DEFINITIONS

- Anatomic Positioning – Standing erect, arms to side, palms up.
- Open Reduction – use of surgery to place bones.
- Internal Fixation – wires, pins, screws to place bones.
- Crepitus – Bones grinding against each other. Like ribs with CPR.
- Cravats – goes around an extremity.
- Sling – goes around neck to hold up arm.
- Swathe – goes around torso.

SKELETAL SYSTEM

- Approximately 206 bones.
- Provides structure and protection.
- Ligaments support bone to bone.
- Tendons support muscle to bone.
- Bones have a rich supply of blood, the larger the bone the more bleeding possible.
- The lining of the bone has the nerves (periosteum). This is why a fracture hurts.
- Young children are more flexible, injuries are more of a twisting motion.

BONE CLASSIFICATION

- Long bones – humerus, femur
- Short bones – fingers, toes, wrist
- Flat bones – sternum, ribs, skull, scapula
- Irregular or odd shaped bones – vertebrae

MUSCULAR SYSTEM

- Approximately 600 muscles
- Support movement of the skeletal system.
- Point of origin – doesn't move during contraction.
- Point if insertion – the bone that moves during contraction.

MUSCLES CELLS

- Skeletal muscle (voluntary or striated) – found in skeletal movement.
- Involuntary muscle (smooth) – control body organs. Vessels, GI
- Cardiac muscle (heart) – sensitive to O2 levels and has automaticity.

MECHANISM OF INJURY

- Direct force – bat to body.

- Indirect force – a fall and the wrist tries to catch the body.
- Twisting force – football tackle that spins your body but the shoes are planted.

FRACTURE INJURIES

- Open (compound) fracture – skin is open
- Closed (simple) fracture - skin is closed
- Unstable – bone moves freely
- Impacted – jammed together
- Angulated – major curves.
- Dislocation – frozen joint or locked joint
- Greenstick - children bones flex like a green stick.

OPEN FRACTURES

- Most common open fractures are tibia and fibula
- Complications include; internal hemorrhage, nerve damage, contamination.
- Do not put back in, unless it goes in on its own.
- Traction splint used only on mid-shaft femur fx.

CLOSED FRACTURES

- Hemorrhage into soft tissue.
- Since skin is still closed Compartment Syndrome can take place.

DISLOCATION

- Possible nerve, vessel damage.
- 50% of dislocated knees and elbows have nerve damage. If knee or elbow try to splint as found.
- Spontaneously reduce or relocated – popped back in
- Subluxation is the pulling of the joint apart and goes back in.

STRAIN

- Tendon (muscle) pulled.
- Days to weeks to heal.
- Lifting something heavy.

SPRAIN

- Ligament damage.
- Can take up to 8 months to heal.
- Twisted an ankle on a sidewalk.
- "I heard it pop."

ASSESSMENT – what to look for

- Swelling - indicates inflammation for protection and/or hemorrhage.
- Unusual color – indicates contusion or hematoma. Purple, black, blue.
- Unusual position – angulations, shorter than other side, false movement.
- Feel – Bone ends grinding known as crepitus.
- Loss of Nerve Supple – PMS problems.
- Loss if Pulses – distal cold and discolored.
- Capillary refill – may be delayed if blood supply is affected.
- Pain – Hurts with motion
- Pain and swelling is considered broken until x-ray.

RULES FOR BASIC SPLINTING

- PMS checks before and after.
- Remove clothing from affected area.
- Open wounds dressed and bandaged before splinting
- Do not put bones back in that have come out unless they went in on their own.
- Pad the splints.
- No knots on the body to dig into tissue.

- Try to align the injured part into a more protective position if vulnerable. IF NO CREPITUS, MAJOR PAIN, OR FROZEN JOINT IS OBSERVED.
- Try to keep knees and elbows as found.
- Ice is fluff.

DCAP-BTLS

- During physical exam look for;
- D-deformity
- C-contusion
- A-abrasion
- P-punctures
- B-burns
- T-tender
- L-laceration
- S-swelling

HEMORRHAGE COMPLICATION

- After ABC – control major bleeding.
- Follow four steps to control bleeding.

- If life threatening a fracture is not a priority. Place on long back board if that bad.

PMS COMPLICATION

- If no distal PMS the EMT has one chance to gently align the extremity with gentle traction and splint when pulse returns. If still no pulse splint as is and transport.

SPLINTS

- Hard – like a board. “Something you would not like across your face.”
- Soft – pillow. “Something you would like across your face.”
- Air (pneumatic) splints – like PASG but made for body parts.
- Traction – used only on isolated mid shaft femur fractures with no other injury.