

Chapter One

Introduction

WHAT

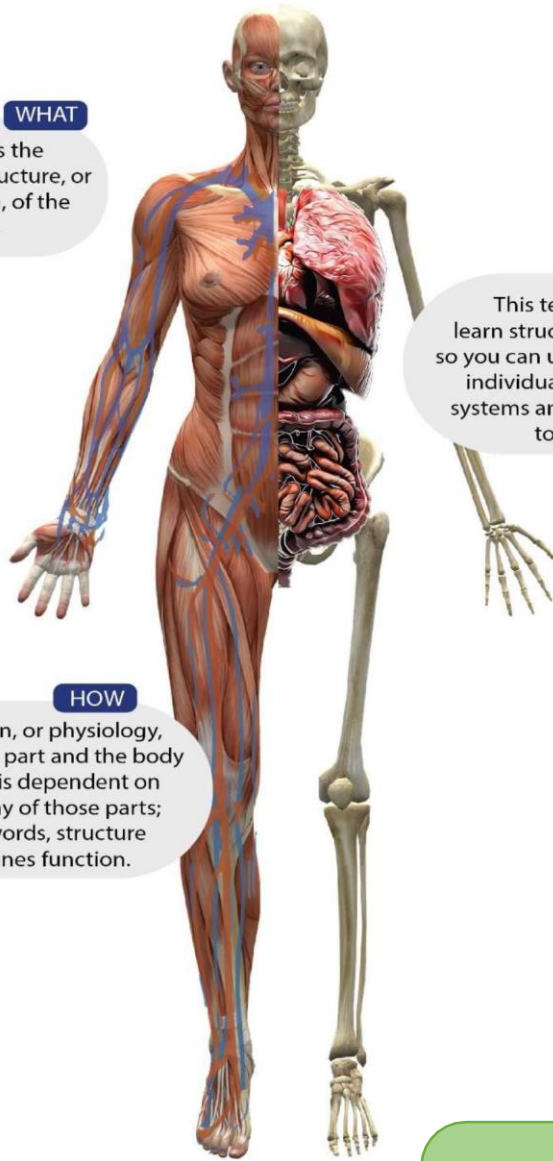
Anatomy is the study of the structure, or physical form, of the body.

WHY

This text will help you learn structures and functions so you can understand the role of individual organs and body systems and how they interact to support life

HOW

The function, or physiology, of each body part and the body as a whole is dependent on the anatomy of those parts; in other words, structure determines function.



Instructor Note:

Write the names of ten organs of the human body.

Unit Introduction

Essential Clinical Anatomy relates the function and structure of the body to the general practice of dentistry, medicine, and the allied health sciences. Clinical Anatomy streamlines and connects the information to make it simpler and more convenient to comprehend by the human mind (Boon et al., 2002). This is necessary because the sheer extent of detail in anatomy can be overwhelming for many beginning students. The clinical applications of anatomy are covered in this book through the use of illustrations and, and clinical box studies.

Fun Fact:

Every second, your body produces
25 million new cells

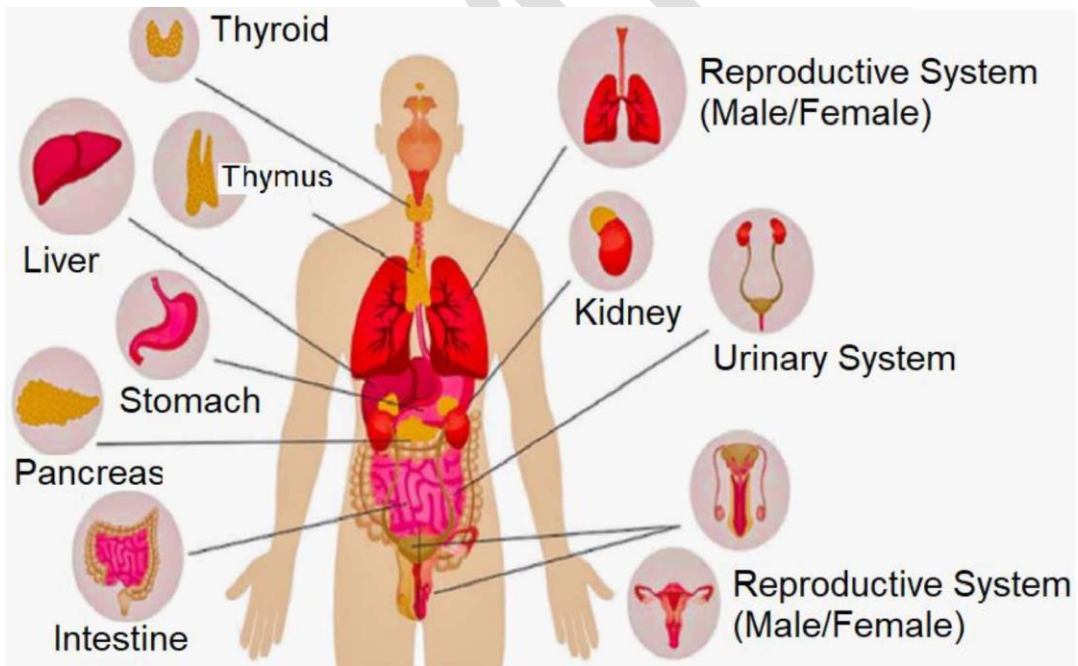


Figure 1-1. Parts of the body and their anatomical positions.

1.1. APPROACHES TO STUDYING ANATOMY

Learning Objectives

1. Identify the major anatomical structures of the human body.
2. Describe the different approaches to studying anatomies, such as cadaver dissection, protection, and radiological imaging.
3. Relate the anatomical structures to their physiological functions.
4. Utilize anatomical terminology correctly to describe human anatomy.

Human gross anatomy can be studied in three different ways: regionally, systemically, and clinically (applied). This introductory chapter takes a systemic view, whereas the subsequent chapters use clinical and regional perspectives (Ward, 2011).

Regional anatomy is centered on the body's division into parts, such as the trunk, neck, head, and associated upper and lower limbs. The interconnections between the numerous systemic structures (such as muscles, nerves, and arteries) in the region are emphasized. Each region is not isolated; neighboring regions and the body must consider it. Surface anatomy is an important component of the regional approach because it explains which structures are visible and/or palpable in the living organism at rest and inactivity. The clinical extension of surface anatomy is the physical examination of patients. For example, the healthcare provider must be able to visualize the deep structures that may be harmed in persons with stab wounds. (Pandey & Zimitat, 2007).

Did you know?

Your hands, wrists, feet, and ankles contain more than half of your body's bones.

When it comes to studying the human body, the **systemic approach** organizes things according to the organ systems that help them perform their complex functions. None of the organ systems function in isolation. The locomotor system, for instance, is mainly comprised of the skeletal, muscular, and articular systems. Although the joints, bones, ligaments, and muscles are the primary structural components that deal with the movement, other systems also play a role. They receive oxygen and waste removal from the circulatory system via the veins and arteries and are prompted to take action by the nervous system (Johansen & Rushworth, 2009).

Specific features of the body's function and structure relevant to the areas of allied health sciences, dentistry, and medicine are focussed on clinical (applied) anatomy. It includes both the systemic and regional methods of studying anatomy and emphasizes their use in the clinical applications. (Eleazer & Scopa Kelso, 2018).

Following are brief summaries of the body's systems and their fields of study that focus on them:

Integumentary System (Dermatology)

It is composed of the skin as well as its appendages, which include the nails and hair. The largest sense organ —skin— also serves as the body's primary barrier against the environment (Wilhelmsson et al., 2010).

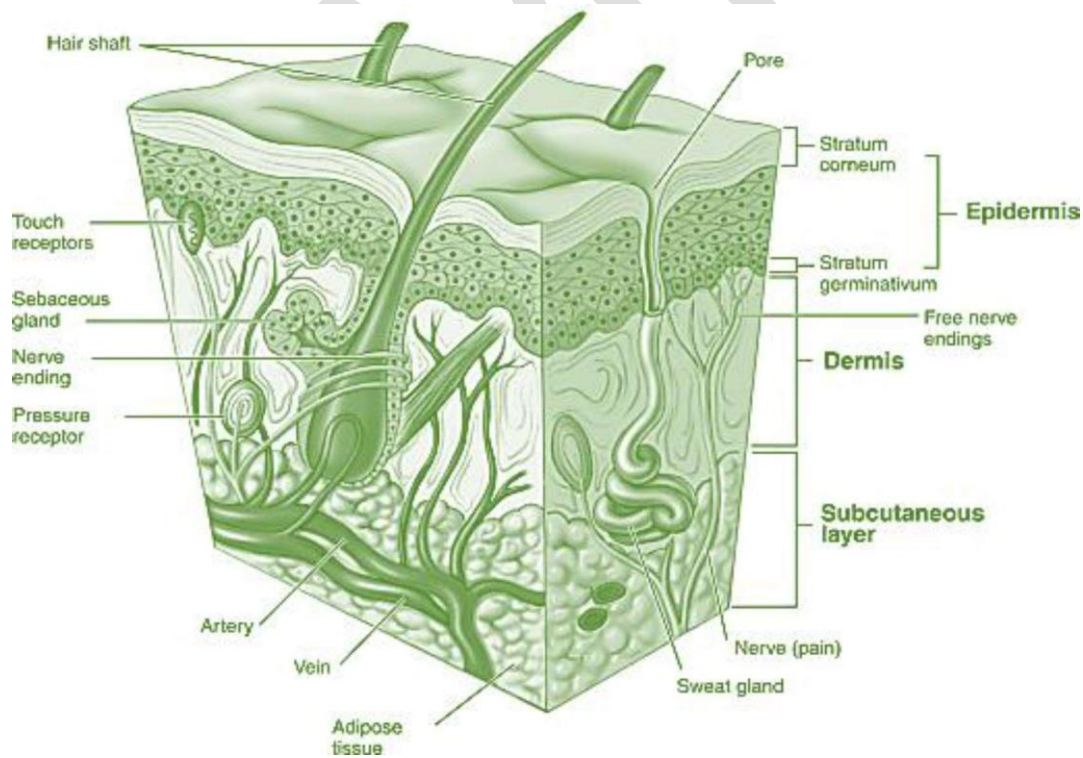


Figure 1-2. Detailed illustration of Integumentary System (Source: Brainkart, Creative Commons License).

Skeletal System (Orthopedics)

It consists of cartilage and bone and helps keep the body together. Human body movements are generated by the muscular system's interaction with the skeletal system.

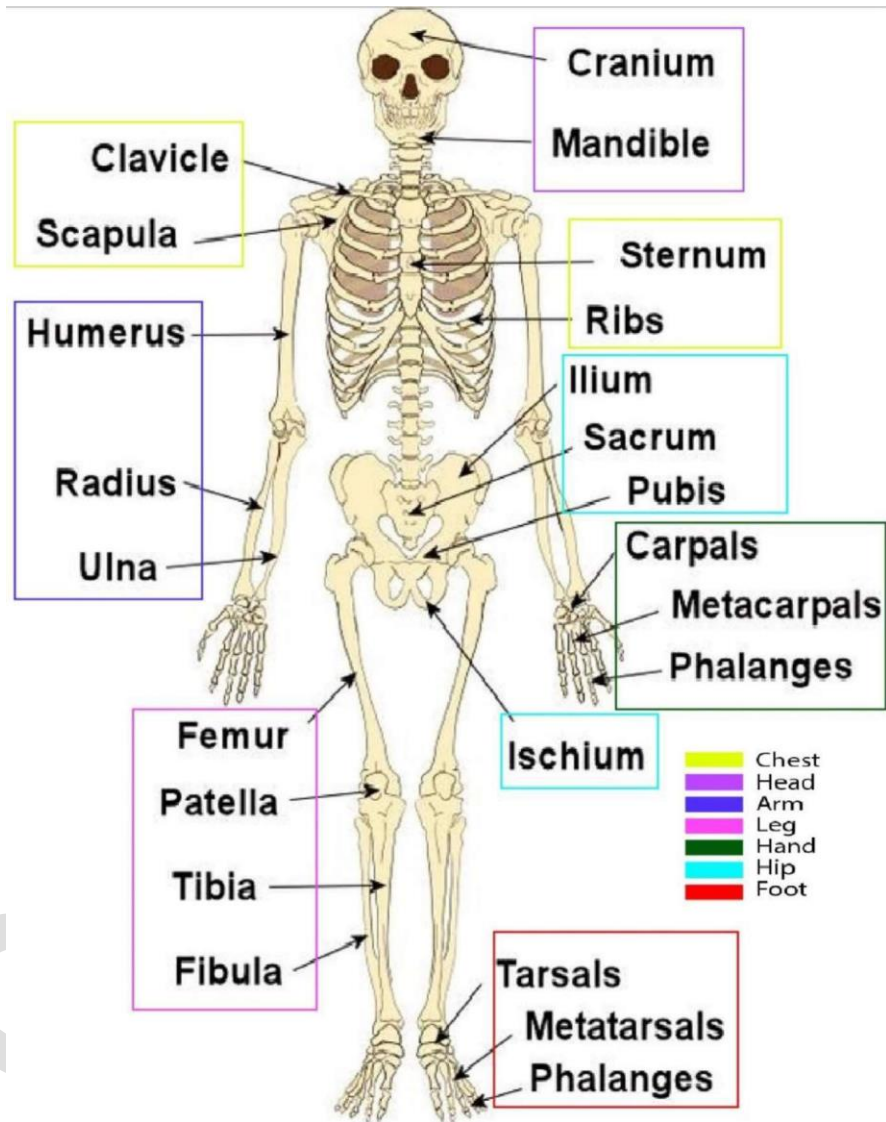


Figure 1-3. Different parts of the Skeletal System

Articular System (Arthrology)

It includes the joint structures and the ligaments that support them. The articular system links the skeletal framework together and serves as a platform for motion.

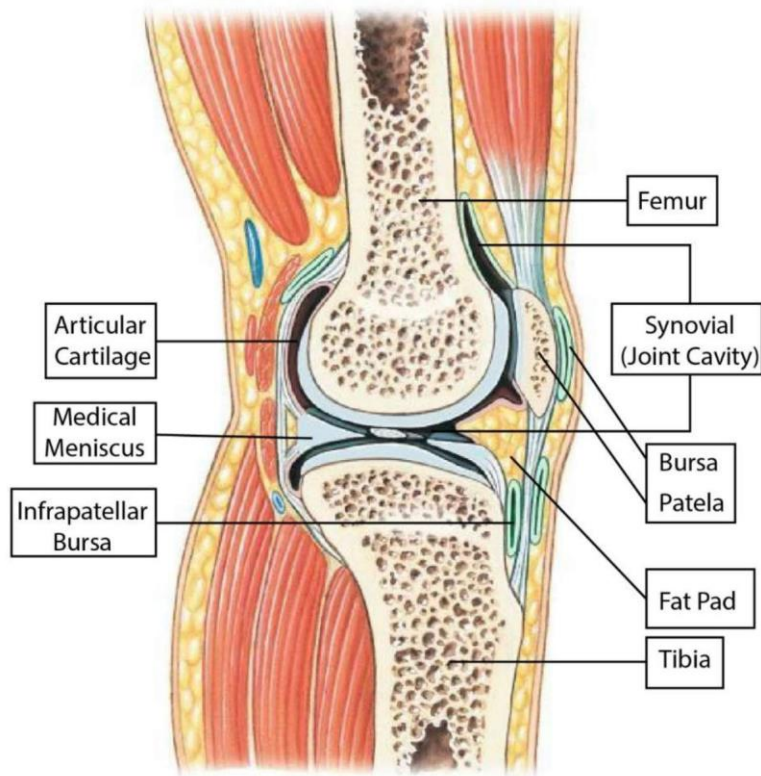


Figure 1-4. Description of human Articular System

Muscular System (Myology)

It is composed of the muscles that contract to cause motion or alter a body part's position (Smith et al., 2014).

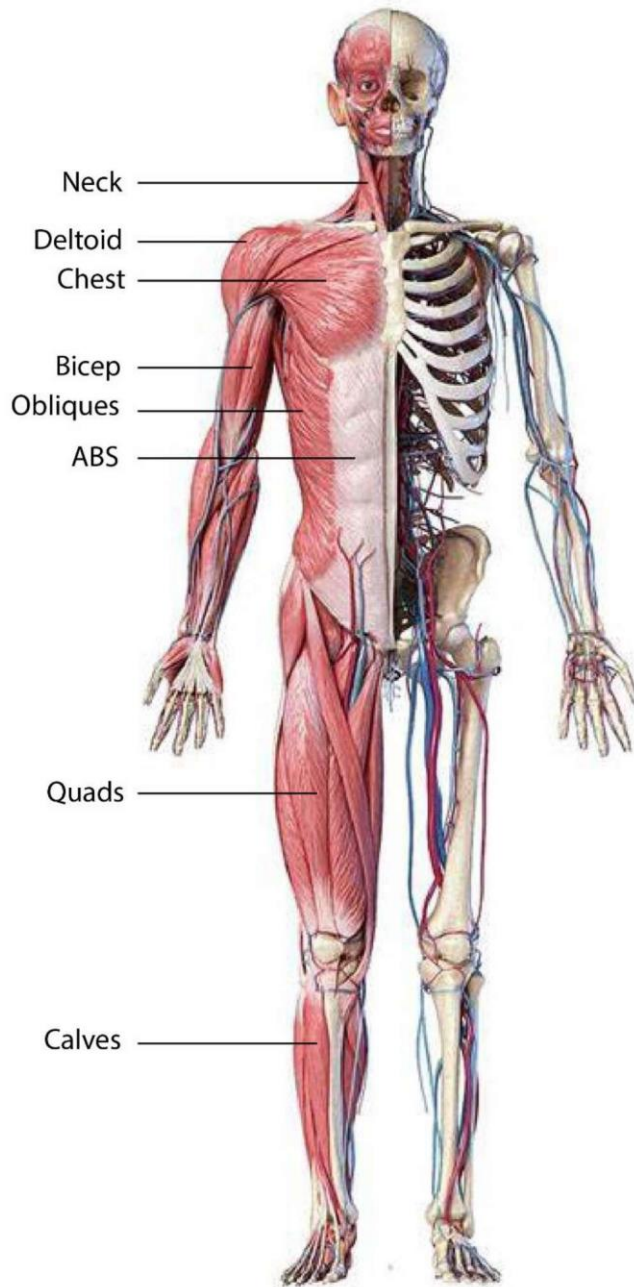


Figure 1-5. Illustration of the Muscular System

Nervous System (Neurology)

The nervous system regulates and organizes all the operations performed by different organs. It consists of the CNS—central nervous system (spinal cord and brain) and the PNS— peripheral nervous system (the rest of the nervous system).