



Orthopedic Surgery, Sports Medicine & Arthroscopy Specialists

Jonathan Watson, MD

Return to baseball- Hitting & Throwing protocols

Baseball hitting progression

Off a Tee Stand

1. Step 1: 50% effort (15 to 20 swings)
2. Step 2: 50% effort (two sets of 15 swings)
3. Step 3: 65% to 70% effort (two sets of 15 swings)
4. Step 4: 70% to 75% effort (two sets of 20 to 25 swings)
5. Step 5: 80% to 90% effort (two sets of 25 swings)

Soft Toss Swings

Warm-Up Using a Tee Stand

1. Step 6: 50% to 60% effort (15 to 20 swings)
2. Step 7: 65% to 70% effort (two sets of 20 to 25 swings)
3. Step 8: 80% to 90% effort (two sets of 25 swings)

Batting Practice Swings

Warm-Up with Soft Toss Swings

1. Step 9: 50% to 65% effort (two sets of 25 swings)
2. Step 10: 70% to 75% effort (two sets of 30 swings)
3. Step 11: 80% to 90% effort (two sets of 30 to 35 swings)
Hit three times per week with a day off in between. Perform each step for 2 days before progressing to next step.

INTERVAL THROWING PROGRAM

Phase I

Flat Ground Throwing

The Interval Throwing Program (ITP) is designed to gradually return motion, strength, and confidence in the throwing arm after injury or surgery by slowly progressing through graduated throwing distances. The ITP is initiated upon clearance by the athlete's physician to resume throwing, and performed under the supervision of the rehabilitation team (physician, physical therapist, and athletic trainer).

The program is set up to minimize the chance of reinjury and emphasize pre-throwing warm-up and stretching. In development of the interval throwing program, the following factors are considered most important.

1. The act of throwing the baseball involves the transfer of energy from the feet through the legs, pelvis, trunk, and out the shoulder through the elbow and hand. Therefore any return to throwing after injury must include attention to the entire body.
2. The chance for reinjury is lessened by a graduated progression of interval throwing.
3. Proper warm-up is essential.
4. Most injuries occur as the result of fatigue.
5. Proper throwing mechanics lessen the incidence of reinjury.
6. Baseline requirements for throwing include:
 1. •Pain-free range of motion
 2. •Adequate muscle power
 3. •Adequate muscle resistance to fatigue

Because there is individual variability in all throwing athletes, there is no set timetable for completion of the program. Most athletes, by nature, are highly competitive individuals and wish to return to competition at the earliest possible moment. Although this is a necessary quality in all athletes, the proper channeling of the athlete's energies into a rigidly controlled throwing program is essential to lessen the chance of reinjury during the rehabilitation process. The athlete may have the tendency to want to increase the intensity of the throwing program. This will increase the incidence of reinjury and may greatly retard the rehabilitation process. It is recommended to follow the program rigidly because this will be the safest route to return to competition.

During the recovery process the athlete will probably experience soreness and a dull, diffuse aching sensation in the muscles and tendons. If the athlete experiences sharp pain, particularly in the joint, stop all throwing activity until this pain ceases. If pain continues, contact your physician.

WEIGHT TRAINING

The athlete should supplement the ITP with a high-repetition, low-weight exercise program. Strengthening should address a good balance between anterior and posterior musculature so that the shoulder will not be predisposed to injury. Special emphasis must be given to posterior rotator cuff musculature for any strengthening program. Weight training will not increase throwing velocity, but will increase the resistance of the arm to fatigue and injury. Weight training should be done the same day as you throw; however, it should be after your throwing is completed, using the day in between for flexibility exercises and a recovery period. A weight training pattern or routine should be

stressed at this point as a “maintenance program.” This pattern can and should accompany the athlete into and throughout the season as a deterrent to further injury. It must be stressed that weight training is of no benefit unless accompanied by a sound flexibility program.

INDIVIDUAL VARIABILITY

The ITP is designed so that each level is achieved without pain or complications before the next level is initiated. This sets up a progression in which a goal is achieved before advancement rather than advancing to a specific timeframe. Because of this design, the ITP may be used for different levels of skills and abilities from those in high school to professional levels. Progression will vary from person to person throughout the ITP. Example: One athlete may wish to use alternate days throwing with or without using weights in between; another athlete may have to throw every third or fourth day because of pain or swelling. “Listen to your body. It will tell you when to slow down.” Again, completion of the steps of the ITP will vary from person to person. There is no set timetable in terms of days to completion.

WARM-UP

We recommend one set of 10 repetitions of RTC be performed before ITP. Jogging may also assist in warm-up. Jogging increases blood flow to the muscles and joints. Thus increasing their flexibility and decreasing the chance of reinjury. Because the amount of warm-up will vary from person to person, the athlete should jog until developing a light sweat, and then progress to the stretching phase.

STRETCHING

Because throwing involves all muscles in the body, all muscle groups should be stretched before throwing. This should be done in a systematic fashion beginning with the legs and including the trunk, back, neck, and arms. Continue with capsular stretches and L-bar range of motion exercises.

THROWING MECHANICS

A critical aspect of the ITP is maintenance of proper throwing mechanics throughout the advancement. The use of the Crow-Hop method simulates the throwing act, allowing emphasis of the proper body mechanics. This throwing method should be adopted from the set of the ITP. Throwing flat footed encourages improper body mechanics, placing increased stress on the throwing arm, and therefore predisposing the arm to reinjury. The pitching coach and sports biomechanic (if available) may be valuable allies to the rehabilitation team with their knowledge of throwing mechanics.

Components of the Crow-Hop method are first a hop, then a skip, followed by the throw. The velocity of the throw is determined by the distance, whereas the ball should have only enough momentum to travel each designed distance. Again, emphasis should be placed upon proper throwing mechanics when the athlete begins Phase II, “Throwing off the Mound” or from the athlete’s respective position, to decrease the chance of reinjury.

THROWING

Using the Crow-Hop method, the athlete should begin warm-up throws at a comfortable distance (approximately 30 to 45 ft), and then progress to the distance indicated for that phase (refer to the box that follows). The program consists of throwing at each step two to three times without pain or symptoms before progressing to the next step. The object of each phase is for the athlete to be able to throw the ball without pain the specified number of feet (45 ft, 60 ft, 90 ft, 120 ft, 150 ft, 180 ft), 75 times at each distance. After the athlete can throw at the prescribed distance without pain, he or she will be ready for throwing from flat ground 60 ft, 6 in. in the normal pitching mechanics or return to his or her respective position (step 14). At this point, full strength and confidence should be restored in the athlete’s arm. It is important to stress the Crow-Hop method and proper mechanics with each throw. Just as the advancement to this point has been gradual and progressive, the return to unrestricted throwing must follow the same principles. A pitcher should first throw only fast balls at 50%, progressing to 75% and 100%. At this time, he may start more stressful pitches such as breaking balls. The position player should simulate a game situation, again progressing to 50%, 75% and 100%. Once again, if an athlete has increased pain, particularly at the joint, the throwing program should be backed off and re-advanced as tolerated, under the direction of the rehabilitation team.

BATTING

Depending on the type of injury that the athlete has, the time of return to batting should be determined by the physician. It should be noted that stress placed upon the arm and shoulder in the batting motion are very different from the throwing motion. Return to unrestricted use of the bat should also follow the same progression guidelines as seen in the training program. Begin with dry swings progressing to hitting off the tee, then soft toss, and finally live pitching.

SUMMARY

In using the Interval Throwing Program (ITP) in conjunction with a structured rehabilitation program, the athlete should be able to return to full competition status, minimizing any chance of reinjury. The program and its progression should be modified to meet the specific needs of each individual athlete. A comprehensive program consisting of maintenance strength and flexibility program, appropriate warm-up and cool down procedures, proper

pitching mechanics, and progressive throwing and batting will assist the baseball player in returning safely to competition.

PHASE I FOR PITCHERS

45' PHASE	60' PHASE	90' PHASE	120' PHASE
			Step 7: A) 60' (5 to 7 throws)
			B) 90' (5 to 7 throws)
			C) 120' (15 Throws)
			D) Rest 3 to 5 min.
			E) 60' (5 to 7 throws)
Step 1: A) Warm-up Throwing	Step 3: A) Warm-up Throwing	Step 5: A) 60' (10 throws)	F) 90' (5 to 7 throws)
B) 45' (25 Throws)	B) 60' (25 Throws)	B) 90' (20 throws)	G) 120' (15 Throws)
C) Rest 3 to 5 min.	C) Rest 3 to 5 min.	C) Rest 3-5 min.	Step 8: A) 60' (5 throws)
D) Warm-up Throwing	D) Warm-up Throwing	D) 60' (10 throws)	B) 90' (10 throws)
E) 45' (25 Throws)	E) 60' (25 Throws)	E) 90' (20 Throws)	10. C) 120' (15 Throws)
Step 2: A) Warm-up Throwing	Step 4: A) Warm-up Throwing	Step 6: A) 60' (7 throws)	11. D) Rest 3 to 5 min.
B) 45' (25 Throws)	B) 60' (25 Throws)	B) 90' (18 Throws)	12. E) 60' (5 throws)
C) Rest 3 to 5 min.	C) Rest 3 to 5 min.	C) Rest 3 to 5 min.	13. F) 90' (10 throws)
D) Warm-up Throwing	D) Warm-up Throwing	D) 60' (7 throws)	14. G) 120' (15 Throws)
10. E) 45' (25 Throws)	10. E) 60' (25 Throws)	10. E) 90' (18 Throws)	15. H) Rest 3 to 5 min.
11. F) Rest 3 to 5 min.	11. F) Rest 3 to 5 min.	11. F) Rest 3-5 min.	16. I) 60' (5 throws)
12. G) Warm-up Throwing	12. G) Warm-up Throwing	12. G) 60' (7 throws)	17. J) 90' (10 throws)
13. H) 45' (25 Throws)	13. H) 60' (25 Throws)	13. H) 90' (18 Throws)	18. K)

		120' (15 Throws)
<p>Flat Throwing</p> <p>A) Throw 60 ft. (10 to 15 throws)</p> <p>B) Throw 90 ft. (10 throws)</p> <p>C) Throw 120 ft. (10 throws)</p> <p>D) Throw 60 ft. (flat ground) using pitching mechanics (20 to 30 throws)</p>	<p>A) Throw 60 ft. (10 to 15 throws)</p> <p>B) Throw 90 ft. (10 throws)</p> <p>C) Throw 120 ft. (10 throws)</p> <p>D) Throw 60 ft. (flat ground) using pitching mechanics (20 to 30 throws)</p> <p>E) Rest 3 to 5 min.</p> <p>F) Throw 60 to 90 ft. (10 to 15 throws)</p> <p>G) Throw 60 ft. (flat ground) using pitching mechanics (20 throws)</p>	

Throwing program should be performed every other day, with one day of rest between steps, unless otherwise specified by your physician

Perform each step two times before progressing to the next step.