**OEC Chapter 17: Principles of Trauma**

**Overview:** This chapter covers the basic principles of trauma and traumatic injuries. In outdoor recreation, including at the Snow Bowl, physical trauma is very common compared to other medical conditions.

**Major Points:**

* Kinematics is the study of body motion without considering external forces
* Kinetic energy 🡪 highly dependent on velocity
* Injury patterns
  + Specific sports and MOIs have common injuries associated
* Stopping distance
  + A longer stopping distance dissipates the force over a longer time, diminishing injury
* Mechanisms of Injury (MOI)
  + Blunt
  + Penetrating
    - High velocity (Over 2000 ft/sec)
    - Low velocity (under 2000 ft/sec)
  + Rotational
  + Crush
  + Blast
    - Primary (pressure wave)
    - Secondary (projectile objects)
    - Tertiary (body thrown into wall, ground, etc)
* Organ densities
  + Solid organs (spleen, kidney, liver, pancreas) are more likely to rupture and bleed severely
* Types of force
  + Direct
  + Twisting
  + Forced flexion/hyperextension
  + Indirect
* Phases of Injury
  + Pre-injury phase
    - Predispositions or underlying conditions
    - Risk management
    - Safety equipment
  + Injury phase
    - When energy is transferred through the patient’s body
    - Importance of determining an index of suspicion
  + Post-injury phase
    - Mortality peaks – seconds to minutes, “golden hour”, days to weeks
* Trauma systems
  + Level 1 – 24 hr in-house specialists and subspecialists, residency and training programs
  + Level 2 – 24 hr in-house specialists and subspecialists
  + Level 3 – 24 hr trauma surgeon, but not necessarily specialists
  + Level 4 and 5 – in-house trauma nurse, and access to a physician, usually in rural areas
  + Pediatric vs Adult trauma centers (many level 1 trauma centers are not pediatric level 1)

**Must Study:** Figure 17-6, Figure 17-7

**Key Terms:** Golden hour, index of suspicion, injury pattern, kinematics, kinetic energy, trauma (systems, centers, surgeon)