

# WINTER WORKOUT BASEBALL AND SOFTBALL PERFORMANCE AND INJURY PREVENTION PROGRAM

*Provided by Dr. John Mishock, PT, DPT, DC*



*"Providing Hope, Encouragement, & Healing"*



The Mishock Winter Workout Baseball and Softball Training Program is a home exercise program that prepares the athlete for pre-season baseball. It also can be used as a warm-up or training station in a winter work-out program or as an in-season training program. The ultimate goal is to prevent shoulder and arm injuries during the season while allowing the athlete to perform better in throwing and hitting. The program will consist of specific exercises (core, scapular stabilizers, rotator cuff, and arm), under-weight/over-weight baseball swings, and weighted throw and holds.



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## THE IMPORTANCE OF ROTATOR CUFF/ SCAPULAR STABILIZATION AND CORE EXERCISES

The rotator cuff, scapular, and core stabilizers are muscles around the torso and shoulder critical for performance in baseball or softball players. Throwing a baseball or softball is a violent activity leading to significant mechanical stress at the elbow and shoulder. To dissipate the extreme rotational and distraction forces at the shoulder during throwing, the posterior musculature of the shoulder has a critical role in slowing the fast-moving arm during a throw. Due to these forces, the deceleration phase of throwing is the most common point of throwing injury to the shoulder. Furthermore, as a protective mechanism, the body will not allow the arm acceleration to be greater than the degree to which it can decelerate. Thus, one limiting factor in throwing velocity is the posterior shoulder's inability to eccentrically (lengthening muscle contraction) contract, controlling the decelerating arm. In other words, the arm won't accelerate faster

than it can decelerate. The rotator cuff and scapular stabilizers are the muscles that slow the arm down while providing a stable base for the throwing athlete. Strengthening these muscles will allow for greater throwing velocity and arm injury prevention.

The core muscles consist of the hips, low back, and abdominals. These muscles provide the base of stability, allowing the limbs to move with efficiency and power. A strong core also creates rotational sequencing force enabling the athlete to throw harder and hit further while preventing shoulder and arm injuries. For more information on the core's importance, please go to my previous article, *The "Core": Preventing Injury and Improving Sports Performance in the Overhead Throwing Athlete* at [mishockpt.blog](http://mishockpt.blog) on my website [mishockpt.com](http://mishockpt.com).

## UNDER-WEIGHTED AND OVER-WEIGHTED DRY SWINGS FOR IMPROVING BAT SPEED AND BETTER SWING MECHANICS

Under-weighted and over-weighted dry swings for improve bat speed and better swing mechanics

The athlete performs dry swings (baseball hitting swing without hitting a baseball) with a heavy bat and lighter bat at game speed. The scientific basis for the under-weighted/over-weighted dry swing program is to preferentially train fast-twitch type II a and b muscle fibers, thereby increasing bat speed. (1) (For a detailed review of muscle typing, go to [train2playsports.com](http://train2playsports.com), the book "Fundamental Training Principles: Essential knowledge for building the elite athlete". Fast-twitch muscle allows for explosive, powerful movements. By performing the swings, the athlete is also working on fine motor control and proper sequencing of the hitting mechanic, thereby

reinforcing proper power transfer up the kinetic chain to the bat head.

Researches Sergo and Boatwright showed an 8% increase in swing speed when the control group took 100 swings per day, 3 days per week for 6 weeks (1,800 total swings). (2)

For best results, studies show that bat should be approximately 12-20% less or greater than the standard game bat. For example, if the player's game bat is a 32 oz game bat, the player's over-weight bat should not be greater than 38 oz, and the under-weight bat lighter than 26 oz. (3-7)

## THROW AND HOLDS IN PREVENTING SHOULDER INJURY, BUILDING ARM TOLERANCE, AND IMPROVING THROWING MECHANICS

Physical therapists have been using throwing holds for decades as a rehabilitation tool for the shoulder. Throw and holds means that you go through the throwing motion without releasing the ball or weight. This training type works both a concentric (muscle shortening contraction during the act of accelerating the arm) and eccentric (muscle lengthening contraction in decelerating the arm) muscles of the shoulder.

By going through the throwing motion while holding onto the ball or weight, the arm decelerators (scapular and posterior rotator cuff muscles) are trained. This type of training also can improve throwing mechanics by working on the proper mechanical sequence used in throwing, which is the ultimate sports specific training.

In the only study to date on throwing holds, Henning and his colleges examined scapular muscle activation (upper, middle, and lower trapezius and serratus anterior muscles) using surface EMG (Electromyography) during a series of throws and hold (throwing without releasing) with two different ball weights (7oz and 12oz) in NCAA Division I softball players. Despite using a weighted ball, the hold exercises produced more significant muscle activations than a throw but no less stress on the shoulder or elbow. The authors concluded that the throw and hold might be a way to bridge the gap between traditional shoulder exercises and weighted baseball throwing programs. (7)

## PNF SHOULDER STRETCHES

Shoulder range of motion and flexibility is critical to throwing performance. The goal is to have a total range of motion of 180 degrees (internal and external rotation combined). Overhead throwing athletes often develop excessive external rotation (turning arm back) versus internal rotation (turning arm in). Most scientific evidence points to this as a normal bony and capsular-ligamentous adaptative process. However, if the total range of motion of 180 degrees is not maintained, injury to the shoulder or elbow may

ensue. Proprioceptive neuromuscular facilitation (PNF) is a stretching technique used to enhance stretching activities by utilizing the neurological and motor systems. The PNF procedure consists of performing an isometric muscle contraction to the muscle being stretched before performing the active stretch. The stretches described below are specific to the shoulder in range of motion and flexibility needed to prevent injury of the shoulder and elbow. These stretches should be performed before any throwing activity.

## LOCATIONS

### **Gilbertsville\***

#### **AQUA THERAPY**

1806 Swamp Pike, Suite 100

Gilbertsville, PA 19525

**610-327-2600**

**Fax: 610- 327-9050**

### **Phoenixville\***

131 Nutt Road

Phoenixville, PA 19460

**610-933-3371**

**Fax: 610-933-3376**

### **Skippack**

3887 Skippack Pike (Lower Level)

Skippack, PA 19474

**610-584-1400**

**Fax: 610-584-5224**

### **Limerick\***

Spring Valley YMCA

19 W. Linfield-Trappe Rd

Limerick, PA 19468

**484-948-2800**

**Fax: 610-792-3044**

### **Boyertown**

560 North Route 100

Bechtelsville, PA 19505

**610-845-5000**

**Fax: 610-845-5011**

### **Pottstown**

1650 W. High Street

Stowe, PA 19464

**484-948-2810**

**Fax: 484-949-9003**

# MISHOCK ARM CARE TRAINING CIRCUIT

Mishock Physical Therapy

Each exercise should be performed in a circuit fashion (one after the next in the order described). Perform the circuit 1 to 3 times depending on time.

## □ (1) ACROSS BODY STRETCH



## □ (2) BEHIND BACK STRETCH



## □ (3) OVER HEAD STRETCH



### Procedure:

1. Place arm in the described position.
2. Hold the position for 10 seconds.
3. Next, perform the PNF by gently contract the muscles pushing away from the stretch direction for 5 seconds.
4. Relax the muscle contraction and stretch the joint further.
5. Hold that position for 10 seconds.
6. Repeat this 5 times. Repeat on the other side.



## □ (4) T-BAND SHOULDER EXTERNAL 90 DEGREES

**Why this exercise?** This exercise focuses on the rotator cuff and scapular stabilizers (deltoid, rhomboid, middle trapezius muscles), which are critical for the stability of the shoulder and prevention of arm injury and throwing performance in the throwing position.

### Procedure:

1. Hold the elastic tub/T-band with the left hand in front of the body. The right hand is holding the elastic tub/T-band with the thumb up. The shoulder is abducted to approximately 90 degrees with the elbow bent at 90 degrees.
2. While keeping the elbow bent, turn the arm up and back (external rotation).
3. Keep the elbows bent to 90 degrees during the movement.
4. Squeeze the shoulder blades together.
5. Hold the position for 5 seconds (isometric hold).
6. Repeat 10 times. The exercise should be felt in the middle back and shoulders.



## □ (5) PUSH-UP

**Why this exercise?** The push-up primarily targets the muscles of the chest (pectoralis m), arms (biceps and triceps), shoulders (lower/middle trapezius and serratus anterior), and core muscles (abdominals and hips). These muscle groups are essential for proper motor control and stability, vital for overhead throwing athletes.

### Procedure:

1. Start in a fist position. The fist position reduces the excessive strain on the wrists when placed in the traditional extended position.
2. Tighten the abdominals and slowly lower the body.
3. Lower to a point where the elbows are bent to 90 degrees. Lowering too far will increase anterior shoulder strain.
4. Hold this position for 5 seconds. Raise to the starting position and repeat 10 times.



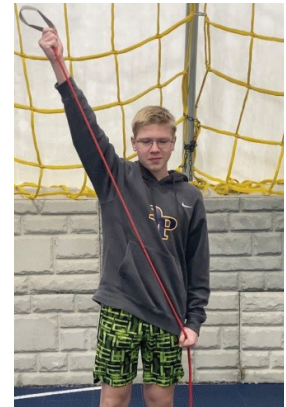


## □ (6) KNEELING SHOULDER-HIP SEPARATION THROW AND HOLD

**Why this exercise?** This drill works on the throwing mechanic of shoulder-hip separation and the angle of the throwing arm. The exercise teaches the loading of the hips, abdominal, and arm accelerator muscles (left hip flexors, left external obliques, rectus abdominis, right pectoralis major, right latissimus dorsi, and right subscapularis muscles for the right-handed pitcher).

### **Procedure:**

1. Have the player start in the 1/2 kneeling position holding a 2-5 lb weight or medicine ball. If not available use a standard baseball.
2. The start position is a rough "W" position (shoulder abduction and elbow flexion of 70 degrees). Keep the head over the center of gravity.
3. Rotate the torso back, creating shoulder-hip separation. The player will feel a stretch through his glove-side abdominal region.
4. Once the shoulder-hip separation is created, move the throwing arm back into a loaded position (horizontal abduction and external rotation). The right-handed player will feel a stretch through the throwing-side region of the chest as well as the shoulder.
5. Go through the throwing motion without releasing the weight or medicine ball.
6. Follow-through by moving the throwing arm across the body
7. Reverse the motion slowly. Repeat this 10 times.



## □ (7) SHOULDER SCAPTION

**Why this exercise?** This exercise focuses on the rotator cuff and scapular stabilizers (deltoid, rhomboid, middle trapezius muscles), which are critical for the stability of the shoulder during the deceleration phase.

### **Procedure:**

1. Hold the elastic tub/T-band with the left hand in front of the body. The right hand is holding the elastic tub/T-band with the thumb up and elbow straight.
2. While keeping the elbow straight, raise the arm up and to the side (shoulder scaption).
3. Hold the position for 5 seconds.
4. Squeeze the shoulder blade.
5. Hold the position for 5 seconds (isometric hold).
6. Repeat 10 times. Repeat on the other side. The exercise should be felt in the middle back and shoulders.



## □ (8) DRY SWING

**Why this exercise?** This drill works on shoulder-hip separation and the angle of the throwing arm. This teaches the loading of the hips, abdominal, and arm accelerator muscles (left hip flexors, left external obliques, rectus abdominis, right pectoralis major, right latissimus dorsi, and right subscapularis muscles for the right-handed pitcher).

### Procedure:

1. Perform 10 dry swings with a weighted bat and 10 dry swings with a underweight bat. Perform the swings at game swing.



## □ (10) FRONT SIDE ALIGNMENT THROW AND HOLD

**Why this exercise?** This drill works on proper alignment and mechanics, keeping the head over the center of gravity, optimizing stride length while working on follow through. Increasing the stride length will create "effective velocity". Effective velocity is when a pitcher releases the ball closer to home plate secondary to a long stride length.

### Procedure:

1. Have the player start from the stretch position. Lift the front knee, and move to the balance point. With the back and stance leg in a slightly bent position, begin falling forward. Push off toward home plate, landing on the stride leg and front side foot.
2. Make sure the player is leading with the front hip (back pocket), head, front shoulder, front elbow, and glove on the target line. The front foot should land a few inches inside (to the right, for the right-handed pitcher) the target line, with the foot slightly pointed toward third base (for the right-handed pitcher).
3. Finish down and across the body without releasing the medicine ball or weight.
4. Slowly reverse the move back to the starting position to a count of seconds.

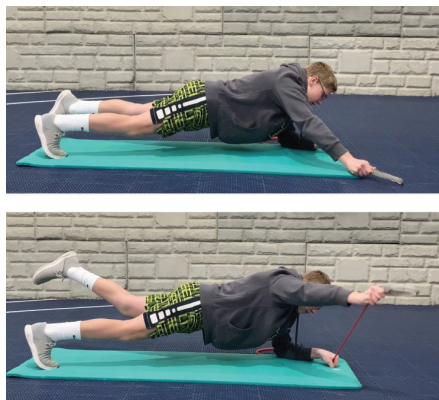


## □ (9) SIDE PLANK WITH LEG AND ARM LIFTS

**Why this exercise?** This movement is a great core exercise that works multiple muscle groups of the side abdominals (rectus abdominus, transverse abdominus, external obliques muscles), hips (gluteus medius muscles), and shoulders (deltoid, rhomboid, middle trapezius muscles).

### Procedure:

1. Position the body in the side plank position on the elbow and knee (or on foot). Keep the top leg straight. Place the arm in front of the body.
2. Perform abdominal brace (tighten abdomen) and raise torso and maintain position perpendicular to the ground. Keep the body straight.
3. While in the side plank position, raise thigh up (hip abduction), keeping the knee straight, and raise the arm. Isometric hold: Hold this position for 5 seconds.
4. Do not allow the torso to rotate forward or backward.
5. Slowly lower the arm and leg to the starting position to a count of 5 seconds. Maintain the plank position.
6. Repeat the arm and leg movements for 10 reps, perform the exercise on the other side.

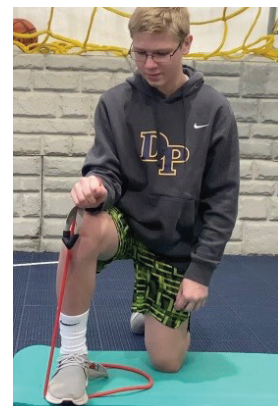
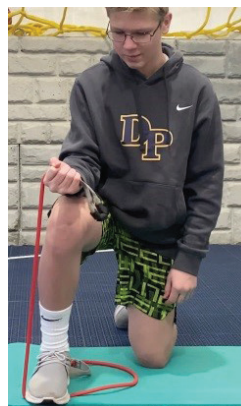


## □ (11) FRONT PLANK WITH LEG AND ARM MOVEMENT

**Why this exercise?** The plank is an essential core strengthening exercise. The plank strengthens the abdominals, back, and shoulders. The core helps stabilize the body and allow a transfer of energy as the limbs move.

### **Procedure:**

1. Position on elbows and knees (or on toes). Raise torso and maintain position.
2. Perform abdominal brace (tighten abdomen)
3. Move arm up into a Y position (120 degrees of shoulder abduction). At the same time, raise the thigh (hip extension)
4. Slowly lower to the start position. Eccentric: Lower to a count of 5 seconds.
5. Repeat arm and leg movements for reps for 5-10 reps while holding the plank position. Perform exercise on the other side. Repeat-2-3 sets



## □ (12) WRIST PRONATION

**Why this exercise?** This exercise works the pronator flexor muscle group, which helps in the stability of the medial elbow, potentially protecting the ulnar collateral ligament (Tommy John Ligament).

### **Procedure:**

1. While seated, rest your forearm on your thigh.
2. Hold the T-band in your hand, palm up, around the thumb side.
3. Step on the band with your foot.
4. Start with your palm facing up.
5. Turn your wrist/forearm in toward you so that the palm is facing down.

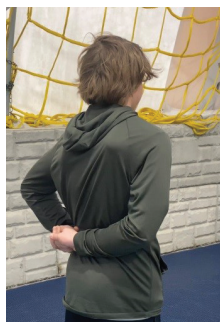




## MISHOCK ARM CARE TRAINING CIRCUIT (QUICK GLANCE):



□ (1) ACROSS BODY STRETCH



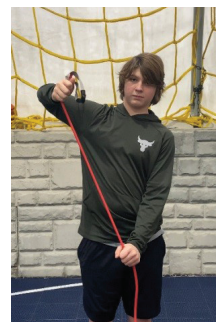
□ (2) BEHIND BACK STRETCH



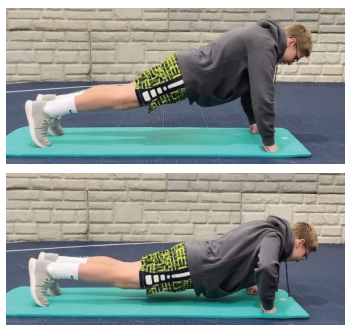
□ (3) OVER HEAD STRETCH



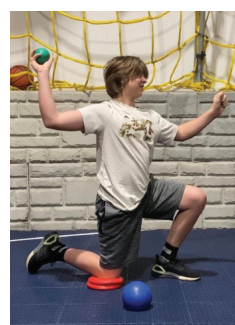
□ (4) T-BAND SHOULDER EXTERNAL 90 DEGREES



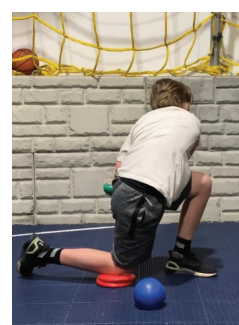
□ (4) T-BAND SHOULDER EXTERNAL 90 DEGREES



□ (5) PUSH-UP



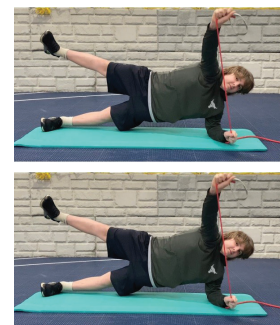
□ (6) KNEELING SHOULDER-HIP SEPARATION THROW AND HOLD



□ (7) SHOULDER SCAPTION



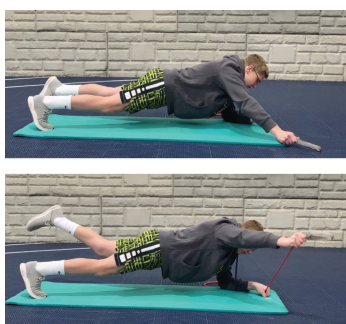
□ (8) DRY SWING



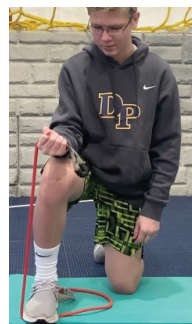
□ (9) SIDE PLANK WITH LEG AND ARM LIFTS



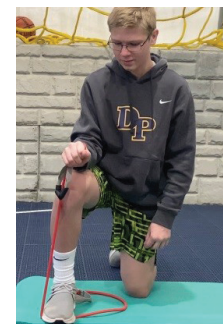
□ (10) FRONT SIDE ALIGNMENT THROW AND HOLD



□ (11) FRONT PLANK WITH LEG AND ARM MOVEMENT



□ (12) WRIST PRONATION





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