

**Appendix A.** arm care protocol implemented by the professional baseball team's training staff that aims to maintain shoulder ROM by focusing on proper recovery, ROM exercises, postural restoration, and postural activation exercises

### **Arm Care Protocol**

Range of motion data were analyzed to assess the need for treatment interventions above and beyond normal maintenance programs. The criterion for pitchers shoulder range of motion were as follows:

1. If the dominant shoulder TROM deficit was 10% or greater compared to the non-dominant shoulder AND GIRD was identified (dominant IR less than non-dominant) then intervention strategies to increase shoulder IR were employed.
2. If the dominant shoulder horizontal adduction range of motion deficit was 10% or greater compared to the non-dominant arm then an intervention strategy was employed.
3. Elbow range of motion measurements were used to establish norms for the players and used as a baseline. Range of motion was repeated if a loss was suspected possibly correlating player symptom complaints. Players who had a history of surgery or imaging with associated pathology would be monitored if a flexion contracture of greater than 10 degrees was noted.
4. Total ROM for each player's hip were calculated and compared for symmetry. A difference greater than 10 degrees between the two hips was considered a marker for further investigation of range of motion limitations. In addition, internal rotation less than 35 degrees in either hip was also considered a marker for investigation. Limitations in hip internal rotation have been considered a risk factor for other associated injuries (core injury, lumbar spine pathology) in baseball players.
5. If shoulder flexion range of motion in dominant arm was less than the non-dominant shoulder by more than 5 degrees then and shoulder flexion ROM strategy was employed. For every degree of flexion loss (greater than 5) noted on the dominant side, the more concentrated the strategy.

**Interventions:**

Interventions to address IR loss coupled with TROM loss were as follows:

1. Soft tissue release of posterior rotator cuff (RTC)
  - a. Massage
  - b. Active Release Technique (ART), myofascial release
  - c. Instrument-Assisted Soft Tissue Mobilization (IASTM)
  - d. Deep Muscle Stimulation (DMS) use
2. Stretching of posterior RTC
  - a. Sleeper stretch
  - b. Manual IR stretching
  - c. Cross-body stretching if a humeral adduction deficit was noted
3. Soft tissue release of anterior musculature (pec minor/major)
  - a. Massage
  - b. ART, myofascial release
  - c. IASTM
  - d. Neuromuscular stretching
4. Thoracic range of motion program

**Interventions for Humeral Adduction loss:**

1. Massage
2. ART, myofascial release
3. IASTM
4. Neuromuscular stretching
5. Joint mobilizations (based on response to Soft tissue techniques and PMH)