

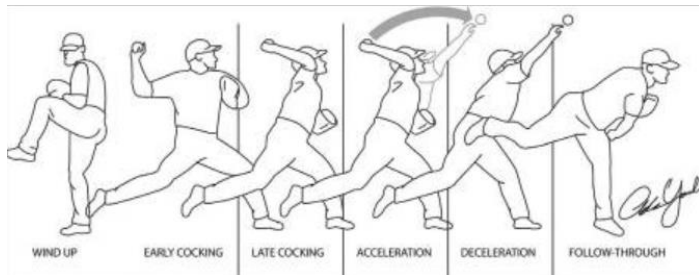


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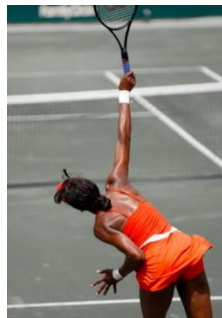
THE OVERHEAD ATHLETE

The shoulder complex is a joint designed for mobility; to allow the hand to be positioned at any point in space. Due to the high level of mobility, the shoulder relinquishes stability. The constant battle between mobility and desired stability puts the shoulder at high risk for instability, dysfunction, and injury. When there is an imbalance between muscle groups, overuse of incorrect muscle groups, decreased kinetic chain power transfer, limited available mobility and/or poor body mechanics that is when injury can occur. These injuries can occur in any athlete, but athletes that have repetitive overhead motions: football, baseball, tennis, volleyball, swimmers, and some field events are all at risk for shoulder injuries.



The six phases of the baseball pitch. (Modified from Meister K. Injuries to the shoulder in the throwing athlete: part one, biomechanics/pathophysiology/classification of injury. *Am J Sports Med.* 2000;28:265-275.)

“The act of throwing a baseball is one of the fastest and most violent maneuvers to which any joint in the body is subjected. For each pitch, the thrower must generate high levels of energy in the lower extremities and trunk to accelerate the ball to top velocity. The muscles and capsular structures of the shoulder must then dissipate this force after ball release and during arm deceleration. In elite pitchers, internal rotation of the Humerus can reach velocities as great as 7000 deg/s” (Shane T. Seroyer, Shane J. Nho, Bernard R. Bach, Jr, Charles A. Bush-Joseph, Gregory P. Nicholson, Anthony A. Romeo *Sports Health.* 2009 Mar; 1(2): 108–120)



WHAT WE SEE FROM ATHLETES OF THE COASTAL BEND

- Major muscle weakness and imbalance in the dominant arm
 - Shoulder Flexion Average = 20-25# of force; Lowest needed= 80#+
 - Rotator Cuff Average = 13# of force: Lowest needed= 60#+
- Scapula Dysfunction
- Thoracic spine and hip stiffness
 - Decreased internal rotation at hips
- Difficulty with balance and agility
 - Static single limb balance
 - Stability with dynamic transfer to a single limb
- Poor biomechanics to transfer ground forces
- Poor bioawareness and disassociation
- Early fatigue
 - Muscular
 - Type 1 fibers
 - Cardiovascular
 - Overall health: lack of sleep and recovery
- Reports of over 100+ throws a day

WHAT TYPICALLY OCCURS

- Contractile and non contractile tissue injury of the shoulder
 - Rotator cuff tears
 - Labral tears
 - Biceps Tendon injury
 - Glenohumeral Internal rotation deficit
 - Impingement
- Elbow Injuries
- Cervical spine disc herniation
- Vertebral stress fractures



WHAT'S RECOMMENDED FOR OVERHEAD ATHLETES

- 20 minutes 3 days a week: balance and agility training
- Eccentric and concentric loading
 - Below and above horizontal plane
 - Reactive strengthening and muscle recruitment
 - Upper extremity closed chain work
- Periodization:
 - off season max strength and conditioning, endurance and light strengthening into season, and sports specific during season
- Kinetic chain and core strengthening and mobilization
- Segmented disassociated practice between core and extremities
- 10 hours of sleep per night

Throwing / Pitching Recommendations

AGE	DAILY MAX (PITCHES)	REQUIRED REST (PITCHES)				
		0 Days	1 Days	2 Days	3 Days	4 Days
7-8	50	1-20	21-35	36-50	N/A	N/A
9-10	75	1-20	21-35	36-50	51-65	66+
11-12	85	1-20	21-35	36-50	51-65	66+
13-14	95	1-20	21-35	36-50	51-65	66+
15-16	95	1-30	31-45	46-60	61-75	76+
17-18	105	1-30	31-45	46-60	61-75	76+

Little League Baseball & USA Baseball have implemented the following pitch count recommendations:

- 9-10 years of age: 1000/season, 2000/year
- 11-12 years of age: 1000/season, 3000/year
- 13-14 years of age: 1000/season, 3000/year
- Pitcher-to-catcher ban: any pitcher who throws >41 pitches may not play catcher that day

Other Recommendations include:

- Avoid pitching with arm fatigue and/or pain
- Use a pitch counter
- Pitch less than 80 pitches/game at ALL adolescent levels
- Pitch less than 8 months out of the year
- Pitch less than 100 innings in games in any calendar year
- Pitch less than 2000-3000 pitches in competition/year (pending age)

FOR INJURED ATHLETES

- Healing time

Tissue		Healing Time
Muscle	Exercise Induced	0 - 3 days
	Grade 1	1 - 4 weeks
	Grade 2	3 - 12 weeks
	Grade 3	1 - 6 months
Tendon	Tendonitis	3 - 7 weeks
	Tendonosis	3 - 6 months
Ligament Sprain	Grade 1	2 - 8 weeks
	Grade 2	2 - 6 months
	Grade 3	6 - 12 months
Meniscus / Labrum		3 - 12 months
Fracture		6 - 8 weeks

If you have any questions or are interested in a formal injury prevention program, please contact us.