

Controlling Pain and Inflammation

Remember the HEALING PROCESS!

- Rehab should be based on framework of healing process
 - Understand time and sequence of healing and physiological principals
- Stage 1: Acute Inflammatory Response (up to 4 days)
- Stage 2: Fibroblastic Repair Phase (4 days to weeks)
- Stage 3: Maturation Remodeling (week to up to 2 years)

PRICES for up to 4 days !

P	Protection
R	Rest
I	Ice
C	Compression
E	Elevation
S	Support

Phases of Healing

The Healing Process

- <http://www.youtube.com/watch?v=u7Ryg9nVFLI>

- Phase I – Acute/ Inflammatory

Response Phase

- May last up to 4 days
- Immobility for the first 2 days is necessary to control inflammation
- Primary focus is to control swelling and modulate pain w/ PRICES
- Early mobility during rehab is critical, however, being overly aggressive during the first 48 hours may not allow inflammatory process to accomplish its purpose
- Rest should be active - avoiding aggravating injury, but working to maintain other areas

- By day 3 or 4 swelling begins to subside
- While it may be painful to the touch w/ some discoloration, gradual mobility exercises may be started (pain free ROM)
 - If it is the lower extremity, athlete should be encouraged to bear weight
- The use of NSAID's may also be used to control swelling and inflammation

Phase 2: Fibroblastic/Repair Phase

- Phase 2: Fibroblastic/Repair Phase
 - Repair is underway and pain is less
 - Begins about Day 4 and lasts for a few weeks.
 - Pain control is still critical
 - Scar Formation begins in this phase!
 - The addition of cardio, strengthening, flexibility and neuromuscular activities should be gradually added

Phase 3: Maturation/Remodeling Phase

- Longest of 3 phases
- Pain is minimal (none to the touch)
- Scar maturation due to collagen realignment according to tensile strength applied to them during functional activities
- Begins generally around Day 7 but may take a year or so

- Focus is on regaining sport-specific skills
- Functional training - repeated performance of athletic skill for purpose of perfecting that skill
- Strengthening exercises should be used to place athlete under stresses and strains normally associated w/ athletic participation
- Plyometrics can be used to improve power and explosiveness
- Functional testing should be done to determine specific skill weaknesses that need to be addressed prior to full return
- Thermal modalities should be used to enhance tissue environment (reduce spasm, increase circulation, waste removal and reduce pain)

Checks and Balances in REHAB

- Exercise that is too intense or prolonged can be detrimental to progress
- Increases in swelling, pain, a loss or plateau in strength/ROM, an increase in laxity or exacerbation of other symptoms indicates too great a load

WHEN TO USE THERAPEUTIC MODALITIES

PHASE	TIME FRAME	MODALITY USED
Initial acute	Injury-day 4	CRYOTHERAPY PRICES
Inflammatory response	Day 1-day 4	CRYOTHERAPY Range of motion

WHEN TO USE THERAPEUTIC MODALITIES

PHASE	TIME FRAME	MODALITY USED
Fibroblastic-repair	Day 4-day 10 (a few weeks)	THERMOTHERAPY Range of motion Strengthening
Maturation remodeling	Day 7-recovery (up to a 1-2 years)	Range of motion Strengthening Functional activities