CPR/First Aid

Lesson 12
Injuries to Muscles, Bones & Joints

Muscles

• Muscles are soft tissues.
• Your body has over 600 different muscles.
• Injuries to the brain, spinal cord or nerves can affect the muscles.
• Most muscles are attached to bones by strong tissues called tendons.

Bones

• Bones are strong and rigid.
• Your body has 206 bones.
• The skeleton provides support, protection, allows for body movement, produces blood cells and stores minerals.
• Children have more flexible bones than adults.

Joints

• Joints are two or more bones coming together at one place.
• Joints are held together by bands of fibers called ligaments.
• When joints are moved beyond their normal range of motion/movement, ligaments stretch and tear.

Types of Injuries

The four basic types of injuries to muscles, bones and joints are:
• Fractures
• Dislocations
• Strains
• Sprains
X-Rays
X-rays are a form of radiation that can penetrate the body to form an image on film. Structures that are dense (such as bone) will appear white, air will be black, and other structures will be shades of gray depending on density. X-rays also provide information about obstructions, tumors, and other diseases.

Fractures
- A fracture is a complete break, chip or crack in a bone.
- Fractures are opened or closed.
- Open fractures involve an open wound. They are more dangerous because they carry the risk of infection and bleeding.
- Closed fractures are more common injuries.

Fracture types
- Oblique
- Comminuted
- Spiral
- Compound

Closed Fracture
Closed fracture right wrist.
(Radius & ulna)

Closed Fracture
Posterior x-ray, closed fracture right lower leg.
(Fibula)
Comminuted Fracture

Comminuted— a fracture with many relatively small fragments. (right thigh/femur)

Open Fracture

Open fracture left collarbone. (Clavicle)

Dislocation

- A dislocation is the movement of a bone at a joint away from its normal position.
- The joint no longer functions properly.

Sprain

- A sprain is the tearing of ligaments at a joint.
- Mild sprains swell and usually heal quickly.
- Do not ignore the signals of pain & swelling. If you become active too soon there is the chance the joint could be hurt again.

Type I Sprain

The most common way the ankle can be injured is by an ankle sprain. Type I ankle sprain is mild. It occurs when the ligaments have been stretched or torn minimally.

Type II Sprain

Type II ankle sprain is a moderate level of sprain. It occurs when some of the fibers of the ligaments are torn completely.
Type III Sprain

Type III ankle sprain is the most severe. It occurs when the entire ligament is torn and there is instability of the ankle joint.

General Care for Muscle, Bone or Joint Injuries

The acronym RICE is helpful in remembering how to treat minor injuries:
• “R” stands for rest.
• “I” is for ice.
• “C” is for compression.
• “E” is for elevation.

Splinting

Splinting is a method of immobilizing an injured extremity and should ONLY be used if you have to move a person to seek medical attention and if splinting does not cause additional pain.

Splinting (cont)

If you have to splint–
• Splint an injury in the position you find it.
• Splint the injured area and the joints or bones above and below the injury site.
• Check for circulation (feeling, warmth and color) before and after splinting.

Types of Splints

• Soft splints include folded blankets, towels, pillows and a sling.
• Rigid splints include boards, metal strips and folded magazines or newspapers. Use triangular bandages to secure the rigid or soft splinting material in place.

Types of Splints (cont)

• Anatomic splints use an uninjured body part as a splint to immobilize an injured area. You can use tape to secure an uninjured finger to the injured one.
• The ground can be used as a splint. An injured leg stretched out on the ground is splinted.