



COMPLETE

THROWING PROGRAM

Dr. James Bradley

Burke & Bradley Orthopedics
200 Delafield Road, Suite 4010
Pittsburgh, PA 15215
Phone: 412.784.5770

Glenn Holland, PT, ATC

Sports Medicine and
Shoulder Specialist
412.337.5565

Peter Draovitch, MS, PT, CSCS • Julie Ferketic, PTA • T.P. Waligora

Complete Throwing Program

The Complete Throwing Program is a comprehensive, preventative, and systematic program designed for the athlete who throws overhand. The program has been designed to identify and address common sequencing, mobility and stability shortcomings as they relate to kinetic linking in the overhead motion. The SLAP Program is based on:

- Shoulder sequencing/stretching/stabilization
- Lower extremity range of motion/ flexibility/strength
- Abdominal bracing & core stabilization
- Progression of engaged (Recruit) movements & patterns
 - Isometric movements & patterns
 - Repetitive movements & patterns
 - Rapid movements & patterns

The four areas of the progression part of the SLAP Program are:

- Recruitment of appropriate segmental movement patterns within the kinetic link
- Static held positional exercises for development of muscular and postural stability
- Repetitive exercises for development of constant muscular recruitment, strength and endurance
- High speed exercises for the development of sport specific function, power and skill

The Throwing and Preventative Program was developed to fill a void in the sports medicine, rehabilitation, and sports performance communities. For years, the accepted information disseminated to the public by professionals was the *Throwers Ten Program*. Although the *Throwers Ten Program* has been beneficial to many, it lacks key components that prevent injuries in the throwing athlete. In recent years, sports medicine professionals have stressed the importance of core and leg strength, scapular recruitment and stabilization, and proper pitching mechanics.

How does a lack of thoracic mobility affect shoulder external rotation or how does a lack of frontal plane stability of the lower extremities affect arm position at release? Physical impairments such as lack of strength and motion, decreased postural stability, and poor neuromuscular control or sequencing may influence throwing mechanics and may be the cause of shoulder or elbow pain. Although the *Thrower's Ten Program* provides the athlete with comprehensive exercises for the upper extremity, it does not address these important aspects of the kinetic chain. Just like the *Throwers Ten Program*, the Complete Throwing Program is not the solution for all problems associated with pain from the throwing motion. However, unlike the *Throwers Ten*, the Complete Throwing Program provides preventative and rehabilitation solutions for all links in the kinetic chain of the athlete who throws overhand.

The Throwing and Preventative Program has a base model so that it can be incorporated into a pre-practice warm up or into a preventative exercise program. In an ever-changing state of development, the program is frequently revised to incorporate recent research, clinical, functional, and performance findings. The program has been designed and initiated by James Bradley MD, Glenn Holland PT, Pete Draovitch PT, and Julie Ferketic PTA, all of Pittsburgh.

Table of Contents	
Title	Page
Preventative Program	3
Throwing Guidelines	11
Throwing Program	
Pitchers Ulnar Collateral Ligament Reconstruction (1 year)	
Interval Throwing Program • Phase I	13
Interval Throwing Program • Phase II	14
Interval Throwing Program • Phase III	14
Pitchers SLAP Program (9 months)	
Interval Throwing Program • Phase I	15
Interval Throwing Program • Phase II	16
Interval Throwing Program • Phase III	16
Interval Throwing Program for ulnar collateral ligament reconstruction and SLAP repair for infielders, outfielders and catchers (nine-month program)	17
Accelerated Throwing (3 months)	
Phase I	19
Phase II	19
SLAP Hitting Program	20
Shoulder Weight Lifting Restrictions	21
Pitching Mechanics	22
Pitcher's Daily Throwing Routine	23

Sleeper Stretches (use table, wall or floor)

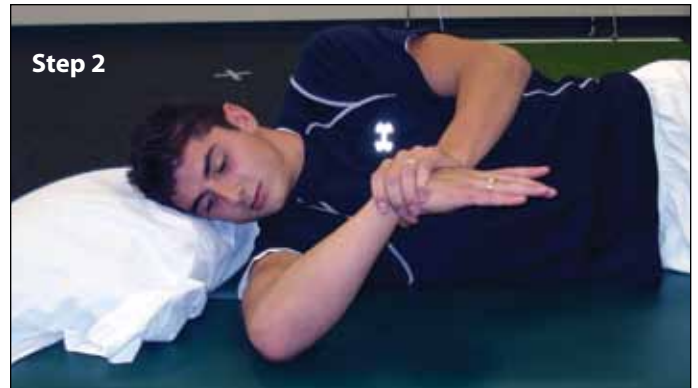
Sleeper stretches are designed to increase the internal rotation in your shoulder by stretching the posterior rotator cuff muscles and posterior capsule. There should be no soreness or pinching in the front of the shoulder. If the stretches make the front of your shoulder ache, re-position your elbow and repeat the stretch. If it still hurts, stop doing the stretch and talk to your therapist during your next session.

Step 1. Lie on your throwing shoulder with your elbow placed at shoulder height and flexed to 90 degrees.

Step 2. Using your other arm, push your hand down toward your feet, internally rotating your shoulder.

Step 3. Hold for 30 seconds and perform three repetitions at each shoulder angle (90° / 70° / 45°) three times a day.

Sleeper @ 90°



Sleeper @ 70°



Sleeper @ 45°



Scapula Training Exercises

Retractions/Protraction

Set up. Sit in front of a table. Place your throwing hand palm down on the table. Keep your elbow straight and place your other hand behind your head.

Step 1. Keep your arm straight and slide your throwing arm away from your body on the table.

Step 2. Slide your throwing hand toward your body and pull your shoulder blades together. Hold this position for six seconds.

Step 3. Return to starting position.



Shoulder Protraction/Retraction Step1



Step2

Elevation/Depression

Set up. Sit beside a table. Place your throwing arm palm down on a table top. Keep your elbow straight and place your other hand behind your head.

Step 1. Keep your arm straight and slide your throwing arm towards away from your body. Hold for six seconds.

Step 2. Slide your throwing hand towards your body. Pull your shoulder blades together. Hold for six seconds and repeat step 1.



Shoulder Elevation/Depression Step1



Step2

Wall Scapula protraction/retractions

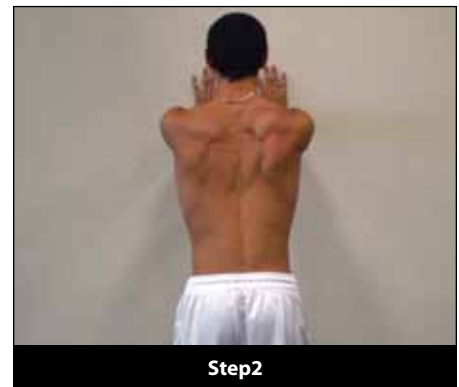
Set up. Place fingertips on a wall at shoulder height with arms straight.

Step 1. Round shoulder blades outward keeping fingertips on wall.

Step 2. Pull shoulder blades together while keeping fingertips on wall.



Shoulder Protraction/Retraction on wall Step1



Step2

Wall Thumbtacks

Set up. Place thumbs on the wall in front of you at shoulder height with arms straight.

Step 1. Keep your elbows straight and rotate your arms using your thumbs as pivot points (like screwing a thumbtack into the wall)

Step 2. Rotate thumbs in clockwise and counterclockwise direction. This movement will elevate and depress your shoulder blades.

You should increase from three sets of eight repetitions to three sets of twelve repetitions, and finally to three sets of fifteen repetitions while holding "pinched together" positions for six seconds.



Shoulder Elevations/Depression on wall Step1



Step2

Rotator Cuff Exercises

External Rotation at 0 degrees of Abduction

- Step 1.** Place towel under throwing arm with elbow flexed to 90 degrees and forearm parallel to floor.
- Step 2.** Rotate arm outward, keeping elbow at side.
- Step 3.** Return to starting position slowly



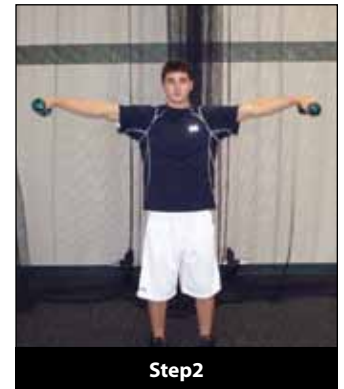
Internal Rotation at 0 degrees of Abduction

- Step 1.** Place towel under throwing arm with elbow flexed to 90° and forearm parallel to floor.
- Step 2.** Rotate arm inward, keeping elbow at side.
- Step 3.** Return to starting position slowly.



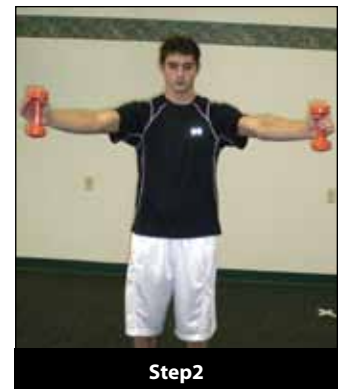
Shoulder Abduction to 90 degrees

- Step 1.** Place arms along side of body.
- Step 2.** Raise arms out to side of body to shoulder height with palms facing downward.
- Step 3.** Return to starting position slowly.



Scaption

- Step 1.** Place arms along side of body.
- Step 2.** Elevate arms upward to shoulder height in "V" position (which is 45 degrees forward from horizontal) with thumbs pointing upward at 45 degree angle.
- Step 3.** Return to starting position slowly.



You should progress from three sets of eight repetitions to three sets of twelve repetitions, and finally to three sets of fifteen repetitions. Weight-resistance should be increased when you can perform three sets of fifteen repetitions easily with the proper form. Exercises can be performed using dumbbells ranging from 1 lb. to 5 lbs.

Scapula Exercises

Y's

Step 1. Lie face down on a table with both arms hanging straight to the floor, and thumbs pointed forward.

Step 2. Bring your hands above your head, raising your arms to shoulder height to form a Y.

Step 3. Hold for three seconds, then slowly lower your arms.



T's

Step 1. Lie face down on a table with both arms hanging straight to the floor, palms down.

Step 2. Raise arms out to the side, parallel to the floor, and squeeze both shoulder blades together.

Step 3. Hold for three seconds, then slowly lower your arms.



I's

Step 1. Lie face down on a table with both arms hanging straight down with palms facing down.

Step 2. Raise both arms back toward legs until parallel with body, and squeeze shoulder blades together.

Step 3. Hold for three seconds, then slowly lower your arms.



W's

Step 1. Lie face down on a table with elbows flexed and arms parallel to body to form a W position.

Step 2. Squeeze your shoulder blades downward while pulling your elbows along your side.

Step 3. Hold for three seconds, then return to step 1.



You should progress from three sets of eight repetitions to three sets of twelve repetitions, and finally to three sets of 15 repetitions. Weight-resistance should be increased when you can perform three sets of fifteen repetitions easily with the proper form. Exercises can be performed using dumbbells ranging from 1 lb. to 5 lbs.

Core exercises

Lifts

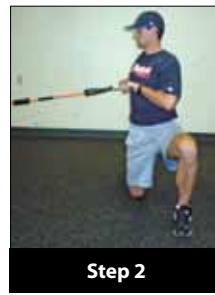
Step 1. Position yourself on one knee; Grasp the bar with hands shoulder-width apart. Tighten your stomach muscles.

Step 2. Pull the bar toward your chest keeping your elbows up and forearms level.

Step 3. When you reach your sternum, rotate from the waist and lift the bar away from your body, then overhead and across your body in a diagonal pattern. Hold this position for three seconds.

Step 4. Return bar to chest position and then to the initial starting position.

You should progress from three sets of eight repetitions to three sets of twelve repetitions, and finally to three sets of fifteen repetitions.



Hovers

Step 1. Lie face down floor with elbows flexed and forearms/hands placed on floor.

Step 2. Brace your stomach muscles. Raise your body up on your toes and forearms. Keep your body in a straight line.

Step 3. Hold this position for ten seconds and return to initial position.

You should start with ten repetitions, holding the position for ten seconds. Progress to fifteen repetitions in which the position is held for fifteen seconds, and then to twenty repetitions, holding the position for twenty seconds.



Side Supports:

Step 1. Lie on your side with your elbow flexed, forearm on floor and palm down. Place your head, body and legs in a straight line.

Step 2. Tighten your stomach muscles and use your feet and shoulder to lift your hips off floor keeping your body in a straight line.

Step 3. Hold this position for ten seconds and lower your body to initial position.

Step 4. Repeat steps 1 to 3 while lying on opposite side.

You should start with ten repetitions, holding the position for ten seconds. Progress to fifteen repetitions in which the position is held for fifteen seconds, and then to twenty repetitions, holding the position for twenty seconds.



Lower Extremity Exercises

Side Stepping

Step 1. Stand with your feet shoulder-width apart. Keep your knees slightly flexed and your back straight. Tighten your stomach muscles.

Step 2. Place a resistance band around your feet.

Step 3. Side-step to your right, keeping your feet shoulder-width apart as you move in 6-inch steps for twenty feet.

Step 4. Return to starting position by side-stepping to left.

You should start with two repetitions of right/left side stepping; increase to four, then six repetitions; as strength improves, increase the resistance by changing the resistance band thickness.



Windmills

Step 1. Stand on one leg with opposite foot off the ground and knee flexed to 90 degrees. Raise your arms out to the side in a "T" position, making sure your arms are even with your shoulders.

Step 2. Hinge at your hips and lean forward until your upper body is parallel to floor.

Step 4. Keeping your arm straight, sweep the arm from the "T" position and place your hand in front of your foot without rotating the body.

Step 5. Hold this position for three seconds, then swing the arm back to the "T" position.

Step 6. Repeat with opposite arm.



Step 7. Now change legs and repeat Steps 2 through 7.

You should start with three sets of eight repetitions progressing to three sets of

twelve repetitions, then to three sets of fifteen repetitions. To increase the difficulty, rotate your body when placing your hand in front of your foot.

Walking Lunges

Step 1. Stand in upright position with feet shoulder-width apart. Tighten your stomach muscles. Place your arms on your hip or behind your head. Step forward with your right foot, bending both knees so that your front knee is aligned over your ankle and the back knee comes close to the floor. Your back heel is lifted off the floor.



Step 2. Before your back knee touches the floor, push up with your back left leg, forcing the weight of your body through your right heel, simultaneously bringing your left foot together with your right foot.



Step 3. Without pausing, alternate legs, lunge forward with your left foot and push up with your back right leg and return to upright position to complete one repetition.



You should start with two repetitions of lunges for distance of twenty feet, progressing to four and six repetitions as strength improves. Resistance can also be increased by holding dumbbells in hands.

Prone Leg Extension

Step 1. Lie face down with upper body on a bench with legs straight and feet touching floor.

Step 2. Hold the side of bench and lift legs to horizontal position.

Step 3. Hold his position for ten seconds.

You should start with ten repetitions, holding the position for ten seconds. Progress to fifteen repetitions in which the position is held for fifteen seconds, and then to twenty repetitions, holding the position for twenty seconds.



Medicine Ball Program

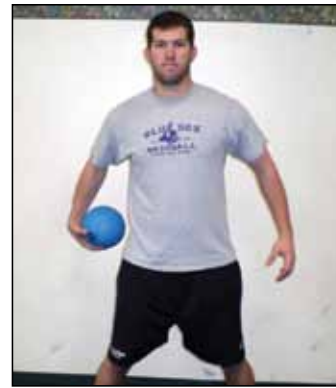
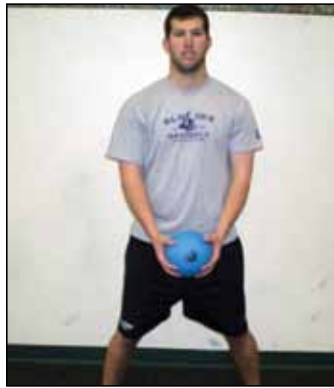
Warm up: Body Circles

Step 1. Stand with feet shoulders-width apart. Flex your knees, keep your back straight and tighten your stomach muscles.

Step 2. Hold the medicine ball in both hands at the center of your body with arms straight.

Step 3. Slowly begin to rotate the medicine ball around your body at waist level, ten circles to the right, then ten circles to the left.

Step 4. Complete two sets of ten circles in each direction.



Bus Driver:

Step 1. Stand with your feet shoulders-width apart. Flex your knees, keep your back straight and tighten your stomach muscles.

Step 2. Hold the medicine ball with both hands at shoulder height with arms straight.

Step 3. Keep the ball at shoulder height and rotate the ball so that your top hand becomes the bottom hand.

Rotate the ball again so your hands return to their original positions. This is one repetition.

You should perform two sets of ten repetitions, then progress to two sets of fifteen repetitions, and finally to sets of twenty repetitions.



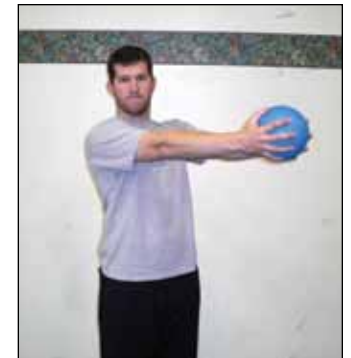
Figure 8's

Step 1. Stand with your feet shoulders-width apart. Flex your knees, keep your back straight and tighten your stomach muscles.

Step 2. Hold the medicine ball with both hands at shoulder height with arms straight.

Step 3. Perform a sideways figure 8 pattern.

Each completed figure 8 counts as one repetition. You should perform two sets of ten repetitions, then progress to two sets of fifteen repetitions, and finally to two sets of twenty repetitions.



Medicine Ball Program

Discus

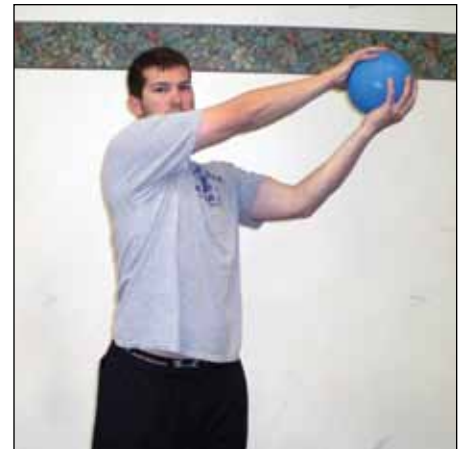
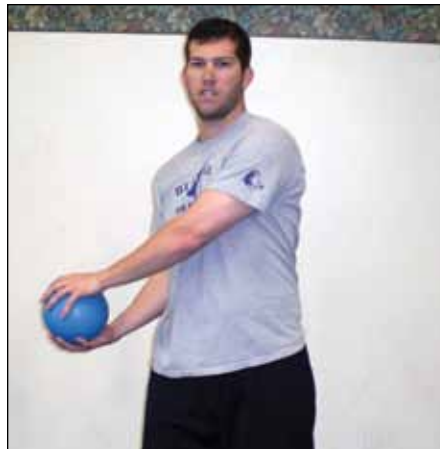
Step 1. Stand with your feet shoulders-width apart. Flex your knees, keep your back straight and tighten your stomach muscles.

Step 2. Hold the medicine ball on your left hip with your left hand under the ball and right hand on top of the ball.

Step 3. Lift the ball in a diagonal plane above your right shoulder while rotating your hand position.

Step 4. Repeat on the right side.

You should perform two sets of ten repetitions, then progress to two sets of fifteen repetitions, then two sets of twenty repetitions.



Chest Press

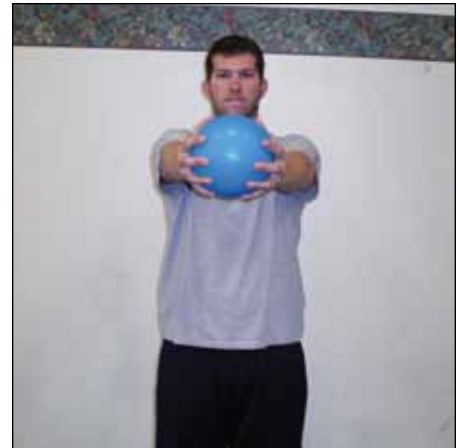
Step 1. Stand with your feet shoulders-width apart. Flex your knees, keep your back straight and tighten your stomach muscles.

Step 2. Hold the medicine ball at chest height with elbows flexed.

Step 3. Extend your arms keeping ball at chest height.

Step 4. Return to starting position while squeezing your shoulder blades together.

You should perform two sets of ten repetitions, then progress to two sets of fifteen repetitions, and finally to two sets of twenty repetitions.



Overhead Press

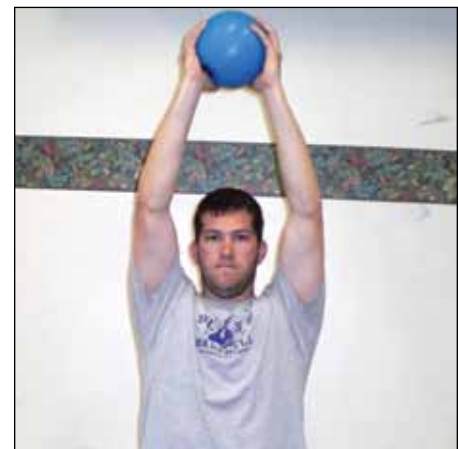
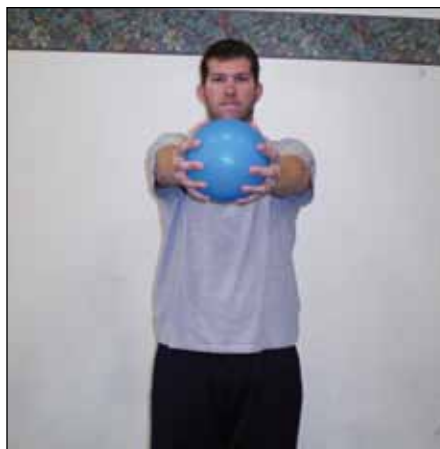
Step 1. Stand with your feet shoulders-width apart. Flex your knees, keep your back straight and tighten your stomach muscles.

Step 2. Hold the medicine ball at chest height with arms extended.

Step 3. Lift the ball directly over head, then return the ball to chest height

You should perform two sets of ten repetitions, then progress to two sets of fifteen repetitions, and finally to two sets of twenty repetitions.

To increase difficulty, progress from 4 lb. medball to 6, 8, 10 and 15 lbs. as tolerated.



Interval Throwing Program

Ulnar collateral ligament reconstruction (1 year)

SLAP repair (9 months)

Accelerated (3 months)

These Interval Throwing Programs are designed to gradually return the athlete to sport efficiently and safely. In these programs, stresses and loads placed on the upper extremities are slowly increased in steps that progress through the mechanics of throwing. The number of throws, number of sets, and the intensity of the throws are used to gradually increase throwing volume. The program is initiated when the athlete is cleared by his or her physician to resume throwing and is performed under the supervision of the rehabilitation team (physician, physical therapist, and athletic trainer).

To minimize the chance of re-injury, the program emphasizes proper warm-up, stretching, strengthening, and throwing progression in a systematic order. Every athlete is different, so there is no set timetable for completion of the program. During the recovery process, the athlete is likely to experience soreness and a dull, diffuse ache in the muscles and tendons. If the athlete experiences sharp pain, particularly in the joint, stop the throwing program and contact the physician. Following the program exactly as it is outlined is the safest route to back to competitive play. Progression through the program is dependent on the soreness rules listed below.

Soreness rules:

- If a sharp pain occurs, particularly in the joint, stop all throwing activities until pain decreases. If pain persists, contact your physician.
- If sore for longer than 1 hour after throwing or if sore the next day, take one day off. After the day off, repeat the most recent throwing program workout.
- If soreness occurs during warm-up but disappears within the first 15 throws, repeat the previous workout. If the shoulder becomes sore during this workout, stop and take two days off. On return to throwing, drop back one step in the workout program.
- If soreness occurs during warm-up and continues through the first 15 throws, stop throwing and take two days off. On return to throwing, drop back one step in the workout program.
- If there is no soreness, advance according to the injury guidelines listed below.

Throwing Guidelines:

- After medical clearance, begin with step 1. Throw every other day and progress one step per week.
- Distances should be increased by 15 feet to 30 foot increments depending on specific throwing program.

Throwing Sequence:

- Break a sweat
- Shoulder stretches
- Throwing program
- Rotator cuff strengthening

Warm-up:

- General body warm-up: upper bicycle ergometer, biking, and jogging are excellent for increasing blood flow to muscles and tendons and decreasing the chance of re-injury.
- Throwing warm-up: Begin at 20 feet in full-kneel position for 15 throws to facilitate trunk rotation and proper technique; Advance 10 feet at a time in standing position, throwing 3 to 5 times at each distance at 50 percent effort until reaching the throwing distance for that workout.

Stretching:

- Because throwing involves all muscles in the body, upper extremity, trunk, and lower extremity stretching should be performed prior to throwing. Dynamic stretching should be implemented prior to throwing, followed by capsular stretches. Static stretches should be performed systematically after throwing.

Throwing Mechanics:

- A critical aspect of Interval Throwing Programs is *maintaining proper throwing mechanics*. Progressing from simulation throwing along a wall to full-kneel throwing to throwing using the walk-behind method enhances the use of proper body mechanics (see illustrations).
- Components of the walk-behind method: Step 6 inches with the lead leg, step behind with back leg, and step with lead leg followed by the throw. The velocity of the throw is determined by the distance, and the ball should have only enough momentum to travel each designated distance.

Weight Training:

- Sport-specific weight training for baseball that encompasses core strengthening, upper and lower body strengthening, and flexibility exercises should supplement the Interval Throwing Programs. Weight-training should be performed on non-throwing days.

Rotator Cuff Strengthening:

- Strengthening of the rotator cuff muscles should be performed three times a week after the throwing program. The athlete should progress through the stages while increasing repetitions from three sets of eight repetitions to three sets of twelve repetitions, and finally to three sets of fifteen repetitions. Weight-resistance should be increased when the athlete can perform three sets of fifteen repetitions easily while demonstrating proper form. Exercises can be performed using resistance bands or dumbbells (1 lb. to 5 lbs.).

Running/Hitting:

- Athletes are able to return to running four months after surgery. Athletes can return to hitting five months after surgery. (See Hitting Guidelines)

Throwing Mechanics

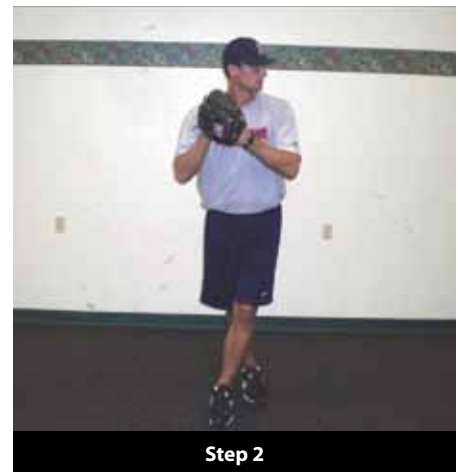
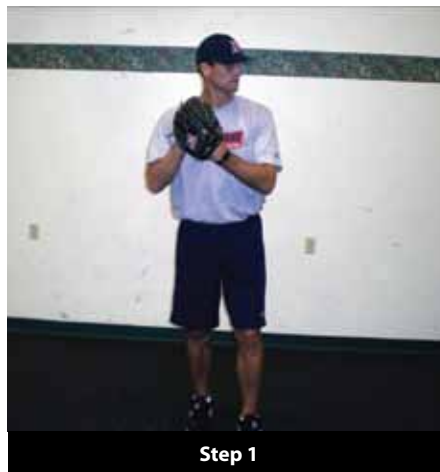
Full-Kneel Throwing

1. Kneel on floor at 45 degree angle
2. Rotate your trunk (show your number)
3. Follow through flexing trunk



Walk-behind Throwing

1. Athletic stance placing back foot at mid-arch of front foot
2. Step forward 6 inches with lead foot, walk behind with back foot
3. Step with lead leg and throw ball
4. Follow through (flex trunk)



Pitchers Interval Throwing Program for ulnar collateral ligament reconstruction (one- year program)

- Phase I Long toss program (four-month program)
- Initiate at four months following surgery

45 feet Phase

- Week 1: Warm-up x 20 to 45 feet
45 feet x 15
Rest 2-3 min
Warm-up x 10 to 45 feet
45 feet x 15
- Week 2: Warm-up x 20 to 45 feet
45 feet x 15
Rest 2-3 min
Warm-up x 10 to 45 feet
45 feet x 15
Rest 2-3 min
Warm-up x 10 to 45 feet
45 feet x 15

60 feet Phase

- Week 3: Warm-up x 20 to 60 feet
60 feet x 15
Rest 2-3 min
Warm-up x 10 to 60 feet
60 feet x 15
- Week 4: Warm-up x 20 to 60 feet
60 feet x 15
Rest 2-3 min
Warm-up x 10 to 60 feet
60 feet x 15
Rest 2-3 min
60 feet x 15

75 feet Phase

- Week 5: Warm-up x 20 to 75 feet
75 feet x 15
Rest 2-3 min
Warm-up x 10 to 75 feet
75 feet x 15
- Week 6: Warm-up x 20 to 75 feet
75 feet x 15
Rest 2-3 min
Warm-up x 10 to 75 feet
75 feet x 15
Rest 2-3 min
Warm-up x 10 to 75 feet
75 feet x 15

- Progress one step per week to 150 feet
- Throw on Monday, Wednesday, and Friday

90 feet Phase

- Week 7: Warm-up x 20 to 90 feet
90 feet x 15
Rest 2-3 min
Warm-up x 10 to 90 feet
90 feet x 15
- Week 8: Warm-up x 20 to 90 feet
90 feet x 15
Rest 2-3 min
Warm-up x 10 to 90 feet
90 feet x 15
Rest 2-3 min
Warm-up x 10 to 90 feet
90 feet x 15

105 feet Phase

- Week 9: Warm-up x 20 to 105 feet
105 feet x 15
Rest 2-3 min
Warm-up x 10 to 105 feet
105 feet x 15
- Week 10: Warm-up x 20 to 105 feet
105 feet x 15
Rest 2-3 min
Warm-up x 10 to 105 feet
105 feet x 15
Rest 2-3 min
Warm-up x 10 to 105 feet
105 feet x 15

120 feet Phase

- Week 11: Warm-up x 20 to 120 feet
120 feet x 15
Rest 2-3 min
Warm-up x 10 to 120 feet
120 feet x 15
- Week 12: Warm-up x 20 to 120 feet
120 feet x 15
Rest 2-3 min
Warm-up x 10 to 120 feet
120 feet x 15
Rest 2-3 min
Warm-up x 10 to 120 feet
120 feet x 15

135' Phase

- Week 13: Warm-up x 20 to 135'
135' x 15
Rest 2-3 min
Warm-up x 10 to 135'
135' x 15
- Week 14: Warm-up x 20 to 135'
135' x 15
Rest 2-3 min
Warm-up x 10 to 135'
135' x 15
Rest 2-3 min
Warm-up x 10 to 135'
135' x 15

150' Phase

- Week 15: Warm-up x 20 to 150'
150' x 15
Rest 2-3 min
Warm-up x 10 to 150'
150' x 15
- Week 16: Warm-up x 20 to 150'
150' x 15
Rest 2-3 min
Warm-up x 10 to 150'
150' x 15
Rest 2-3 min
Warm-up x 10 to 150'
150' x 15

- All warm-up and long tosses should begin with the walk-behind technique and be thrown with limited arc

Pitchers Interval Throwing Program for Ulnar Collateral Ligament

- Phase II: Flat ground pitching using pitching mechanics (two-month program)
- Warm-up to distance of 90 feet using walk-behind technique
- Throw Monday, Wednesday, and Friday

Phase III: Mound pitching (three-month program)

- Warm-up to distance of 90 feet using walk-behind technique
- Throw Monday & Friday

Flat-Ground Throwing M/W/F

- Week 17: Warm-up 20 throws
15 FB @ 50% velocity
Rest 2-3 minutes
15 FB @ 50% velocity
- Week 18: Warm-up 20 throws
15 FB @ 50% velocity
Rest 2-3 minutes
15 FB @ 50% velocity
15 FB @ 50% velocity
- Week 19: Warm-up 20 throws
15 FB @ 75% velocity
Rest 2-3 minutes
15 FB @ 75% velocity
- Week 20: Warm-up 20 throws
15 FB @ 75% velocity
Rest 2-3 minutes
15 FB @ 75% velocity
Rest 2-3 minutes
15 FB @ 75% velocity
- Week 21: Warm-up 20 throws
15 FB @ 100%
Rest 2-3 minutes
15 FB @ 100%
- Week 22: Warm-up 20 throws
15 FB @ 100% velocity
Rest 2-3 minutes
15 FB @ 100% velocity
Rest 5 minutes
15 FB @ 100%
- Week 23: Warm-up 20 throws
15 FB @ 100% velocity 5 CH
Rest 2-3 minutes
15 FB @ 100% velocity 5 CH
- Week 24: Warm-up 20 throws
15 FB @ 100% 5 CH
Rest 2-3 minutes
15 FB @ 100% velocity 5 CH
Rest 2-3 minutes
15 FB @ 100% velocity 5 CH

Mound Throwing M & F

- Week 25: Warm-up 20 throws
15 FB flat ground at 100% velocity
Rest 2-3 minutes
15 FB off mound at 50% velocity
- Week 26: Warm-up 20 throws
15 FB flat ground at 100% velocity
Rest 2-3 minutes
15 FB off mound at 50% velocity
Rest 2-3 minutes
15 FB off mound at 50% velocity
- Week 27: Warm-up 20 throws
15 FB off mound at 50% velocity
Rest 2-3 minutes
15 FB off mound at 50% velocity
Rest 2-3 minutes
15 FB off mound at 50% velocity
- Week 28: Warm-up 20 throws
15 FB off mound at 75% velocity
Rest 2-3 minutes
15 FB off mound at 75% velocity
- Week 29: Warm-up 20 throws
15 FB off mound at 75% velocity
Rest 2-3 minutes
15 FB off mound at 75% velocity

Mound Throwing M & F (cont.)

- Week 30: Warm-up 20 throws
15 FB off mound at 100% velocity
Rest 2-3 minutes
15 FB off mound at 100% velocity
- Week 31: Warm-up 20 throws
15 FB off mound at 100% velocity
Rest 2-3 minutes
15 FB off mound at 100% velocity
Rest 2-3 minutes
15 FB off mound at 100% velocity
- Week 32: Warm-up 20 throws
15 FB off mound at 100% velocity
5 CH
Rest 2-3 minutes
15 FB off mound at 100% velocity
5 CH
- Week 33: Warm-up 20 throws
15 FB off mound at 100% velocity
5 CH
Rest 2-3 minutes
15 FB off mound at 100% velocity
5 CH off mound
Rest 2-3 minutes
15 FB off mound at 100% velocity
5 CH off mound

Pitchers Interval Throwing Program SLAP repair (nine-month program)

- Initiate at four months following surgery
- Phase I: Long-toss program (two-month program)
- Progress: One step per week to 150 feet
- Throw on Monday, Wednesday, and Friday
- All warm-up and long tosses should begin with the walk behind technique and be thrown with limited arc

Mound Throwing M & F (cont.)

- Week 34: Warm-up 20 throws
15 FB off mound at 100% velocity
Rest 2-3 minutes
15 FB off mound at 100% velocity
Rest 2-3 minutes
15 FB off mound at 100% velocity
5 CH
Rest 2-3 minutes
15 FB off mound at 100% velocity
5 CH
- Week 35: Warm-up 20 throws
15 FB off mound at 100% velocity
5 CH off mound
5 CB off mound
Rest 2-3 minutes
10 FB Batting Practice at 100% velocity
- Week 36: Warm-up 20 throws
15 FB off mound at 100% velocity
5 CH off mound
5 CB off mound
Rest 2-3 minutes
15 FB Batting Practice at 100% velocity
5 CH Batting Practice
5 CB Batting Practice
- Week 37: Simulated Game
Pitcher must have 2 pitches at 100%
Catcher calls pitches
Pre-Game Warm-up
Simulated Game 1 innings
** Progress 15 Throws per workout until pitch count 90 throws

***Return to sport at one year if cleared by physician*

45 feet Phase

- Week 1: Warm-up x 20 to 45 feet
45 feet x 15
Rest 2-3 min
Warm-up x 10 to 45'
45 feet x 15
- Week 2: Warm-up x 20 to 45 feet
45 feet x 15
Rest 2-3 min
Warm-up x 10 to 45 feet
45 feet x 15
Rest 2-3 min
Warm-up x 10 to 45 feet
45 feet x 15

60 feet Phase

- Week 3: Warm-up x 20 to 60 feet
60 feet x 15
Rest 2-3 min
Warm-up x 10 to 60 feet
60 feet x 15
- Week 4: Warm-up x 20 to 60 feet
60 feet x 15
Rest 2-3 min
Warm-up x 10 to 60 feet
60 feet x 15
Rest 2-3 minutes
Warm-up x 10 to 60 feet
60 feet x 15

90 feet Phase

- Week 5: Warm-up x 20 to 90 feet
90 feet x 15
Rest 2-3 min
Warm-up x 10 to 90 feet
90 feet x 15
- Week 6: Warm-up x 20 to 90 feet
90 feet x 15
Rest 2-3 min
Warm-up x 10 to 90 feet
90 feet x 15
Rest 2-3 min
Warm-up x 10 to 90 feet
90 feet x 15

120 feet Phase

- Week 7: Warm-up x 20 to 120 feet
120 feet x 15
Rest 2-3 min
Warm-up x 10 to 120 feet
120 x 15
- Week 8: Warm-up x 20 to 120 feet
120 feet x 15
Rest 2-3 min
Warm-up x 10 to 120 feet
120 feet x 15
Rest 2-3 min
Warm-up x 10 to 120 feet
90 feet x 15

150 feet Phase

- Week 9: Warm-up x 20 to 150 feet
150 feet x 15
Rest 2-3 min
Warm-up x 10 to 150 feet
150 feet x 15
- Week 10: Warm-up x 20 to 150 feet
150 feet x 15
Rest 2-3 min
Warm-up x 10 to 150 feet
150 feet x 15
Rest 2-3 min
Warm-up x 10 to 150 feet
150 feet x 15

Pitchers Interval Throwing Program for SLAP repair

- Phase II Flat ground pitching (one month)
- Use pitching mechanics
- Warm-up to distance of 90 feet using walk-behind technique
- Throw Monday, Wednesday, & Friday

Flat-Ground Throwing M/W/F

- Week 11: Warm-up 20 throws (60 feet) 15 FB at 50% velocity
Rest 2-3 minutes
15 FB at 50% velocity
- Week 12: Warm-up 20 throws (60 feet) 15 FB at 75% velocity
Rest 2-3 minutes
15 FB @ 75% velocity
- Week 13: Warm-up 20 throws (60 feet) 15 FB at 100% velocity
Rest 2-3 minutes
15 FB at 100% velocity
Rest 2-35 minutes
15 FB at 100% velocity
- Week 14: Warm-up 20 throws
15 FB at 100% velocity
5 CH
Rest 2-3 minutes
15 FB at 100% velocity
5 CH
Rest 2-3 minutes
15 FB at 100% velocity
5 CH

- Phase III: Throwing off mound (two-month program)
- Throwing off the mound (two months)
- Warm-up to distance of 90 feet using walk-behind technique
- Throw on Monday and Friday

Mound Throwing M & F

- Week 15: Warm-up 20 throws
15 FB flat ground at 100% velocity
5 CH
Rest 2-3 minutes
15 FB off mound at 50% velocity
- Week 16: Warm-up 20 throws
15 FB flat ground at 100% velocity
5 CH
Rest 2-3 minutes
15 FB off mound at 50% velocity
Rest 2-3 minutes
15 FB off mound at 50% velocity
- Week 17: Warm-up 20 throws
15 FB off mound at 75% velocity
Rest 2-3 minutes
15 FB off mound @ 75% velocity
Rest 2-3 minutes
15 FB off mound @ 75% velocity
- Week 18: Warm-up 20 throws
15 FB off mound at 100% velocity
5 CH
Rest 2-3 minutes
15 FB off mound at 100% velocity
5 CH

Mound Throwing M & F (cont.)

- Week 19: Warm-up 20 throws
15 FB off mound at 100% velocity
5 CH
5 CB
Rest 2-3 minutes
15 FB off mound at 100% velocity
5 CH
5 CB
Rest 2-3 minutes
15 FB off mound at 100% velocity
5 CH
5 CB
- Week 20: Warm-up 20 throws
15 FB batting practice at 100% velocity
5 CH
5 CB
Rest 2-3 minutes
15 FB batting practice at 100% velocity
5 CH
5 CB
Rest 2-3 minutes
15 FB batting practice at 100% velocity
5 CH
5 CB

Simulated Game M & F

- Week 21: Warm-up 20 throws
Simulated Game
Pitcher must have 2 pitches at 100 percent
Catcher calls pitches
Pre-Game Warm-up
Simulated Game 1 inning

Progress by 15 throws per workout until pitch count reaches 60 throws.

Athlete may return to sport at nine months if cleared by physician.

FB = fastball, **CH** = changeup, **CB** = curveball

Interval Throwing Program for ulnar collateral ligament reconstruction and SLAP repair for infielders, outfielders and catchers (nine-month program)

- Phase I: Long Toss Program (5 months)
- Initiate at 4 months following surgery
- Progress 1 step per week
- Throw on Monday, Wednesday, and Friday
- All warm-up and long tosses should begin with walk behind technique and be thrown with limited arc

45' Phase	90' Phase	135' Phase
<p>Week 1: Warm-up x 20 to 45' 45' x 15 Rest 2-3 min Warm-up x 10 to 45' 45' x 15</p> <p>Week 2: Warm-up x 20 to 45' 45' x 15 Rest 2-3 min Warm-up x 10 to 45' 45' x 15 Rest 2-3 min Warm-up x 10 to 45' 45' x 15</p>	<p>Week 7: Warm-up x 20 to 90' 90' x 15 Rest 2-35 min Warm-up x 10 to 90' 90' x 15</p> <p>Week 8: Warm-up x 20 to 90' 90' x 15 Rest 2-3 min Warm-up x 10 to 90' 90' x 15 Rest 2-3 min Warm-up x 10 to 90' 90' x 15</p>	<p>Week 13: Warm-up x 20 to 135' 135' x 15 Rest 2-3 min Warm-up x 10 to 135' 135' x 15</p> <p>Week 14: Warm-up x 20 to 135' 135' x 15 Rest 2-3 min Warm-up x 10 to 135' 135' x 15 Rest 2-3 min Warm-up x 10 to 135' 135' x 15</p>
60' Phase	105' Phase	150' Phase
<p>Week 3: Warm-up x 20 to 60' 60' x 15 Rest 2-3 min Warm-up x 10 to 60' 60' x 15</p> <p>Week 4: Warm-up x 20 to 60' 60' x 15 Rest 2-3 min Warm-up x 10 to 60' 60' x 15</p>	<p>Week 9: Warm-up x 20 to 105' 105' x 15 Rest 2-3 min Warm-up x 10 to 105' 105' x 15</p> <p>Week 10: Warm-up x 30 to 105' 105' x 15 Rest 2-3 min Warm-up x 10 to 105' 105' x 15 Rest 2-3 min Warm-up x 10 to 105' 105' x 15</p>	<p>Week 15: Warm-up x 20 to 150' 150' x 15 Rest 2-3 min Warm-up x 10 to 150' 150' x 15</p> <p>Week 16: Warm-up x 20 to 150' 150' x 15 Rest 2-3 min Warm-up x 10 to 150' 150' x 15 Rest 2-3 min Warm-up x 10 to 150' 150' x 15</p>
75' Phase	120' Phase	
<p>Week 5: Warm-up x 20 to 75' 75' x 15 Rest 2-3 min Warm-up x 10 to 75' 75' x 15</p> <p>Week 6: Warm-up x 30 to 75' 75' x 15 Rest 2-3 min Warm-up x 10 to 75' 75' x 15 Rest 2-3 min Warm-up x 10 to 75' 75' x 15</p>	<p>Week 11: Warm-up x 20 to 120' 120' x 15 Rest 2-3 min Warm-up x 10 to 120' 120' x 15</p> <p>Week 12: Warm-up x 20 to 120' 120' x 15 Rest 2-3 min Warm-up x 10 to 120' 120' x 15 Rest 2-3 min Warm-up x 10 to 120' 120' x 15</p>	

Interval Throwing Program for ulnar collateral ligament reconstruction and SLAP repair for infielders, outfielders and catchers (nine-month program)

- Phase II: Sport-Specific Program (1 month)
- Initiate at 7 months following surgery
- Progress 1 step per week
- Throw on Monday, Wednesday, and Friday
- All warm-up and long tosses should begin with walk behind technique and be thrown with limited arc

Infielders

Week 17: Warm-up x 20 to 75'
Field practice
75' x 15 @ 75%
Rest 2-3 minutes
75' x 15 @ 75%

Week 18: Warm-up x 20 to 90'
Field practice
90' x 15 @ 75%
Rest 2-3 minutes
90' x 15 @ 75%

Week 19: Warm-up x 20 to 105'
Field practice
105' x 15 @ 100%
Rest 2-3 minutes
105' x 15 @ 100%

Week 20: Warm-up x 20 to 120'
Field practice
120' x 15 @ 100%
Rest 2-3 minutes
120' x 15 @ 100%

Catchers

Week 17: Warm-up x 20 to 90'
Catching position
90' x 15 @ 75%
Rest 2-3 minutes
90' x 15 @ 75%

Week 18: Warm-up x 20 to 105'
Catching position
105' x 15 @ 75%
Rest 2-3 minutes
105' x 15 @ 75%

Week 19: Warm-up x 20 to 120'
Catching position
120' x 15 @ 100%
Rest 2-3 minutes
120' x 15 @ 100%

Week 20: Warm-up x 20 to 135'
135' x 15 @ 100%
Rest 2-3 minutes
135' x 15 @ 100%

Outfielders

Week 17: Warm-up x 20 to 120'
Fly balls/Ground balls
120' x 15 @ 75%
Rest 2-3 minutes
120' x 15 @ 75%

Week 18: Warm-up x 20 to 120'
Fly balls/Ground balls
135' x 15 @ 75%
Rest 2-3 minutes
135' x 15 @ 75%

Week 19: Warm-up x 20 to 150'
Fly balls/Ground balls
150' x 15 @ 100%
Rest 2-3 minutes
150' x 15 @ 100%

Week 20: Warm-up x 20 to 180'
180' x 15 @ 100%
Rest 2-3 minutes
180' x 15 @ 100%

* Return to sport at 9 months if cleared by MD

Accelerated Throwing Program (three-month program)

Rotator cuff tendonitis/partial ulnar collateral ligament tear/elbow and shoulder debridement

- Phase I: Long-toss program (five-week program)
- Throw on Monday, Wednesday & Friday
- All warm-up and long tosses should begin with a “walk behind” and be thrown with limited arc

45 feet Phase

Week 1: Warm-up x 20 to 45 feet
45 feet x 15
Rest 2-3 min
Warm-up x 10 to 45 feet
45 feet x 15

60 feet Phase

Week 2: Warm-up x 20 to 60 feet
60 feet x 15
Rest 2-3 min
Warm-up x 10 to 60 feet
60 feet x 15

90 feet Phase

Week 3: Warm-up x 20 to 90 feet
90 feet x 15
Rest 2-3 min
Warm-up x 10 to 90 feet
90 feet x 15

120 feet Phase

Week 4: Warm-up x 20 to 120 feet
120 feet x 15
Rest 2-3 min
Warm-up x 10 to 120 feet
120 x 15

150 feet Phase

Week 5: Warm-up x 20 to 150 feet
150 feet x 15
Rest 2-3 min
Warm-up x 10 to 150 feet
150 feet x 15

Accelerated Throwing Program Phase II

Flat-ground and mound throwing (seven-week program)

- Use pitching mechanics
- Warm-up to distance 90 feet with walk-behind throwing technique

Flat Ground Throwing M/W/F

Week 6: Warm-up 20 throws
15 FB flat ground at
75% velocity

Rest 2-3 minutes
15 FB off mound at
75% velocity

Week 7: Warm-up 20 throws
15 FB flat ground at
100% velocity

5 CH
Rest 2-3 minutes
15 FB off mound at
100% velocity
5 CH

Mound Throwing M & F

Week 8: Warm-up 20 throws
15 FB off mound at
75% velocity

5 CH
Rest 2-3 minutes
15 FB off mound at
75% velocity

Week 9: Warm-up 20 throws
15 FB batting practice at
100% velocity

5 CH
5 CB
Rest 2-3 minutes
15 FB batting practice at
100% velocity
5 CH
5 CB
Rest 2-3 minutes
15 FB batting practice at
100% velocity
5 CH
5 CB

Simulated Game M & F

Week 10: Warm-up 20 throws
Simulated Game
Pitcher must have two pitches at 100 percent
Catcher calls pitches
Pre-Game Warm-up
Simulated Game 1 inning

Week 11: **Pitcher must have two pitches at 100 percent**
Catcher calls pitches
Pre-game warm-up
Simulated game: 2 innings

Week 12: **Pitcher must have two pitches at 100 percent**
Catcher calls pitches
Pre-game warm-up
Simulated game: 3 innings

**Return to sport if cleared by physician.*

Interval Hitting Program Following Shoulder Injury (eight-week program)

SLAP repair and Ulnar collateral ligament reconstruction: initiate at 5 months post-surgery

Week 1

- Monday: 10 Dry swings at 50 percent X 2 sets
- Wednesday: 10 Dry swings at 50 percent X 2 sets ; 10 dry swings at 75percent
- Friday: 10 Dry swings at 75 percent X 2 sets ; 10 dry swings at 100 percent

Week 2

- Monday: Dry swings X 20 ; Tee hitting 20 swings at 50 percent
- Wednesday: Dry swings X 20 ; Tee hitting 30 swings at 75 percent
- Friday: Dry swings X 20; Tee hitting 40 swings at 100 percent

Week 3

- Monday: Dry swings X 20; Tee hitting 30 swings at 100%
- Wednesday: Dry swings X 20 ; Tee hitting 40 swings at 100%
- Friday: Dry swings X 20 ; Tee hitting 50 swings at 100%

Week 4

- Monday: Dry swings X 20; Front toss 20 swings at 50 percent
- Wednesday: Dry swings X 20; Front toss 30 swings at 75 percent
- Friday: Dry swings X 20; Front toss 40 swings at 100 percent

Week 5

- Monday: Dry swings X 20; Front toss 30 swings at 100 percent
- Wednesday: Dry swings X 20; Front toss 40 swings at 100 percent
- Friday: Dry swings X 20; Front toss 50 swings at 100 percent

Week 6

- Monday: Dry swings X 20 ; BP swings 20 swings at 50 percent
- Wednesday: Dry swings X 20; BP swings 30 swings at 75 percent
- Friday: Dry swings X 20 ; BP swings 40 swings at 100 percent

Week 7

- Monday: Dry swings X 20; BP swings X 30 at 100 percent
- Wednesday: Dry swings X 20; BP swings X 40 at 100 percent
- Friday: Dry swings X 20; BP swings X 50 at 100 percent

Week 8

- Monday: Dry swings X 25 ; BP swings X 50
- Wednesday: Dry swings X 25; BP swings X 50
- Thursday: Dry swings X 25; BP swings X 75

Return to sport after Week 8 if cleared by physician

Complete Throwing Program

Guidelines for Returning to Weight Training After Shoulder Surgery

You should not return to training with weights until your surgeon determines that you may safely do so. In general, the following timetable illustrates when it is safe to return to weight training following your particular surgery:

- | | |
|--|------------|
| • Rotator cuff repair | 6 months |
| • Bankart Repair | 4 months |
| • SLAP Repair | 4-6 months |
| • Arthroscopic subacromial decompression | 4-6 months |
| • Capsular Release | 3 months |

Before you return to or start a weight-training program, you should have no pain, full range of shoulder motion, and normal strength of the rotator/scapular muscles. Your motion and strength will be tested by your surgeon or physical therapist; talk to your surgeon or therapist about your recovery and your rehabilitation program.

When you are cleared to start a weight-training program, you can begin with three sets of 15-20 repetitions. Training with high-repetition sets ensures that the weights that you are using are not too heavy.

Never perform any weight-training exercise to the point of muscle failure. "Muscle failure" occurs when, in performing a weight training exercise, the muscle is no longer able to provide the energy necessary to contract and move the joint(s) involved in the particular exercise. Joint, muscle, and tendon injuries are more likely to occur when muscle failure occurs.

The following weight training exercises should be avoided:

1. Pull downs behind-the-neck (wide grip)
2. Behind-the-neck shoulder press
3. Bench press
4. Triceps press overhead
5. Dips

The following exercises require special cautions:

1. Pull downs should only be done in front of the head, to the chest, with a medium (not wide) grip.
2. Shoulder press overhead should be done with extreme caution. Avoid heavy weights. If doing shoulder presses, always start with the hand in front of the shoulders and end overhead where you can still see your hand. For persons using barbells, this is the "military press."

3. Lateral deltoid raises should be performed to shoulder level because of the impinging and wearing effect on the rotator cuff. Forward raises in the "thumb up" position are usually safer and can be done with reasonable weights. Lateral raises from the prone or bent over position can be done as a substitute for standing lateral deltoid raises.
4. If you are doing any type of "chest-fly", keep in mind the following precautions:
 - Do not do any chest-fly exercise with straight elbows
 - Always bend the elbows
 - Always keep weights/dumbbells at or above chest level.
5. The "Pec-Deck" machine is recommended, however, never let the weight stretch the arms so that your elbows pass behind your shoulders. You can set the arms on this machine a few clicks forward to adjust the maximum motion allowed.
7. For triceps extension, triceps push-downs on a pulley system are safe as well as bent-over triceps extensions. When doing upright-rowing exercise, keep your hands at least 12 inches apart on the bar. When pulling the bar upward toward the chin, do not raise the bar higher than the point at which the elbow reaches shoulder level.

Exercises Usually Problem-Free

- Biceps curls (at three months)
- Cable and bent-over rowing
- Shoulder shrugs

If your goal is to return to a high-level weight training program, it will take three to six month of cautious, gradual progression to return to top form. In general, avoid increasing the amount of weight lifted by more than 10-15 percent (at a time) of your present working weight every 10-14 days.

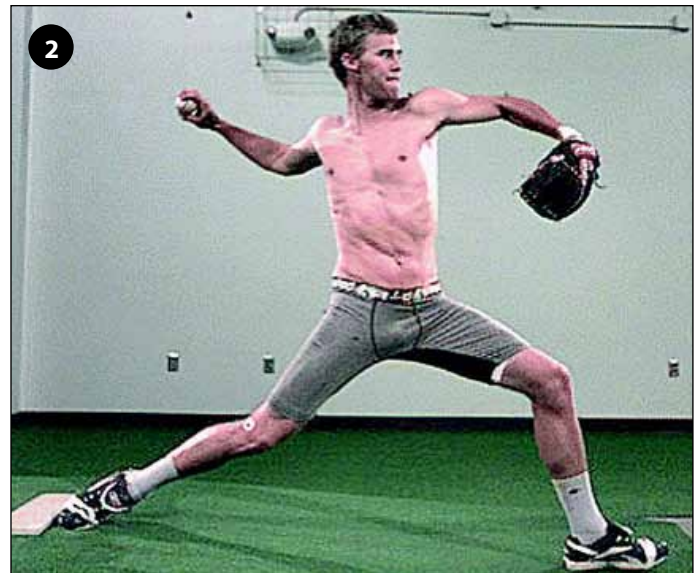
Remember: Weight training improves muscle strength and helps to protect the joints from injury. However, if done improperly — using too much weight and/or improper technique — weight training can cause serious injury.

Pitching Mechanics



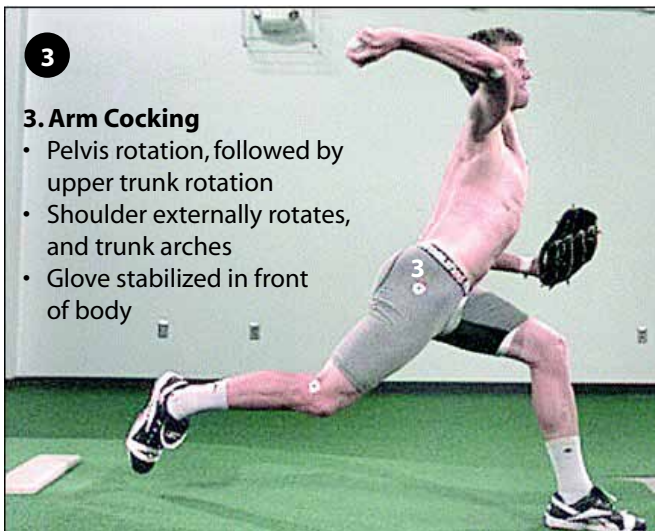
1. Wind up: lift leg up

- Balance: Single leg control
- Hip Canted (left hip higher than right)
- Maximum knee height
- Arms separate, swing down and up



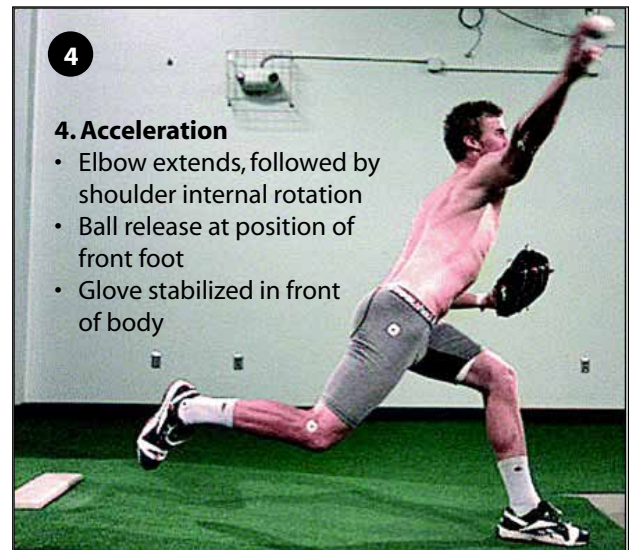
2. Stride & Foot Contact

- Front leg goes down and forward
- Front foot is planted slightly toward third base and pointed slightly inward
- Shoulder abducted to 90° and retracted
- Elbows flexed symmetrically
- Thumb position behind the ball



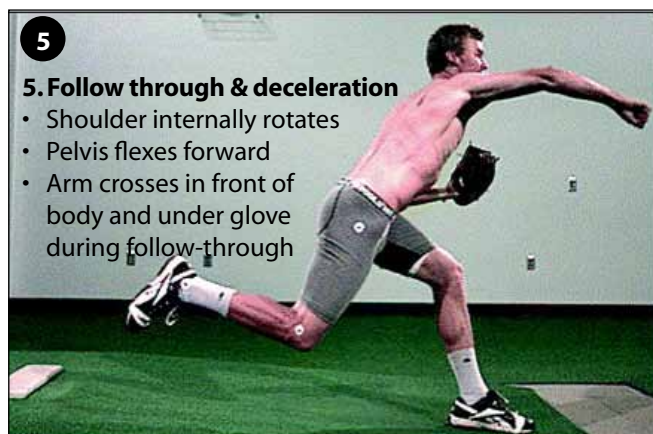
3. Arm Cocking

- Pelvis rotation, followed by upper trunk rotation
- Shoulder externally rotates, and trunk arches
- Glove stabilized in front of body



4. Acceleration

- Elbow extends, followed by shoulder internal rotation
- Ball release at position of front foot
- Glove stabilized in front of body



5. Follow through & deceleration

- Shoulder internally rotates
- Pelvis flexes forward
- Arm crosses in front of body and under glove during follow-through

Reproduced with permission from Fleisig GS. *Baseball Pitching Biomechanics in Relation to Injury Risk and Performance*. Sports Health, A Multidisciplinary Approach 2009;1:314-320.

Pitchers Daily Throwing Routine

- Free toss: getting loose (3min-45ft.)
- Feet together square to target chest out- head on-line turn upper ½ only (2min-55ft)
- Feet spread, closed to target rock and fire-work quick arm action (3min-65ft)
- Feet spread arms separated to landing point back to balance- (2min-75ft)
- Throwing from stretch, sidestep, control head- (3min-85ft)
- Working back in, free catch, work in change ups- (2min)

Game Day

Post Game: Stretch/tubing

- Ice (20 minutes)
- 20 minute jog
- Stretch

Rest Day 1: 25-30 minute run

- Stretch
- Tubing
- Light toss (10 minutes max. 60-80 feet max)
- Shadow mechanics
- Pitcher's Fielding Practice footwork (only if arm is sore)
- Abdominal (med ball) & Lower extremity control exercises

Rest Day 2: Stretch/tubing

- Long-toss (180-200 ft max) work outward, then back inward, low line drives
- Sprints (30-40, 50-60, 50-40, 30) down and back=14 total
- Pick-offs to all bases
- Shadow mechanics
- Pitcher's Fielding Practice
- Drills (1 knee curve balls, towel drill, CH-UP catch etc.)

Rest Day 3: Stretch/tubing

- 25-30 pitch bullpen-work on specific mechanics or specific pitches
- 10 sprints-jogs (pole to pole –sprint 1/2 jog 1/2) down and back =2
- Pick-offs to all bases
- Pitcher's Fielding Practice
- Drills (1 knee curve balls, towel drill, CH-UP catch etc.)
- Abdominal (med ball) & Lower extremity control exercises

Rest Day 4: Light jog (10 minutes)

- Stretch/tubing
- Light toss (90 ft max 10 minutes max)
- Pitcher's Fielding Practice (throwing optional, or very light)
- Pick-off's (light throwing, focus on footwork)

Game Day:

If you are not on 5 day rotation, you may have to repeat some rest days. If more than 4 days rest between starts, do all 4 rest day, and then work backwards from game day.

For instance, you have 6 day rest between starts. Do all 4 days, then on day 5 do rest day 3 again, and rest day 4 workout on day 6, and you are ready to go. Always end with light rest day 4 the day before you throw again.

Glenn Holland, PT, MS, ATC, SCS, CSCS, FAAOMPT

For the past 15 years, Glenn has specialized in evaluation and treatment of the overhead athlete with a primary emphasis on baseball players. As a consultant for baseball injuries in high school, collegiate, and professional athletes in Western Pennsylvania, he has implemented rehabilitative programs, throwing programs, and sport-specific training. Glenn works closely with Dr. Pat McMahon, the University of Pittsburgh Medical Center Orthopedic Specialist for shoulder, elbow, and wrist injuries; Dr. James Bradley, the physician for the Pittsburgh Steelers; and Dr. Patrick DeMeo, Medical Director of the Pittsburgh Pirates. A 1995 graduate of the University of Pittsburgh Physical Therapy School, Glenn is a Certified Athletic Trainer and has specialty certifications in manual therapy and strength and conditioning. He also has 30 years experience in baseball as a high school and collegiate player and as an AAU coach

Peter Draovitch, MS, PT, CSCS

Pete's expertise meshes physical therapy, sports medicine, fitness and wellness. As a physical therapist, he has worked closely with young baseball and hockey athletes developing preventative programs and rehabilitative treatment and programs following injury or surgery. For 10 years, Pete was travelling physical therapist and fitness consultant to professional golfer Greg Norman. He is CEO of The BodyGuards, Inc., a health and fitness company that he founded to launch "BG Nation." The program uses entertainment to encourage children ages seven to 11 to take responsibility for their own health and fitness. He is a Certified Strength and Conditioning Specialist. A graduate from the University of Miami's Physical Therapy School, Pete has taught sports medicine, physical therapy and wellness courses at several universities.

Julie Ferketic, PTA

Since May 2007, Julie has been treating high school, collegiate, and professional athletes following injury or surgery. She works closely with lead physical therapists to ensure athletes implement their exercises with correct form and progression. Julie complemented her Physical Therapist Assistant degree with additional training in kinesiо taping for sport injuries. While undertaking her PTA degree at Butler County Community College, Julie was class president and monitor of the physical therapy assistant program. She is a 2004 graduate of Slippery Rocky University with a bachelor's degree in exercise science and a minor in gerontology.

T. P. Waligora

T. P. serves as the National Director for Champion Baseball Camps and the Pitching Coach for Duquesne University in Pittsburgh, Pennsylvania. His 14 years of experience as a coach and time as a physical therapy throwing specialist have led to the development of the Velocity99 Throwing Program, which safely and systematically increases throwing velocity 4-5 miles per hour. He has worked with throwing athletes of all levels, ranging from Little League to Major League Baseball players, including members of the Chicago White Sox and Texas Rangers organizations. T. P. completed a successful pitching career spanning eight professional seasons with the Chicago Cubs, Pittsburgh Pirates, and Tampa Bay Rays organizations. He was also honored as an All-East Region and All-State Pitcher at the College of William & Mary in Williamsburg, Virginia.

Copyright 2010 © by Glenn Holland, PT and Pete Draovitch, PT

All right reserved. Except for use in a review, the reproduction or utilization in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including xerography, photocopying, and recording, and in any information storage and retrieval system, is forbidden without the written permission of the publisher.