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INTERVAL THROWING PROGRAM
FOR BASEBALL PLAYERS
PHASE I
(Adapted from HealthSouth®)

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 re-injury and emphasizes 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 re-injury 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 re-injury
6. Baseline requirements for throwing include:

- Pain-free range-of-motion
- Adequate muscle power
- Adequate muscle resistance to fatigue

Because there is an 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. While this is a necessary quality of all athletes, the proper channeling of the athlete's energies into a rigidly controlled throwing program is essential to lessen the chance of re-injury during the rehabilitative period. The athlete may have the tendency to want to increase the intensity of the throwing program. This will increase the incidence of re-injury and may greatly retard the rehabilitation process. It is recommended to follow the program rigidly, as 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 the athlete experiences continued pain, contact the 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 started. This sets up a progression that a goal is achieved prior to advancement instead of advancing to a specific time frame. Because of this design, the ITP may be used for different levels of skills and abilities from those in high school to professional levels. The reasons for being in the ITP will vary from person to person. 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 due to 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: Jogging increases blood flow to the muscles and joints thus increasing their flexibility and decreasing the chance of re-injury. Since the amount of warm-up will vary from person to person, the athlete should jog until developing a light sweat, then progress to the stretching phase.

Stretching: Since throwing involves all muscles in the body, all muscle groups should be stretched prior to 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 re-injury. The pitching coach and sports biomechanist (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 his respective position, to decrease the chance of re-injury.

Throwing: Using the Crow-Hop method, the athlete should begin warm-up throws at a comfortable distance (approximately 30-45 feet) and then progress to the distance indicated for that phase (refer to Table 1). 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 180 feet, 50 times without pain, he will be ready for throwing off the mound or return to their 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 at 50-75-100%. 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 is 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 re-injury. The program and its progression should be modified to meet the specific needs of each individual athlete. A comprehensive program consisting of a 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.

TABLE 1

45' Phase	**60' Phase**	**90' Phase**	**120' Phase**
Step 1: A) Warm-up Throwing	Step 3: A) Warm-up Throwing	Step 5: A) Warm-up Throwing	Step 7: A) Warm-up Throwing
B) 45' (25 Throws)	B) 60' (25 Throws)	B) 90' (25 Throws)	B) 120' (25 Throws)
C) Rest 15 minutes	C) Rest 15 minutes	C) Rest 15 minutes	C) Rest 15 minutes
D) Warm-up Throwing	D) Warm-up Throwing	D) Warm-up Throwing	D) Warm-up Throwing
E) 45' (25 Throws)	E) 60' (25 Throws)	E) 90' (25 Throws)	E) 120' (25 Throws)
Step 2: A) Warm-up Throwing	Step 4: A) Warm-up Throwing	Step 6: A) Warm-up Throwing	Step 8: A) Warm-up Throwing
B) 45' (25 Throws)	B) 60' (25 Throws)	B) 90' (25 Throws)	B) 120' (25 Throws)
C) Rest 10 minutes	C) Rest 10 minutes	C) Rest 10 minutes	C) Rest 10 minutes
D) Warm-up Throwing	D) Warm-up Throws	D) Warm-up Throwing	D) Warm-up Throwing
E) 45' (25 Throws)	E) 60' (25 Throws)	E) 90' (25 Throws)	E)120' (25 Throws)
F) Rest 10 minutes	F) Rest 10 minutes	F) Rest 10 minutes	F) Rest 10 minutes
G) Warm-up Throwing	G) Warm-up Throwing	G) Warm-up Throwing	G) Warm-up Throwing
H)45' (25 Throws)	H) 60' (25 Throws)	H) 90' (25 Throws)	H) 120' (25 Throws)

150' Phase

Step 9: A) Warm-up Throwing
B)150' (25 Throws)
C) Rest 15 minutes
D) Warm-up Throwing
E) 150' (25 Throws)

Step 10: A) Warm-up Throwing
B) 150' (25 Throws)
C) Rest 10 minutes
D) Warm-up Throwing
E) 150' (25 Throws)
F) Rest 10 minutes
G) Warm-up Throwing
H) 150' (25 Throws)

Step 11: A) Warm-up Throwing
B) 180' (25 Throws)
C) Rest 15 minutes
D) Warm-up Throwing
E) 180' (25 Throws)

Step 12: A) Warm-up Throwing
B) 180' (25 Throws)
C) Rest 10 minutes
D) Warm-up Throws
E) 180' (25 Throws)
F) Rest 10 minutes
G) Warm-up Throwing
H) 180' (25 Throws)

180' Phase

Step 13: A) Warm-up Throwing
B) 180' (25 Throws)
C) Rest 15 minutes
D) Warm-up Throwing
E) 180' (25 Throws)

Step 14: Begin throwing off the the mound or return to respective position.

Throwing Program should be performed every other day, unless otherwise specified by your physician or rehabilitation specialists.