

# Conditioning Program for Baseball Pitchers

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The information found in this booklet is to be used as a guideline for developing a conditioning program for the baseball pitcher. This information is provided to assist coaches and players in developing proper conditioning programs. Because individuals vary, the conditioning program must be adapted to meet the specific needs of each player as determined by a medical professional (physician, physical therapist, athletic trainer, or conditioning coach). The American Sports Medicine Institute, the Alabama Sports Medicine and Orthopaedic Center, and HEALTHSOUTH Rehabilitation Corporation accept no responsibility for the improper use of the following information.

Copies may be purchased from:

American Sports Medicine Institute  
1313 13th Street South  
Birmingham, AL 35205  
(205) 918-0000  
[www.asmi.org](http://www.asmi.org)

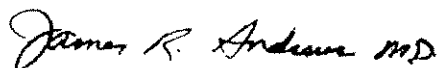
# Foreword

When I first started treating injured baseball players, baseball was considered a six-months-a-year job. Nowadays most experts agree players need a twelve-month periodization program. We have devoted a considerable amount of effort over the past twenty years here at the American Sports Medicine Institute studying throwing injuries in baseball. Based upon this research we now firmly believe that year-round conditioning is a vital component in injury prevention. This is now consistent with research carried out for other sports.

This does not mean that everything is known about proper conditioning for the throwing athlete; research evolves on a yearly basis. There are certain injuries that we are unable to predict, much less prevent, and this will probably continue until more research is conducted.

This booklet contains what we believe to be the best baseball-conditioning program available today. While this booklet has been specifically designed for the pitcher, the concepts apply to all baseball players. Your trainer, physician, or conditioning specialist can adapt this program to fit your competition level, position, schedule, and personal needs.

We are pleased to offer the second edition of this booklet, which contains a completely updated and revised program based on recent advances in the understanding and care of baseball pitchers. We hope that this information helps you stay healthy, enabling you to succeed and enjoy the game of baseball.



James R. Andrews, M.D.  
Medical Director

# Conditioning Program for Baseball Pitchers

Jeremy W. Loftice, C.S.C.S.

Glenn S. Fleisig, Ph.D.

Kevin Wilk, P.T.

Michael M. Reinold, D.P.T., A.T.C., C.S.C.S.

Terri Chmielewski, P.T.

Rafael E. Escamilla, Ph.D., C.S.C.S.

James R. Andrews, M.D.

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# Principles of Conditioning

Conditioning needs to be approached with the same motivation and organization as the competitive season. Without proper conditioning, muscles, tendons, ligaments, and bones are more likely to suffer injury. This is especially true for the baseball pitcher because each pitch generates a tremendous amount of force and stress on the athlete's body, particularly the shoulder and elbow. A lack of conditioning contributes to poor performance and inconsistency. Proper conditioning cannot, however, be obtained in the 4-5 weeks of pre-season practice. A well-planned, year-round program is needed to minimize the risk of injury and prepare for peak performance during the competitive season. The saying, "You must condition to play, not play to get into condition" describes a philosophy that is used by successful athletes.

A good program includes more than strength training, as muscular strength is only one requirement for performance. Flexibility, speed, power, muscular endurance, aerobic/anaerobic capacity, agility, and coordination/skill training are also components of a good conditioning program. In addition, the athlete must pay attention to nutrition and mental preparation. While a conditioning program should be individualized based upon the individual's strengths and weaknesses, certain principles must be adhered to:

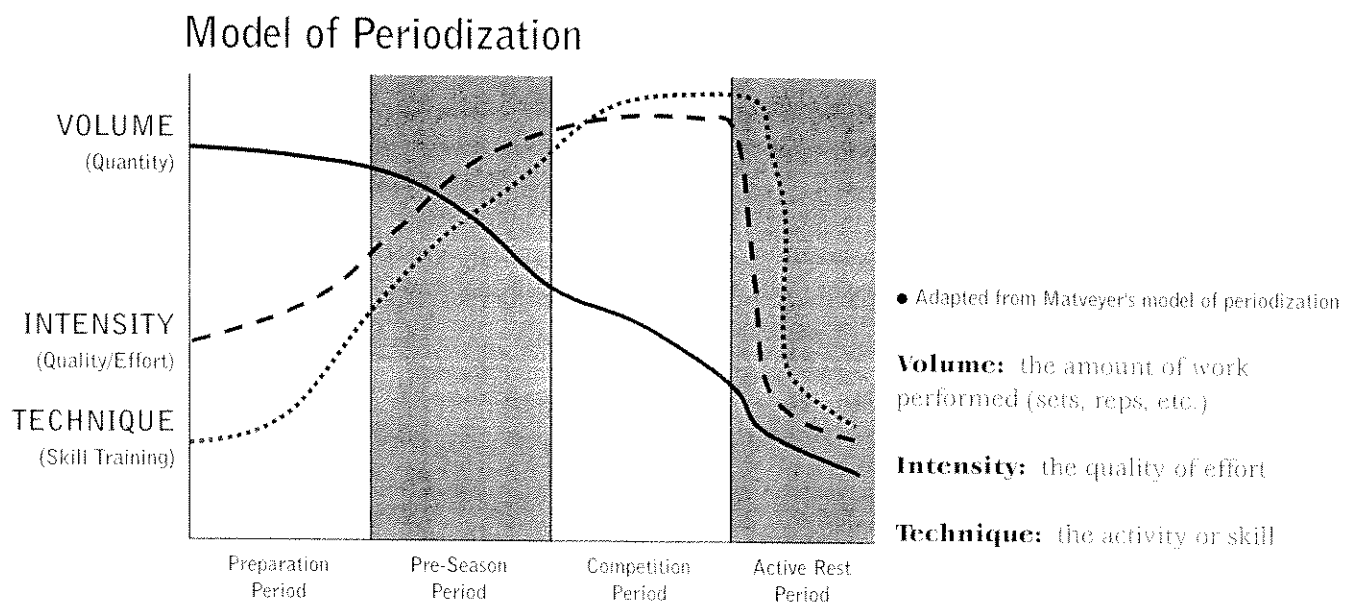
1. **Condition the entire body**, not just the arm. It is important that the core of the body (thighs, hips, trunk, abdominals, shoulders) be strong to provide a stable base for movement and reduce the stress on the throwing arm. Keep in mind that over 50% of the energy required to deliver a pitch is generated by the legs and the trunk. A strong and stable lower body is a pitcher's "power zone". Many arm injuries can be prevented by generating power using the core of the body.
2. **Train the muscles** with the movement they perform during throwing. For example, the large muscles of the trunk (e.g. latissimus dorsi, abdominals, pectoralis major) accelerate the arm during the baseball throw; while the smaller rotator cuff muscles (e.g. infraspinatus and teres minor) decelerate the arm.
3. **Train for muscular balance.** Joint stability relies on the contraction of muscles on both sides of the joint; therefore, a program which emphasizes only certain muscle groups leaves an athlete susceptible to injury. Specific areas of emphasis for the baseball pitcher include the posterior rotator cuff (infraspinatus & teres minor) and scapulothoracic musculature. These muscles are an essential component to dynamic stabilization of the shoulder and are highly susceptible to injury. It is also important to train both sides of the body. In the throwing athlete, the non-throwing arm (lead arm) contributes to rotational forces from the hips and trunk to increase the throwing arm speed and ball velocity.
4. **Train strength before power and endurance.** A base level of strength must be achieved before power drills and muscular endurance exercises can be successfully initiated. For the pitcher, static strength of the rotator cuff, and scapular musculature must be established for shoulder stability before dynamic drills and techniques should be used.
5. **Emphasize quality of exercise**, not quantity. Do not train merely to fatigue the muscles or to develop muscle mass.
6. **Train for muscular endurance.** Muscular endurance is critical for preventing arm injuries. The muscles of the shoulder joint provide dynamic stability during pitching. Once these muscles are fatigued, the stability of the joint is disturbed which may lead to a variety of shoulder and elbow injuries.
7. **Although a conditioning program** is used throughout the year, the concept of periodization should be implemented.

# Periodization

"Periodization of training" refers to adjusting the conditioning program over the course of the year, as it is unrealistic to maintain peak performance throughout the entire year. Through periodization, the year-round conditioning program is divided into four periods, each with specific goals and guidelines for progressively preparing the athlete for peak performance during the competitive season. The periods of periodization are:

- 1. The Preparation Period:** During this period the athlete will begin traditional total body conditioning. This period is often divided into three cycles because it encompasses the bulk of the off-season. The cycles in order are the hypertrophy/endurance phase, the basic strength phase, and the strength/power phase.
- 2. The Pre-Season Period:** The pre-season period, more commonly known as "spring training", is the time the athlete works on specific skills and proper techniques. The athlete is making the transition from strength gaining to sport specific skill enhancement.
- 3. The Competition Period:** This period is the regular season. In college and high school athletes, this involves both the Spring and Summer seasons.
- 4. The Active Rest Period:** This is the first of the three periods of the off-season and begins immediately following the competitive season.

During each of these periods, the volume of work, intensity of effort, and skill/technique are adjusted according to the period. As the preparation period starts, the volume of work is high while the skill/technique training and intensity level is low. As the season approaches, the volume of work decreases while the skill/technique training and intensity of effort increases. The graph below is a model of periodization and demonstrates the direct relationship between intensity and technique, and the inverse relationship between volume and technique. The time-frames for each period are not pre-set or rigid, rather they should be individualized to allow progressive strengthening and peaking in time for the competitive season. In general, the starting date and length of the competitive season will determine how much time is spent in the other phases.



# Preparation Period-Cycle I:

## Hypertrophy/Endurance Phase

### Goals

As the name of this phase suggests, one goal of this phase is to increase lean body mass and develop a muscular and metabolic endurance base for the intensified training that will occur in the later phases and periods.

### Flexibility

Stretching should be performed 15 minutes before activity and 5-6 minutes after completion of the activity. Be sure to perform 5-6 minutes of a proper warm-up before beginning sport-specific stretches in order to minimize the risk of muscle strain. All major muscle groups should be stretched, especially those with decreased flexibility. Each stretch should be held at the point of mild discomfort for 30 seconds and performed 1-3 times each. Refer to the appendix for suggested stretching exercises.

### Aerobic / Anaerobic

Cardiovascular exercise should be performed for 5-10 minutes, at least two days per week. Running, stationary bicycle, or stairmaster are all acceptable forms of cardiovascular exercise. Sprints will also be initiated in this period. Rest 15-45 seconds in between sprints.

### Strength

Resistance training is initiated three days per week at an intensity of 50-55% of a three repetition max (RM). If a 3 RM test is not performed, the athlete should select the amount of weight for each exercise such that fatigue is felt at the last repetition, yet the athlete is able to complete all repetitions. If the suggested weight is too heavy, decrease the weight to achieve the recommended repetitions. Rest approximately 15 to 30 seconds in between sets.

### Rotator Cuff (RTC) Exercises

The tubing and weighted rotator cuff exercises are performed three times a week. Refer to the appendix for suggested RTC exercises.

### Plyometrics

Medicine ball drills will be performed one day a week. Refer to the appendix for suggested plyometric exercises.

### Coordination / Skill

Pitchers should begin balancing drills on a balance beam (or suitable alternative). These drills should be performed two days per week for 20-30 minutes.

**WEEK 1**

(1 SET x 12 REPS)

(1 SET x 12 REPS)

(1 SET x 12 REPS)

MONDAY		WEDNESDAY		FRIDAY	
Squat	50% max	Latissimus Pull-Down(Front)	50% max	Squat	50% max
Leg Press	50% max	Reverse Flys	Tubing	Leg Press	50% max
Forward Lunge	BW	Dumbbell Incline Press	50% max	Step-Up	BW
Knee Extension	50% max	Hammer Curl	50% max	Side Lunge	BAR
Leg Curl	50% max	Triceps Kick-Back	3-5 lbs	Standing Calf Raise	50% max
Latissimus Pull-Down(Front)	50% max	Back Extension	BW	Seated Row	50% max
Dumbbell Bench Press	50% max	Forearm Pronation	3-5 lbs	Push Up	25 reps
Seated Row	50% max	Forearm Supination	3-5 lbs	Bent Over Row	10-20 lbs
Biceps Curl	50% max	RTC Exercises	1 x 10 reps	Biceps Curl	50% max
Triceps Extension	BAR	Plyometrics (Series A)	2 x 10 reps	Triceps Press Down	50% max
RTC Exercises	1 x 10 reps	Crunch	1 x 20 reps	RTC Exercises	1 x 10 reps
Crunch	1 x 20 reps	Reverse Crunch	1 x 20 reps	Crunch	1 x 20 reps
Weighted Crunch	20 reps	Sprinting	3 x 60 yds	Crunch With Twist	1 x 20 reps
Bike/Run/Stairmaster	5 mins			Bike/Run/Stairmaster	5 mins

**WEEK 2**

(2 SETS x 12 REPS)

(2 SETS x 12 REPS)

(2 SETS x 12 REPS)

MONDAY		WEDNESDAY		FRIDAY	
Squat	55% max	Latissimus Pull-Down(Front)	55% max	Squat	55% max
Leg Press	55% max	Reverse Flys	Tubing	Leg Press	55% max
Forward Lunge	5-10 lbs	Dumbbell Incline Press	55% max	Step-Up	10 lbs
Knee Extension	55% max	Hammer Curl	55% max	Side Lunge	BAR + 10 lbs
Leg Curl	55% max	Triceps Kick-Back	5 lbs	Standing Calf Raise	55% max
Latissimus Pull-Down(Front)	55% max	Back Extension	BW	Seated Row	55% max
Dumbbell Bench Press	55% max	Forearm Pronation	3-5 lbs	Push Up	25 reps
Seated Row	55% max	Forearm Supination	3-5 lbs	Bent Over Row	10-20 lbs
Biceps Curl	55% max	RTC Exercises	1 x 10 reps	Biceps Curl	55% max
Triceps Extension	BAR + 5-10 lbs	Plyometrics (Series B)	2 x 10 reps	Triceps Press Down	55% max
RTC Exercises	1 x 10 reps	Crunch	1 x 25 reps	RTC Exercises	1 x 10 reps
Crunch	1 x 25 reps	Reverse Crunch	1 x 25 reps	Crunch	1 x 25 reps
Weighted Crunch	1 x 25 reps	Sprinting	3 x 60 yds	Crunch With Twist	1 x 25 reps
Bike/Run/Stairmaster	5 mins			Bike/Run/Stairmaster	5 mins

**WEEK 3**

(3 SETS x 12 REPS)

(3 SETS x 12 REPS)

(3 SETS x 12 REPS)

MONDAY		WEDNESDAY		FRIDAY	
Squat	55% max	Latissimus Pull-Down(Front)	55% max	Squat	55% max
Leg Press	55% max	Reverse Flys	Tubing	Leg Press	55% max
Forward Lunge	5-10 lbs	Dumbbell Incline Press	55% max	Step-Up	15 lbs
Knee Extension	55% max	Hammer Curl	55% max	Side Lunge	BAR + 10 lbs
Leg Curl	55% max	Triceps Kick-Back	3-5 lbs	Standing Calf Raise	55% max
Latissimus Pull-Down(Front)	55% max	Back Extension	BW	Seated Row	55% max
Dumbbell Bench Press	55% max	Forearm Pronation	3-5 lbs	Push Up	25 reps
Seated Row	55% max	Forearm Supination	3-5 lbs	Bent Over Row	10-20 lbs
Biceps Curl	55% max	RTC Exercises	1 x 10 reps	Biceps Curl	55% max
Triceps Extension	BAR + 5-10 lbs	Plyometrics (Series A)	2 x 10 reps	Triceps Press Down	55% max
RTC Exercises	1 x 10 reps	Crunch	1 x 25 reps	RTC Exercises	1 x 10 reps
Crunch	1 x 25 reps	Reverse Crunch	1 x 25 reps	Crunch	1 x 25 reps
Weighted Crunch	1 x 25 reps	Sprinting	4 x 60 yds	Crunch With Twist	1 x 25 reps
Bike/Run/Stairmaster	7 mins			Bike/Run/Stairmaster	7 mins

**WEEK 4**

(3 SETS x 12 REPS)

(3 SETS x 12 REPS)

(3 SETS x 12 REPS)

MONDAY		WEDNESDAY		FRIDAY	
Squat	60% max	Latissimus Pull-Down(Front)	60% max	Squat	60% max
Leg Press	60% max	Reverse Flys	Tubing	Leg Press	60% max
Forward Lunge	5-10 lbs	Dumbbell Incline Press	60% max	Step-Up	20 LBS
Knee Extension	60% max	Hammer Curl	60% max	Side Lunge	BAR + 15 lbs
Leg Curl	60% max	Triceps Kick-Back	3-5 lbs	Standing Calf Raise	60% max
Latissimus Pull-Down(Front)	60% max	Back Extension	BW	Seated Row	60% max
Dumbbell Bench Press	60% max	Forearm Pronation	3-5 lbs	Push Up	25 reps
Seated Row	60% max	Forearm Supination	3-5 lbs	Bent Over Row	10-20 lbs
Biceps Curl	60% max	RTC Exercises	1 x 10 reps	Biceps Curl	60% max
Triceps Extension	BAR + 5-10 lbs	Plyometrics (Series B)	2 x 10 reps	Triceps Press Down	60% max
RTC Exercises	1 x 10 reps	Crunch	2 x 25 reps	RTC Exercises	1 x 10 reps
Crunch	2 x 25 reps	Reverse Crunch	2 x 25 reps	Crunch	2 x 25 reps
Weighted Crunch	2 x 25 reps	Sprinting	4 x 60 yds	Crunch With Twist	2 x 25 reps
Bike/Run/Stairmaster	7 mins			Bike/Run/Stairmaster	7 mins

# Preparation Period-Cycle II:

## Basic Strength Phase

### Goals

In this phase, the rotator cuff muscles and other muscles essential to throwing are strengthened. The strength foundation built in the previous cycle is now utilized in functional patterns including throwing. This phase involves heavier loads for fewer repetitions than the hypertrophy/endurance phase.

### Flexibility

As in the hypertrophy/endurance phase.

### Aerobic / Anaerobic

Cardiovascular exercise through running should be performed for 10-15 minutes, at least two days per week. Perform anaerobic training as indicated in the workout table. Rest 15-45 seconds in between sprints.

### Strength

Strength workouts are performed four times per week, at three sets for each exercise. Lower body exercise is performed on Mondays and Thursdays while upper body exercise is to be done on Tuesdays and Fridays. If the suggested weight is too heavy, decrease the weight to achieve the recommended repetitions. Rest approximately 30 to 45 seconds in between sets.

### Rotator Cuff (RTC) Exercises

The tubing and weighted rotator cuff exercises are performed two days a week, accompanying the upper body workouts. When building strength in weeks 5-10, gradually increase the weights for the RTC exercises. Be sure the exercise can still be performed comfortably without any pain while maintaining the correct exercise technique. Refer to the appendix for suggested RTC exercises.

### Plyometrics

Plyometrics are performed two days a week. Refer to the appendix for suggested plyometric exercises.

### Coordination / Skill

Pitchers will begin the long-toss phase of the interval throwing program, two to three days per week. Start throwing at a distance of 45 feet, and progress to 180 feet by the end of the period.



# WEEK 5

(3 SETS X 8 REPS)

(3 SETS X 8 REPS)

(3 SETS X 8 REPS)

MONDAY	TUESDAY	THURSDAY	FRIDAY
Squat	Reverse Flys	Squat	Reverse Flys
Leg Press	Dumbbell Bench Press	Leg Press	Dumbbell Incline Press
Back Extension	Bent Over Row	Back Extension	Hammer Curl
Forward Lunge	Dumbbell Incline Press	Side Lunge	Triceps Press Down
Knee Extension	Biceps Curl	Step-Up	Concentration Curl
Leg Curl	Triceps Extension	Standing Calf Raise	Triceps Kick-Back
Crunch	Wrist Curls	Weighted Crunch	Reverse Wrist Curls
Reverse Crunch	Rice Bucket	Crunch With Twist	Rice Bucket
Bike/Run/Stairmaster	Forearm Pronation	Bike/Run/Stairmaster	Forearm Pronation
	Forearm Supination		Forearm Supination
	RTC Exercises		RTC Exercises
	Plyometrics (Series A)		Plyometrics (Series B)
	Sprinting		Sprinting

# WEEK 6

(3 SETS X 8 REPS)

(3 SETS X 8 REPS)

(3 SETS X 8 REPS)

MONDAY	TUESDAY	THURSDAY	FRIDAY
Squat	Reverse Flys	Squat	Reverse Flys
Leg Press	Dumbbell Bench Press	Leg Press	Push-Ups
Back Extension	Bent Over Row	Back Extension	Biceps Curl
Forward Lunge	Dumbbell Incline Press	Side Lunge	Triceps Press Down
Knee Extension	Hammer Curl	Step-Up	Concentration Curl
Leg Curl	Triceps Extension	Standing Calf Raise	Triceps Kick-Back
Crunch	Wrist Curls	Weighted Crunch	Reverse Wrist Curls
Reverse Crunch	Rice Bucket	Crunch With Twist	Rice Bucket
Bike/Run/Stairmaster	Forearm Pronation	Bike/Run/Stairmaster	Forearm Pronation
	Forearm Supination		Forearm Supination
	RTC Exercises		RTC Exercises
	Plyometrics (Series A)		Plyometrics (Series B)
	Sprinting		Sprinting

# WEEK 7

(3 SETS X 8 REPS)

(3 SETS X 8 REPS)

(3 SETS X 8 REPS)

MONDAY	TUESDAY	THURSDAY	FRIDAY
Squat	Reverse Flys	Squat	Latissimus Pull-Down(Front)
Leg Press	Dumbbell Bench Press	Leg Press	Dumbbell Incline Press
Back Extension	Bent Over Row	Back Extension	Biceps Curl
Forward Lunge	Dumbbell Incline Press	Side Lunge	Triceps Press Down
Knee Extension	Biceps Curl	Step-Up	Concentration Curl
Leg Curl	Triceps Extension	Standing Calf Raise	Triceps Kick-Back
Crunch	Wrist Curls	Weighted Crunch	Reverse Wrist Curls
Reverse Crunch	Rice Bucket	Crunch With Twist	Rice Bucket
Bike/Run/Stairmaster	Forearm Pronation	Bike/Run/Stairmaster	Forearm Pronation
	Forearm Supination		Forearm Supination
	RTC Exercises		RTC Exercises
	Plyometrics (Series A)		Plyometrics (Series B)
	Sprinting		Sprinting

**WEEK 8**

(3 SETS X 8 REPS)

(3 SETS X 8 REPS)

(3 SETS X 8 REPS)

MONDAY	TUESDAY	THURSDAY	FRIDAY
Squat	Reverse Flys	Squat	Reverse Flys
Leg Press	Dumbbell Bench Press	Leg Press	Dumbbell Incline Press
Back Extension	Bent Over Row	Back Extension	Hammer Curl
Forward Lunge	Dumbbell Incline Press	Side Lunge	Triceps Press Down
Knee Extension	Biceps Curl	Step-Up	Concentration Curl
Leg Curl	Triceps Extension	Standing Calf Raise	Triceps Kick-Back
Crunch	Wrist Curls	Weighted Crunch	Reverse Wrist Curls
Reverse Crunch	Rice Bucket	Crunch With Twist	Rice Bucket
Bike/Run/Stairmaster	Forearm Pronation	Bike/Run/Stairmaster	Forearm Pronation
	Forearm Supination		Forearm Supination
	RTC Exercises		RTC Exercises
	Plyometrics (Series A)		Plyometrics (Series B)
	Sprinting		Sprinting

**WEEK 9**

(3 SETS X 8 REPS)

(3 SETS X 8 REPS)

(3 SETS X 8 REPS)

MONDAY	TUESDAY	THURSDAY	FRIDAY
Squat	Reverse Flys	Squat	Reverse Flys
Leg Press	Dumbbell Bench Press	Leg Press	Push-Ups
Back Extension	Bent Over Row	Back Extension	Biceps Curl
Forward Lunge	Dumbbell Incline Press	Side Lunge	Triceps Press Down
Knee Extension	Hammer Curl	Step-Up	Concentration Curl
Leg Curl	Triceps Extension	Standing Calf Raise	Triceps Kick-Back
Crunch	Wrist Curls	Weighted Crunch	Reverse Wrist Curls
Reverse Crunch	Rice Bucket	Crunch With Twist	Rice Bucket
Bike/Run/Stairmaster	Forearm Pronation	Bike/Run/Stairmaster	Forearm Pronation
	Forearm Supination		Forearm Supination
	RTC Exercises		RTC Exercises
	Plyometrics (Series A)		Plyometrics (Series B)
	Sprinting		Sprinting

**WEEK 10**

(3 SETS X 8 REPS)

(3 SETS X 8 REPS)

(3 SETS X 8 REPS)

MONDAY	TUESDAY	THURSDAY	FRIDAY
Squat	Reverse Flys	Squat	Latissimus Pull-Down (Front)
Leg Press	Dumbbell Bench Press	Leg Press	Dumbbell Incline Press
Back Extension	Bent Over Row	Back Extension	Biceps Curl
Forward Lunge	Dumbbell Incline Press	Side Lunge	Triceps Press Down
Knee Extension	Biceps Curl	Step-Up	Concentration Curl
Leg Curl	Triceps Extension	Standing Calf Raise	Triceps Kick-Back
Crunch	Wrist Curls	Weighted Crunch	Reverse Wrist Curls
Reverse Crunch	Rice Bucket	Crunch With Twist	Rice Bucket
Bike/Run/Stairmaster	Forearm Pronation	Bike/Run/Stairmaster	Forearm Pronation
	Forearm Supination		Forearm Supination
	RTC Exercises		RTC Exercises
	Plyometrics (Series A)		Plyometrics (Series B)
	Sprinting		Sprinting

# Preparation Period-Cycle III:

## Strength/Power Phase

### Goals

The goal of this phase is to intensify the activity to near competition levels. Also, an increased emphasis is placed on the exercises that are more sport specific.

### Flexibility

As in the hypertrophy/endurance phase.

### Aerobic / Anaerobic

Cardiovascular exercise through running should be performed for 20-30 minutes, at least two days per week. Perform anaerobic training as indicated in the workout table. Rest 15-45 seconds in between sprints.

### Strength

Strength and power workouts are performed two times per week each, at three sets for each exercise. Note that the amount of weight lifted during power exercises do not follow the typical %1RM guidelines. If the suggested weight is too heavy, decrease the weight to achieve the recommended repetitions. The POWER DAYS are designated in the table. On the POWER DAYS, the exercises are to be performed explosively. The (NP) next to some exercises indicate that the exercise is not to be performed as a power exercise that day. Rest approximately 1 to 3 minutes in between sets.

### Rotator Cuff (RTC) Exercises

The tubing and weighted rotator cuff exercises are performed two days a week, accompanying the upper body workouts. When gaining strength in weeks 11-16, gradually increase the weights for the RTC exercises. Be sure the exercise can still be performed comfortably without any pain while maintaining the correct exercise technique. RTC exercises are not to be exercised to failure or "burnout". Refer to the appendix for suggested RTC exercises.

### Plyometrics

Plyometric drills are performed two days per week. Refer to the appendix for suggested plyometric exercises.

### Coordination / Skill

Pitchers will continue the long-toss phase of the interval throwing program, two to three days per week. Begin at step 14 or flat ground throwing. Approximately halfway through this phase, the pitcher should begin to throw from the mound, using proper pitching mechanics and limiting his pitches.



WEEK 14 POWER DAY (3 SETS X 12 REPS)			(3 SETS X 2-5 REPS)			(3 SETS X 2-5 REPS)			POWER DAY (3 SETS X 12 REPS)		
MONDAY			TUESDAY			THURSDAY			FRIDAY		
Squat	50-55% max		Reverse Flys	Tubing		Squat	75-80% max		Latissimus Pull-Down (Front)	50-55% max	
Leg Press	50-55% max		Dumbbell Bench Press	75-80% max		Leg Press	75-80% max		Dumbbell Incline Press	50-55% max	
Back Extension (NP)	BW x 10 reps		Bent Over Row	50-55 lbs		Back Extension	BW x 10 reps		Biceps Curl	50-55% max	
Forward Jump Lunge	10-15 lbs		Dumbbell Incline Press	75-80% max		Side Lunge	BAR + 50 lbs		Triceps Press Down	50-55% max	
Knee Extension	50-55% max		Hammer Curl	75-80% max		Step-Up	45 lbs		Concentration Curl	50-55% max	
Leg Curl	50-55% max		Triceps Kick-Back	10-15 lbs		Standing Calf Raise	75-80% max		Triceps Kick-Back	5-10 lbs	
Reverse Crunch (NP)	2 x 50 reps		Wrist Curls	20 lbs		Crunch	2 x 50 reps		Wrist Curls (NP)	20 lbs	
Weighted Crunch (NP)	2 x 50 reps		Rice Bucket	75 secs		Crunch With Twist	2 x 50 reps		Rice Bucket (NP)	45 secs	
Bike/Run/Stairmaster	20 mins		Forearm Pronation	5-10 lbs		Bike/Run/Stairmaster	20 mins		Forearm Pronation (NP)	5-10 lbs	
			Forearm Supination	5-10 lbs					Forearm Supination (NP)	5-10 lbs	
			Plyometrics (Series A)	2 x 10 reps					Plyometrics (Series B)	2 x 10 reps	
			RTC Exercises	1 x 10 reps					RTC Exercises (NP)	1 x 10 reps	
			Sprinting	8 x 60 yds					Sprinting	8 x 60 yds	

WEEK 15 POWER DAY (3 SETS X 8 REPS)			(3 SETS X 2-5 REPS)			(3 SETS X 2-5 REPS)			POWER DAY (3 SETS X 8 REPS)		
MONDAY			TUESDAY			THURSDAY			FRIDAY		
Squat	60-65% max		Reverse Flys	Tubing		Squat	80-85% max		Latissimus Pull-Down (Front)	60-65% max	
Leg Press	60-65% max		Dumbbell Bench Press	80-85% max		Leg Press	80-85% max		Push-Ups	3 x 30 reps	
Back Extension (NP)	BW x 10 reps		Bent Over Row	60-65 lbs		Back Extension	BW x 10 reps		Biceps Curl	60-65% max	
Forward Jump Lunge	20-25 lbs		Dumbbell Incline Press	80-85% max		Side Lunge	BAR + 70 lbs		Triceps Press Down	60-65% max	
Knee Extension	60-65% max		Biceps Curl	80-85% max		Step-Up	45 lbs		Concentration Curl	60-65% max	
Leg Curl	60-65% max		Triceps Extension	BAR + 35 lbs		Standing Calf Raise	80-85% max		Triceps Kick-Back	10-15 lbs	
Reverse Crunch (NP)	2 x 50 reps		Wrist Curls	25 lbs		Crunch	2 x 50 reps		Wrist Curls (NP)	25 lbs	
Weighted Crunch (NP)	2 x 50 reps		Rice Bucket	90 secs		Crunch With Twist	2 x 50 reps		Rice Bucket (NP)	45 secs	
Bike/Run/Stairmaster	25 mins		Forearm Pronation	5-10 lbs		Bike/Run/Stairmaster	25 mins		Forearm Pronation (NP)	5-10 lbs	
			Forearm Supination	5-10 lbs					Forearm Supination (NP)	5-10 lbs	
			Plyometrics (Series A)	2 x 10 reps					Plyometrics (Series B)	2 x 10 reps	
			RTC Exercises	1 x 10 reps					RTC Exercises (NP)	1 x 10 reps	
			Sprinting	9 x 60 yds					Sprinting	9 x 60 yds	

WEEK 16 POWER DAY (3 SETS X 5 REPS)			(3 SETS X 2-5 REPS)			(3 SETS X 2-5 REPS)			POWER DAY (3 SETS X 5 REPS)		
MONDAY			TUESDAY			THURSDAY			FRIDAY		
Squat	70-75% max		Reverse Flys	Tubing		Squat	85-90% max		Reverse Flys	Tubing	
Leg Press	70-75% max		Dumbbell Bench Press	85-90% max		Leg Press	85-90% max		Dumbbell Incline Press	70-75% max	
Back Extension (NP)	BW x 10 reps		Bent Over Row	70-75 lbs		Back Extension	BW x 10 reps		Biceps Curl	70-75% max	
Forward Jump Lunge	30-35 lbs		Dumbbell Incline Press	85-90% max		Side Lunge	BAR + 90 lbs		Triceps Press Down	70-75% max	
Knee Extension	70-75% max		Hammer Curl	85-90% max		Step-Up	45 lbs		Concentration Curl	70-75% max	
Leg Curl	70-75% max		Triceps Kick-Back	20-25 lbs		Standing Calf Raise	85-90% max		Triceps Kick-Back	15-20 lbs	
Reverse Crunch (NP)	2 x 60 reps		Wrist Curls	35 lbs		Crunch	2 x 60 reps		Wrist Curls (NP)	35 lbs	
Weighted Crunch (NP)	2 x 60 reps		Rice Bucket	105 secs		Crunch With Twist	2 x 60 reps		Rice Bucket (NP)	45 secs	
Bike/Run/Stairmaster	30 mins		Forearm Pronation	5-10 lbs		Bike/Run/Stairmaster	30 mins		Forearm Pronation (NP)	5-10 lbs	
			Forearm Supination	5-10 lbs					Forearm Supination (NP)	5-10 lbs	
			Plyometrics (Series A)	2 x 10 reps					Plyometrics (Series B)	2 x 10 reps	
			RTC Exercises	1 x 10 reps					RTC Exercises (NP)	1 x 10 reps	
			Sprinting	10 x 60 yds					Sprinting	10 x 60 yds	

# Pre-Season Period

## (Spring Training)

### Goals

The goals of spring training are to develop the skill level of the athlete and to prepare the athlete both mentally and physically for the upcoming season.

### Flexibility

As in the hypertrophy/endurance phase. Partner stretches may be used.

### Aerobic / Anaerobic

Maintenance of cardiovascular endurance continues to include running, stationary bicycle, or stairmaster for periods of 35-45 minutes, at least two times a week. Perform anaerobic training as indicated in the workout table. Rest 15-45 seconds in between sprints.

### Strength

Continue strength training 3 times per week at 3 sets of varying repetitions for all exercises. Again, the POWER DAY is indicated in the workout chart. On the POWER DAYS, the exercises are to be performed explosively. The (NP) next to some exercises indicate that the exercise is not to be performed as a power exercise that day. If the suggested weight is too heavy, decrease the weight to achieve the recommended repetitions. Rest approximately 30 to 60 seconds in between sets.

### Rotator Cuff (RTC) Exercises

The tubing and weighted rotator cuff exercises are performed three days a week. When choosing a desired weight, be sure the exercise can still be performed comfortably without any pain while maintaining the correct exercise technique. RTC exercises are not to be exercised to failure or "burnout". Refer to the appendix for suggested RTC exercises.

### Plyometrics

Plyometric drills are performed three times a week through this phase. Refer to the appendix for suggested plyometric exercises.

### Coordination / Skill

Pitchers now throw exclusively from the mound, simulating the game environment and game situations at the discretion of the pitching coach.

**WEEK 17 POWER DAY (3 SETS x 8 REPS)**

(3 SETS x 10 REPS)

(3 SETS x 10 REPS)

MONDAY		WEDNESDAY		FRIDAY	
Squat	65% max	Latissimus Pull-Down (Front)	60% max	Squat	60% max
Leg Press	65% max	Reverse Flys	Tubing	Leg Press	60% max
Forward Jump Lunge	5-10 lbs	Dumbbell Incline Press	60% max	Step-Up	20 LBS
Knee Extension	65% max	Hammer Curl	60% max	Side Lunge	BAR + 15 lbs
Leg Curl	65% max	Triceps Kick-Back	3-5 lbs	Standing Calf Raise	60% max
Latissimus Pull-Down (Front)	65% max	Back Extension	BW	Seated Row	60% max
Dumbbell Bench Press	65% max	Forearm Pronation	3-5 lbs	Push Up	25 reps
Seated Row	65% max	Forearm Supination	3-5 lbs	Bent Over Row	10-20 lbs
Biceps Curl	65% max	RTC Exercises	1 x 10 reps	Biceps Curl	60% max
Triceps Extension	BAR + 5-10 lbs	Plyometrics (Series B)	2 x 10 reps	Triceps Press Down	50-55 lbs
RTC Exercises (NP)	1 x 10 reps	Crunch	2 x 60 reps	RTC Exercises	1 x 10 reps
Plyometrics (Series A)	2 x 10 reps	Reverse Crunch	2 x 60 reps	Plyometrics (Series A)	2 x 10 reps
Crunch (NP)	2 x 60 reps	Sprinting	10 x 60 yds	Crunch	2 x 60 reps
Weighted Crunch (NP)	2 x 60 reps			Crunch With Twist	2 x 60 reps
Bike/Run/Stairmaster	35 mins			Bike/Run/Stairmaster	35 mins

**WEEK 18 POWER DAY (3 SETS x 6 REPS)**

(3 SETS x 12 REPS)

(3 SETS x 12 REPS)

MONDAY		WEDNESDAY		FRIDAY	
Squat	70% max	Latissimus Pull-Down (Front)	60% max	Squat	60% max
Leg Press	70% max	Reverse Flys	Tubing	Leg Press	60% max
Forward Jump Lunge	10-15 lbs	Dumbbell Incline Press	60% max	Step-Up	20 LBS
Knee Extension	70% max	Hammer Curl	60% max	Side Lunge	BAR + 15 lbs
Leg Curl	70% max	Triceps Kick-Back	3-5 lbs	Standing Calf Raise	60% max
Latissimus Pull-Down (Front)	70% max	Back Extension	BW	Seated Row	60% max
Dumbbell Bench Press	70% max	Forearm Pronation	3-5 lbs	Push Up	25 reps
Seated Row	70% max	Forearm Supination	3-5 lbs	Bent Over Row	10-20 lbs
Biceps Curl	70% max	RTC Exercises	1 x 10 reps	Biceps Curl	60% max
Triceps Extension	BAR + 10-15 lbs	Plyometrics (Series A)	2 x 10 reps	Triceps Press Down	50-55 lbs
RTC Exercises (NP)	1 x 10 reps	Crunch	2 x 60 reps	RTC Exercises	1 x 10 reps
Plyometrics (Series B)	2 x 10 reps	Reverse Crunch	2 x 60 reps	Plyometrics (Series B)	2 x 10 reps
Crunch (NP)	2 x 60 reps	Sprinting	12 x 60 yds	Crunch	2 x 60 reps
Weighted Crunch (NP)	2 x 60 reps			Crunch With Twist	2 x 60 reps
Bike/Run/Stairmaster	40 mins			Bike/Run/Stairmaster	40 mins

**WEEK 19 POWER DAY (3 SETS x 4 REPS)**

(3 SETS x 15 REPS)

(3 SETS x 15 REPS)

MONDAY		WEDNESDAY		FRIDAY	
Squat	75% max	Latissimus Pull-Down (Front)	60% max	Squat	60% max
Leg Press	75% max	Reverse Flys	Tubing	Leg Press	60% max
Forward Jump Lunge	15-20 lbs	Dumbbell Incline Press	60% max	Step-Up	20 LBS
Knee Extension	75% max	Hammer Curl	60% max	Side Lunge	BAR + 15 lbs
Leg Curl	75% max	Triceps Kick-Back	3-5 lbs	Standing Calf Raise	60% max
Latissimus Pull-Down (Front)	75% max	Back Extension	BW	Seated Row	60% max
Dumbbell Bench Press	75% max	Forearm Pronation	3-5 lbs	Push Up	25 reps
Seated Row	75% max	Forearm Supination	3-5 lbs	Bent Over Row	10-20 lbs
Biceps Curl	75% max	RTC Exercises	1 x 10 reps	Biceps Curl	60% max
Triceps Extension	BAR + 15-20 lbs	Plyometrics (Series B)	2 x 10 reps	Triceps Press Down	50-55 lbs
RTC Exercises (NP)	1 x 10 reps	Crunch	2 x 60 reps	RTC Exercises	1 x 10 reps
Plyometrics (Series A)	2 x 10 reps	Reverse Crunch	2 x 60 reps	Plyometrics (Series A)	2 x 10 reps
Crunch (NP)	2 x 60 reps	Sprinting	15 x 60 yds	Crunch	2 x 60 reps
Weighted Crunch (NP)	2 x 60 reps			Crunch With Twist	2 x 60 reps
Bike/Run/Stairmaster	45 mins			Bike/Run/Stairmaster	45 mins

**WEEK 20 POWER DAY (3 SETS x 8 REPS)**

(3 SETS x 10 REPS)

(3 SETS x 10 REPS)

MONDAY		WEDNESDAY		FRIDAY	
Squat	65% max	Latissimus Pull-Down (Front)	60% max	Squat	60% max
Leg Press	65% max	Reverse Flys	Tubing	Leg Press	60% max
Forward Jump Lunge	5-10 lbs	Dumbbell Incline Press	60% max	Step-Up	20 LBS
Knee Extension	65% max	Hammer Curl	60% max	Side Lunge	BAR + 15 lbs
Leg Curl	65% max	Triceps Kick-Back	3-5 lbs	Standing Calf Raise	60% max
Latissimus Pull-Down (Front)	65% max	Back Extension	BW	Seated Row	60% max
Dumbbell Bench Press	65% max	Forearm Pronation	3-5 lbs	Push Up	25 reps
Seated Row	65% max	Forearm Supination	3-5 lbs	Bent Over Row	10-20 lbs
Biceps Curl	65% max	RTC Exercises	1 x 10 reps	Biceps Curl	60% max
Triceps Extension	BAR + 5-10 lbs	Plyometrics (Series B)	2 x 10 reps	Triceps Press Down	50-55 lbs
RTC Exercises (NP)	1 x 10 reps	Crunch	2 x 60 reps	RTC Exercises	1 x 10 reps
Plyometrics (Series A)	2 x 10 reps	Reverse Crunch	2 x 60 reps	Plyometrics (Series A)	2 x 10 reps
Crunch (NP)	2 x 60 reps	Sprinting	10 x 60 yds	Crunch	2 x 60 reps
Weighted Crunch (NP)	2 x 60 reps			Crunch With Twist	2 x 60 reps
Bike/Run/Stairmaster	35 mins			Bike/Run/Stairmaster	35 mins

**WEEK 21 POWER DAY (3 SETS x 6 REPS)**

(3 SETS x 12 REPS)

(3 SETS x 12 REPS)

MONDAY		WEDNESDAY		FRIDAY	
Squat	70% max	Latissimus Pull-Down (Front)	60% max	Squat	60% max
Leg Press	70% max	Reverse Flys	Tubing	Leg Press	60% max
Forward Jump Lunge	10-15 lbs	Dumbbell Incline Press	60% max	Step-Up	20 LBS
Knee Extension	70% max	Hammer Curl	60% max	Side Lunge	BAR + 15 lbs
Leg Curl	70% max	Triceps Kick-Back	3-5 lbs	Standing Calf Raise	60% max
Latissimus Pull-Down (Front)	70% max	Back Extension	BW	Seated Row	60% max
Dumbbell Bench Press	70% max	Forearm Pronation	3-5 lbs	Push Up	25 reps
Seated Row	70% max	Forearm Supination	3-5 lbs	Bent Over Row	10-20 lbs
Biceps Curl	70% max	RTC Exercises	1 x 10 reps	Biceps Curl	60% max
Triceps Extension	BAR + 10-15 lbs	Plyometrics (Series A)	2 x 10 reps	Triceps Press Down	50-55 lbs
RTC Exercises (NP)	1 x 10 reps	Crunch	2 x 60 reps	RTC Exercises	1 x 10 reps
Plyometrics (Series B)	2 x 10 reps	Reverse Crunch	2 x 60 reps	Plyometrics (Series B)	2 x 10 reps
Crunch (NP)	2 x 60 reps	Sprinting	12 x 60 yds	Crunch	2 x 60 reps
Weighted Crunch (NP)	2 x 60 reps			Crunch With Twist	2 x 60 reps
Bike/Run/Stairmaster	40 mins			Bike/Run/Stairmaster	40 mins

**WEEK 22 POWER DAY (3 SETS x 4 REPS)**

(3 SETS x 15 REPS)

(3 SETS x 15 REPS)

MONDAY		WEDNESDAY		FRIDAY	
Squat	75% max	Latissimus Pull-Down (Front)	60% max	Squat	60% max
Leg Press	75% max	Reverse Flys	Tubing	Leg Press	60% max
Forward Jump Lunge	15-20 lbs	Dumbbell Incline Press	60% max	Step-Up	20 LBS
Knee Extension	75% max	Hammer Curl	60% max	Side Lunge	BAR + 15 lbs
Leg Curl	75% max	Triceps Kick-Back	3-5 lbs	Standing Calf Raise	60% max
Latissimus Pull-Down (Front)	75% max	Back Extension	BW	Seated Row	60% max
Dumbbell Bench Press	75% max	Forearm Pronation	3-5 lbs	Push Up	25 reps
Seated Row	75% max	Forearm Supination	3-5 lbs	Bent Over Row	10-20 lbs
Biceps Curl	75% max	RTC Exercises	1 x 10 reps	Biceps Curl	60% max
Triceps Extension	BAR + 15-20 lbs	Plyometrics (Series B)	2 x 10 reps	Triceps Press Down	50-55 lbs
RTC Exercises (NP)	1 x 10 reps	Crunch	2 x 60 reps	RTC Exercises	1 x 10 reps
Plyometrics (Series A)	2 x 10 reps	Reverse Crunch	2 x 60 reps	Plyometrics (Series A)	2 x 10 reps
Crunch (NP)	2 x 60 reps	Sprinting	15 x 60 yds	Crunch	2 x 60 reps
Weighted Crunch (NP)	2 x 60 reps			Crunch With Twist	2 x 60 reps
Bike/Run/Stairmaster	45 mins			Bike/Run/Stairmaster	45 mins



# Competition Period

## Goals

The goal of this period is to bring the athlete to peak performance. Flexibility, strength, power, and endurance are maintained or possibly increased to prevent tissue breakdown and subsequent injuries.

## Flexibility

As in the hypertrophy/endurance phase. Partner stretches may be used.

## Aerobic / Anaerobic

Maintenance of cardiovascular endurance continues to include running, stationary bicycle, or stairmaster for periods of 15-30 minutes, 2-3 times per week. Sprinting continues 2 days a week. Rest 15-45 seconds in between sprints.

## Strength

For starting pitchers, sprinting workouts and weight training are incorporated into a five-day cycle to coincide with their position in the pitching rotation. The athlete is allowed to rest the day after pitching except for some preventative exercises, then performs the outlined workouts the next three days. Light throwing is allowed the day before competition. Use light weights and low intensities (e.g., 3-8 pound dumbbells) for arm exercises. For relief pitchers, the cycle will vary because of possibility of pitching back-to-back days. If the suggested weight is too heavy, decrease the weight to achieve the recommended repetitions. Rest approximately 30 to 60 seconds in between sets.

## Rotator Cuff (RTC) Exercises

The tubing and weighted rotator cuff exercises are performed at least four days a week. When choosing a desired weight, be sure the exercise can still be performed comfortably without any pain while maintaining the correct exercise technique. RTC exercises are not to be exercised to failure or "burnout". Refer to the appendix for suggested RTC exercises.

## Plyometrics

Plyometric drills are performed at least twice per week. Refer to the appendix for suggested plyometric exercises.

## Coordination / Skill

None in this period.

<b>GAMEDAY</b>	
<b>BEFORE PITCHING</b>	
RTC Exercises (#1- #6)	1 x 10 reps
<b>AFTER PITCHING</b>	
RTC Exercises (#1- #6)	1 x 10 reps
Bike/Run/Stairmaster	15-20 mins

<b>DAY 1 AFTER GAME</b>	
RTC Exercises	1 x 10 reps
Plyometrics (Series A)	2 x 10 reps
Crunch	2 x 50 reps
Reverse Crunch	2 x 50 reps
Sprinting	10 x 60 yds

<b>DAY 2 AFTER GAME</b>		
Seated Row	55-60% max	2 x 10 reps
Latissimus Pull-Down (Front)	55-60% max	2 x 10 reps
Dumbbell Bench Press	55-60% max	2 x 10 reps
Leg Press	55-60% max	2 x 10 reps
Forward Lunge	15 lbs	2 x 10 reps
Hammer Curl	55-60% max	2 x 10 reps
Triceps Press Down	45-50 lbs	2 x 10 reps
Rice Bucket	30-45 sec	
Bike/Run/Stairmaster	20-30 mins	

<b>DAY 3 AFTER GAME</b>	
Plyometrics (Series B)	2 x 10 reps
Crunch	2 x 50 reps
Weighted Crunch	2 x 50 reps
Sprinting	10 x 60 yds

<b>DAY 4 AFTER GAME</b>		
Bent Over Row	10-20 lbs	2 x 10 reps
Reverse Flys	Tubing	2 x 10 reps
Dumbbell Incline Press	55-60% max	2 x 10 reps
Squat	55-60% max	2 x 10 reps
Knee Extension	55-60% max	2 x 10 reps
Biceps Curl	55-60% max	2 x 10 reps
Triceps Kick-Back	5 lbs	2 x 10 reps
Rice Bucket	30-45 sec	
RTC Exercises	1 x 10 reps	
Plyometrics (Series A)	2 x 10 reps	
Bike/Run/Stairmaster	10 mins	

# Active Rest Period

## **Goals**

The goal of this period is to allow the athlete to recuperate mentally and physically from the competitive season. It is important that the athlete maintain a basic level of fitness, which can be attained through physical activities that he enjoys. Sport specific exercise (e.g. baseball, softball, throwing activities, racquet sports) should be avoided. Active rest should last between 4-6 weeks post-competition.

## **Flexibility**

As in the hypertrophy/endurance phase.

## **Aerobic / Anaerobic**

In order to prevent a major loss of conditioning due to inactivity, the athlete should perform activities which are enjoyable, such as golf, swimming, jogging, basketball, or aerobics. These activities should be performed for 20-45 minutes at a frequency of at least three times per week.

## **Strength**

None in this period.

## **Plyometrics**

None in this period.

## **Coordination / Skill**

None in this period.

# Youth, High School, and College Pitchers

While the conditioning program outlined is based upon the minor league or professional pitcher, it may be used by the younger developing pitcher. To do so, the length of the periods will need to be modified based upon the starting date and length of the competition period. Some scholastic athletes participate in more than one sport; therefore, the content and duration of each phase must be individualized to the athlete's needs.

Little research is available regarding conditioning programs for adolescents, and the topic of strength training in adolescents has been controversial. In the past, it was believed that resistance training pre-disposed skeletally immature athletes to injury and that strength gains were minimal. Now it has been proven that resistance exercise with proper technique and supervision, does not increase the risk of musculoskeletal injury. Also, it has been shown that adolescents can increase their strength. Strength gains do not occur solely by muscle fibers becoming larger. Strength increases also occur when the nervous system becomes more efficient at causing the muscle fibers to contract.

Exercises for the pre-adolescent and adolescent athlete may vary depending on age, physical maturity, and experience of each individual. Initially, the exercises are designed to gradually adapt the young athlete to the stresses of strength and conditioning programs. Light weight and high volume exercises should be performed for a variety of large muscle groups. As the athlete matures and becomes more experienced, greater weight may be used, as well as exercises for smaller muscle groups and sport specific drills.

Plyometric exercise can also be beneficial to adolescents, but this type of training needs to be monitored carefully. The quick stretch of the muscle, which helps increase muscle contraction, also places large stresses on tendons. Inflammatory conditions of the tendon or tendon insertion, such as Osgood Schlotters disease are common in adolescents; therefore, plyometrics must be used with caution. If an athlete begins to complain or unusual musculoskeletal pain after starting plyometrics, these exercises should be taken out of the athlete's conditioning program.

It is important that the adolescent's training program be supervised to insure proper lifting technique and proper progression of resistance. A 1 RM test should not be used when setting up the program. Instead, have the athlete choose a weight that he feels he can lift 10 times. If the athlete is unable to finish the set, allow time for recovery; decrease the weight by 10%, and attempt 10 repetitions with the new weight. Continue this cycle until the athlete has found his 10 RM. When beginning resistance training in the preparation period cycle 1, the athlete will decrease the weight by 10% of his 10 RM.

The following are sample periodized schedules for athletes of various levels:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>Professional Pitcher</b>	Preparation Period	↑	Pre-Season Period	Competitive Period	↑	↑	↑	↑	↑	Active Rest	↑	Preparation Period
<b>High School or College</b>	Pre-Season Period	↑	Competitive Period	↑	Active Rest	↑	Preparation Period	Preparation Period	↑	↑	↑	↑
<b>2 Sport High School Athlete Fall/Spring</b>	Preparation Period	Pre-Season Period	Competitive Period	↑	Active Rest	Active Rest	Preparation Period	Pre-Season Period	Competitive Period	↑	Active Rest	Preparation Period
<b>College Athlete with Fall / Spring Baseball</b>	Preparation Period	Pre-Season Period	Competitive Period	↑	↑	Active Rest	Preparation Period	Pre-Season Period	Competitive Period	↑	↑	Active Rest

# Stretching and Warm-Up

Prior to warm-up activities, the athlete must go through their stretching routine. Stretch the larger muscle groups first and then the smaller muscles. Stretch the lower body muscles before you stretch the upper body. It is also very important to stretch after your workout is complete. The post-exercise stretch lengthens the muscles back out and keeps the pitcher from becoming tight.

A proper warm-up should be performed before each workout in order to prepare the body for the activity and to minimize the risk of injury. Warm-up activities should increase blood flow to the muscles and increase the heart rate. Several different warm-up programs are acceptable, but a few suggestions will be given here.

In order to increase heart rate and core body temperature, five to ten minutes of an aerobic activity is necessary. This may include a slow jog, stationary bicycle, or a stairmaster.

To increase the blood flow to muscles, active movements must be performed by the target muscles. Each exercise should be performed for 20 to 30 seconds.

- Upper Body Warm-Up:
  - Arm Circles (forward and backward)
  - Slapping Your Back
- Trunk Warm-Up
  - Standing Trunk Twist
  - Windmill (touch the outside of each foot)
  - Lateral Bends
- Lower Body Warm-Up
  - Side Lunge
  - Half Squat
  - Heel-to-Toe Rock
  - Knee Lifts

A dynamic warm-up can also be included in the general warm-up, especially if the workout will include dynamic activities. Each dynamic exercise should be performed 3 to 5 times for a distance of 20 to 30 yards. Examples of dynamic activities are:

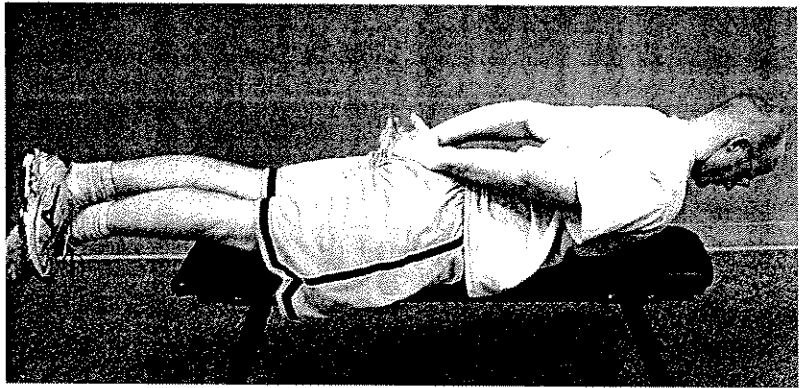
1. High Knees
2. Butt Kicks
3. Straight Leg Shuffle
4. Side Shuffle
5. Cariocas
6. Skipping (forward and backward)

Flexibility exercises should be performed immediately after the warm-up is completed.

# Strengthening Exercises

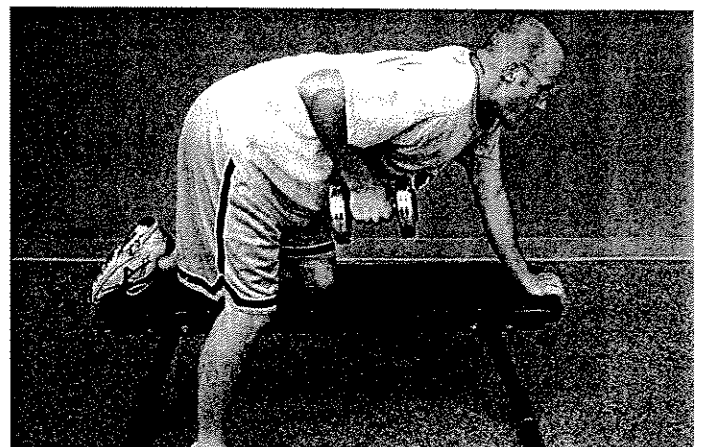
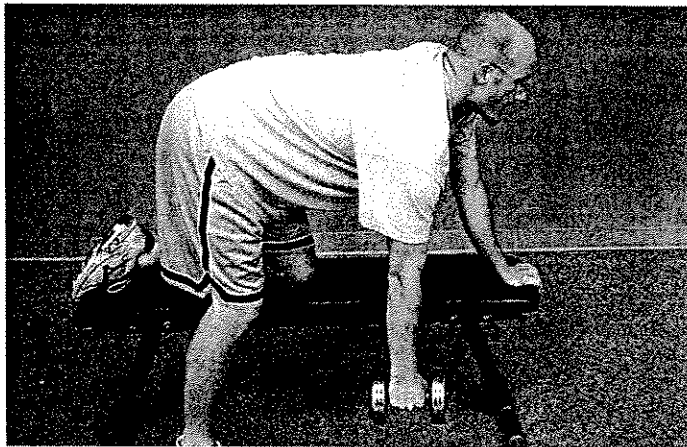
## 1. BACK EXTENSION

Lie on the floor or a bench face down with arms at side. Lift chest and shoulders off the floor, arching the low back.



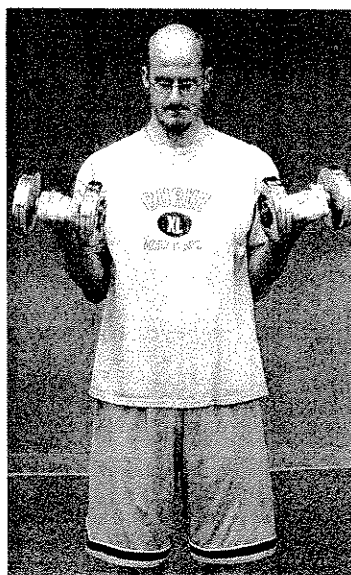
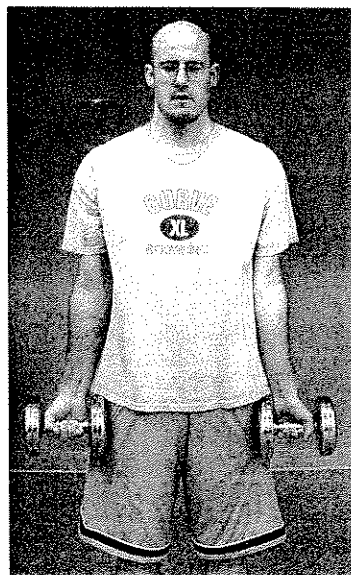
## 2. BENT-OVER ROWS

Hold a dumbbell in one hand. Kneel with opposite leg on bench and lean forward so free hand supports upper body. Allow weighted hand to straighten to floor. Pull elbow up toward the ceiling. Slowly lower.



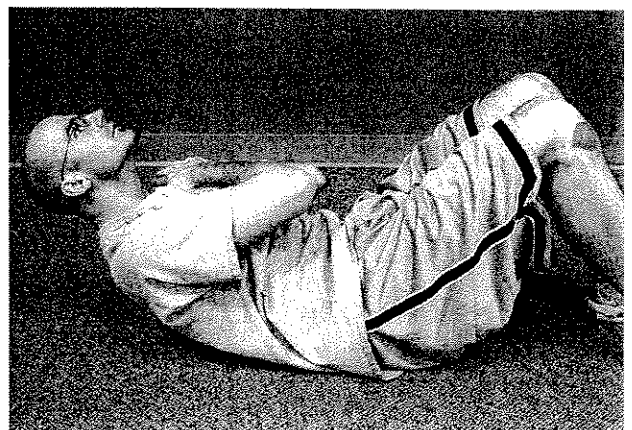
## 3. BICEPS CURL

Stand with a dumbbell in each hand, palms facing in toward body. Rotate palms up as you bend your elbow and pull the weight up. Slowly lower to starting position.



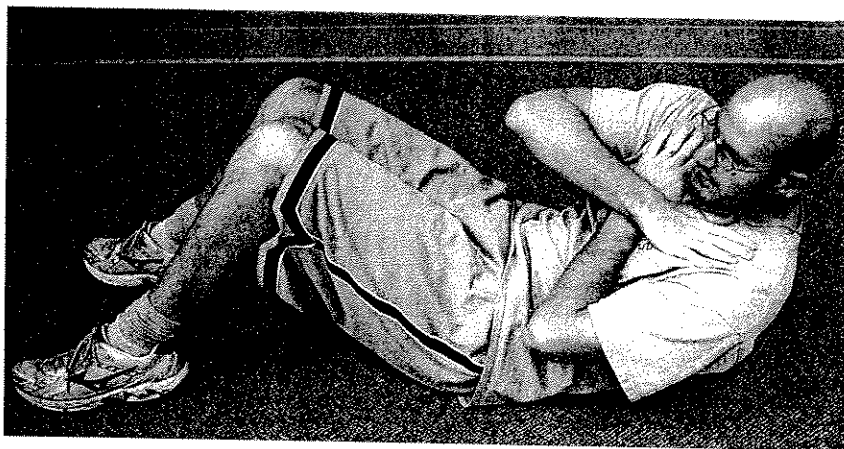
## 4. CRUNCHES

Lie on the floor on your back with knees bent and hands over chest. Keep chin up toward the ceiling as you raise your chest until your shoulder blades lift off the floor. Slowly lower back to floor.



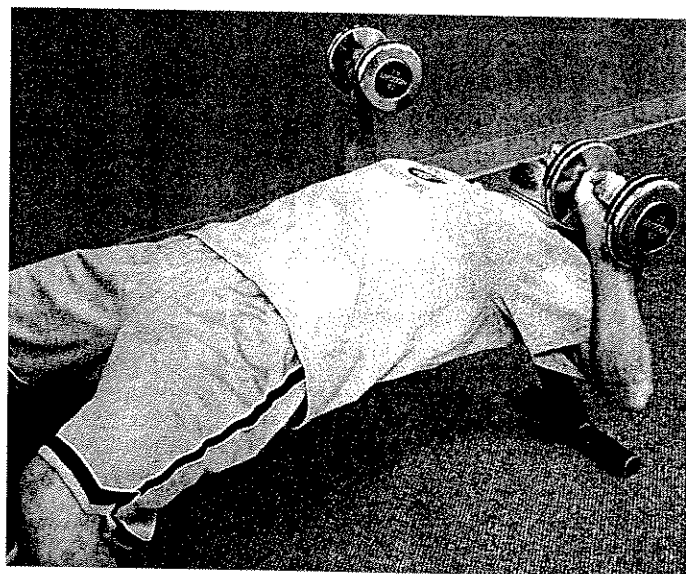
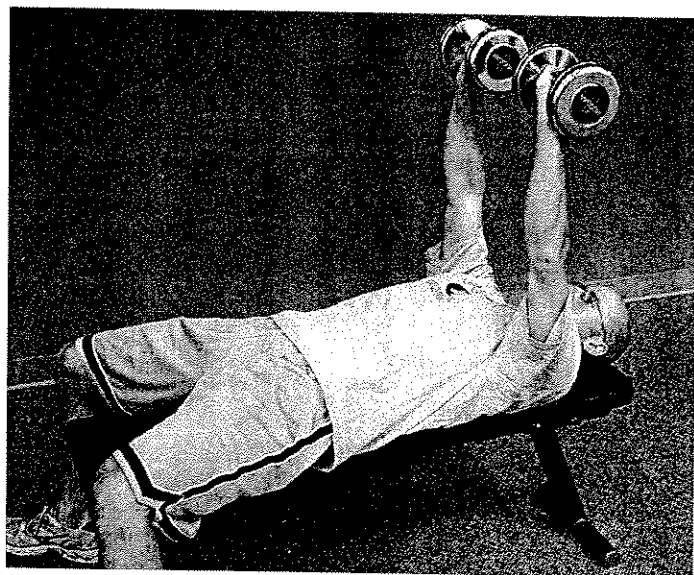
### 5. CRUNCH WITH TWIST

Start in the same position as for crunches. As you lift up, rotate upper body toward one side, then rotate back to center as your lower back to floor. Alternate sides.



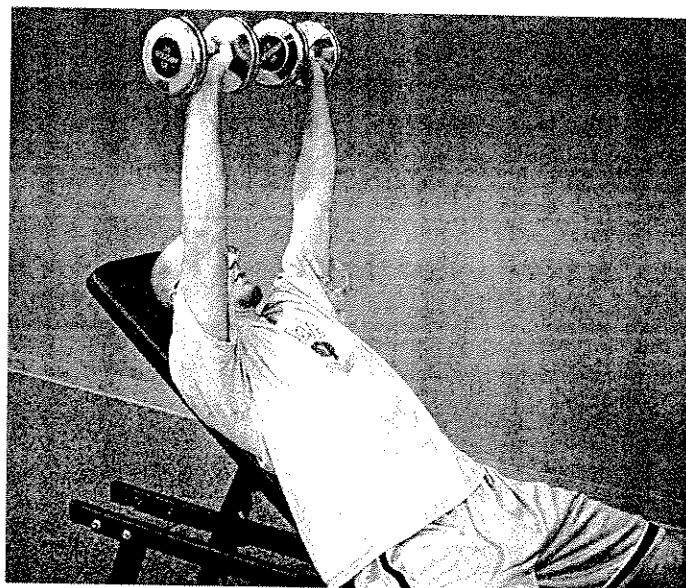
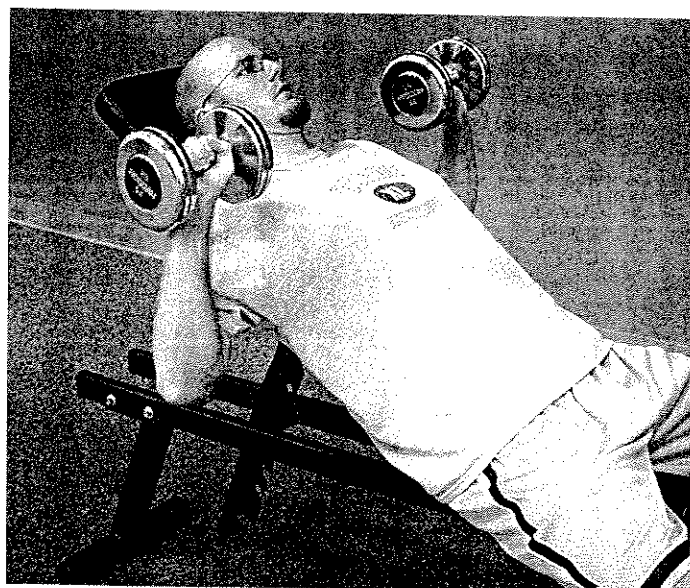
### 6. DUMBBELL BENCH PRESS

Lie on back on a bench. Hold dumbbell weights in each hand with arms up toward ceiling and elbows straight. Palms should be turned out. Allow elbows to bend so that dumbbells approach chest, then push back to starting position.



### 7. DUMBBELL INCLINE PRESS

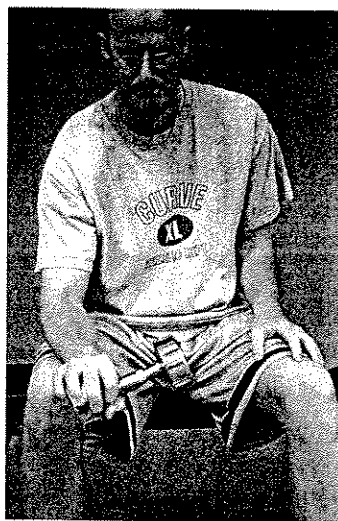
Sit on an incline bench with a dumbbell in each hand. Start with weights by shoulders, palms facing forward. Press forward from shoulders until arms are straight. Slowly lower.





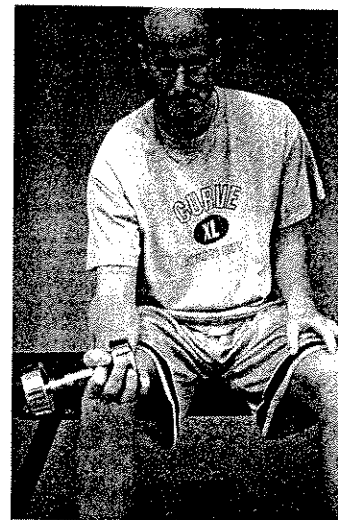
### 8. FOREARM PRONATION

Sit with forearm supported on your knee or across the corner of a table. Hold a dumbbell with your thumb pointing up toward ceiling. Rotate palm down. Return to starting position.



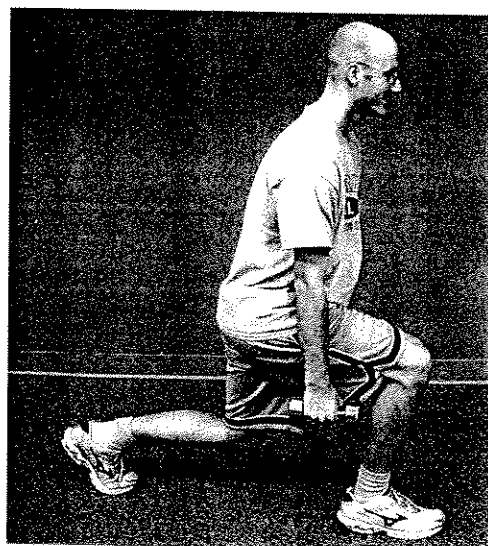
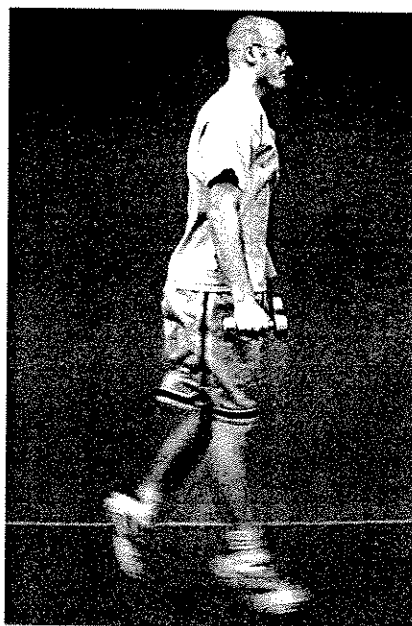
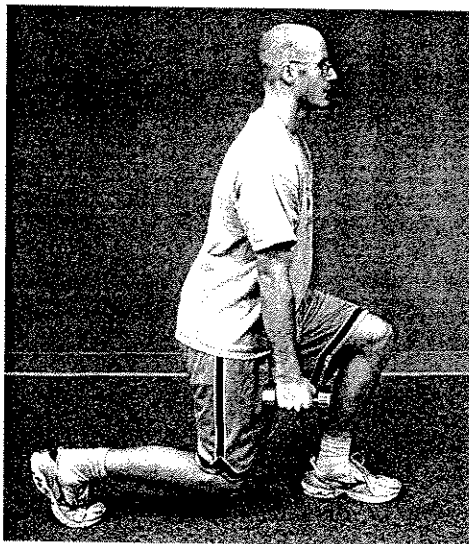
### 9. FOREARM SUPINATION

Sit with forearm supported on your knee or across the corner of a table. Start with arm in a neutral position (thumb up toward ceiling). Rotate palm up. Return to starting position.



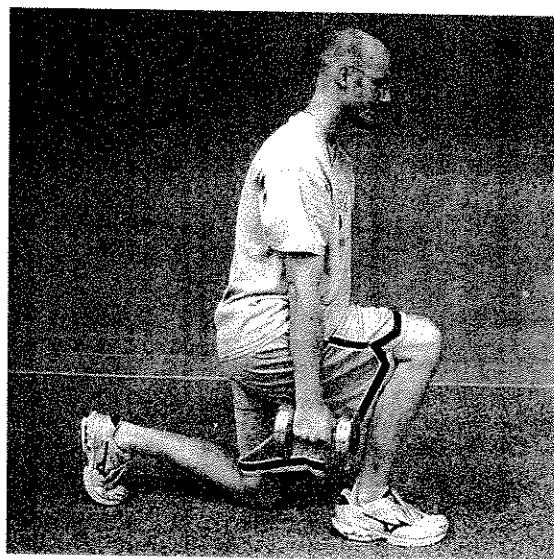
### 10. FORWARD JUMP LUNGE

Take one large step forward with your left leg. Slowly lower your body straight down, allowing the back leg to bend and stopping when a 90 degree angle is reached with the front leg. Jump up and alternate legs in the air and land with the right leg forward. Repeat.



### 11. FORWARD LUNGE

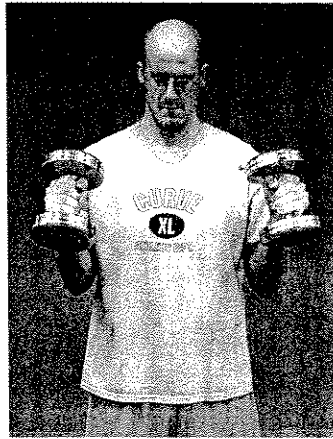
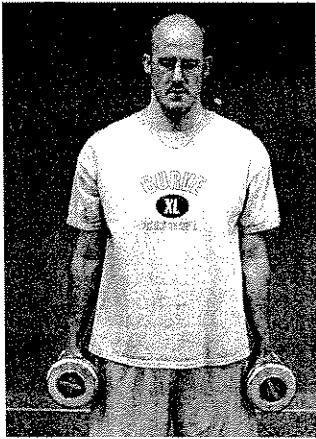
Take one large step forward with your right leg. Slowly lower your body straight down, allowing the back leg to bend and stopping when a 90 degree angle is reached with the front leg. Push body up, stepping back to the starting position. Alternate sides.





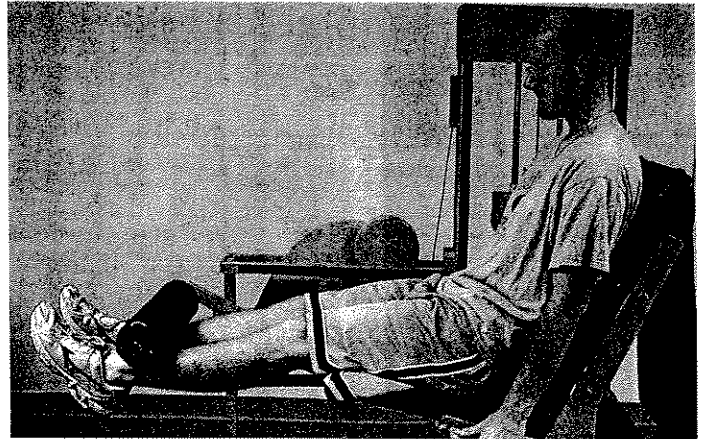
## 12. HAMMER CURL

Stand with a dumbbell in each hand, palms facing in toward body. Keep palms facing the body as you bend your elbow and pull the weight up. Slowly lower to starting position.



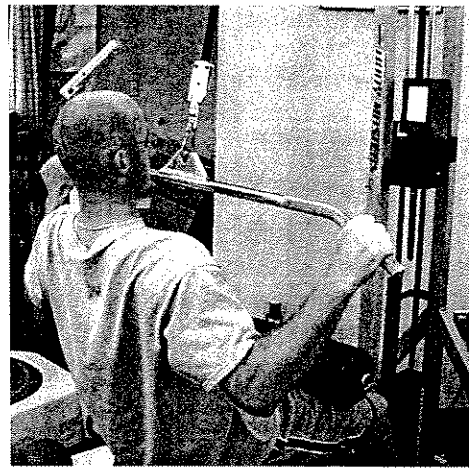
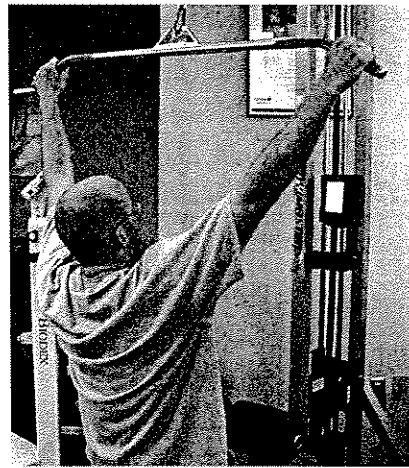
## 13. KNEE EXTENSION

Sit on a knee extension machine with legs behind the pad. Kick up, stopping just before your knees are locked out. Slowly lower weight. Perform this exercise in a smaller range if you experience knee pain.



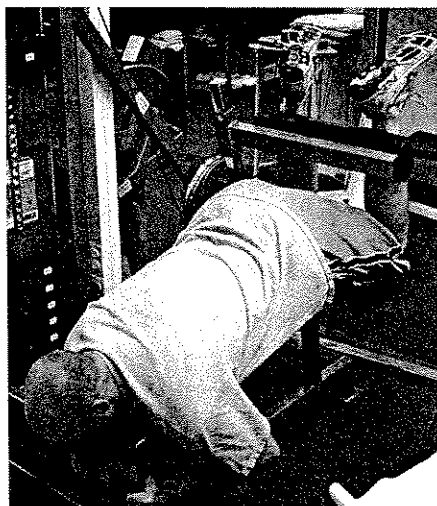
## 14. LATISSIMUS PULL-DOWNS

Sit on a pull down machine. Lean upper body back about 45 degrees with elbows slightly bent. Pull bar in front of chest, then return to starting position. This exercise should not be performed by pulling the bar behind the neck.



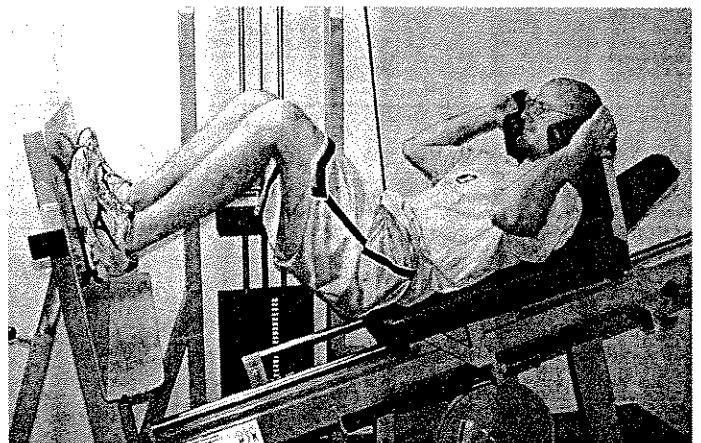
## 15. LEG CURL

Lie face down on a leg curl machine. Start with feet under the pad and legs straight. Lift weight by bringing heels toward the buttocks as far as is comfortable. Slowly lower weight.



## 16. LEG PRESS

Lie on your back on a leg press machine. Start with your knees bent to about 90 degrees. Push back until legs are almost fully straightened, but not locked out. Slowly lower to starting position.



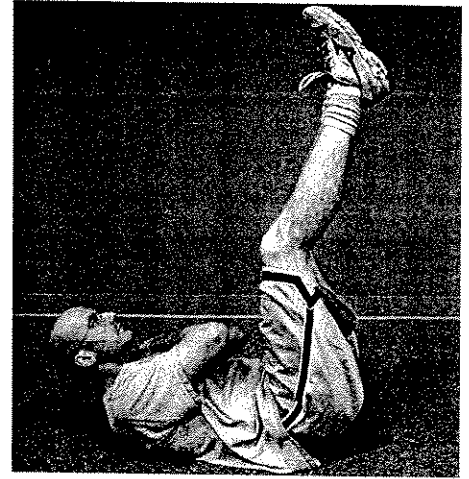
### 17. PUSH-UPS

Start in the traditional push-up position with body weight supported on your hands and toes. Slowly lower body to floor, keeping your back straight. Return to starting position.



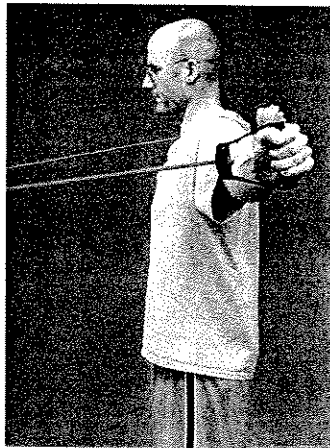
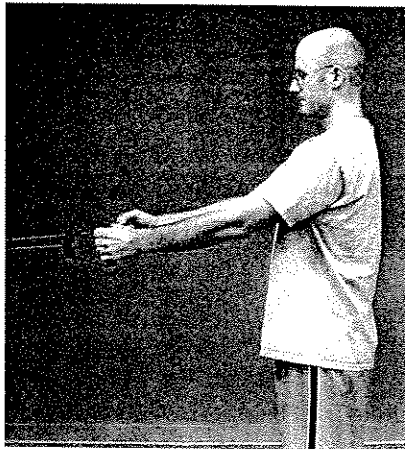
### 18. REVERSE CRUNCHES

Start in the same position as for crunches. Keep upper body on floor as you pull knees in toward chest. Slowly lower legs back to starting position.



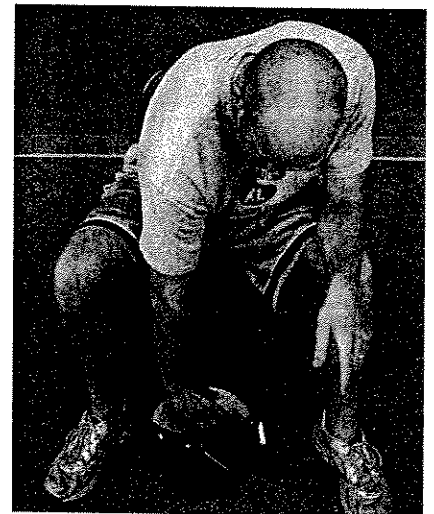
### 19. REVERSE FLYS

Face the direction where the tubing is coming from. Grab the tubing with arms stretched out to the wall. Keeping the arms only slightly bent, pull the tubing back to shoulder level (pinching the shoulder blades together). Return to starting position.



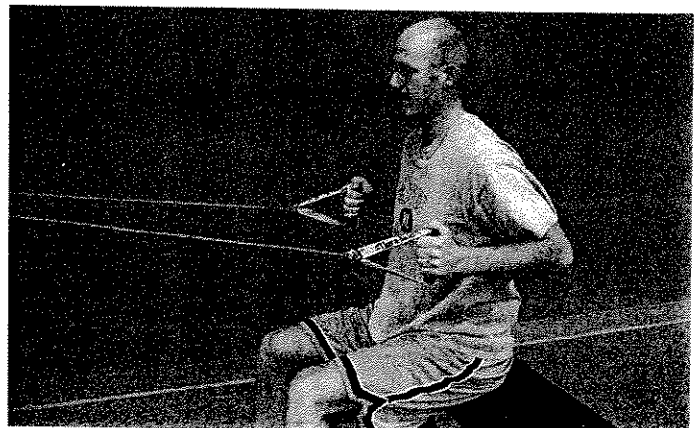
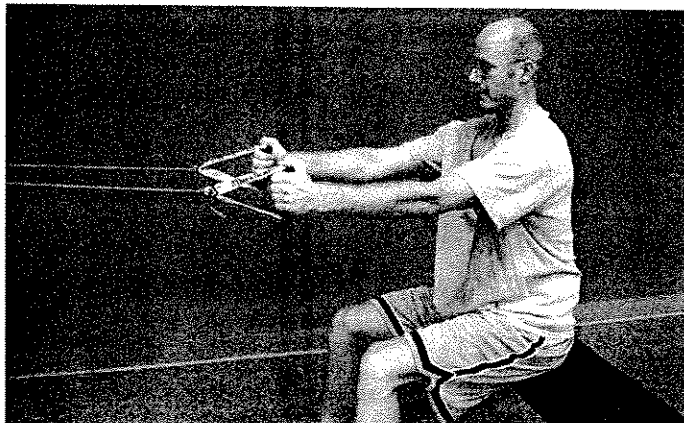
### 20. RICE BUCKET

Sit with hand in bucket of dried rice filled up past your wrist. Dig hand into rice while squeezing the rice and supinating the forearm.



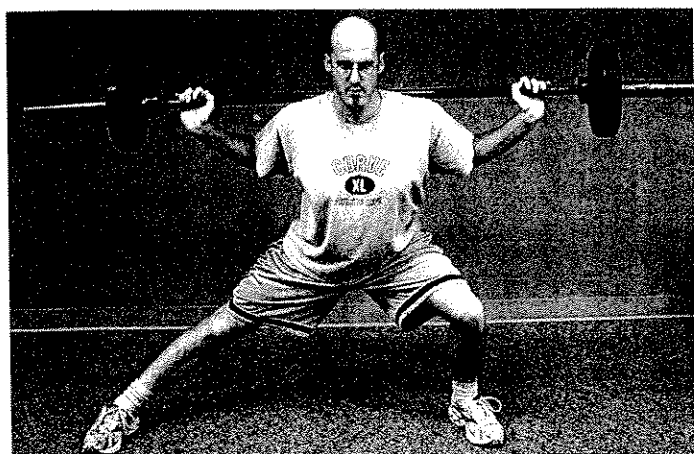
### 21. SEATED ROWS

Sit on the floor or bench with knees straight. Grip the handles of a cable pulley or of tubing that is affixed in front of you with your elbows in at your side. Pull elbows back, squeezing shoulder blades together. Slowly return to starting position.



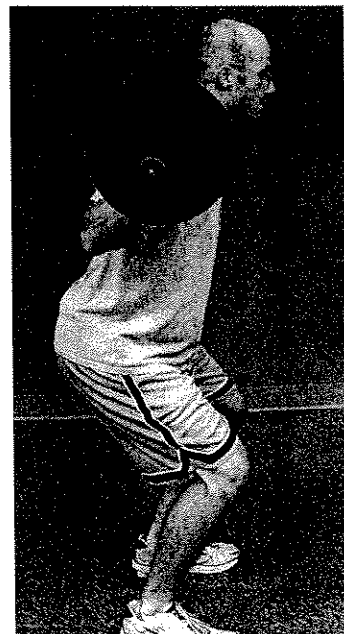
## 22. SIDE LUNGE

Stand with feet slightly wider than shoulder width apart. Allow feet to rotate out slightly. Shift weight over right leg, allowing right knee to bend. Return to center. Repeat to left side. Alternate sides.



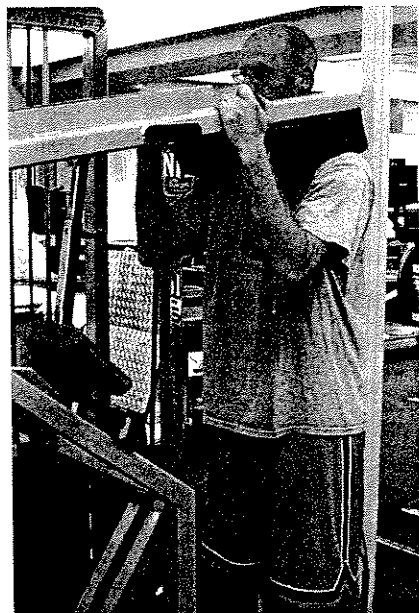
## 23. SQUAT

Perform a traditional squat with a barbell placed across your shoulders. Keep trunk upright during the squat. Feet should be positioned with toes pointed forward or slightly toed-out. Limit the depth of your squat if you experience knee pain.



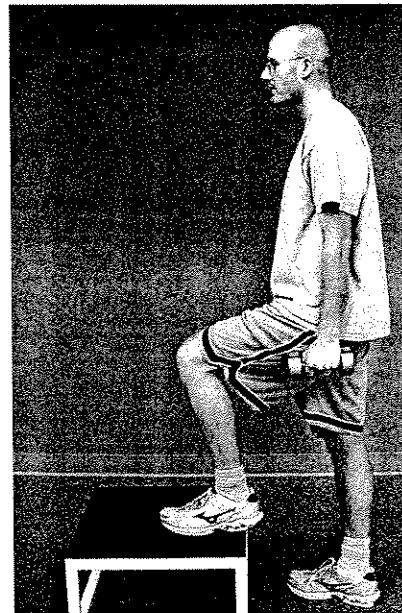
## 24. STANDING CALF RAISE

Stand under the padding of a calf raise machine. Raise your heels until you are on the balls of your feet. Slowly lower.



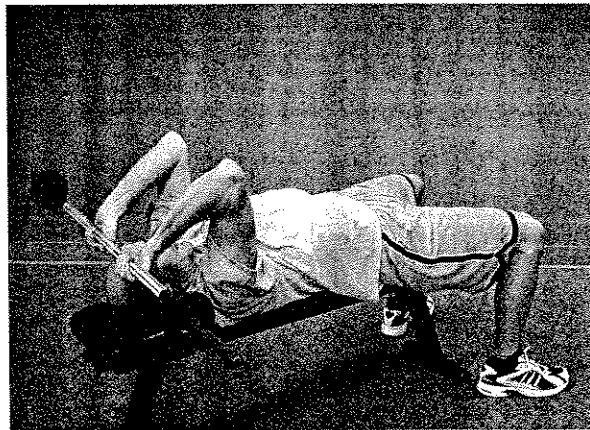
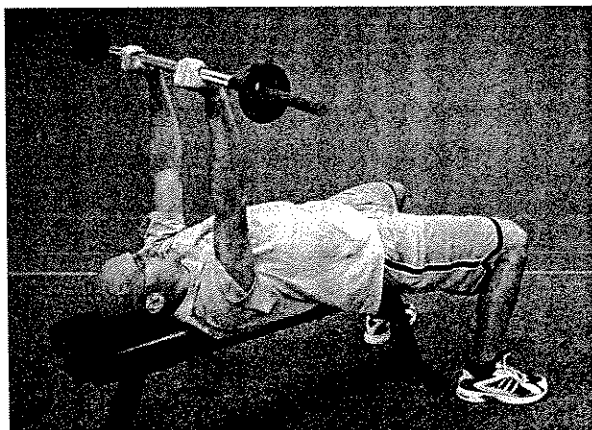
## 25. STEP-UP

Hold a dumbbell in each hand. Step up on an 8 to 12 inch box, leading with your left leg. Step down leading with your right leg. Repeat exercise going up with your right leg and coming down on your left leg. Continue alternating sides.



## 26. TRICEPS EXTENSION

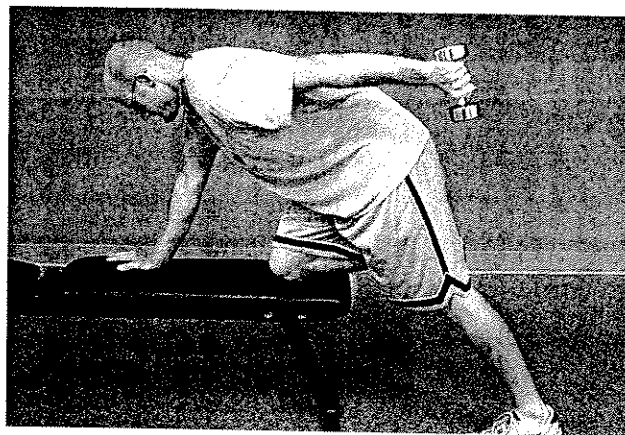
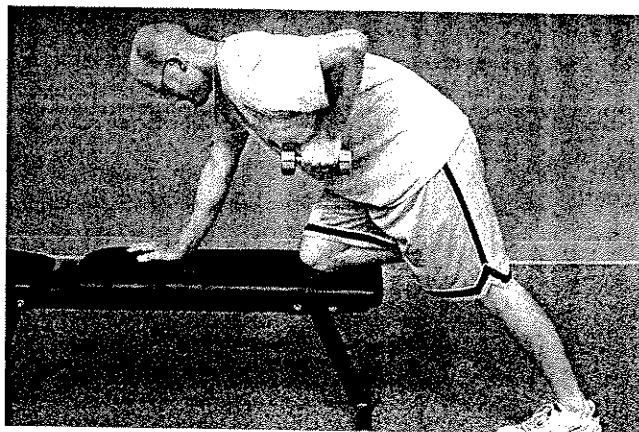
Lie back on a bench. Hold a weighted bar (EZ curl bar: NOT Olympic bar) in both hands, arms pointing up to the ceiling and palms turned away from body. Keep shoulders still as you allow elbows to bend so that the bar approaches your head. Return to the starting position.





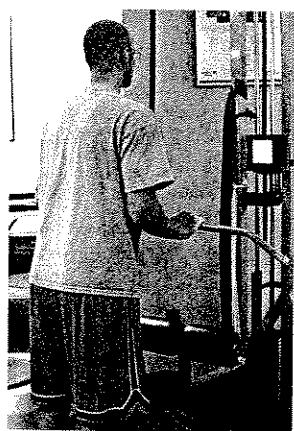
### 27. TRICEPS KICK-BACK

Hold a dumbbell in one hand. Kneel on a bench with the opposite knee, then lean forward from your waist and support your body weight on your free hand. Keep upper arm of weighted hand fixed to your side, and allow the elbow to bend to 90 degrees. Push hand back until elbow is straight. Slowly lower to starting position.



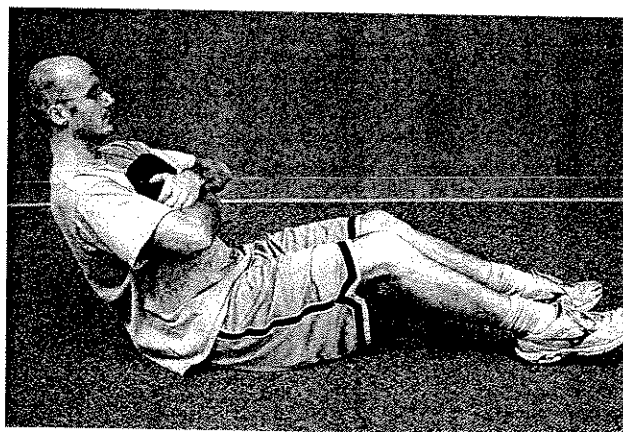
### 28. TRICEPS PRESSDOWN

Standing in front of a pull down machine, grab the bar or rope with hands close together. Bring bar down until arms are parallel to the floor. Start exercise from this position. Keeping elbows stationary, press the bar or rope down until full elbow extension. Return slowly to starting position.



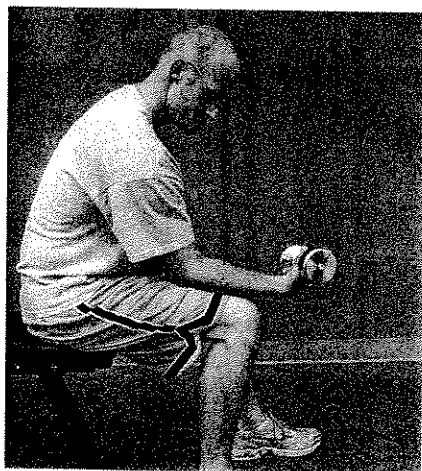
### 29. WEIGHTED CRUNCH

Hold a 25 to 45 lb. plate against your chest as you perform a crunch.



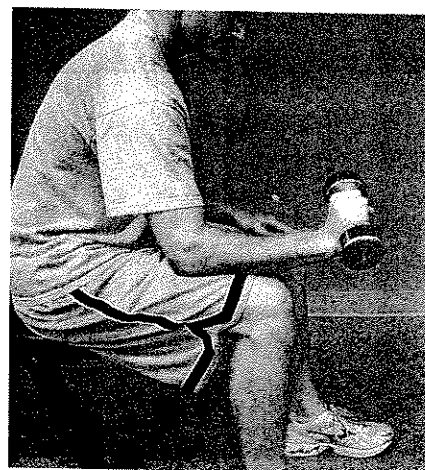
### 30. WRIST CURLS

Sit with forearm palm up on your knee or across the corner of a table. Holding a small dumbbell weight, start with hand pointing down toward floor. Curl wrist to raise weight up. Slowly lower. Can also be performed as a Reverse Wrist Curl (shown to the right).



### 31. REVERSE WRIST CURLS

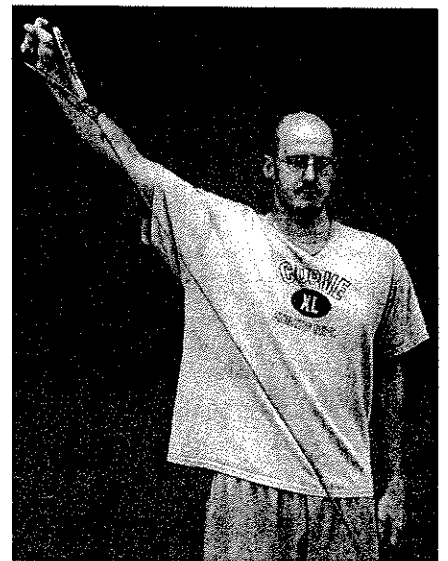
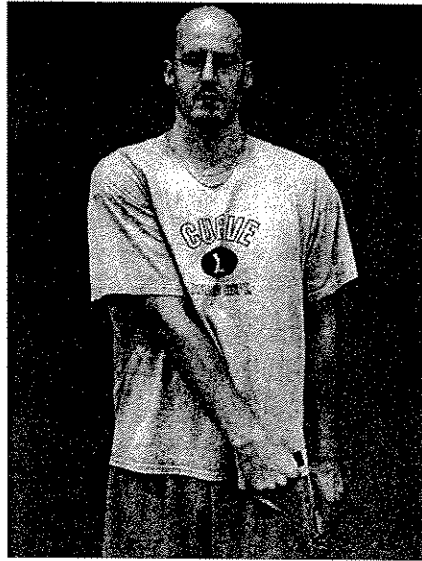
Sit with forearm palm down on your knee or across the corner of a table. Holding a small dumbbell weight, start with hand pointing down toward floor. Curl wrist to raise weight up. Slowly lower.



# Rotator Cuff (RTC) Exercises

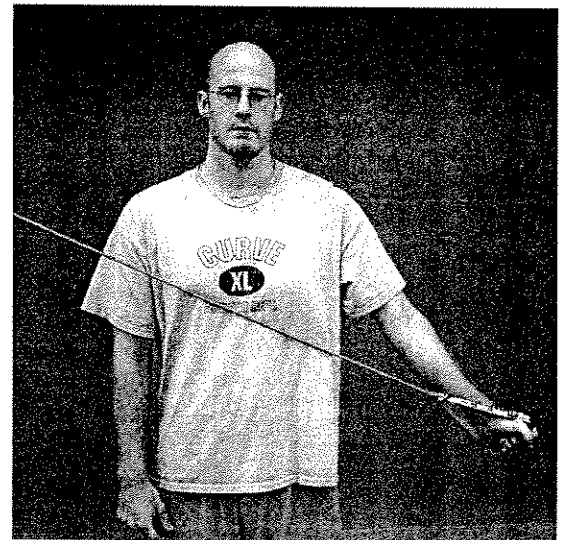
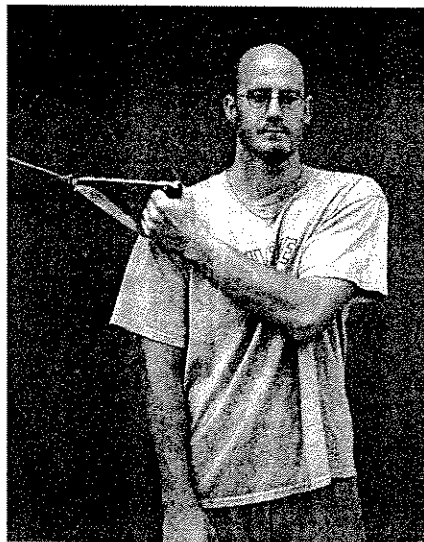
## 1. TUBING D2 PNF FLEXION

Affix surgical tubing to the floor near opposite foot. Stand facing the tubing. Involved hand will grip tubing handle across body, near opposite hip, with thumb pointing in toward hip. Rotate thumb so that it points behind you as you raise your arm toward the ceiling. Rotate thumb back in toward pocket as you return to the starting position.



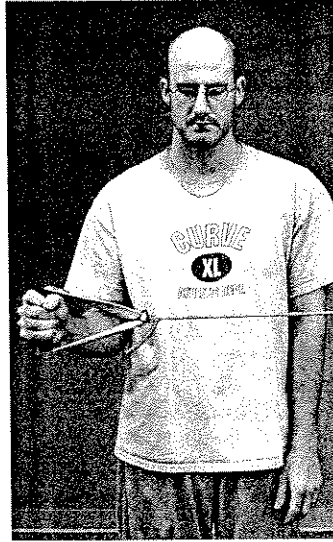
## 2. TUBING D2 PNF EXTENSION

Affix surgical tubing above shoulder height. Stand with back to tubing. Hold tubing in hand with arm pointed toward ceiling and thumb pointing behind you. Rotate thumb in toward pocket as you pull the tubing down toward opposite pocket. Rotate thumb back behind you as you return to the starting position.



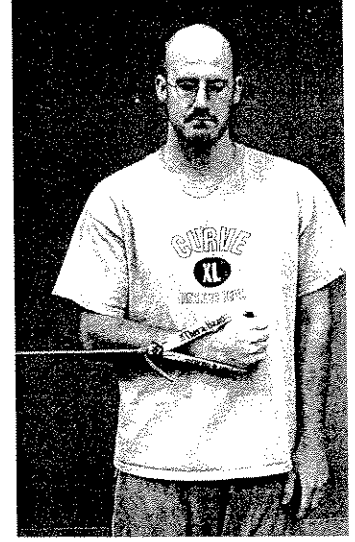
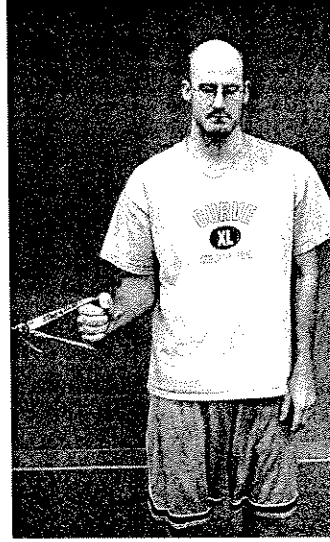
### 3. TUBING ER @ 0 DEGREES OF ABDUCTION

Affix a piece of surgical tubing to the wall at elbow height. Stand with your pitching arm opposite the tubing side with shoulder abducted to 0 degrees, elbow bent to 90 degrees and hand pointing toward the tubing. Keeping elbow tucked, quickly rotate forearm until hand is pointing straight ahead, then quickly return to the starting position. Pause slightly at the starting position.



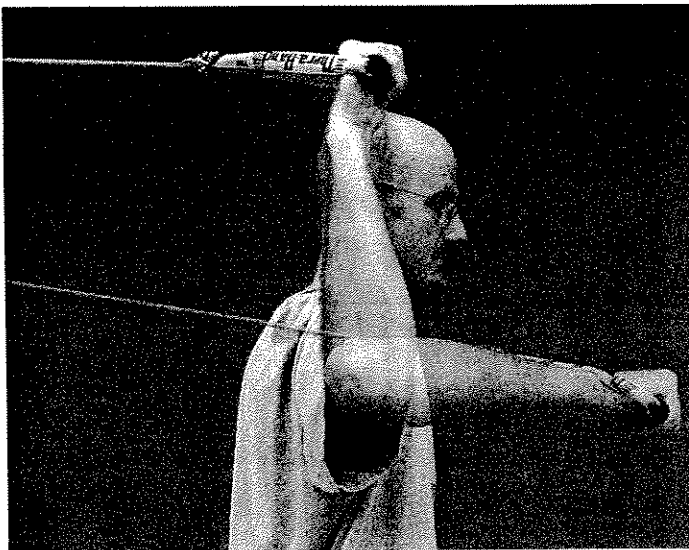
### 4. TUBING IR @ 0 DEGREES OF ABDUCTION

Affix a piece of surgical tubing to the wall at elbow height. Stand with your pitching arm on the tubing side with shoulder abducted to 0 degrees, elbow bent to 90 degrees and hand pointing straight ahead. Keeping elbow tucked, quickly rotate forearm until palm is facing the body, then quickly return to the starting position. Pause slightly at the starting position.



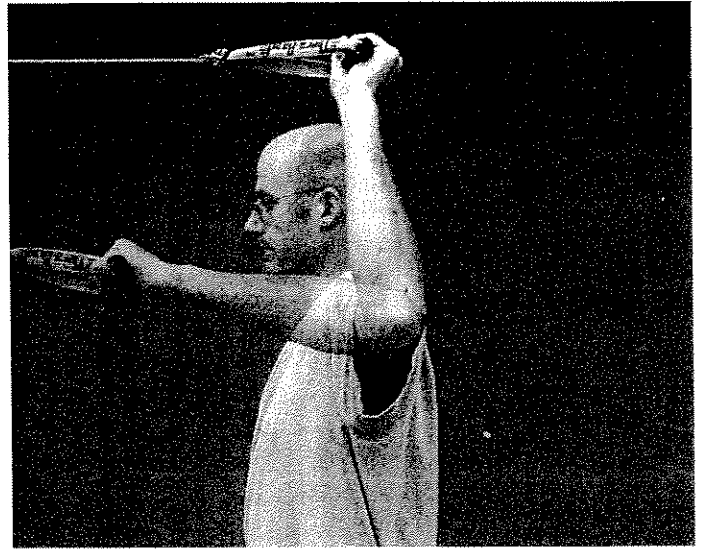
### 5. TUBING IR @ 90 DEGREES OF ABDUCTION

Affix a piece of surgical tubing to the wall at about head height. Stand with back to tubing, shoulder abducted to 90 degrees, elbow bent to 90 degrees, and hand pointing up to the ceiling. Keeping shoulder abducted, quickly rotate shoulder forward until forearm is parallel with the ground, then quickly return to the starting position. Pause slightly at the starting position.



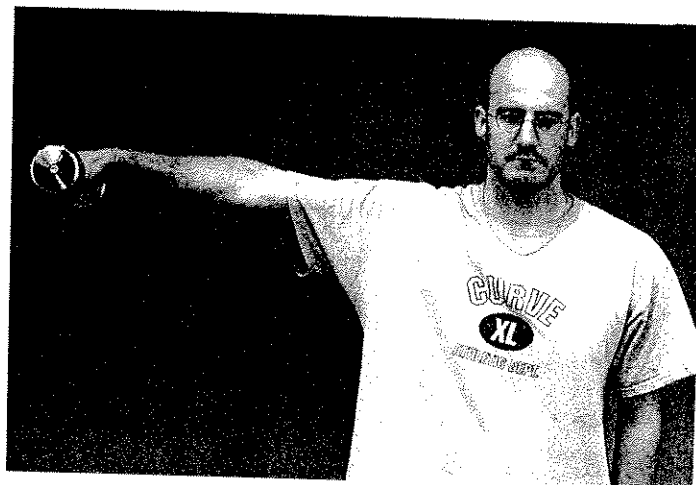
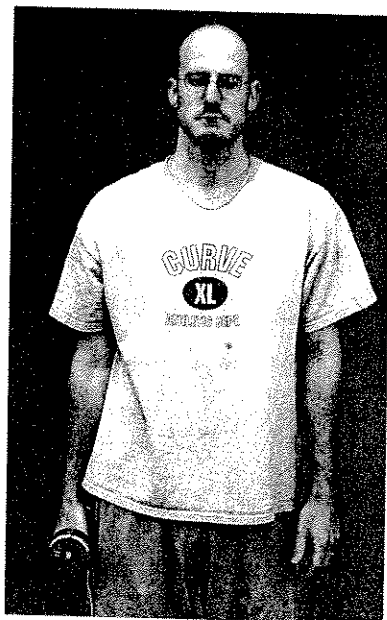
### 6. TUBING ER @ 90 DEGREES OF ABDUCTION

Affix a piece of surgical tubing to the wall at shoulder height. Stand facing the tubing with shoulder abducted to 90 degrees, elbow bent to 90 degrees and hand pointing straight ahead. Keeping shoulder abducted, quickly rotate shoulder until hand is pointing up to the ceiling, then quickly return to the starting position. Pause slightly at the starting position.



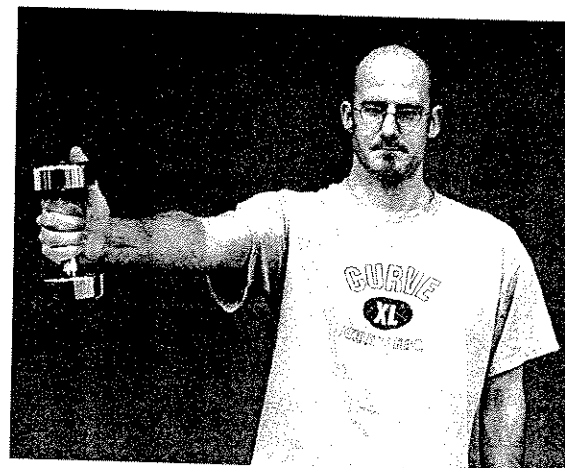
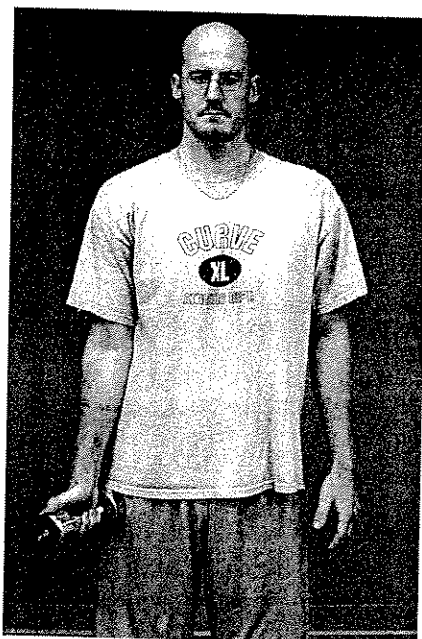
### 7. DUMBBELL LATERAL RAISE

Stand with a dumbbell in each hand, palms facing in toward body. Raise arm out to side with palms facing downward, stopping at shoulder level. Slowly lower. Return to the starting position.



### 8. SUPRASPINATUS RAISE (FULL CAN)

Stand with arm straight and thumb pointing 45 degrees away from body. Raise arm to shoulder level. Slowly lower.

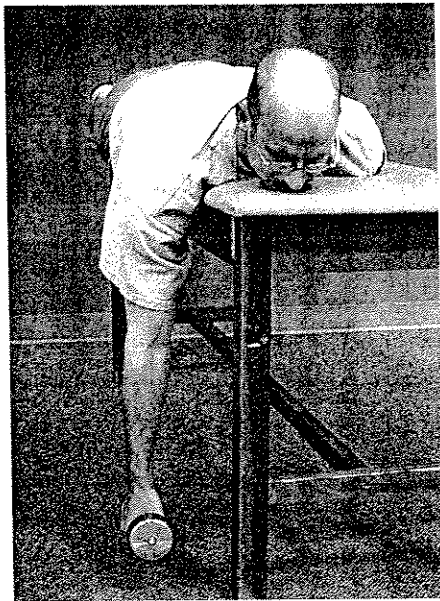


### 9. SHOULDER EXTERNAL ROTATION

Lie on your pitching non-throwing side. Keep the upper part of your arm against your side and bend your elbow to 90 degrees. Raise the weight up, keeping arm against your side. Slowly lower. Also perform this exercise lying on your other side.

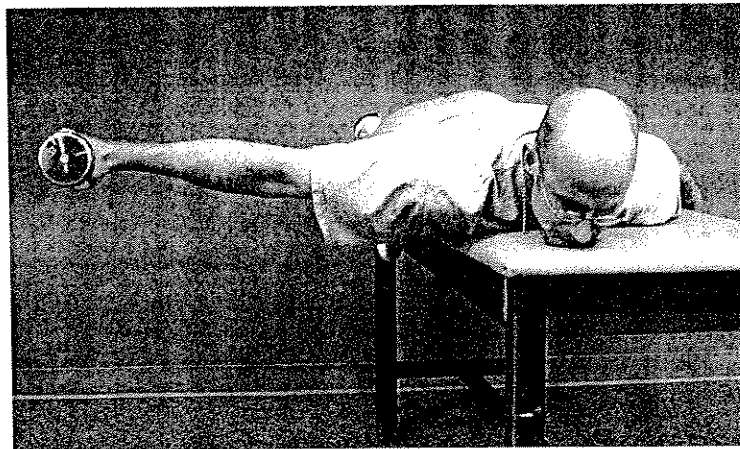






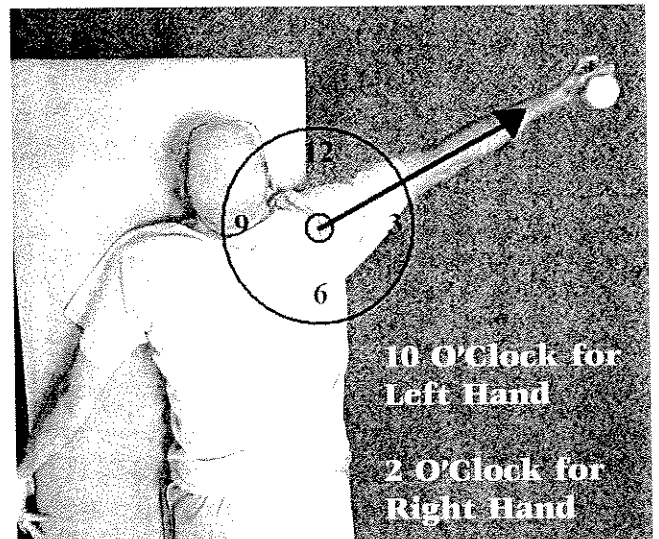
## 10. PRONE HORIZONTAL ABDUCTION

Lie on table face down with arm hanging straight to the floor, thumb facing forward. Raise arm out to the side until it is parallel to the floor. Slowly lower.



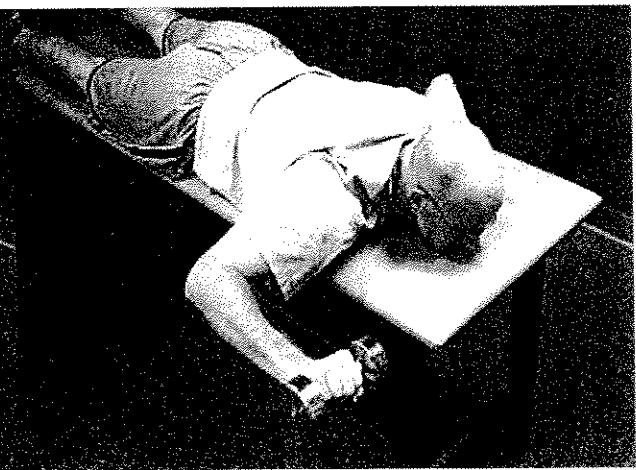
## 11. PRONE SHOULDER FLEXION @ 105-110 DEGREES OF ABDUCTION

Lay on a weight bench face down. Hold a dumbbell with thumb rotated up (hitchhiker). Raise arm out to the side at an angle of 105 degrees from your side (about 2 o'clock) – slightly in front of shoulder – until arm is parallel with the floor. Lower slowly.



## 12. PRONE ROW WITH EXTERNAL ROTATION

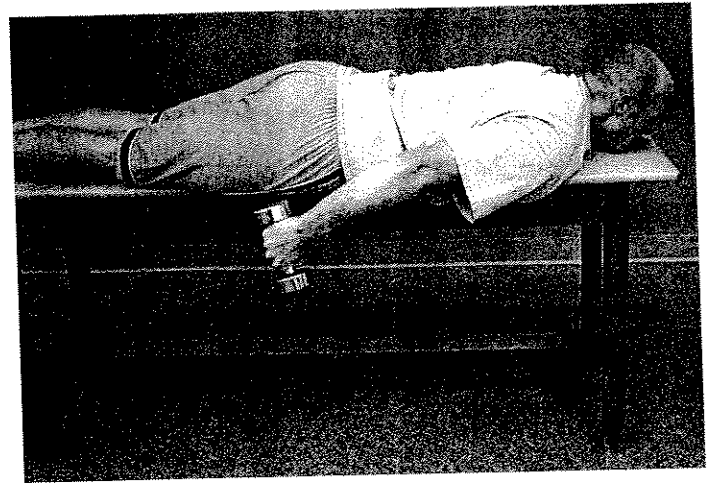
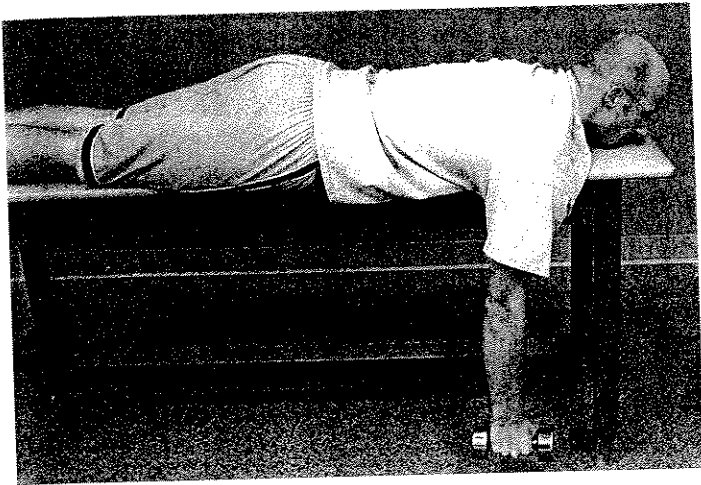
Lie on table face down with elbow abducted to 90 degrees and hand pointing to the ground. Keeping the elbow stationary, slowly raise the dumbbell until it is parallel to the floor. Slowly lower.





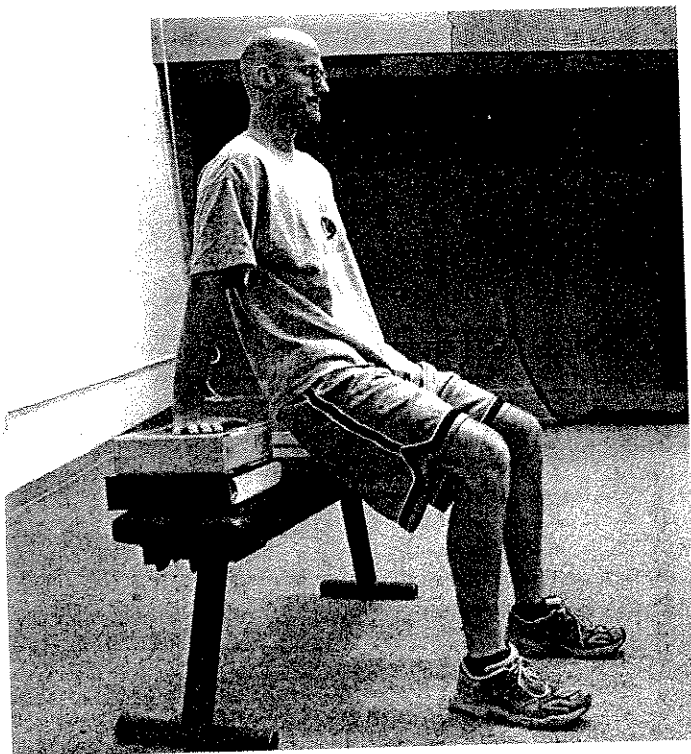
### 13. PRONE SHOULDER EXTENSION

Lie on table face down with arm hanging straight to the floor, thumb facing forward. Raise arm straight back until it is parallel to the floor. Slowly lower.



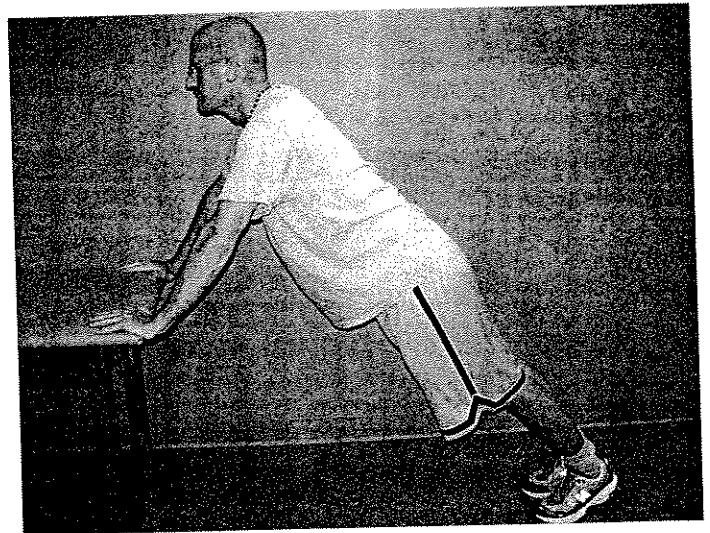
### 14. PRESS-UP

Sit on a weight bench. Set a block or thick book on both sides of you. Put hands on block and push body until elbows are fully straightened. From this position, allow the elbows to bend as you lower body toward bench, then push back up.



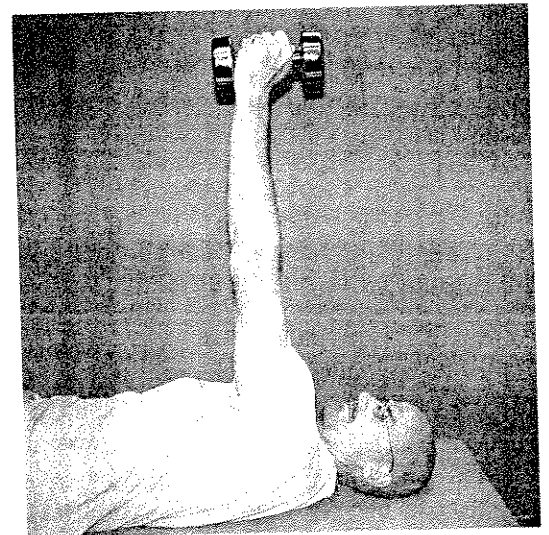
### 15. PUSH-UP WITH A PLUS

Standing in a neutral position with your hands placed on the edge of a table and arms extended, push away from the table by extending the shoulder. Do not lose contact with the table.



### 16. SUPINE SERRATUS PUNCH

Lie on your back with a 2-5 pound dumbbell in your hand. Outstretch your arm to full extension. Push towards the sky lifting only the shoulder off the table. Return the shoulder to the table. Repeat.



# Plyometrics

## Series A

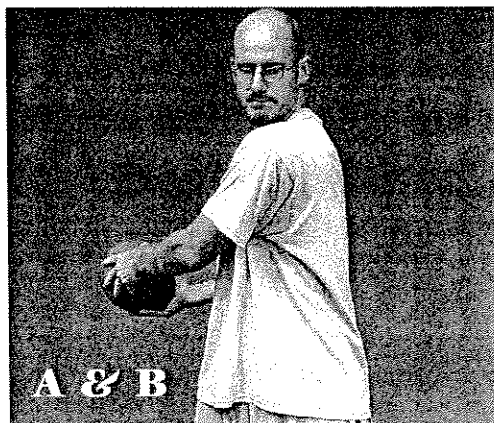
1. Medicine Ball Rotations
2. Medicine Ball Side Bends
3. Medicine Ball Wood Chop
4. Wall Dribble
5. 90 / 90 Throw
7. Two Hand Side Throw
9. Chest Pass

## Series B

1. Medicine Ball Rotations
2. Medicine Ball Side Bends
3. Medicine Ball Wood Chop
4. Wall Dribble
6. Two Hand Overhead Throw
8. Two Hand Underhand Throw

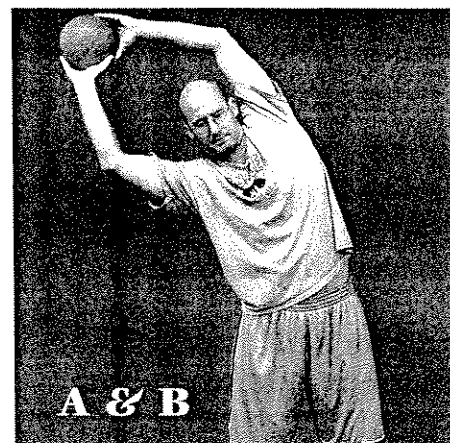
### 1. MEDICINE BALL ROTATIONS

Hold medicine ball out in front of you with straight arms. Turn from waist and ankles to rotate from one side, then the other.



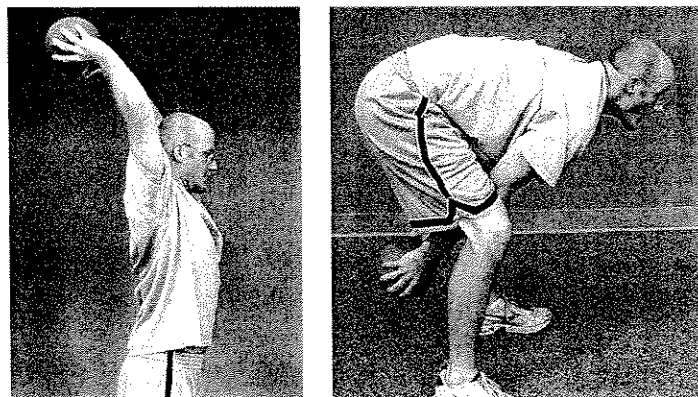
### 2. MEDICINE BALL SIDE BENDS

Hold medicine ball overhead with straight arms. Bend to one side, then the other.



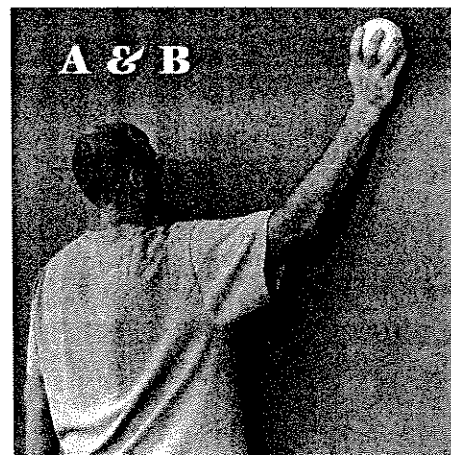
### 3. MEDICINE BALL WOOD CHOP

Hold medicine ball overhead with straight arms. Stand with feet shoulder width apart. Keeping arms straight, bend at the waist, hips and knees to allow ball to pass between the legs. Return to starting position.



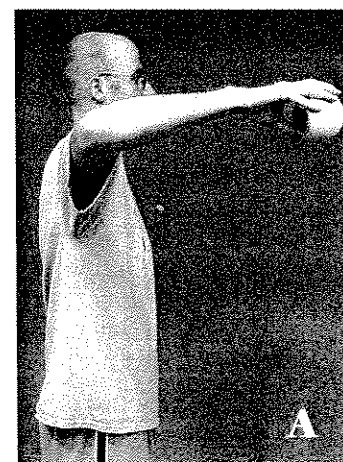
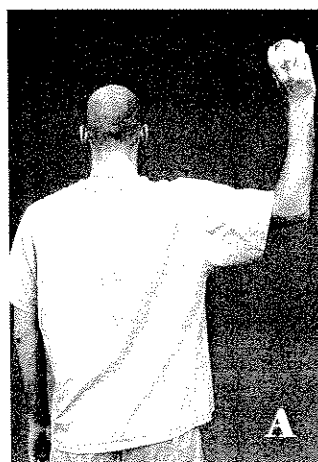
### 4. WALL DRIBBLE

Dribble a 1 or 2 pound medicine ball against the wall with the fingertips of one hand. Perform this exercise above the height of your head. This exercise can also be performed by dribbling in an arc.



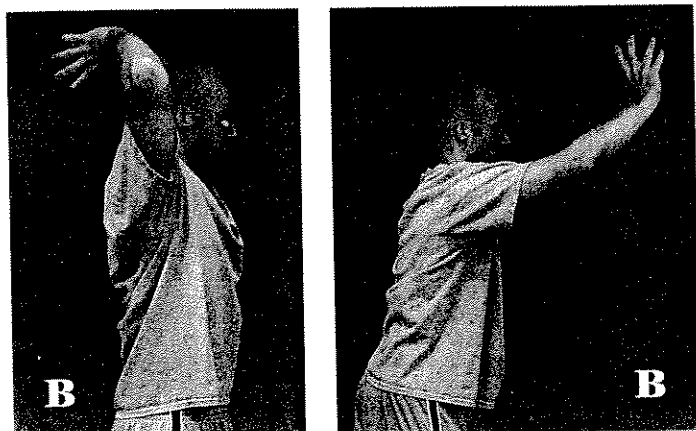
### 5. 90 / 90 THROW

Stand facing a plyoback. Hold a 1 or 2 pound medicine ball in your pitching hand. Abduct the shoulder to 90 degrees, and bent the elbow to 90 degrees. Throw the ball into the plyoback using only a forearm movement. Catch the ball in the same position and repeat.



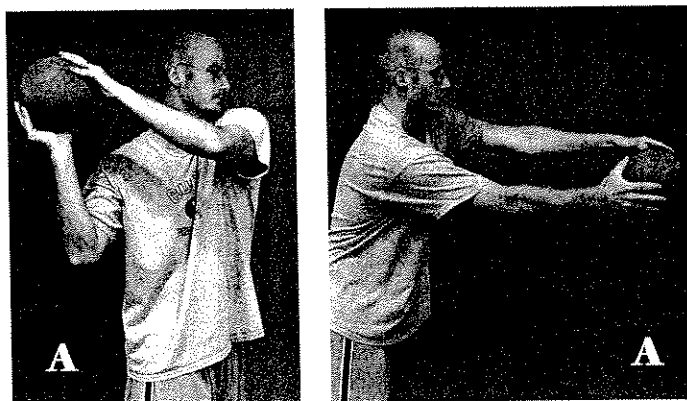
### 6. TWO HAND OVERHEAD THROW

Stand facing a plyoback. Hold a medicine ball overhead with both hands. Throw the ball against the plyoback. Catch the ball overhead, allowing the ball to pull your arms back as you catch the ball.



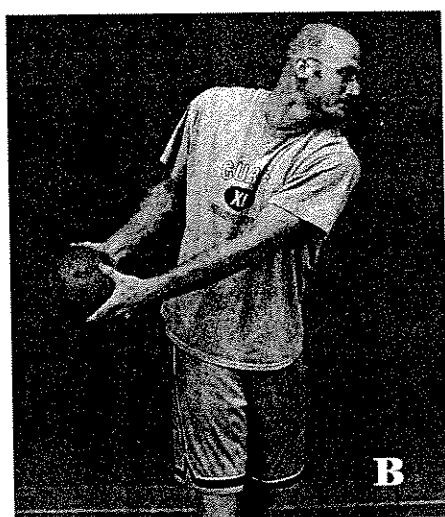
### 7. TWO HAND SIDE THROW

Stand facing a plyoback. Hold a small medicine ball in both hands. Bring the ball over one shoulder, then throw in a side arm fashion into the plyoback. Catch the ball on the opposite side, allowing body to turn slightly. Continue alternating sides.



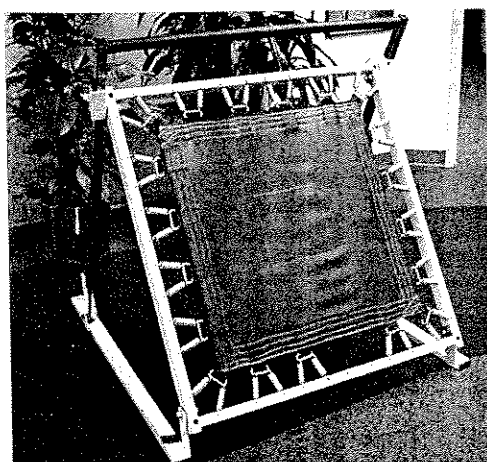
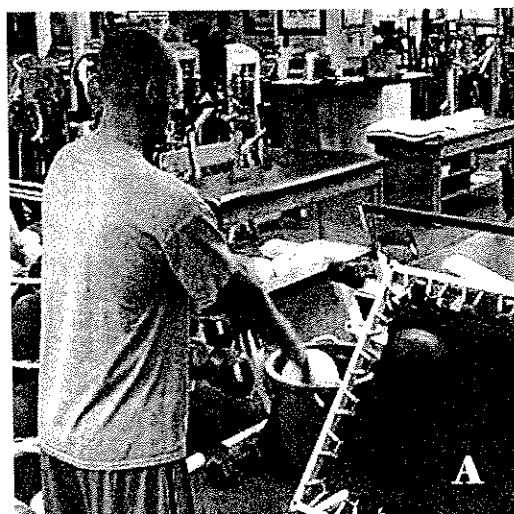
### 8. TWO HAND UNDERHAND THROW

Stand facing a plyoback. Hold a medicine ball with both hands in front of you, below waist level. Bring the ball over to one side, then throw it in an underhand fashion against the plyoback. Catch the ball on the other side, then throw it again. Continue alternating sides.



### 9. CHEST PASS

Stand close to a plyoback, leaning forward slightly. Hold a medicine ball in both hands, at chest level, with elbows pointing out to the side. Push ball away from body into the plyoback. Perform this exercise rapidly.



Shown to the left is a PLYOBACK (Exertools, Inc). This is referred to in some of the plyometric exercises. A plyoback is a small trampoline that is used to return the medicine ball to the athlete

# Stretches

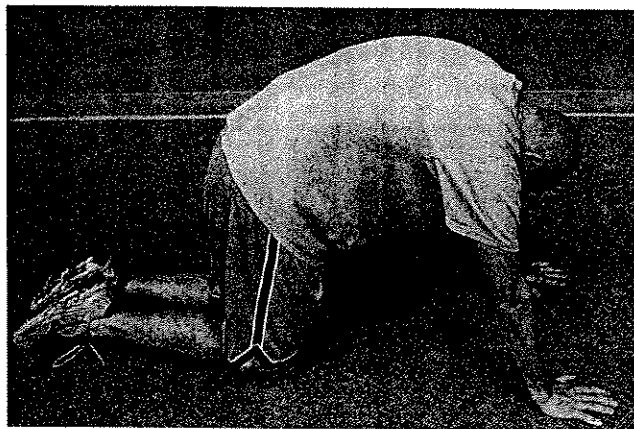
## 1. TRUNK ROTATION STRETCH

Lie on your back on the floor. Bend your knees up toward chest, then allow them both to fall to one side. Reach both arms over to the opposite side.



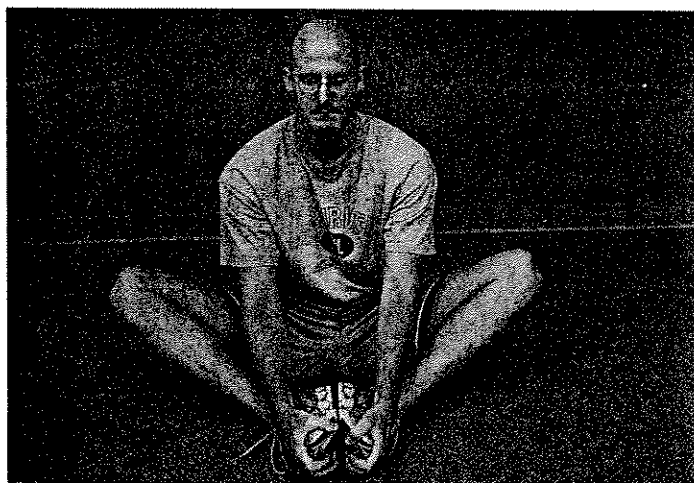
## 2. MAD CAT STRETCH

Get on your hands and knees on the floor. Arch your back up to the ceiling.



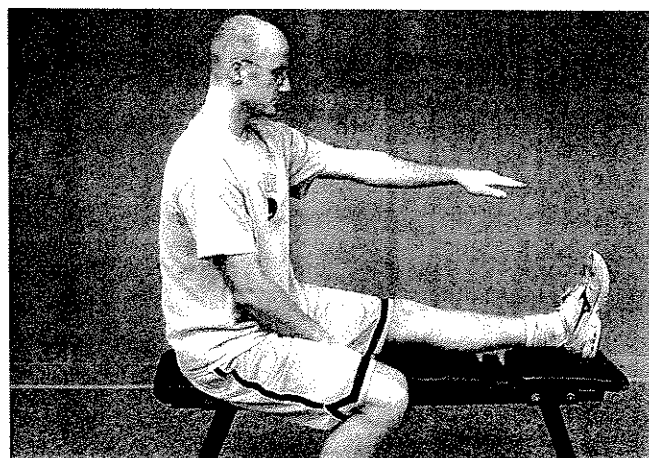
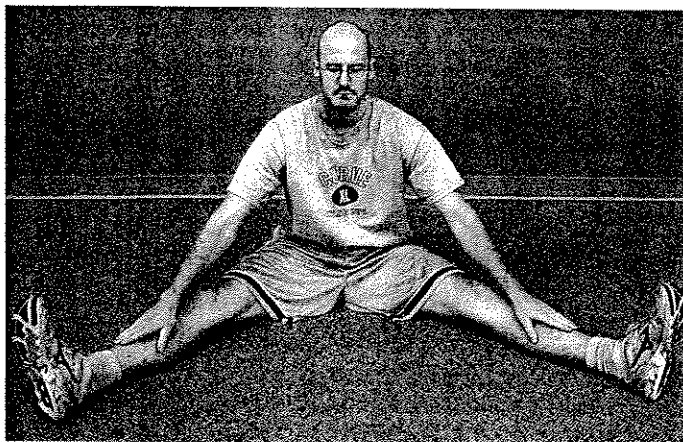
## 3. BUTTERFLY GROIN STRETCH

Sit on the floor with your heels together. Allow your knees to fall out to the side. Increase the stretch by applying gentle pressure downward on your knees.



## 4. ADDUCTOR STRETCH

Sit on the floor with your legs spread apart in a V-position. Lean forward between your legs until you feel a stretch. This stretch can also be performed in a standing position with feet slightly wider than shoulder width apart. Lunge over to one side until you feel a stretch in the inner thigh of your opposite leg. Repeat for the other leg.



## 5. HAMSTRING STRETCH

Sit on the side of a bench with one leg on the bench straight in front of you and the opposite leg off the side of the bench. Lean forward from your hips, keeping your back straight, until you feel a stretch in the back of your thigh. Do not allow your knee to bend.



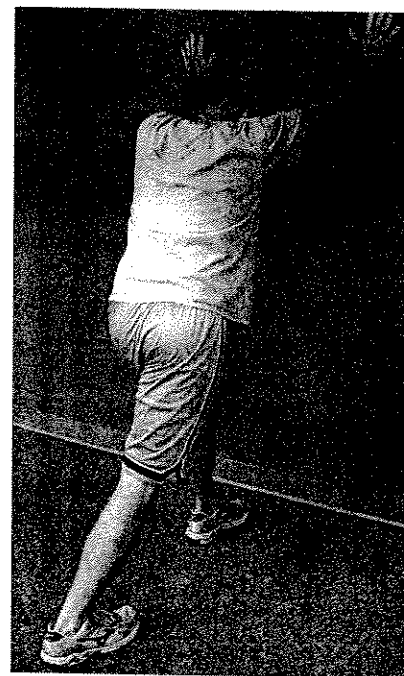
## **6. QUADRICEPS STRETCH**

In a standing position, bring one foot up toward your buttocks. Reach back with the hand on the same side, grab your foot and pull your thigh back. Keep your trunk upright. Switch legs



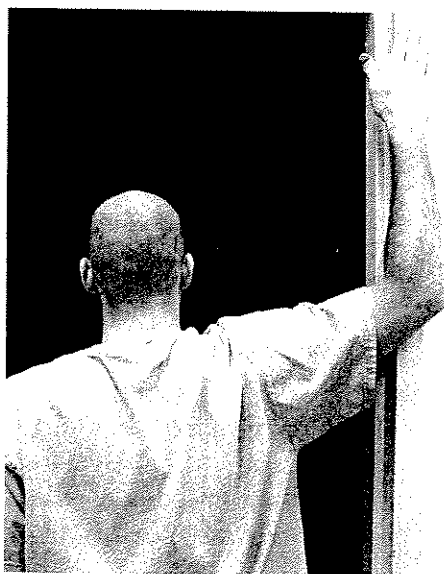
## **7. CALF STRETCH**

Stand facing a wall. Step one leg back approximately one step length. Push the heel of your back leg down as you lean forward, allowing your front leg to bend. Stop when you feel a stretch in the calf of your back leg. Also perform this stretch with your back knee slightly bent while pushing your heel down.



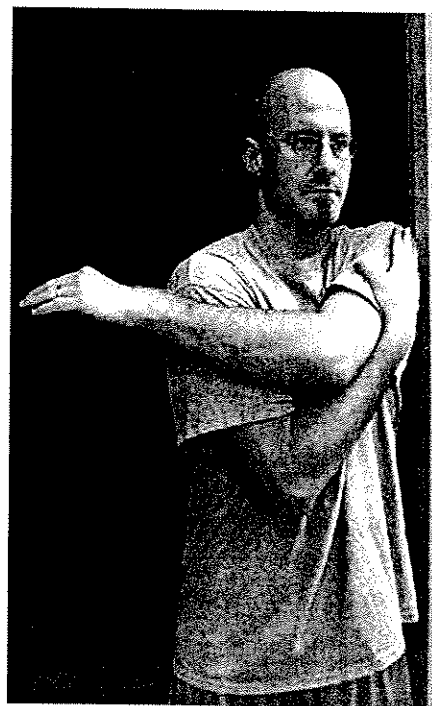
## **8. ANTERIOR MUSCULATURE STRETCH**

Hold the corner of a wall or the inside of a door frame and step away until your arm is out away from your body at shoulder height with the elbow straight. Slowly rotate your body away from your arm until you feel a stretch in the front of your arm.



## **9. POSTERIOR MUSCULATURE STRETCH**

Bring one arm across your chest. Apply gentle pressure at the elbow with your opposite hand to push the arm closer to your body.



# Interval Throwing Program for Baseball Players: Phase I

The Interval Throwing Program (ITP) is designed to gradually return motion, strength, and confidence in the throwing arm after injury or surgery by slowly progressing through graduated throwing distances. The ITP is initiated upon clearance by the athlete's physician to resume throwing, and preformed under the supervision of the rehabilitation team (physician, physical therapist, and athletic trainer). The program is set up to minimize the chance of re-injury and emphasizes pre-throwing warm up and stretching. In development of the interval throwing program, the following factors are considered most important:

1. The act of throwing the baseball involves the transfer of energy from the feet through the legs, pelvis, trunk, and out the shoulder through the elbow and hand. Therefore, any return of throwing after injury must include attention to the entire body.
2. The chance of re-injury is lessened by a graduated progression of interval throwing.
3. Proper warm-up is essential.
4. Most injuries occur as a result of fatigue.
5. Proper throwing mechanics lessen the incidence of re-injury.
6. Baseline requirements for throwing include a pain-free range of motion of all joints involved and adequate muscle power and resistance to fatigue.

Because there is an individual variability in each throwing athlete, there is no set timetable for completion of the program. Most athletes, by nature, are highly competitive individuals and wish to return to competition at the earliest possible moment. While this is a necessary quality of all athletes, the proper channeling of the athlete's energies into a rigid, controlled throwing program is essential to lessen the chance of re-injury during the rehabilitation period. The athlete may have the tendency to want to increase the intensity of the throwing program, which could possibly increase the incidence of re-injury and may greatly retard the rehabilitation process. It is recommended to follow the program rigidly, as this will by the safest route to return to competition. During the recovery process the athlete will probably experience soreness and a dull, diffuse aching sensation in the muscles and tendons. If the athlete experiences sharp pain, particularly in the joint, stop all throwing activities until the pain ceases. If pain continues, contact your physician.

## **Weight Training:**

The athlete should supplement the ITP with a high repetition, low weight exercise program. Strengthening should address a good balance between anterior and posterior musculature so that the shoulder will not be predisposed to injury. Special emphasis must be given the posterior rotator cuff musculature for any strengthening program. Weight training will not increase throwing velocity, but will increase the resistance of the arm to fatigue and injury. Weight training should only be done after your throwing is completed. Remember not to neglect exercises that will increase flexibility and range of motion about your shoulder, elbow, and hip joints. The athlete should also allow a recovery period in between throwing and weight training. A weight training pattern or routine should be stressed at this point as a "maintenance program." This pattern can and should accompany the athlete into and throughout the season as a deterrent to further injury.

## **Individual Variability:**

The ITP is designed so that each level is achieved without pain or complications before the next level is started. This sets up a progression that a goal is achieved prior to advancement instead of advancing according to a specific time frame. Because of this design, the ITP may be used for different levels of skill and abilities, ranging from high schoolers to professionals. The reasons for being in the ITP will vary from person to person. **Examples:** 1: One athlete may wish to use alternate throwing days throwing with or without using weights in between. 2: Another athlete may have to throw every third or fourth day due to pain or swelling.

"Listen to your body-it will tell you when to slow down." Again, completion of the steps of the ITP will vary from person to person. There is no set timetable in terms of days to completion.

### **Warm-up:**

Jogging increases blood flow to the muscles and joints thus increasing their flexibility and decreasing the chance of re-injury. Since the amount of warm-up will vary from person to person, the athlete should jog until developing a light sweat, then progress to the stretching phase.

### **Stretching:**

Since throwing involves all muscles in the body, all muscle groups should be stretched prior to throwing. This should be done in a systematic fashion beginning with the legs and including the trunk, back neck, and arms. Continue with capsular stretches and a t-bar range of motion exercises.

### **Throwing Mechanics:**

A critical aspect of the ITP is maintenance of proper throwing mechanics throughout the advancement. The use of the Crow-Hop method simulates the throwing act, allowing emphasis of the proper body mechanics. This throwing method should be adopted from the onset of the ITP. Throwing flat-footed encourages improper body mechanics, placing increased stress on the throwing arm and, therefore, predisposing the arm to re-injury. The pitching coach and sports biomechanist (if available) may be valuable allies to the rehabilitation team with their knowledge of throwing mechanics.

Components of the Crow-Hop method are first a hop, then a skip, followed by the throw. The velocity of the throw is determined by the distance, whereas the ball should have only enough momentum to travel each designed distance. Again, emphasis should be placed upon proper throwing mechanics when the athlete begins phase two (Throwing off the mound or throwing from his respective position) to decrease chance of re-injury.

### **Throwing:**

Using the Crow-Hop method, the athlete should begin warm-up throws at a comfortable distance (approximately 30-45 ft) and then progress to the distance indicated for that phase (refer to Table 1). The object of each phase is for the athlete to be able to throw the ball without pain the specific number of feet (45ft., 60ft., 90ft., 120ft., 150ft., 180ft.) 75 times at each distance. After the athlete can throw 180 ft. 50 times without pain he will be ready for throwing off the mound or return to this respective position (step 14). At this point, full strength and confidence should be restored in the athlete's arm. It is important to stress the Crow-Hop method and proper mechanics in for each throw. Just as the advancement to this point has been gradual and progressive, the return to unrestricted throwing must follow the same principles. A pitcher should first only throw fastballs at 50%, progressing to 75%, and 100%. At this time, he may start more stressful pitches such as breaking balls. The position player should simulate game situation again progressing from 50%-75%-100%. Once again, if an athlete has increased pain, particularly at the joint, the throwing program should be backed off and re-advanced as tolerated, under redirection of the rehabilitation team.

### **Batting:**

Depending on the type of injury that the athlete has, the time of return to batting should be determined by the physician. It should be noted that the stress placed upon the arm and shoulder in tee batting motion are very different from the throwing motion. Return to unrestricted use of the bat should also follow the same progressive guidelines. Begin with dry swings progressing to hitting off the tee, then soft toss, and finally live pitching.

### **Summary:**

In using the Interval Throwing Program (ITP) in conjunction with structured rehabilitation program, the athlete should be able to return to full competition status, minimizing any chance of re-injury. The program and its progression should be modified to meet the specific needs of each individual athlete. A comprehensive program consisting of a maintenance strength and flexibility program, appropriate warm-up and cool-down, proper pitching mechanics, and progressive throwing and batting will assist the baseball player in returning safely to competition.

<b>45' Phase</b>	
Step 1:	A) Warm-up throwing 45' (25 throws) B) Rest 5-10 minutes C) Warm-up throwing 45' (25 throws) D) E)
Step 2:	A) Warm-up throwing 45' (25 throws) B) Rest 5-10 minutes C) Warm-up throwing 45' (25 throws) D) Rest 5-10 minutes E) Warm-up throwing 45' (25 throws) F) G) H)

<b>60' Phase</b>	
Step 3:	A) Warm-up throwing 60' (25 throws) B) Rest 5-10 minutes C) Warm-up throwing 60' (25 throws) D) E)
Step 4:	A) Warm-up throwing 60' (25 throws) B) Rest 5-10 minutes C) Warm-up throwing 60' (25 throws) D) Rest 5-10 minutes E) Warm-up throwing 60' (25 throws) F) G) H)

<b>90' Phase</b>	
Step 5:	A) Warm-up throwing 90' (25 throws) B) Rest 5-10 minutes C) Warm-up throwing 90' (25 throws) D) E)
Step 6:	A) Warm-up throwing 90' (25 throws) B) Rest 5-10 minutes C) Warm-up throwing 90' (25 throws) D) Rest 5-10 minutes E) Warm-up throwing 90' (25 throws) F) G) H)

<b>120' Phase</b>	
Step 7:	A) Warm-up throwing 120' (25 throws) B) Rest 5-10 minutes C) Warm-up throwing 120' (25 throws) D) E)
Step 8:	A) Warm-up throwing 120' (25 throws) B) Rest 5-10 minutes C) Warm-up throwing 120' (25 throws) D) Rest 5-10 minutes E) Warm-up throwing 120' (25 throws) F) G) H)

<b>150' Phase</b>	
Step 9:	A) Warm-up throwing 150' (25 throws) B) Rest 5-10 minutes C) Warm-up throwing 150' (25 throws) D) E)
Step 10:	A) Warm-up throwing 150' (25 throws) B) Rest 5-10 minutes C) Warm-up throwing 150' (25 throws) D) Rest 5-10 minutes E) Warm-up throwing 150' (25 throws) F) G) H)

<b>180' Phase</b>	
Step 11:	A) Warm-up throwing 180' (25 throws) B) Rest 5-10 minutes C) Warm-up throwing 180' (25 throws) D) E)
Step 12:	A) Warm-up throwing 180' (25 throws) B) Rest 5-10 minutes C) Warm-up throwing 180' (25 throws) D) Rest 5-10 minutes E) Warm-up throwing 180' (25 throws) F) G) H)

<b>Flat Ground Throwing</b>	
Step 14:	A) Warm-up throwing 60' (10-15 throws) B) Throw 90' (10 throws) C) Throw 120' (10 throws) D) Throw 60' (flat ground) using pitching mechanics (20-30 throws) E)

<b>Flat Ground Throwing</b>	
Step 15:	A) Warm-up throwing 60' (10-15 throws) B) Throw 90' (10 throws) C) Throw 120' (10 throws) D) Throw 60' (flat ground) using pitching mechanics (20-30 throws) E) Throw 60'-90' (10-15 throws) F) G)

**Throwing program should be performed every other day, unless otherwise specified by your physician or rehabilitation specialist.**

**Progress to Phase II- Throwing Off the Mound**



# Interval Throwing Program

## Starting Off the Mound: Phase II

### STAGE ONE: FASTBALL ONLY

(Use interval throwing to 120' Phase as warm-up)

- Step 1: Interval Throwing  
15 throws off mound at 50%
- Step 2: Interval Throwing  
30 throws off mound at 50%
- Step 3: Interval Throwing  
45 throws off mound at 50%
- Step 4: Interval Throwing  
60 throws off mound at 50%
- Step 5: Interval Throwing  
30 throws off mound at 50%
- Step 6: 30 throws off mound at 75%  
45 throws off mound at 50%
- Step 7: 45 throws off mound at 75%  
15 throws off mound at 50%
- Step 8: 60 throws off mound at 75%

All throwing off the mound should be done in the presence of your pitching coach to stress proper throwing mechanics.

(Use speed gun to aid in effort control)

### STAGE TWO: FASTBALL ONLY

- Step 9: 45 throws off mound at 75%  
15 throws in batting practice
- Step 10: 45 throws off mound at 75%  
30 throws in batting practice
- Step 11: 45 throws off mound at 75%  
45 throws in batting practice

### STAGE THREE

- Step 12: 30 throws off mound at 75%: Warm-Up  
15 throws off mound at 50%: Breaking Balls  
45-60 throws in batting practice (fastballs only)
- Step 13: 30 throws off mound at 75%  
30 Breaking Balls  
30 throws in batting practice
- Step 14: 30 throws off mound at 75%  
60-90 throws in batting practice--25% breaking balls
- Step 15: Simulated Game: Progressing by 15 throws per workout

# Youth Baseball Interval Throwing Program

The youth baseball interval throwing program parallels the interval throwing program in returning the youth baseball player to a graduated progression of throwing distances. Warm-up and stretching should be performed prior to throwing.

## 30' Phase

- Step 1:
- A) Warm-up throwing
  - B) 30' (25 throws)
  - C) Rest 15 minutes
  - D) Warm-up throwing
  - E) 30' (25 throws)

- Step 2:
- A) Warm-up throwing
  - B) 30' (25 throws)
  - C) Rest 10 minutes
  - D) Warm-up throwing
  - E) 30' (25 throws)
  - F) Rest 10 minutes
  - G) Warm-up throwing
  - H) 30' (25 throws)

## 60' Phase

- Step 5:
- A) Warm-up throwing
  - B) 60' (25 throws)
  - C) Rest 15 minutes
  - D) Warm-up throwing
  - E) 60' (25 throws)

- Step 6:
- A) Warm-up throwing
  - B) 60' (25 throws)
  - C) Rest 10 minutes
  - D) Warm-up throwing
  - E) 60' (25 throws)
  - F) Rest 10 minutes
  - G) Warm-up throwing
  - H) 60' (25 throws)

## 45' Phase

- Step 3:
- A) Warm-up throwing
  - B) 45' (25 throws)
  - C) Rest 15 minutes
  - D) Warm-up throwing
  - E) 45' (25 throws)

- Step 4:
- A) Warm-up throwing
  - B) 45' (25 throws)
  - C) Rest 10 minutes
  - D) Warm-up throwing
  - E) 45' (25 throws)
  - F) Rest 10 minutes
  - G) Warm-up throwing
  - H) 45' (25 throws)

## 90' Phase

- Step 7:
- A) Warm-up throwing
  - B) 90' (25 throws)
  - C) Rest 15 minutes
  - D) Warm-up throwing
  - E) 90' (25 throws)

- Step 8:
- A) Warm-up throwing
  - B) 45' (25 throws)
  - C) Rest 10 minutes
  - D) Warm-up throwing
  - E) 90' (25 throws)
  - F) Rest 10 minutes
  - G) Warm-up throwing
  - H) 90' (25 throws)

# Maximum Repetition Chart

MAX REPS (RM)	4	5	6	7	8	9	10	11	12	13	14	15	16
% 1RM	90%	87%	85%	83%	80%	77%	75%	70%	67%	65%	60%	55%	50%
LOAD (lbs)	5	5	4	4	4	4	4	4	4	3	3	3	3
10	9	9	9	8	8	8	8	7	7	7	6	6	5
15	14	14	13	13	12	12	12	11	11	10	9	8	8
20	18	17	17	17	16	15	15	14	13	13	12	11	10
25	23	23	22	21	21	20	19	18	19	17	15	14	13
30	27	26	26	25	24	23	23	21	20	20	18	17	15
35	33	32	30	30	29	28	27	25	26	23	21	19	18
40	36	35	34	33	32	31	30	28	27	26	24	22	20
45	42	41	39	38	37	36	35	32	34	30	27	25	23
50	45	44	43	42	40	39	38	35	34	33	30	28	25
55	51	50	48	47	46	44	42	39	41	37	33	30	28
60	54	52	51	50	48	46	45	42	40	39	36	33	30
65	60	59	57	55	54	52	50	46	49	44	39	36	33
70	63	61	60	58	56	54	53	49	47	46	42	39	35
75	70	68	65	64	62	60	58	53	56	50	45	41	38
80	72	70	68	66	64	62	60	56	54	52	48	44	40
85	79	77	74	72	71	68	65	60	64	57	51	47	43
90	81	78	77	75	72	69	68	63	60	59	54	50	45
95	88	86	83	81	79	76	73	67	71	64	57	52	48
100	90	87	85	83	80	77	75	70	67	65	60	55	50
105	98	95	91	89	87	84	81	74	79	70	63	58	53
110	99	96	94	91	88	85	83	77	74	72	66	61	55
115	107	104	100	98	95	92	89	81	86	77	69	63	58
120	108	104	102	100	96	92	90	84	80	78	72	66	60
125	116	113	109	106	104	100	96	88	94	84	75	69	63
130	117	113	111	108	104	100	98	91	87	85	78	72	65
135	126	122	117	115	112	108	104	95	101	90	81	74	68
140	126	122	119	116	112	108	105	98	94	91	84	77	70
145	135	131	126	123	120	116	112	102	109	97	87	80	73
150	135	131	128	125	120	116	113	105	101	98	90	83	75
155	144	140	135	132	129	124	119	109	116	104	93	85	78
160	144	139	136	133	128	123	120	112	107	104	96	88	80
165	153	149	144	140	137	132	127	116	124	111	99	91	83
170	153	148	145	141	136	131	128	119	114	111	102	94	85
175	163	158	152	149	145	140	135	123	131	117	105	96	88
180	162	157	153	149	144	139	135	126	121	117	108	99	90
185	172	167	161	157	154	148	142	130	139	124	111	102	93
190	171	165	162	158	152	146	143	133	127	124	114	105	95
195	181	176	170	166	162	156	150	137	146	131	117	107	98
200	180	174	170	166	160	154	150	140	134	130	120	110	100
205	191	185	178	174	170	164	158	144	154	137	123	113	103
210	189	183	179	174	168	162	158	147	141	137	126	116	105
215	200	194	187	183	178	172	166	151	161	144	129	118	108
220	198	191	187	183	176	169	165	154	147	143	132	121	110
225	209	203	196	191	187	180	173	158	169	151	135	124	113
230	207	200	196	191	184	177	173	161	154	150	138	127	115
235	219	212	204	200	195	188	181	165	176	157	141	129	118
240	216	209	204	199	192	185	180	168	161	156	144	132	120
245	228	221	213	208	203	196	189	172	184	164	147	135	123
250	225	218	213	208	200	193	188	175	168	163	150	138	125

# Maximum Repetition Chart

MAX REPS (RM)		4	5	6	7	8	9	10	11	12	13	14	15	16
% 1RM		90%	87%	85%	83%	80%	77%	75%	70%	67%	65%	60%	55%	50%
LOAD (lbs)	255	237	230	222	217	212	204	196	179	191	171	153	140	128
	260	234	226	221	216	208	200	195	182	174	169	156	143	130
	265	246	239	231	225	220	212	204	186	199	178	159	146	133
	270	243	235	230	224	216	208	203	189	181	176	162	149	135
	275	256	248	239	234	228	220	212	193	206	184	165	151	138
	280	252	244	238	232	224	216	210	196	188	182	168	154	140
	285	265	257	248	242	237	228	219	200	214	191	171	157	143
	290	261	252	247	241	232	223	218	203	194	189	174	160	145
	295	274	266	257	251	245	236	227	207	221	198	177	162	148
	300	270	261	255	249	240	231	225	210	201	195	180	165	150
	305	275	265	259	253	244	235	229	214	204	198	183	168	153
	310	279	270	264	257	248	239	233	217	208	202	186	171	155
	315	284	274	268	261	252	243	236	221	211	205	189	173	158
	320	288	278	272	266	256	246	240	224	214	208	192	176	160
	325	293	283	276	270	260	250	244	228	218	211	195	179	163
	330	297	287	281	274	264	254	248	231	221	215	198	182	165
	335	302	291	285	278	268	258	251	235	224	218	201	184	168
	340	306	296	289	282	272	262	255	238	228	221	204	187	170
	345	311	300	293	286	276	266	259	242	231	224	207	190	173
	350	315	305	298	291	280	270	263	245	235	228	210	193	175
	355	320	309	302	295	284	273	266	249	238	231	213	195	178
	360	324	313	306	299	288	277	270	252	241	234	216	198	180
	365	329	318	310	303	292	281	274	256	245	237	219	201	183
	370	333	322	315	307	296	285	278	259	248	241	222	204	185
	375	338	326	319	311	300	289	281	263	251	244	225	206	188
	380	342	331	323	315	304	293	285	266	255	247	228	209	190
	385	347	335	327	320	308	296	289	270	258	250	231	212	193
	390	351	339	332	324	312	300	293	273	261	254	234	215	195
	395	356	344	336	328	316	304	296	277	265	257	237	217	198
	400	360	348	340	332	320	308	300	280	268	260	240	220	200
	405	365	352	344	336	324	312	304	284	271	263	243	223	203
	410	369	357	349	340	328	316	308	287	275	267	246	226	205
	415	374	361	353	344	332	320	311	291	278	270	249	228	208
	420	378	365	357	349	336	323	315	294	281	273	252	231	210
	425	383	370	361	353	340	327	319	298	285	276	255	234	213
	430	387	374	366	357	344	331	323	301	288	280	258	237	215
	435	392	378	370	361	348	335	326	305	291	283	261	239	218
	440	396	383	374	365	352	339	330	308	295	286	264	242	220
	445	401	387	378	369	356	343	334	312	298	289	267	245	223
	450	405	392	383	374	360	347	338	315	302	293	270	248	225
	455	410	396	387	378	364	350	341	319	305	296	273	250	228
	460	414	400	391	382	368	354	345	322	308	299	276	253	230
	465	419	405	395	386	372	358	349	326	312	302	279	256	233
	470	423	409	400	390	376	362	353	329	315	306	282	259	235
	475	428	413	404	394	380	366	356	333	318	309	285	261	238
	480	432	418	408	398	384	370	360	336	322	312	288	264	240
	485	437	422	412	403	388	373	364	340	325	315	291	267	243
	490	441	426	417	407	392	377	368	343	328	319	294	270	245
	495	446	431	421	411	396	381	371	347	332	322	297	272	248
	500	450	435	425	415	400	385	375	350	335	325	300	275	250

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American Sports Medicine Institute

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1. Another aspect of a baseball pitcher that needs to be addressed is the biomechanics of his pitching delivery. Proper mechanics, in combination with proper total body conditioning, gives the pitcher the best possible opportunity to avoid injuries and physically excel. One way for the ASMI to assist pitchers in the understanding of baseball pitching injuries is to give you the opportunity to have us analyze your pitching mechanics in our biomechanics laboratory in Birmingham, Alabama.

- The biomechanical evaluation will be administered using the reflective markers, infrared cameras, and motion analysis software.
- Your evaluation movements will be run through a computer program developed at ASMI. The computer program will determine the exact kinematic motions of your delivery.
- Your kinematics will be compared to the kinematics of our database of elite pitchers.
- You will receive a packet including your written evaluation with our comments concerning the efficiency of your pitching delivery.

You will also be videotaped during the evaluation with our Kodak high-speed video cameras. Each of these cameras records your motion at 500 frames per second (standard video is 30 frames per second). The video will be copied to a VHS or a CD-R and mailed to you along with your evaluation. You will also be videotaped using a regular camcorder so your motion can be seen at real speed. From this video, we will capture still photos at various instances during your delivery. This video and these photos will also be sent to you along with your evaluation.

2. ASMI also offers individual, group, and/or team strength and conditioning programs during the year that are available to the public at the ASMI facility in Birmingham, Alabama. The number of pitching related injuries to young pitchers is growing at an alarming rate. As one of the premier sports medicine institutions in the country, we believe that it is our responsibility to offer our expertise to the public in matters such as this. By teaching young pitchers how to condition and strengthen their bodies, we hope to assist in the longevity of their pitching careers. Our programs have been designed according to the general conditioning guidelines presented by the National Strength and Conditioning Association. Our programs are tailored to be specific for baseball pitchers according to the forces and torques placed on the shoulder and elbow. The goal is to increase core strength, as well as the strength, stability, and endurance of the shoulder and elbow joints.

To find out about scheduling an evaluation and/or the cost, or to inquire about the dates and cost of the pitcher's strength and conditioning programs, please contact ASMI at (205) 918-0000 or visit [www.asmi.org](http://www.asmi.org).