

## **UF Health Orthopaedic & Sports Medicine Institute**

### **UF Health Thrower's Clinic Interval Throwing Program**

The interval throwing program (ITP) has been developed to safely return athletes back into competitive play. The ITP has been developed to allow the baseball player to safely throw in incremental distances in order to restore motion, strength, endurance, and confidence back into the throwing arm. The program has been designed to minimize the risk of re-injury and while stressing proper mechanics and warm-up.

In order for the athlete to begin the ITP, they must pass a comprehensive musculoskeletal examination, present with no pain in the arm, demonstrate complete "throwers" range of motion (ROM), demonstrate appropriate strength and endurance in the throwing arm, demonstrate good dynamic stability, and have gone through a complete and proper rehabilitation progression. The ITP should be performed under the supervision of the rehabilitation team, (physician, physical therapist and athletic trainer) and in conjunction with a proper rehabilitation program.

Throwing is a full body activity. Before beginning the ITP, the athlete must be properly warmed up. Increasing blood flow to the muscles and joints by increasing the athlete's core temperature greatly reduces the chance of injury. The warm-up can be individualized, but must incorporate the complete kinetic chain including lower extremity, core, and upper extremity. Our team recommends the use of static stretching, dynamic stretching, as well as any activity that increases heart rate and blood flow to achieve this requirement.

Due to the high individual variability, there is no set timetable to advance the athlete from phase to phase. Instead, advancement is only advised when demonstration of proper technique, fundamentals, accuracy, and number of throws for that day's stage has been achieved. Any signs of fatigue, pain, lack of adherence to ITP guidelines, or any other aberrations will result in a cessation of the ITP. The ITP is designed so that each stage is achieved without complication before advancement to next stage is initiated. The program is set up to minimize the chance of re-injury and emphasize pre-throwing warm-up and stretching

At least one day of rest is required between outings in the first phase, however if the elbow or shoulder is sore after throwing, more days of rest may be required. If the athlete has any pain (specifically at the joint), the ITP should be suspended and re-advanced based under the supervision of the rehabilitation team. In this case, the athlete should rest until symptoms subside completely. After symptoms subside, the ITP may be continued. If the athlete continues to experience soreness or significant fatigue following the second outing for any given step, they should continue to stay at that step until they can perform at least one outing at that step without any symptoms of significant fatigue or soreness.

Pain and more importantly sharp pain to the involved joint is a serious indicator for reevaluation of the injured joint and/or throwing mechanics. The athlete should not progress to the next stage until that step is mastered without pain. If pain does not cease, immediate referral back to the physician, physical therapist, and/or athletic trainer should be advised. Lack of adherence may result in re-injury.

An active cool-down is advised following an outing, even if it is submaximal. The athlete should cool-down with some type of light cardiovascular exercise. Light resistance exercises may be incorporated into the cool-down to help "flush" the muscles of metabolites. Heat or ice may also be used at the end of the cool-down.

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### Flat Ground Throwing

**Stage 1:** Throwing program should be performed every other day with one day of rest in between (i.e. Monday, Wednesday, Friday), unless instructed otherwise by your Physical Therapist, Athletic Trainer, or Physician. Individuals should **not throw more than 3 times per week**. Each step should be performed for 2 or 3 throwing days based on provider/athlete agreement before moving on to the next Step. For example, Step 1 should be performed on Monday and Wednesday, and then Step 2 performed on Friday and the next Monday with the same pattern being followed for subsequent Steps. Any time a Step is painful, stay at that step or go back to a previous step. Do not advance until the step is performed for two consecutive throwing days pain free.

45' Phase	60' Phase	75' Phase	90' Phase	120' Phase
<b>Step 1:</b> A) Warm-up Throwing B) 45' (25 Throws) C) Rest 3-5 minutes D) Warm-up Throwing E) 45' (25 Throws)	<b>Step 3:</b> A) Warm-up Throwing B) 60' (25 Throws) C) Rest 3-5 minutes D) Warm-up Throwing E) 60' (25 Throws)	<b>Step 5:</b> A) Warm up Throwing B) 60' (25 Throws) C) Rest 3-5 minutes D) 75' (25 Throws) E) Rest 3-5 minutes F) 75' (20-25 Throws)	<b>Step 7:</b> A) 60' (5 Throws) B) 75' (5 Throws) C) 90' (20 throws) D) Rest 3-5 minutes E) 60' (5 Throws) F) 75' (5 Throws) G) 90' (20 Throws)	<b>Step 9:</b> A) 60' (5 Throws) B) 90' (5 Throws) C) 120' (20 Throws) D) Rest 3-5 minutes E) 60' (5 Throws) F) 90' (5 Throws) G) 120' (20 Throws)
<b>Step 2:</b> A) Warm-up Throwing B) 45' (25 Throws) C) Rest 3-5 minutes D) Warm-up Throwing E) 45' (25 Throws) F) Rest 3-5 minutes G) Warm-up Throwing H) 45' (25 Throws)	<b>Step 4:</b> A) Warm-up Throwing B) 60' (25 Throws) C) Rest 3-5 minutes D) Warm-up Throwing E) 60' (25 Throws) F) Rest 3-5 minutes G) Warm-up Throwing H) 60' (25 Throws)	<b>Step 6:</b> A) Warm-up Throwing B) 75' (25 Throws) C) Rest 3-5 minutes D) Warm-up Throwing E) 75' (25 Throws) F) Rest 3-5 minutes G) Warm-up Throwing H) 75' (25 Throws)	<b>Step 8:</b> A) 60' (5 Throws) B) 75' (5 Throws) C) 90' (20 Throws) D) Rest 3-5 minutes E) 60' (5 Throws) F) 75' (5 Throws) G) 90' (20 Throws) H) Rest 3-5 minutes I) 60' (5 Throws) J) 75' (5 Throws) K) 90' (20 Throws)	<b>Step 10:</b> A) 60' (5 Throws) B) 90' (10 Throws) C) 120' (20 Throws) D) Rest 3-5 minutes E) 60' (5 Throws) F) 90' (10 throws) G) 120' (20 Throws) H) Rest 3-5 minutes I) 60' (5 Throws) J) 90' (10 Throws) K) 120' (20 Throws)

### Stage 1b (Optional): Flat ground pitching

<b>Step 11:</b> A) Throw 60 ft. (10 Throws) B) Throw 75 ft. (10 Throws) C) Throw 90 ft. (10 Throws) D) Throw 120 ft. (10 Throws) E) Throw 60 ft. (flat ground) using pitching mechanics (25 Throws)	<b>Step 12:</b> A) Throw 60 ft. (10 Throws) B) Throw 75 ft. (10 Throws) C) Throw 90 ft. (10 Throws) D) Throw 120 ft. (10 Throws) E) Throw 60 ft. (flat ground) using pitching mechanics (25 throws) F) Rest 3-5 minutes G) Throw 60-90 ft. (10 Throws) H) Throw 60 ft. (flat ground) using pitching mechanics (25 Throws)
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### Throwing Off the Mound

**Stage 2:** After the completion of Stage 1 of the Interval Throwing Program and the athlete can throw to the prescribed distance without pain the athlete will be ready for throwing off the mound or return to their respective position. At this point, full strength and confidence should be restored in the athlete's arm. Just as the advancement to this point has been gradual and progressive, the return to unrestricted throwing must follow the same principles. 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.

**STEP 1: FASTBALLS ONLY** - Use Interval Throwing to 120' Phase as warm-up

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8
15 Throws off mound 50%	30 Throws off mound 50%	45 Throws off mound 50%	60 Throws off mound 50%	70 Throws off mound 50%	45 Throws off mound 50%	30 Throws off mound 50%	15 Throws off mound 50%
					30 Throws off mound 75%	45 Throws off mound 75%	60 Throws off mound 75%

**STEP 2: FASTBALLS ONLY WITH BP** - Use Interval Throwing to 120' Phase as warm-up

Phase 9	Phase 10	Phase 11
60 Throws off mound 75%	50 Throws off mound 75%	40 Throws off mound 75%
15 Throws in Batting Practice	30 Throws in Batting Practice	45 Throws in Batting Practice

**STEP 3: All PITCHES**

Phase 12	Phase 13	Phase 14
30 Throws off mound 75% (warm-up)	30 Throws off mound 75% (warm-up)	30 throws off mound 75% (warm-up)
15 Throws off mound 50% BREAKING BALLS	30 Breaking Balls 75%	60-90 Throws in Batting Practice (Gradually increase breaking balls)
60 Throws in Batting Practice (fastball only)	30 Throws in Batting Practice	

**Stage 2b SIMULATED GAME:** PROGRESSING BY 15 THROWS PER PRACTICE/COMPETITION (Pitch Count)

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Recommended rest requirements after overhead pitching with respect to age limits after return to sport based on Major League Baseball's Pitch Smart guidelines.

### Pitch Count Limits and Required Rest Recommendations

It is important for each league to set workload limits for their pitchers to limit the likelihood of pitching with fatigue. Research has shown that pitch counts are the most accurate and effective means of doing so. See required rest recommendations below.

Age	Daily Max (Pitches In Game)	0 Days Rest	1 Days Rest	2 Days Rest	3 Days Rest	4 Days Rest	5 Days Rest
7-8	50	1-20	21-35	36-50	N/A	N/A	N/A
9-10	75	1-20	21-35	36-50	51-65	66+	N/A
11-12	85	1-20	21-35	36-50	51-65	66+	N/A
13-14	95	1-20	21-35	36-50	51-65	66+	N/A
15-16	95	1-30	31-45	46-60	61-75	76+	N/A
17-18	105	1-30	31-45	46-60	61-80	81+	N/A
19-22	120	1-30	31-45	46-60	61-80	81-105	106+

### References

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