Chapter 147
Osteoarthritis

Sean Esmende and Hardeep Singh

What are the primary components of articular (hyaline) cartilage?	1. Extracellular matrix (90% collagen and proteoglycan) 2. Chondrocytes 3. Water
How does water content differ between normal aging and osteoarthritis?	Water decreases with normal aging and decreases with osteoarthritis
What are the zones of articular cartilage?	1. Superficial zone 2. Intermediate zone 3. Deep (basal) later 4. Tidemark 5. Subchondral bone

(continued)

S. Esmende, MD (✉)
Orthopedic Associates of Hartford, Division of Spine Surgery, The Bone and Joint Institute, Hartford Hospital, Hartford, CT, USA

H. Singh, MD
Department of Orthopaedic Surgery, New England Musculoskeletal Institute, University of Connecticut School of Medicine, Farmington, CT, USA

A. E. M. Eltorai et al. (eds.), *Essential Orthopedic Review*,
https://doi.org/10.1007/978-3-319-78387-1_147

(continued)

What effect does immobilization have on cartilage?	Leads to cartilage thinning and proteoglycan loss
With aging, what happens to chondrocyte size and the ratio of keratin sulfate to chondroitin sulfate?	– Increase in chondrocyte size – Increase in keratin sulfate to chondroitin sulfate
What effect does moderate repetitive loading have on cartilage and proteoglycans?	Moderate running increases cartilage thickness and proteoglycan content
How is cartilage nourished?	– Synovial fluid at the cartilage surface – Subchondral bone at the base
What are the different forms of lubrication?	1. Elastohydrodynamic 2. Boundary (slippery surface) 3. Boosted (fluid entrapment) 4. Hydrodynamic 5. Weeping
What is the difference in cartilage healing between a deep and superficial laceration?	– Deep laceration leads to fibrocartilage healing – Superficial laceration leads to chondrocyte proliferation with NO healing