**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)