

Identify “Big Picture” Concepts Before Exploring Details

Before you look up details and information within a chapter, read the **Chapter-Opening Roadmap**, which visually groups and organizes “big picture” concepts and shows how they are related. To focus your studying, review the numbered **Key Concept Headings**, **Learning Outcomes**, and summaries.

UNIQUE! Chapter Roadmaps

provide a visual overview of the key concepts in the chapter and show how they relate to each other. Each key concept “brick” in the roadmap corresponds to a numbered section within the chapter.

Each numbered section within the chapter begins with a **Key Concept Heading** that helps you quickly grasp the “big idea” of the discussion that follows.

8 Joints

In this chapter, you will learn that

Joints determine how bones move relative to each other

by first asking

8.1 How are joints classified?

then exploring

8.2 Fibrous joints **8.3 Cartilaginous joints** **8.4 Synovial joints**

looking closer at focusing on

Movement of synovial joints **8.5 Selected synovial joints**

then asking

8.6 What happens when things go wrong?

and finally, exploring

Developmental Aspects of Joints

8.1 Joints are classified into three structural and three functional categories

Learning Outcomes

- ✓ Define joint or articulation.
- ✓ Classify joints by structure and by function.

Joints are classified by structure and by function. The *structural classification* focuses on the material binding the bones together and whether or not a joint cavity is present. Structurally, there are *fibrous*, *cartilaginous*, and *synovial joints* (Table 8.1 on p. 285). Only synovial joints have a joint cavity.

The *functional classification* is based on the amount of movement allowed at the joint. On this basis, there are *synarthroses* (sin’ar-thro’sēz; *syn* = together, *arthro* = joint), which are immovable joints; *amphiarthroses* (am’fē-ar-thro’sēz; *amphi* = on both sides), slightly movable joints; and *diarthroses* (dī’ar-thro’sēz; *dia* = through, apart), or freely movable joints. Freely movable joints predominate in the appendicular skeleton (limbs). Immovable and slightly movable joints are largely restricted to the axial skeleton. This localization of functional joint types makes sense because the less movable the joint, the more stable it is likely to be.

In general, fibrous joints are immovable, and synovial joints are freely movable. However, cartilaginous joints have both rigid

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Learning Outcomes are presented at the beginning of each chapter section to give you a preview of essential information to study.