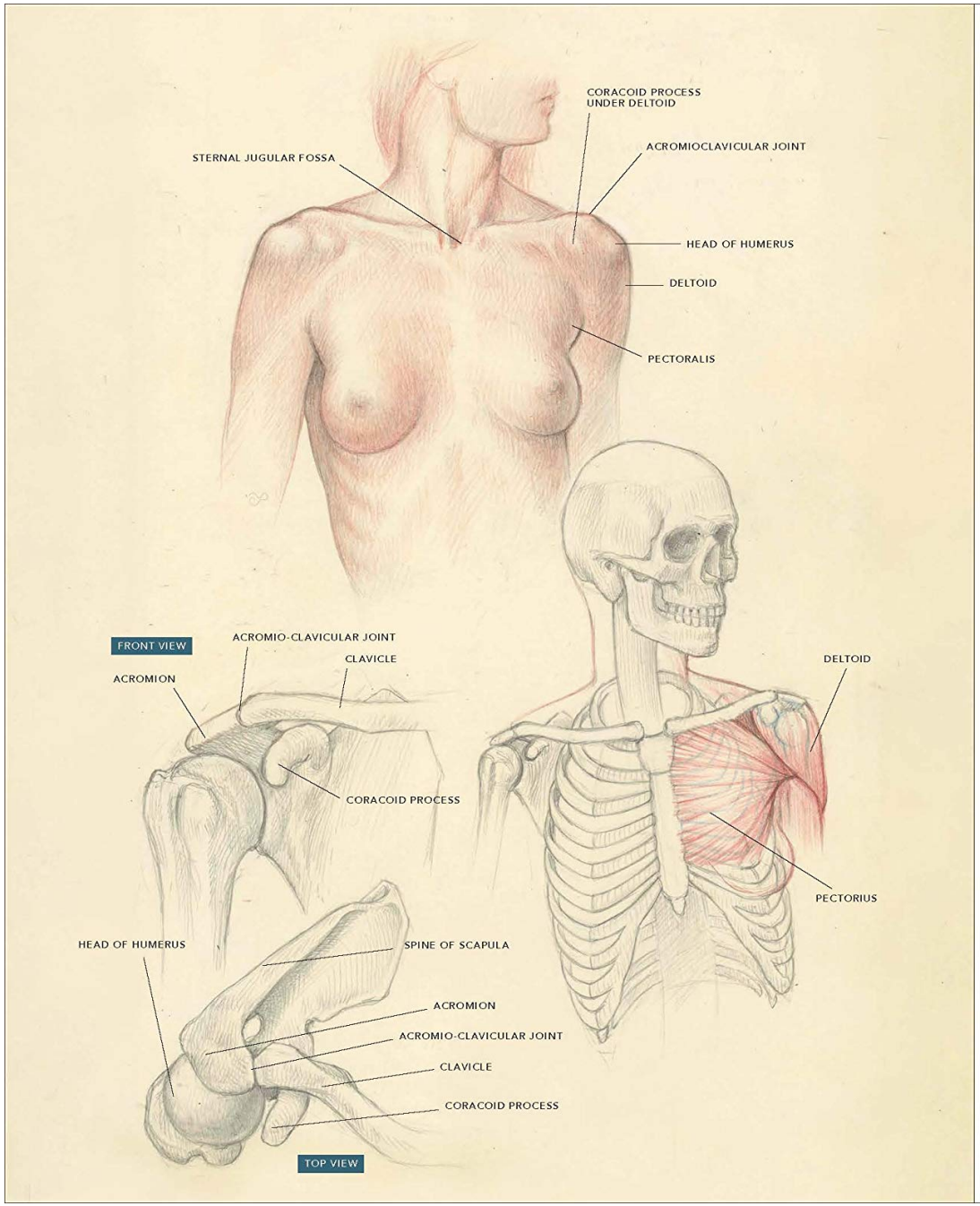




OPPOSITE: Shoulder and arm, external forms

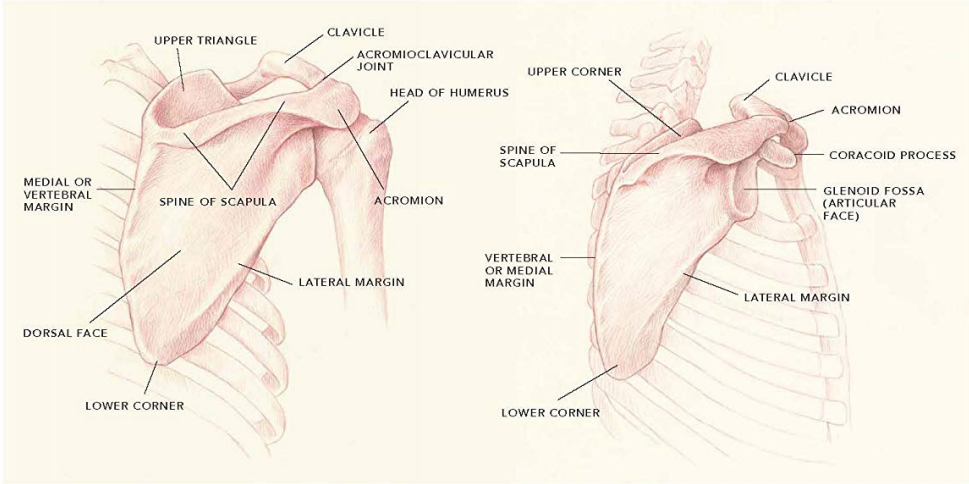
ABOVE, LEFT: Skeleton and skeletal landmarks of arm and shoulder

ABOVEE, RIGHT: Shoulder and arm, muscle layers



LANDMARKS AND ANATOMY OF THE SHOULDER AND SCAPULA

The images here briefly introduces the landmarks of the shoulder and scapula. When hiring a model for figure-study practice, consider that the skeletal landmarks are more clearly visible on a lean model whose muscles are not too developed.



OPPOSITE: Correspondence between skeletal landmarks of the shoulder and external forms

The coracoid process and the head of the humerus create two typical rounded forms on the surface of the deltoid.

ABOVE LEFT: Scapula, posterior view

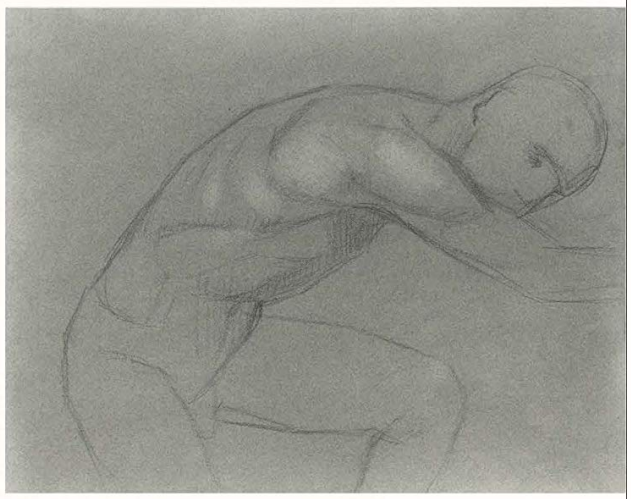
ABOVE RIGHT: Scapula, lateral view

DEMONSTRATION

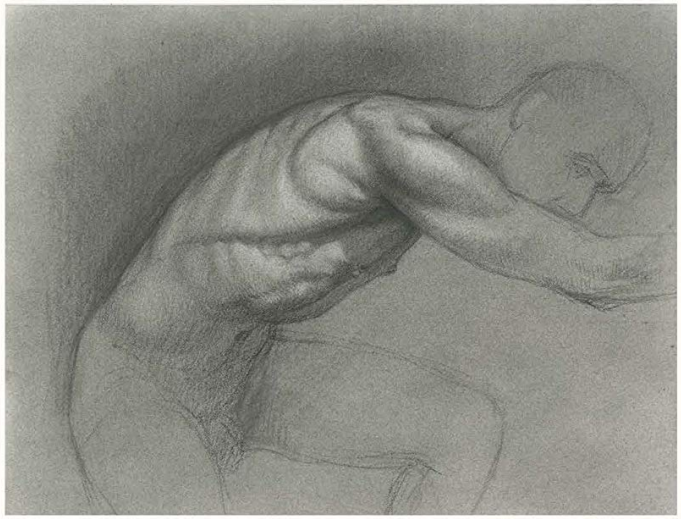
REDUCTION TECHNIQUE, CHARCOAL AND CHALK ON WHITE PAPER

To copy this demonstration, you'll need charcoal sticks or dust and a variety of erasing tools: chamois skin, a kneaded eraser, and one of those mechanical-pencil-type erasers. You'll also need white chalk in pencils or sticks as well as sandpaper to keep your drawing tools sharp.

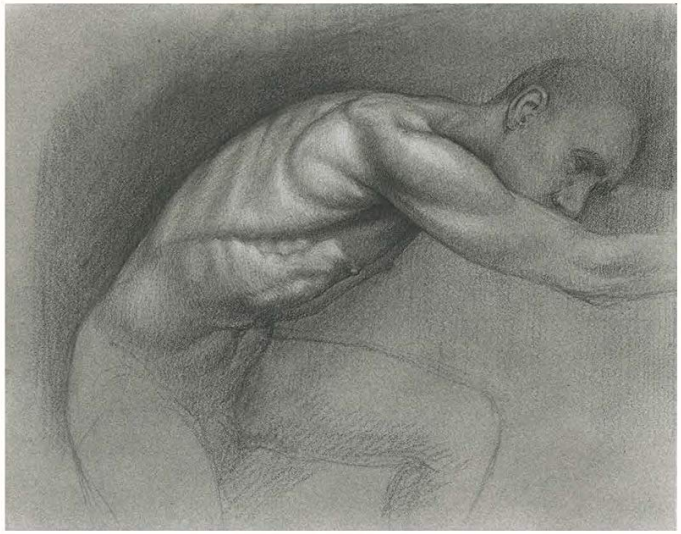
1
Start with a piece of paper, white or lightly toned, and smear it with charcoal, using powder or a stick. Rub the charcoal gently but thoroughly across the paper until it is saturated with pigment. Blow on the paper to get rid of any loose particles.



2
Sketch in the main outlines and volumes of your subject. Don't draw too much detail at this point–just the dominant volumes. Then, using a kneaded eraser or chamois, lift off the dominant areas of light



3
Keep erasing the charcoal with finer and finer erasing tools to extend the tonal scale in the light mass. At the same time, you can extend the values in the shadow mass by applying additional charcoal as needed.



4
Gradually refine and define your drawing with charcoal and white chalk, if needed.

INTRODUCTION

TK sample text here. This book is about learning to see; it is about acquiring skills conducive to the active interpretation of the human form, an approach that can be extended and applied to the physical world that surrounds us.

Drawing or painting the figure using a mimetic approach—that is to say, drawing without understanding but just by imitation—is comparable to copying the words of a book without understanding their meaning.

The artist with a good knowledge of anatomy will be able to create more beautiful and accurate artwork because he or she will have the means to better understand the forms of the body.

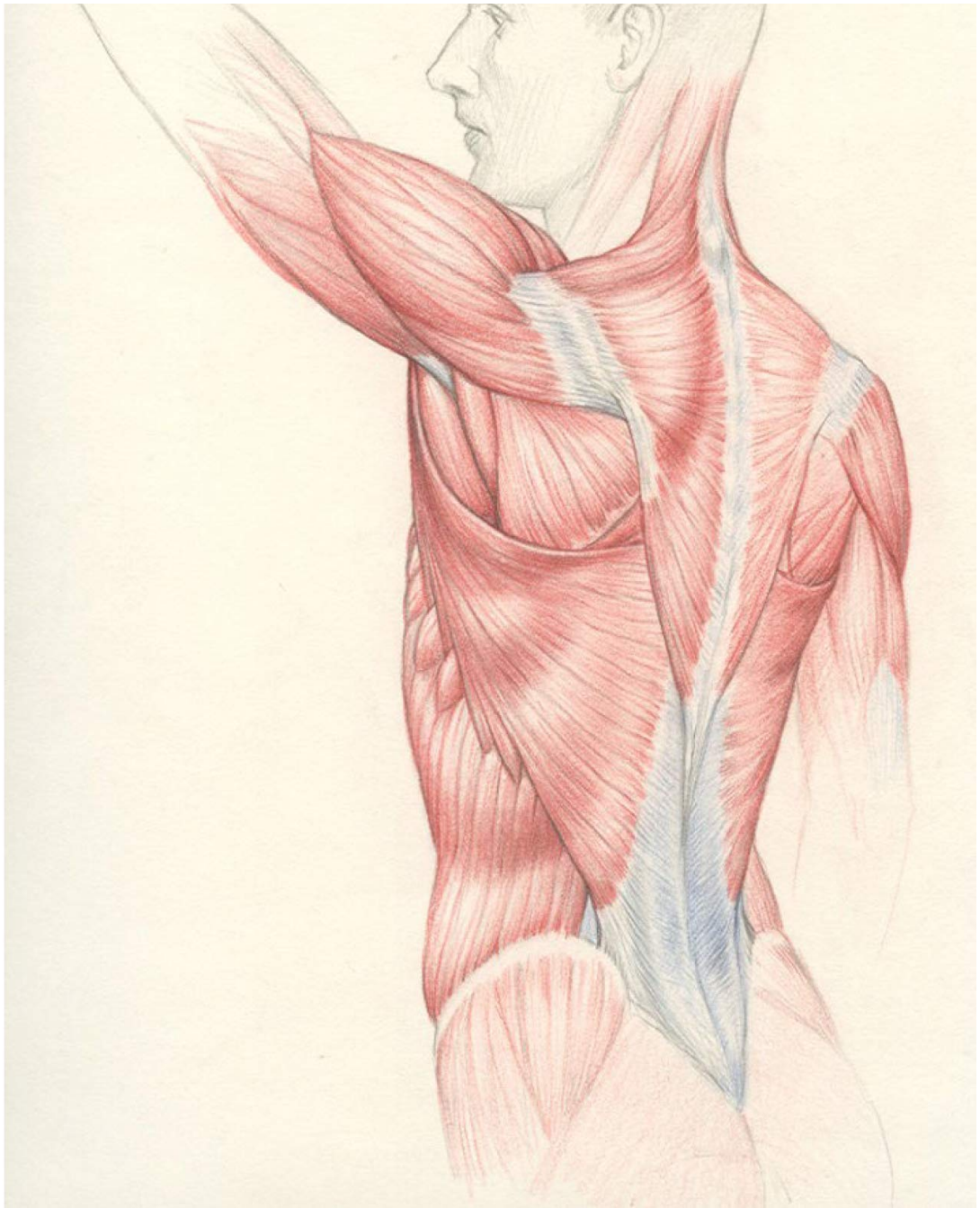
We draw what we know; the more accurate and extended is our knowledge of the subject, the more accurately we can visually represent it. The artist with theoretical and technical training in anatomy, when examining the human figure, will not just see nameless and localized bumps but specific forms interacting with adjacent forms creating flows, rhythms, and harmonies. The artist will understand specific characteristics of each anatomical structure by its function, leading to solid, harmonious, three-dimensional representations of the human figure.

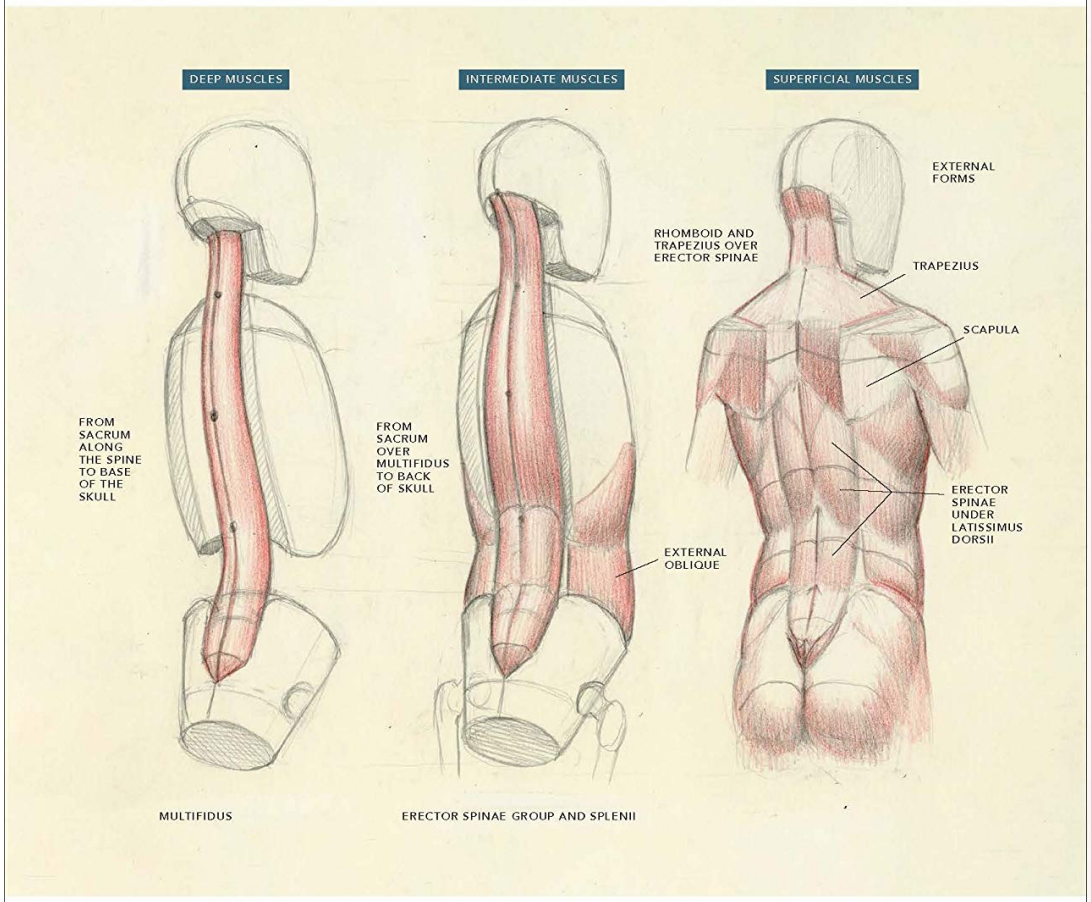
The protean quality of the human figure makes it a very intimidating yet stimulating subject to depict; the body is standardized and idealized in its anatomical representations, but it presents itself in an incredible number of variations in real life. It changes with age, gender, weight; with the light; at rest or in movement; in health or illness, making it an arduous task to capture it graphically.

The conceptual approach to the human body will permit us to focus on only a limited number of specific aspects of the body at a given time, making it possible for us to understand its language. This book is therefore organized into a series of progressive and interconnected conceptualizations of the human body. Each one will deal with limited aspects of the figure: the volumes, the structure, the anatomy, and so on. The chapters are organized according to an analytical progression that goes from very synthetic forms (the basic volumes) to realistic rendering.

Each chapter will explore specific aspects connected with the human form, limiting the amount of information discussed and making it easier to assimilate it. Specific exercises at the end of each chapter will guide the student to the practical application of the notions discussed.

By the end of this book, readers will be able to understand the human figure from a variety of points of view—volumetric, structural, anatomical—and will be able to analyze its planes and patterns. They will also learn the basics of various drawing techniques, enabling them to transition





ABOVE: Layering of the muscles of the back

The multifidus is a deep muscle that goes from the sacrum to the base of the skull, running on the side of the spine. The erector spinae group, simplified here in a single form, is positioned over the multifidus, whose volume is still visible under the tendons of the erector spinae.

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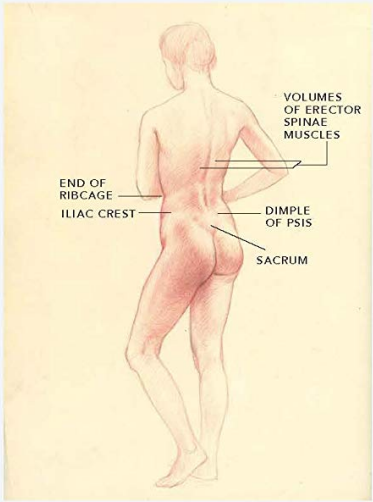
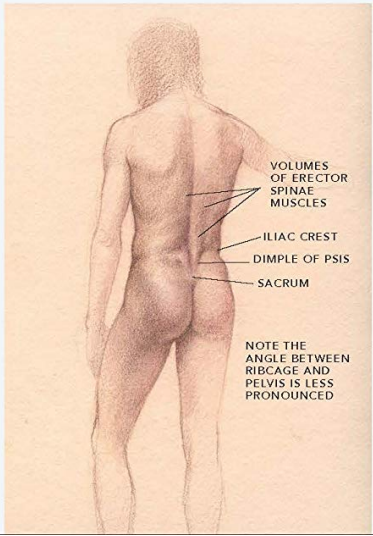
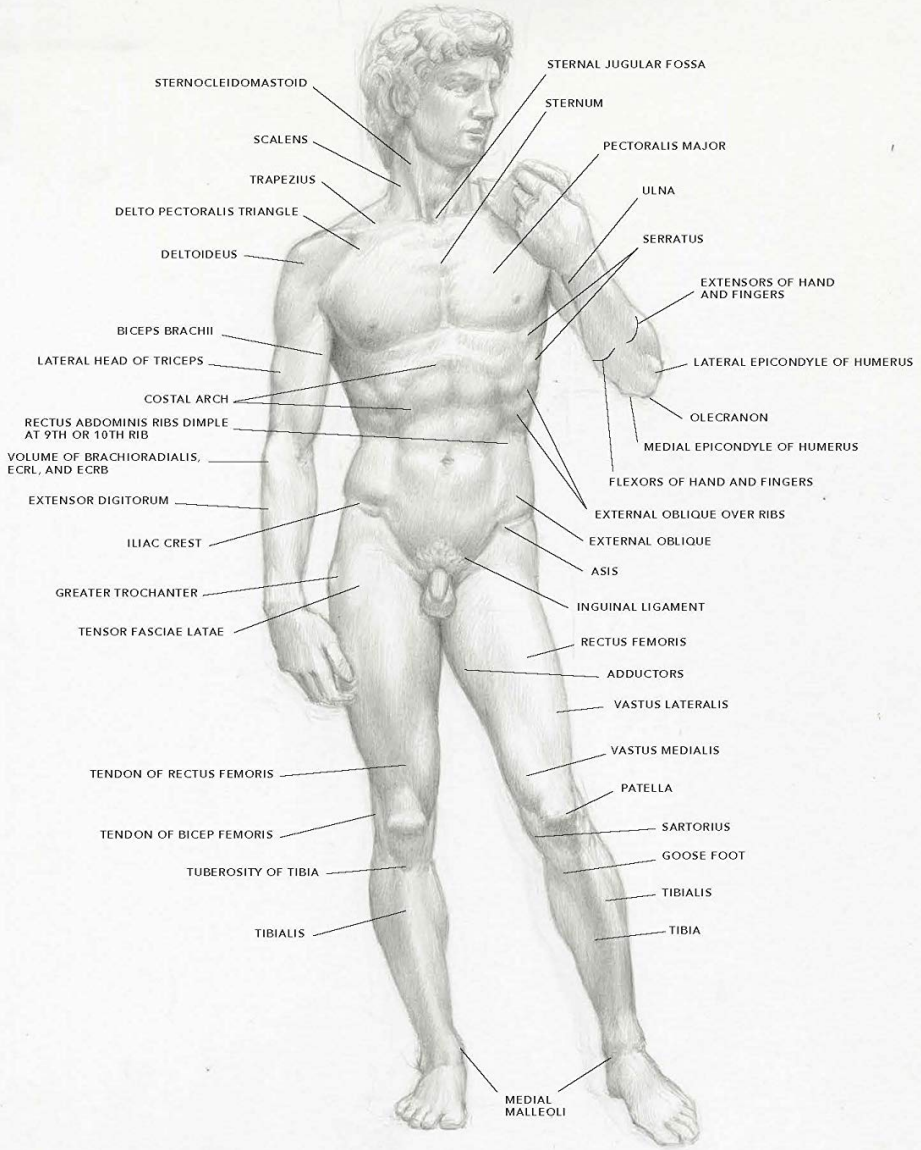
A woman's wider pelvis, narrower hips, and more pronounced angle between ribcage and hips create a posture different from that of the male figure, which appears straighter and has a more discernible distinction between the ribcage, waist, and pelvis.





ABOVE: Landmarks of the back, three-quarters posterior view, female figure

LEFT: Landmarks of the back, three-quarters posterior view, male figure


STERNOCLEIDOMASTOID
STERNAL JUGULAR FOSSA
STERNUM
SCALENS
PECTORALIS MAJOR
TRAPEZIUS
ULNA
DELTO PECTORALIS TRIANGLE
SERRATUS
DELTOIDEUS
EXTENSORS OF HAND AND FINGERS
BICEPS BRACHII
LATERAL HEAD OF TRICEPS
LATERAL EPICONDYLE OF HUMERUS
COSTAL ARCH
OLECRANON
RECTUS ABDOMINIS RIBS DIMPLE AT 9TH OR 10TH RIB
MEDIAL EPICONDYLE OF HUMERUS
VOLUME OF BRACHIORADIALIS, ECRL, AND ECRB
FLEXORS OF HAND AND FINGERS
EXTENSOR DIGITORUM
EXTERNAL OBLIQUE OVER RIBS
ILIAC CREST
EXTERNAL OBLIQUE
ASIS
GREATER TROCHANTER
INGUINAL LIGAMENT
TENSOR FASCIAE LATAE
RECTUS FEMORIS
ADDUCTORS
VASTUS LATERALIS
VASTUS MEDIALIS
TENDON OF RECTUS FEMORIS
PATELLA
TENDON OF BICEP FEMORIS
SARTORIUS
GOOSE FOOT
TUBEROSITY OF TIBIA
TIBIALIS
TIBIALIS
TIBIA
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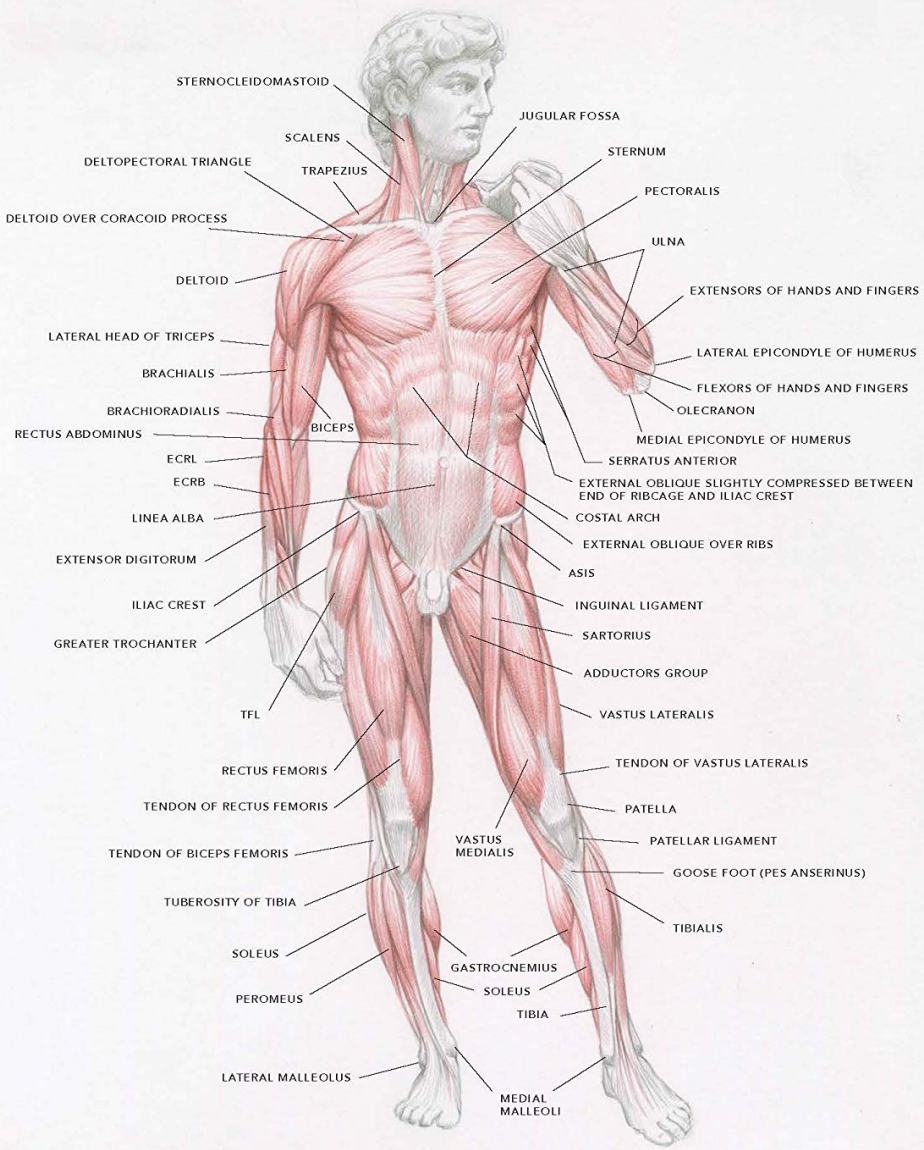

STERNOCLEIDOMASTOID
JUGULAR FOSSA
SCALENS
STERNUM
DELTOPECTORAL TRIANGLE
TRAPEZIUS
PECTORALIS
DELTOID OVER CORACOID PROCESS
ULNA
DELTOID
EXTENSORS OF HANDS AND FINGERS
LATERAL HEAD OF TRICEPS
LATERAL EPICONDYLE OF HUMERUS
BRACHIALIS
FLEXORS OF HANDS AND FINGERS
BRACHIORADIALIS
OLECRANON
BICEPS
RECTUS ABDOMINUS
MEDIAL EPICONDYLE OF HUMERUS
ECRL
SERRATUS ANTERIOR
ECRB
EXTERNAL OBLIQUE SLIGHTLY COMPRESSED BETWEEN END OF RIBCAGE AND ILIAC CREST
LINEA ALBA
COSTAL ARCH
EXTERNAL OBLIQUE OVER RIBS
EXTENSOR DIGITORUM
ASIS
ILIAC CREST
INGUINAL LIGAMENT
SARTORIUS
GREATER TROCHANTER
ADDUCTORS GROUP
TFL
VASTUS LATERALIS
TENDON OF VASTUS LATERALIS
RECTUS FEMORIS
PATELLA
TENDON OF RECTUS FEMORIS
VASTUS MEDIALIS
PATELLAR LIGAMENT
TENDON OF BICEPS FEMORIS
GOOSE FOOT (PES ANSERINUS)
TUBEROSITY OF TIBIA
TIBIALIS
SOLEUS
GASTROCNEMIUS
SOLEUS
PEROMEUS
TIBIA
LATERAL MALLEOLUS
MEDIAL MALLEOLI

ANATOMY AND REALISM—SCULPTURE "DISSECTED"

In the 1940s, the art historian Gisela Richter published the book *Kouroi: A Study of the Development of the Greek Kouros from the Late Seventh to the Early Fifth Century B.C.* In it, she discusses how *kouroi*—freestanding sculptures of nude young men—can be dated based on the level of realism they display. Elaborating on Richter's idea, I try in what follows to draw connections between anatomical accuracy and realistic, lifelike effects in a number of artworks from the Greek Classical period (fifth century BCE) up to the European Baroque (seventeenth century).

To do so, I have "dissected," to varying degrees of analysis, eight works from successive artistic periods with the intent of showing that increasing knowledge and accurate depiction of anatomy corresponds to an increase in an artwork's sense of life and movement. The works I've chosen are iconic and represent the highest level of technical, conceptual, and aesthetic expression of their period.

INCREASING REALISM IN ANCIENT GREEK SCULPTURE

[CAP2]In ancient Greece, the sculptural depiction of the human figure changed dramatically over a the span of about five hundred years. As the level of anatomical precision increased, so did the depictions' realism, dynamism, and sense of emotional and physical life.

ANATOMICAL NAMES

Their Latin appellations are probably the biggest obstacle to learning the names of the muscles. I encourage my terrified students to use the "gym" names for muscles that have them: "lats" instead of latissimus dorsii, "quads" instead of quadriceps, "gluts" instead of glutei, "pecs" instead of pectoralis, and so on.

Understanding the meaning of the terms can also help you to memorize the muscles' names. Once you understand them, you can see that the names are very practical: they indicate the muscles' origin and insertion (where they begin and end) or their action or morphology (shape). For example, the name *sterno-cleidomastoid* indicates that muscle's origin at the sternum and collar bone (*cleido*) and its insertion on the mastoid process behind the ear. *Latissimus dorsii*, or "lats," means "the big one" (*latissimus*) of the back (*dorsii*). *Tensor fasciae latae* means "the muscle that tenses the side band" (i.e., the iliotibial band).

Even some very complicated muscle names become easier to remember when you understand the meanings of the Latin words. For instance, the incredibly long name *extensor carpi radialis longus* means "the muscle that extends the wrist (*carpus*) from the side of the radius," and the even longer *levator alequae nasi labii superioris* means "the muscle that lifts the wing of the nose and the upper lip."

The English word *muscle* itself has an interesting and somewhat comical origin. It apparently comes from the Latin word mus, meaning "mouse," probably because the movements of the muscles under the skin recall the movements of a mouse under a blanket.

MET KOUROS
ARCHAIC (590 BCE)

KROISOS KOUROS
ARCHAIC (530 BCE)

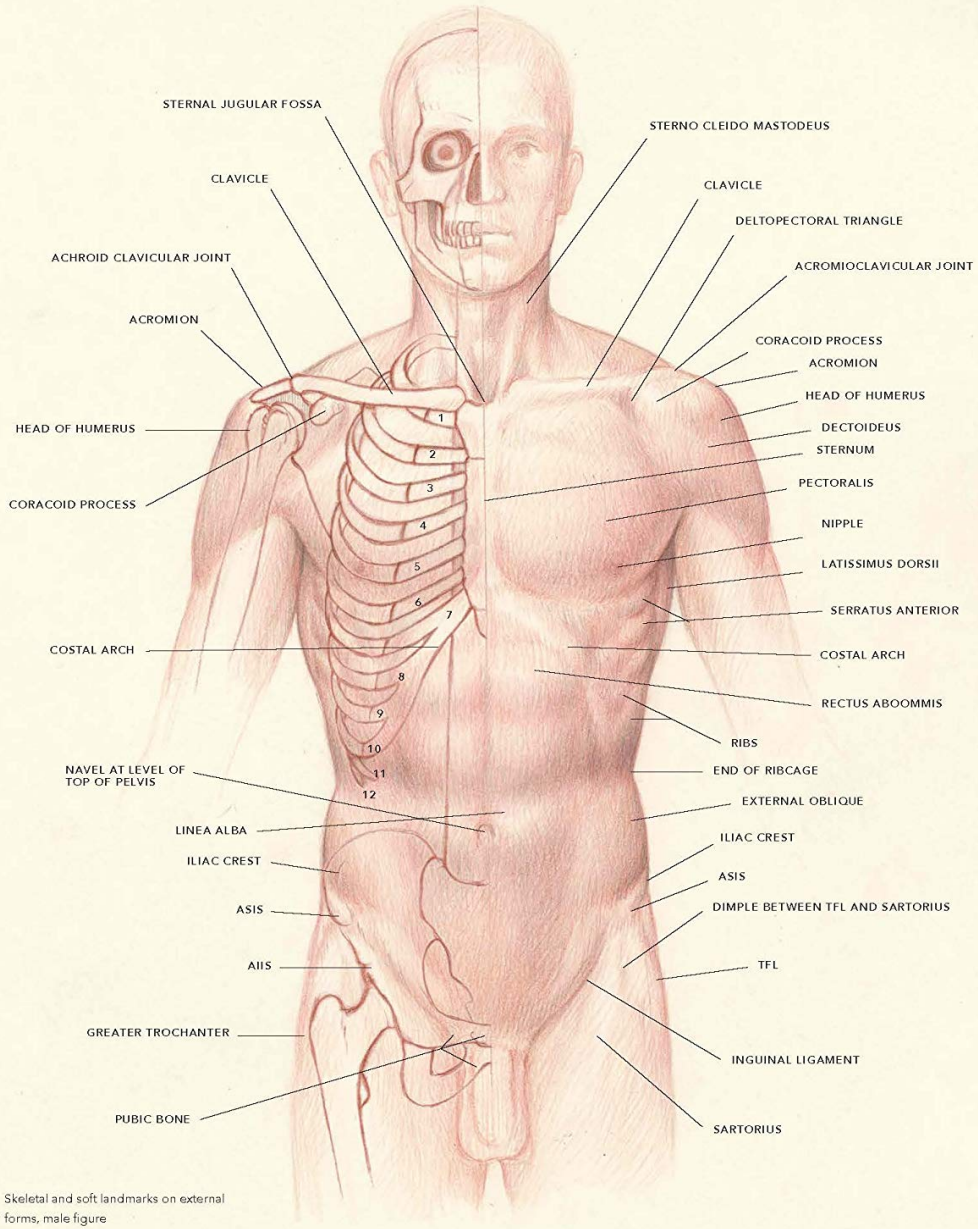
KOUROS OF ARISODIKOS
ARCHAIC (500 BCE)

KRITIOS BOY
EARLY CLASSICAL (480 BCE)

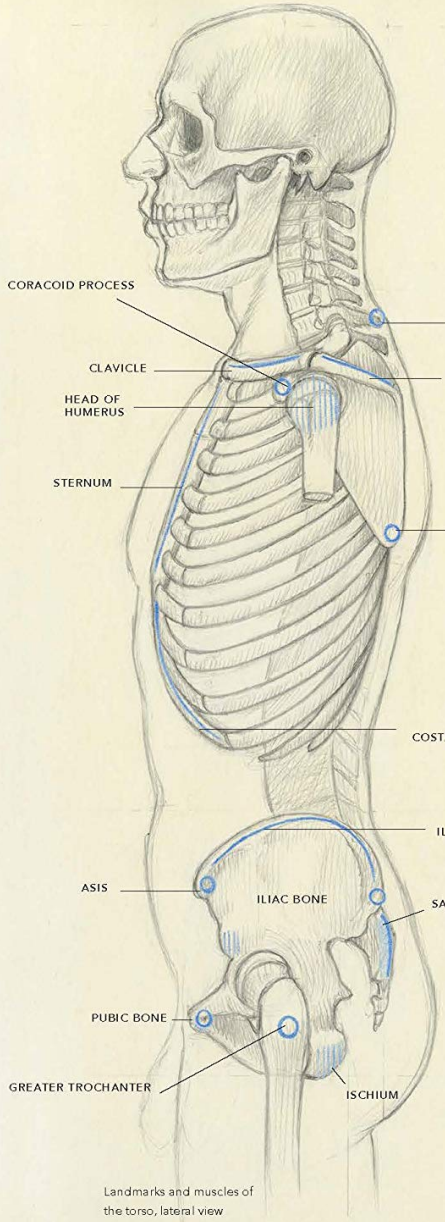
DORYPHOROS
CLASSICAL (440 BCE)

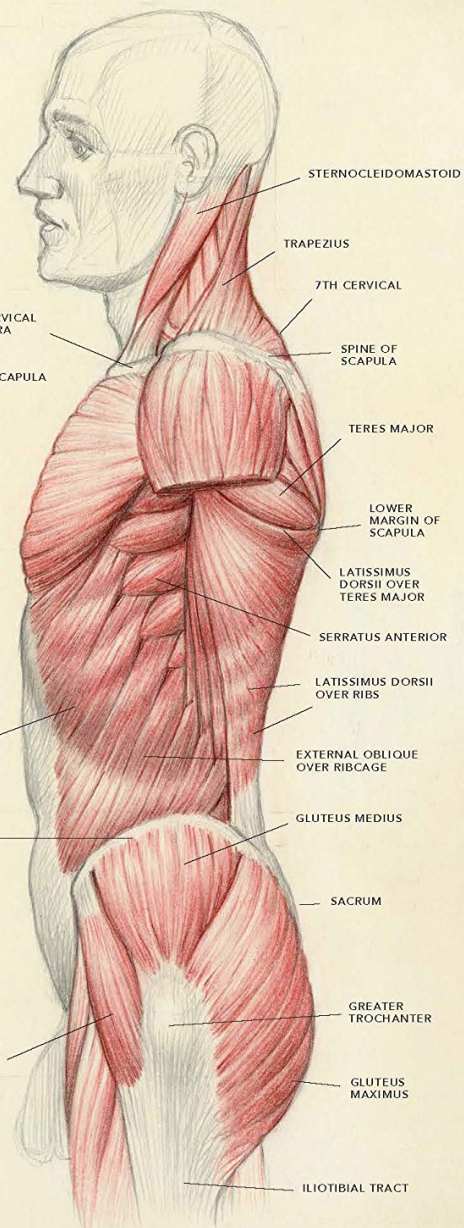
HAGIAS
LATE CLASSICAL (337 BCE)

LAOCOÖN
HELLENISTIC (C. 100 BCE)

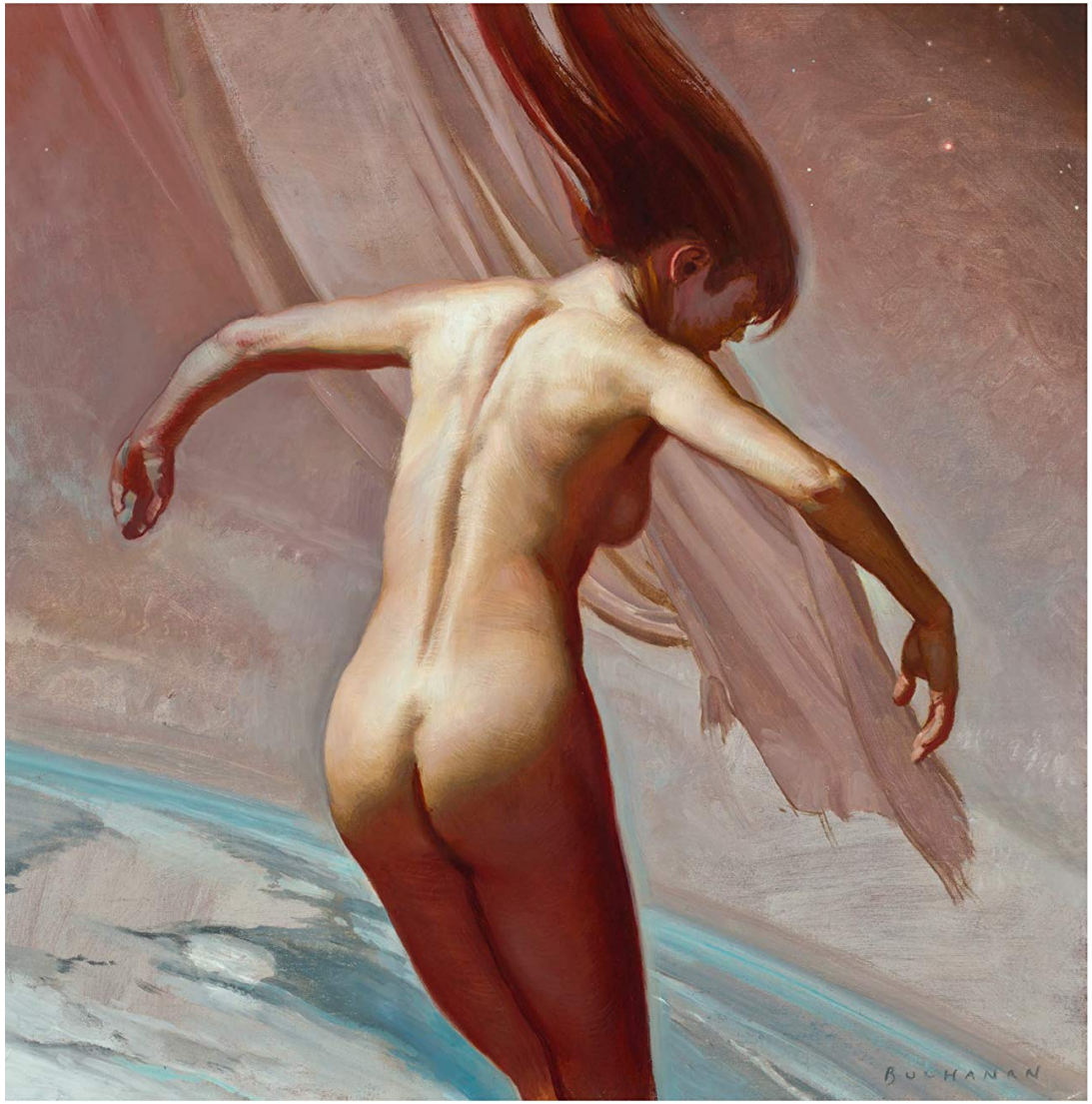


Skeletal and soft landmarks on external forms, male figure





Landmarks and muscles of the torso, lateral view

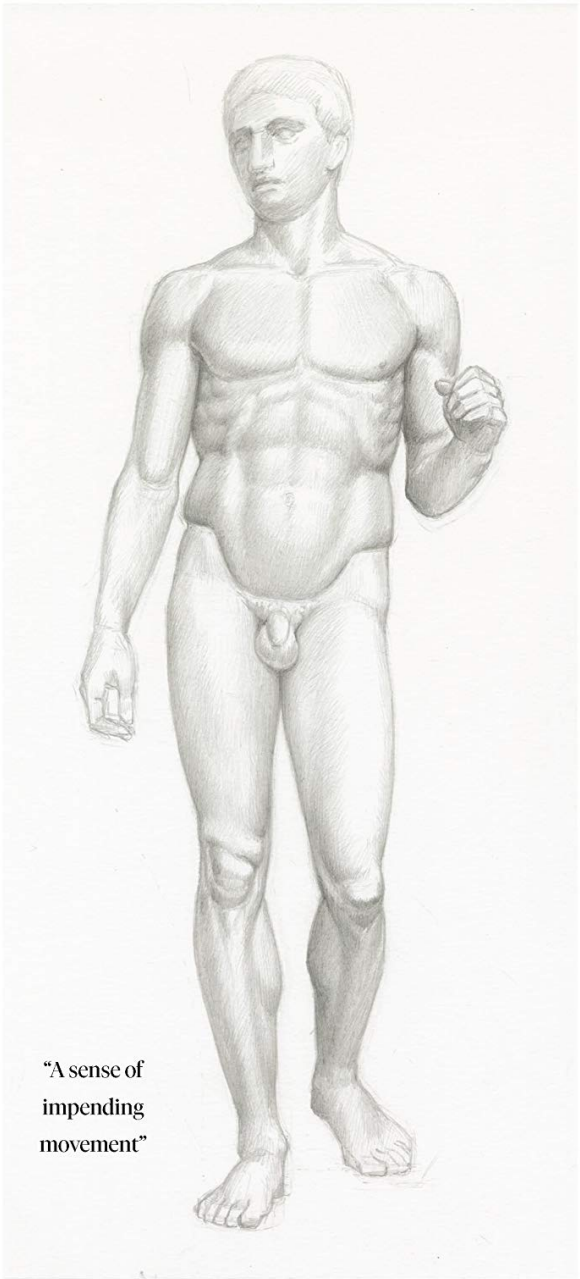


CHAPTER 5

FLOWS AND RHYTHMS OF THE FIGURE

Depending on our intent, we see different things when we look at the body. Scientists and artists have both dissected the body for centuries, but with different intentions and different ends. Physicians and other medical professionals study anatomy for healing purposes; artists study anatomy with an aesthetic intention. When Leonardo or Michelangelo took bodies apart, they later put them back together again though their art, elevating the body beyond its material state.

OPPOSITE: Noah Buchanan, *Venus Descending,* 2018, oil on linen, 46 × 46 inches (116.84 × 116.84 cm). Courtesy of the artist.



"A sense of impending movement"

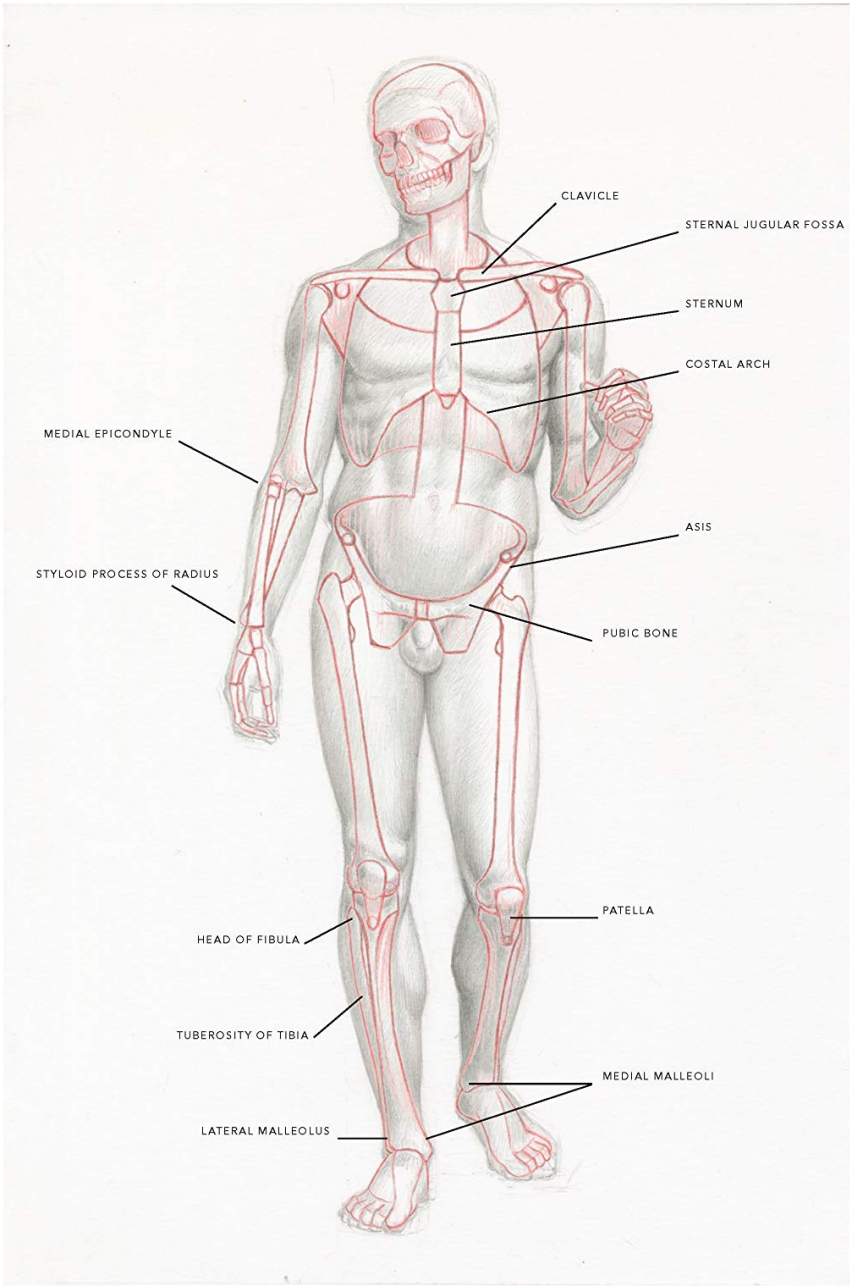
DISSECTING THE DORYPHOROS

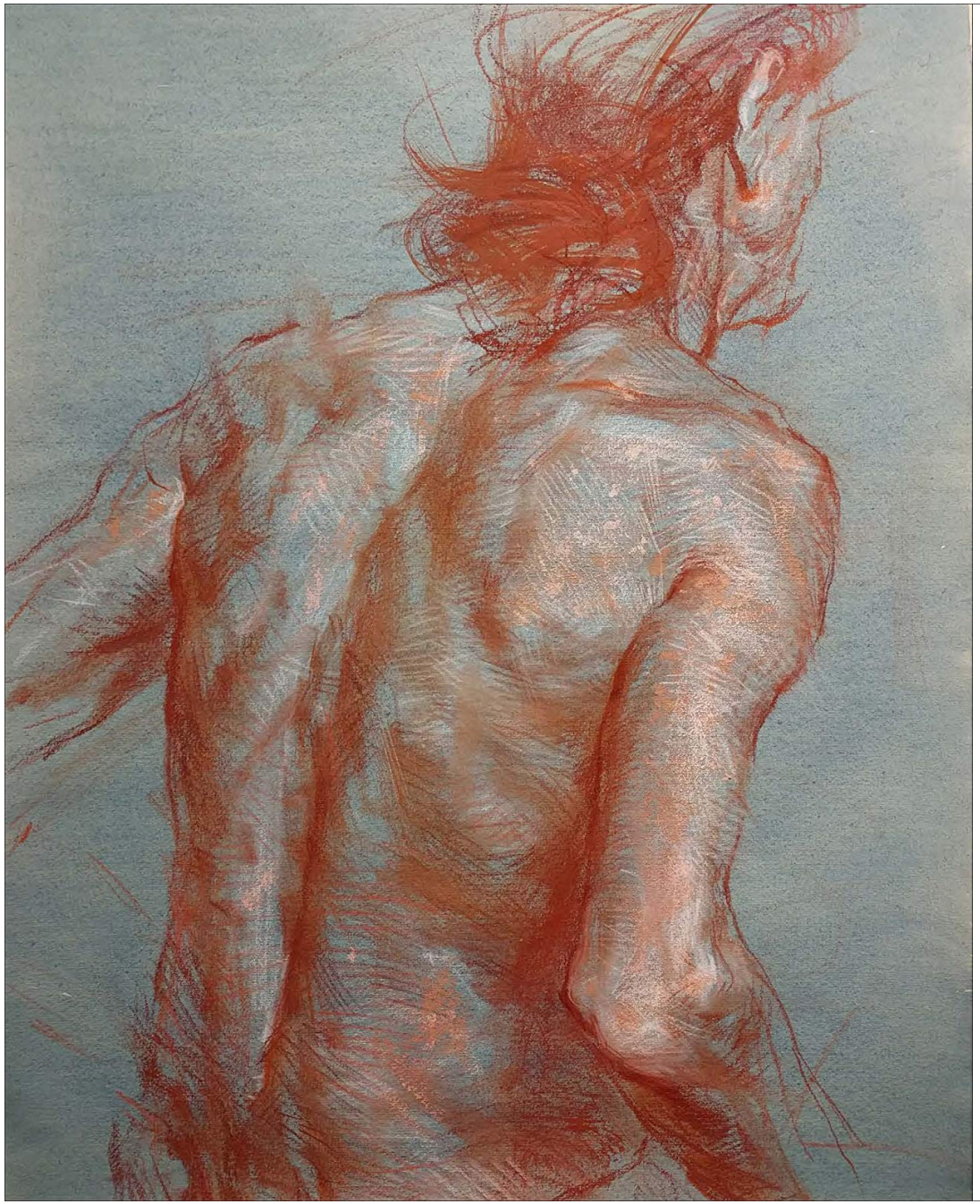
The Doryphoros, or Spear Bearer, exhibits the proportional canons established by the Classical Greek sculptor Polykleitos in the fifth century BCE. The bronze original, dating to 440 BCE, is lost, but several Roman copies, sculpted in marble, survive. The Doryphoros' contrapposto pose and accurate (if idealized) anatomy convey a sense of impending movement and realism, and therefore of life.

All the essential skeletal and soft landmarks are properly positioned on the Doryphoros, revealing the artist's solid understanding of skeletal structure and muscular-skeletal connections. Following these landmarks, it is possible to reconstruct the skeleton of the spear bearer, as shown DIREX. Although idealized in a "type" and somewhat purged of their organic aspects, the figure's muscular forms are correctly synthesized and properly positioned on the skeleton. One can speculate that the standardization of proportions and anatomical forms helped maintain certain aesthetic canons and a high level of quality in the production of this and other Classical artworks.

LEFT: Rendering of Polykleitos's Doryphoros (Spear Carrier; original c. 440 bce)

OPPOSITE: Reconstructed skeleton of Doryphoros, showing skeletal landmarks





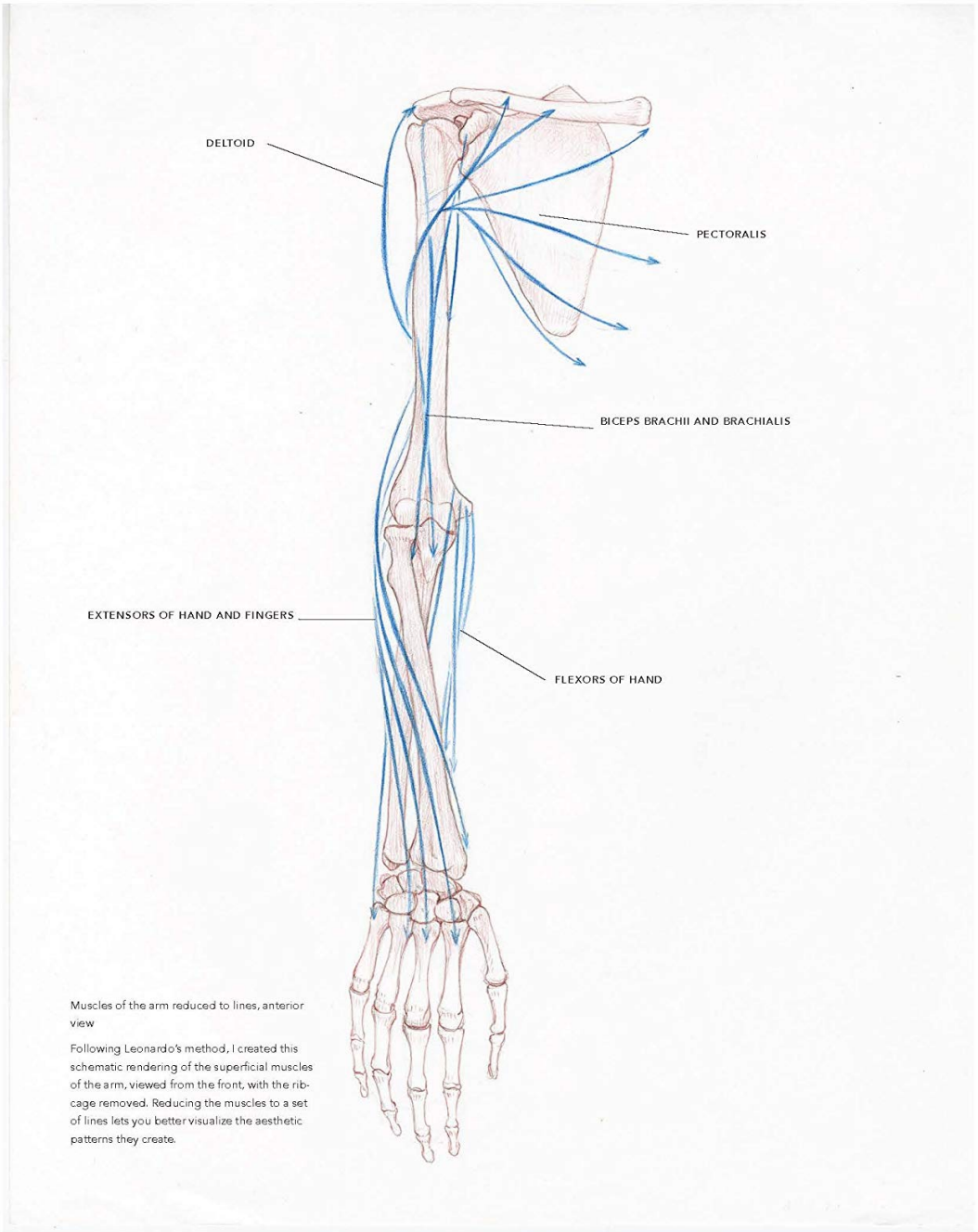
CHAPTER 9

MEASURING & DRAWING TECHNIQUES

I close this book with an examination of a few essential measuring and drawing techniques traditionally associated with figure drawing. By now you have a solid understanding of how important anatomical knowledge is for creating a good figure drawing. An artist who is well trained in anatomy can read a model's body and pose in great detail and with a high degree of accuracy, and the resulting artwork will be more aesthetically complex, expressive, and realistic.

For much of the twentieth century and up until fairly recently, the theoretical aspect of art and art-making was considered to be the most important. The technical part was dismissed, with few exceptions, as "craft" or as showing-off on the part of the artist. The result was a great loss of expressive possibility and a limitation of creativity. But it's also true that an excessive or exclusive focus on the technical aspect of art to the detriment of the conceptual can be equally deleterious, causing a work of art to become just a narcissistic display of technical prowess. The almost alchemical interaction between the technical and the conceptual marries theory and practice and generates creativity, diversity, and innovation.

OPPOSITE: Dan Thompson, *The Runner*, 2017, red and white chalk on paper, 20 × 15 inches (50.80 × 38.10 cm). Courtesy of the artist.



Muscles of the arm reduced to lines, anterior view

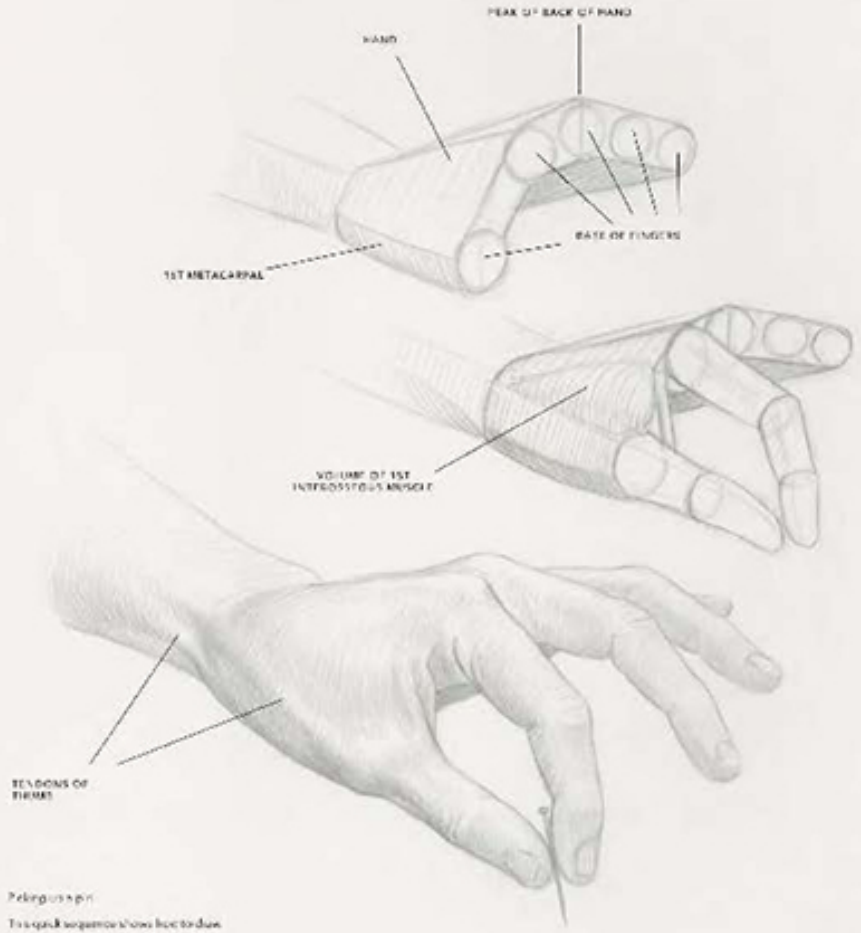
Following Leonardo's method, I created this schematic rendering of the superficial muscles of the arm, viewed from the front, with the rib-cage removed. Reducing the muscles to a set of lines lets you better visualize the aesthetic patterns they create.

FLOWS OF THE ARM

The high degree of mobility of the arm and its many muscles create great dynamism and innumerable lines of flow. The images in this section show the forms and flows of the arm in various positions and from various angles. The scope of this thorough, but not exhaustive, exploration is to point out how many aesthetic pathways the human figure can create, depending on pose, movement, and point of view.

LEFT: Leonardo da Vinci, anatomical studies of the shoulder, 1510–11, black chalk and ink on paper, 11 ⅜ × 7 ⅞ inches (28.9 × 19.9 cm). Royal Library, Windsor, United Kingdom.

Leonardo da Vinci invented an incredibly efficient method of visualizing the muscles, reducing them to lines to see their paths more clearly and to focus on their function.



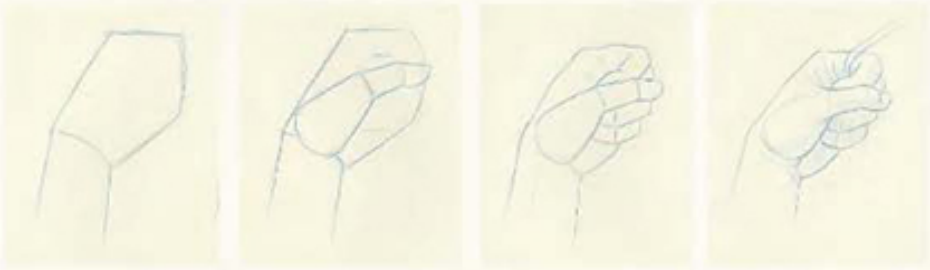
Pointing gesture

This quick sequence shows how to draw a hand in the action of holding a small object.

DEMONSTRATION

A MIXED APPROACH TO DRAWING THE HAND

In this mixed approach, you start with an envelope (the solid volume), move quickly to bones representing the forms, and from there to the line drawing and tonal rendering.



1
Draw the main volumes with simple lines.

2
Add the volumes of the thumb, and compare measurements.

3
Roughly line drawing.

4
Refine the line drawing and start the tonal rendering.

5
Here is the fully developed drawing (left) along with a stereometric study. The stereometric study need not be part of your sequence, but it can be very useful in revealing the effect of the light on the form before rendering the hand tonally.

CONTENTS

DYNAMIC HUMAN ANATOMY