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Baseball Interval Throwing Program

<u>Pitchers</u>: complete the program through the 120 feet phase, then begin the mound program.
<u>Infielders</u>: complete the program through the 150 feet phase.
<u>Outfielders</u>: complete the program through the 180 feet phase.

If you want to throw hard and throw accurately you must throw hard and throw repeatedly ... However, *your shoulder and arm must have time to heal and adapt to the imposed demand*. Progression too rapidly in the throwing program **will DELAY** your recovery and return to sport.

The interval-throwing program is just a guide and this guide should be adapted or modified to meet your individual progress and problems. Your athletic trainer, physical therapist or doctor may help tailor the program to have a slow, normal or accelerated pace based on several factors: the extent of your injury, the type of treatment or repair, the effectiveness of your strengthening program and the time away from throwing. In most cases, the more complicated the problem, the slower you should progress.

Typically, plan to throw every other day or 3 times a week. The number of throwing sessions at a given level will depend on how slowly you are progressing through the program.

Progression Examples:	**Time (weeks) to complete 45-120 feet level**
Elbow Arthroscopy or Nerve Decompression	4 - 8 weeks
Elbow Tommy Ligament Repair	10 - 14 weeks
Elbow Ligament Reconstruction	12 - 20 weeks
Older, bigger, harder throwing pitchers should take longer	
Shoulder Debridement - without repair	10 - 14 weeks
Shoulder Debridement - with repair	12 - 20 weeks

Pain requires attention. You are adding progressively greater loads on your arm as you add throwing distance. However, if you are having problems at a given level, return to the previous level until your problem is corrected or resolves. Do not hesitate to take an extra day or two off if you are having problems.

If you have a bad day, take a day off.
If you are having discomfort or trouble at a level, drop down a level.

While it is not uncommon to have occasional discomfort, you should not have pain. **If your problems do not resolve, see your athletic trainer, physical therapist or doctor.**

Throwing with a qualified coach or pitching instructor will improve your ability to progress in the throwing program.

Video your throwing workout at least once a week to analyze your throwing motion and your progress. There are many phone Apps available that will allow you to record and analyze your progress. HUDL: Slow Motion Video is one free option that seems to work well.

3D Biomechanical Motion Analysis is another available tool to assist your effort to recovery, improve your performance and potentially limit your risk for further injury and lost playing time. If you are interested, contact Craig Garrison, PT, PhD at Texas Health Sports Medicine for an appointment and assessment in the THSM ERA (Evaluation of Rotational Athletes) Lab. (http://www.texashealth.org/sports-medicine)

Throw to your target, not through your target. Throw on line, but throw with sub-maximal effort and throw within your comfort level. Hard line throwing has been shown to generate as much upper extremity load as pitching, even at the shortest distances. Remember that you are not playing "Burn Out" at 60 feet – simply throw hard enough to throw at that level and no more. You will add effort as you add distance. If you cannot throw on line at a given distance, do not lob or arc the ball up in an attempt to move to the next level.

Always pay careful attention to your throwing motion / mechanics:

- Use a gathering step or crow hop to initiate your throwing motion on all throws,
  This will keep your lower body and trunk involved in the throwing motion
- Use a 4-seam grip to allow better view of ball rotation,
- Stay on top of the ball,
- Throw over the top without leaning your trunk (your eyes should stay level with the target),
- Keep your elbow at or above shoulder level,
- Avoid trunk extension or shoulder dip (causes high arc on throws),
- Use your legs,
- Follow through with your arm and trunk. Emphasize your follow through during the throwing program to promote good mechanics,
- Feel like you are throwing the ball with your body, not your arm: Active trunk, quiet arm.

Progression to the next throwing level in the program is based on your ability to perform the elements of the current throwing level. So you must meet the following criteria to move to the next level:

- No pain or stiffness while throwing,
- No pain or stiffness after throwing,
  It's ok to have some exercise related muscle soreness,
- Goal based, acceptable, reproducible throwing motion and mechanics,
- Consistent throwing accuracy throughout the current level,
- Dependably flat, on line throws,
- Good strength throughout the current level with little fatigue.
- And when moving to the next level, you may transition by throwing the first set at the previous level and the second set at the next level for 1-2 days or until you are comfortable throwing two sets at the next level distance.

Continue your upper trunk, scapula and rotator cuff rehabilitation program throughout the interval-throwing program. On throwing days, warm up with aerobic and light stretch cord exercises, then go through the throwing session. Cool down, complete the maintenance trunk and upper extremity exercises that you learned in the rehabilitation process and then ice down. The off day should include light stretch cord exercises for your arm (but just for blood flow and technique – not strengthening) as well as lower body and trunk performance conditioning exercise.

Hat drills: The hat drill program is designed to improve your ability to throw flat or slightly down with better strength and throwing accuracy. When you reach the hat drill phase indicated for your position, place a hat at 120 feet (pitchers), 150 feet (infielders) or 180 feet (outfielders) from your position. Your throwing partner is positioned behind the hat to catch the ball on one bounce. Your goal is to throw with effort, imagining that you are throwing through the chest of another throwing

partner standing 30 feet (pitchers) or 45 feet (infielders and outfielders) in front of the hat. Attempt to hit the hat.

Flat ground pitching is advocated by some after the completion of the long toss program and before the start of the mound program. While it has been shown that when compared to high effort pitching from flat ground, high effort pitching from the mound causes greater stress on the thrower's arm, it has also been shown that partial effort pitching from the mound causes significantly lower loads on the shoulder and elbow and that there is a mechanical and efficiency advantage to throwing from the mound. We therefore **recommend that pitchers avoid flat ground pitching** and further recommend that the mound program begin with the catcher in front of the plate. In the early phases of the mound program, the pitcher should try to throw with a **perceived effort of 60 percent** – and by that we intend for the pitcher to focus on the perceived effort made in the lower body and trunk during the stride toward the plate, not the perceived effort made to propel the ball forward with the arm.

Flat Ground Throwing Program

30 Foot Phase Throwers less than 15 years old begin at 30 feet

45 Foot Phase

First Day	Warm-up throws at 20 - 45 feet Throws at 45 feet Warm-down throws **1 Set** only / Rest the next day	25 Throws
Level 1	Warm-up throws at 20 - 45 feet Throws at 45 feet **2 Sets** / Rest 10 minutes between sets Warm-down throws Throw on alternate days (3 days / week)	25 Throws
Level 2	Warm-up throws at 20 - 45 feet Throws at 45 feet **3 Sets** / Rest 5 - 10 minutes between sets Warm-down throws Throw on alternate days (3 days / week)	25 Throws

60 Foot Phase

Level 1	Warm-up throws at 20 - 60 feet Throws at 60 feet **2 Sets** / Rest 10 minutes between sets Warm-down throws Throw on alternate days (3 days / week)	25 Throws
Level 2	Warm-up throws at 20 - 60 feet Throws at 60 feet **3 Sets** / Rest 5 - 10 minutes between sets Warm-down throws Throw on alternate days (3 days / week)	25 Throws

75 Foot Phase

Level 1

Warm-up throws at 20 - 75 feet
Throws at 75 feet — 25 Throws
2 Sets / Rest 10 minutes between sets
Warm-down throws
Throw on alternate days (3 days / week)

Level 2

Warm-up throws at 20 - 75 feet
Throws at 75 feet — 25 Throws
3 Sets / Rest 5 - 10 minutes between sets
Warm-down throws
Throw on alternate days (3 days / week)

90 Foot Phase

Level 1

Warm-up throws at 20 - 90 feet
Throws at 90 feet — 25 Throws
2 Sets / Rest 10 minutes between sets
Warm-down throws
Throw on alternate days (3 days / week)

Level 2

Warm-up throws at 20 - 90 feet
Throws at 90 feet — 25 Throws
3 Sets / Rest 5 - 10 minutes between sets
Warm-down throws
Throw on alternate days (3 days / week)

Note: After completing the 90-foot phase, the thrower may elect to work through the remainder of the long toss program as outlined up to 120 feet – **or – elect to throw only 2 sets of 20 throws on each day in the program (omitting the third set of 20 throws: only 40 throws / day).** It is also an option to mix phases, such as throwing one set of 25 throws at 90 feet and the next set of 20 throws at 105 feet; **and to have an easy toss set of 25 throws at 60 feet on the off days.**

105 Foot Phase — Only throw 20 throws per set above 90 feet

Level 1

Warm-up throws at 20 - 105 feet
Throws at 105 feet — 20 Throws
2 Sets / Rest 10 minutes between sets
Warm-down throws
Throw on alternate days (3 days / week)

Level 2

Warm-up throws at 20 - 105 feet
Throws at 105 feet — 20 Throws
3 Sets / Rest 5 - 10 minutes between sets
Warm-down throws
Throw on alternate days (3 days / week)

120 Foot Phase (Hat Drills for Pitchers)

Level 1

Warm-up throws at 20 - 120 feet
Throws at 120 feet — 20 Throws
2 Sets / Rest 10 minutes between sets
Warm-down throws
Throw on alternate days (3 days / week)
Easy 8 – 10 minute toss at 60 feet on off day

Level 2

Warm-up throws at 20 - 120 feet
Throws at 120 feet — 20 Throws
3 Sets / Rest 5 - 10 minutes between sets
Warm-down throws
Throw on alternate days (3 days / week)
Easy 8 – 10 minute toss at 60 feet on off day

Note: It should take at least **3 – 4 full months** to complete the 120-foot phase for pitchers returning from ligament reconstruction (Tommy John) surgery and **6 – 12 weeks** to complete the 120-foot phase for pitchers returning from ligament repair.

Hat Drills for Pitchers: After completing the 120-foot phase, pitchers throw Hat Drill sets of 25 throws (as described above) at **120 feet,** then at **90 feet** and finally at **60 feet**, over five days before beginning the Mound Program. Throw with the same effort as for level 120-foot throws.

Extended Distance Long Toss for Pitchers: Pitchers have the option to continue to extend the distance of the long toss program after beginning the Mound Program but with the mound work limited to every third day, or two time a week (which is also recommended by Level 3 in the Mound Program). Example: On day 1, throw 2 extended distance long toss sets of 20 throws at 135 – 250 feet. On day 2, throw off the mound. On day 3, throw 2 easy sets of 25 throws at 60 feet. Repeat. Then take a full day off from throwing on day 7. Repeat as a weekly routine that includes 2 mound days and 2 extended distance long toss days.

135 Foot Phase

Warm-up throws at 20 - 135 feet
Throws at 120 feet — 20 Throws
2 – 3 Sets / Rest 10 minutes between sets
Warm-down throws
Throw on alternate days (3 days / week)
10 minute toss at 60 feet on off day

150 Foot Phase (Hat Drills for Infielders)

Warm-up throws at 20 - 150 feet
Throws at 150 feet — 20 Throws
2 – 3 Sets / Rest 10 minutes between sets
Warm-down throws
Throw on alternate days (3 days / week)
10 minute toss at 60-75 feet on off day

Hat Drills for Infielders: After completing the 150 foot phase, infielders throw 2 normal sets of 25 throws at 150 feet then throw one Hat Drill set of 25 throws (as described above) at 150 feet, then at 120 feet and finally at 90 feet, over 10-15 days before beginning unrestricted field practice / play.

165 Foot Phase

Warm-up throws at 20 - 165 feet
Hat drill throws at 165 feet — 20 Throws
2 – 3 Sets / Rest 10 minutes between sets
Warm-down throws
Throw on alternate days (3 days / week)
10 minute toss at 60-75 feet on off day

180 Foot Phase **(Hat Drills for Outfielders)**

Warm-up throws at 20 - 180 feet
Hat drill throws at 180 feet — 20 Throws
2 – 3 Sets / Rest 10 minutes between sets
Warm-down throws
Throw on alternate days (3 days / week)
10 minute toss at 60-90 feet on off day

Hat Drills for Outfielders: After completing the 180 foot phase, outfielders throw 2 normal sets of 20 throws at 180 feet then throw one Hat Drill set of 20 throws (as described above) at 180 feet, then at 150 feet and finally at 120 feet, over 10-15 days before beginning unrestricted field practice / play.

Extended Distance Long Toss for Infielders and Outfielders: Infielders and Outfielders should continue to extend the distance of the long toss program at 15-foot increments over time based on symptoms, arm strength and endurance.

Mound Program

The Mound Program may be set up many ways and it should be tailored to match the pitcher's individual needs. Early in the program it is reasonable to throw from the mound every other day but eventually throwing from the mound twice a week will be more appropriate. Progressing to the next level must be based on the criteria listed on the first page of the throwing program. Relievers may be able to progress more rapidly through later levels than Starters.

Flat ground pitching is advocated by some after the completion of the long toss program and before the start of the mound program. While it has been shown that when compared to high effort pitching from flat ground, high effort pitching from the mound causes greater stress on the thrower's arm, it has also been shown that partial effort pitching from the mound causes significantly lower loads on the shoulder and elbow and that there is a mechanical advantage and efficiency advantage to throwing from the mound. We therefore **recommend that pitchers avoid flat ground pitching** and believe that 60-foot hat drill throws achieve the downward pull before moving to the mound.

Move the catcher to the front of the plate for the first several days / weeks on the mound in order to decrease the distance thrown and effectively diminish the effort with which the pitch is thrown.

Effort: In the early phases of the mound program, the pitcher should try to throw with a **perceived effort of 60 percent** – and by that we intend for the pitcher to focus on the perceived effort made in the lower body and trunk during the stride toward the plate, not the perceived effort made to propel the ball forward with the arm.

Pitch Selection: Throw the pitch for which the pitcher has the most consistent command at first (typically fastball), then add change up and finally work on breaking pitches.

Warm up to throw – Don't throw to warm up: Aerobically warm up (run, cycle, get your heart rate up), do neuro-glide exercises (if recommended), do joint mobilization exercises (stretch), do muscle activation exercises (warm up muscles) and then, progress through warm up throws (up to 120 feet initially, extended distances later in the program), and then begin the mound throws.

Extended Distance Long Toss for Pitchers: Pitchers have the option to continue to extend the distance of the long toss program after beginning the Mound Program but with the mound work limited to every third day, two mounds a week (which is also recommended by Level 3 in the Mound Program). Example: On day 1, throw 2 extended distance long toss sets of 25 throws at 135 – 250 feet. On day 2, throw off the mound. On day 3, throw 2 easy sets of 25 throws at 60 feet. Repeat. Then take a full day off from throwing on day 7. Repeat as a weekly routine that includes 2 mound days and 2 extended distance long toss days.

Mechanics: Video yourself from all sides once a week. Visually see what you are doing. Often you are not doing what you think you are doing. Work with your pitching coach. Consider 3D Digital High-Speed Motion Analysis at the Texas Health Sports Medicine Upper Extremity Biomechanics Lab.

Legend	Fast Ball (FB)	Change (CH)	Breaking Ball (BrB)
	Mound (M)	Long Toss (LT)	Bullpen/Batting Practice (BP)

Level 1 **Getting your elbow and ligament accustomed to the mound**

Warm-up throws at 20 – 120 feet	
1 Set Hat drill throws at 60 – 90 feet	15 – 25 Throws
Rest 10 Minutes	
50 – 55 foot throw - move the catcher forward (short mound)	
Throw from mound (FB only)	20 – 30 Throws
	Or 6 – 8 Min
Warm-down throws	
Throw on alternate days	
8-10 minute toss at 60 – 120 feet on off day	
3 easy mounds / week	
Weekly rotate as follows:	**M/ LT/ M/ LT/ M/ Off/ LT**

Level 2 **Working or rhythm and mechanics – not velocity**

Warm-up throws at 20 – 120 feet	
1 Set Hat drill throws at 60 – 90 feet	15 – 25 Throws
Rest 10 Minutes	
50 – 55 foot throw - move the catcher back (full mound)	
Throw from mound (FB only)	30 – 35 Throws
	Or 8 – 10 Min

	Warm-down throws	
	Throw on alternate days	
	8-10 minute toss at 60 – 120 feet on off day	
	3 easy mounds / week	
	Weekly rotate as follows: **M/ LT/ M/ LT/ M/ Off/ LT**	
Level 3	**Working on endurance, mechanics and control – not velocity**	
	Warm-up throws at 20 – 120 feet	
	1 Set Hat drill throws at 60 – 90 feet	25 Throws
	Rest 10 Minutes	
	Throw from mound (FB, CH: 1 of 5 CH)	35 – 40 Throws Or 10 – 12 Min
	Warm-down throws	
	Throw on alternate days	
	10-minute toss on off day	
	Only 2 Mounds / week	
Level 4	**Work on FB velocity and breaking balls**	
	Routine Warm-up	
	Short Bullpen (1 of 5 BrB)	10 – 12 Minutes
	Routine Warm-down	
	10-minute toss on off day	
	Only 2 Mounds / week	
Level 5	**Prepare for return to competition pitching**	
	Routine Warm-up	
	Full Bullpen	12 - 15 Minutes
	Routine Warm-down	
	10-minute toss on off day	
	Only 2 Mounds / week	

Progression: Progress to throw batting practice, simulated game, inter-squad game, then 30 / 45 / 60 / 75 / 90 pitch count games.