

COACHING

WOMEN'S BASKETBALL

THE OFFICIAL MAGAZINE OF THE WOMEN'S BASKETBALL COACHES ASSOCIATION

JANUARY/FEBRUARY 1995

MINNEAPOLIS

the "*City of Water*"

hosts the WBCA National Convention
and the 1995 NCAA Women's Final Four

Bulk Rate
U.S. Postage
PAID
Permit No. 7867
Indianapolis, IN

STRENGTH TRAINING FOR THE UPPER BODY



by Matt Brzycki
Princeton University

The main purposes of a strength training program for basketball is to decrease your athletes' injury potential and to increase your athletes' performance potential. Make no mistake about it — strength training is primarily a mechanism to prevent injury. Increasing the strength of the muscles, bones and connective tissue will reduce the likelihood that your athletes will incur an injury while playing. That doesn't mean that they'll never get hurt . . . sometimes injuries are a matter of being in the wrong spot at the wrong time. Strength training, however, will reduce their risk considerably. And, improving their functional strength will be an important step toward realizing their potential as basketball players.

THE UPPER TORSO

The three main muscle groups in the upper torso are the chest, the upper back, and the shoulders. These three important muscle groups can be addressed using a variety of exercises and equipment

CHEST: The major muscle surrounding the chest area is the pectoralis major. The "pecs" pull the upper arm down and across the body. Like most of the upper torso muscles, the pecs are involved in rebounding, shot blocking, shooting, and passing skills.

There are numerous exercises available for training the chest musculature. These movements can be categorized as either multi-joint or single-joint. Multi-joint movements for the chest have ranges of motion around the shoulder and the elbow. Because of this, all multi-joint chest movements also provide indirect work for the triceps and the front (or anterior) portion of the shoulders. Perhaps the most popular multi-joint movement for the chest is the bench press. Two other multi-joint exercises for the chest are variations of the supine position of the bench press: the incline press (which emphasizes the upper portion of the chest) and the decline press (which stresses the lower portion of the chest). These three pressing movements can be performed using barbells, dumbbells, or machines (either selectorized or plateloading). Another multi-joint exercise for the lower chest is a dip using the bodyweight as resistance.

Single-joint movements for the chest involve a range of motion around only one joint — the shoulder. The bent arm fly is a single-joint exercise for the chest. This movement can be performed on a machine (either selectorized or plateloading), with dumbbells, or with manual resistance. When using dumbbells, the bent arm fly can be performed in the supine, incline, or decline positions to emphasize different areas of the chest

UPPER BACK: The latissimus dorsi is the long, broad muscle that comprises most of the upper back. The "lats" are the largest muscles in the upper body. Their primary function is to pull the upper arm backward and downward. The lats are particularly important in pulling down a rebound. In addition, developing the lats is necessary to provide muscular balance between the upper back and the chest areas.

All multi-joint movements for the upper back also provide indirect work for the biceps and the forearms. Multi-joint exercises for the upper back can be performed on selectorized or plateloading machines and include the seated row and the lat pulldown (either underhand or overhand). Another popular multi-joint exercise for the upper back is the bent over row (with dumbbells). A final multi-joint option for the upper back is a chinning movement using the bodyweight as resistance.

The best movement for isolating the upper back is the pullover. This movement can be performed with dumbbells, but a machine (either selectorized or plateloading) will generally provide resistance on the upper back over a much greater range of motion.

SHOULDERS: The shoulders are made up of 11 muscles of which the deltoids are the most important. The "delt" are actually composed of three separate parts or heads. The anterior deltoid is found on the front of the shoulder and is used when raising the upper arm forward; the middle deltoid is found on the side of the shoulder and is involved when the upper arm is lifted sideways (away from the body); the posterior deltoid resides on the back of the shoulder and draws the upper arm backward. The three parts of the deltoid can be exercised by performing the front raise (anterior deltoid), the lateral raise (middle deltoid), and the bent over raise (posterior raise) with dumbbells. The seated (or shoulder) press is a multi-joint movement that exercises the anterior deltoid



with assistance from the triceps. The seated press can be performed with a barbell, dumbbells, a machine (either selectorized or plateloading), or manual resistance.

Several deep muscles of the shoulder are sometimes referred to as the "internal rotators" (the subscapularis and teres major) and the "external rotators" (the infraspinatus and teres minor). The internal rotators and the external rotators can be strengthened by using internal rotation and external rotation with dumbbells.

The trapezius is often considered as part of the shoulder musculature. The trapezius is a trapezoid-shaped muscle that covers the uppermost region of the back and the posterior section of the neck. The primary functions of the "traps" are to elevate the shoulders (as in shrugging), to adduct the scapulae (pinch the shoulder blades together), and to extend the head backward. Along with the muscles of the pectoral region, strong shoulders are a vital part of such skills as shooting, rebounding, and passing. The trapezius can be emphasized with the single-joint movement known as the shoulder shrug using a barbell and dumbbells. The upright row is a multi-joint movement that exercises the trapezius with assistance from the biceps. A barbell, dumbbells, or a selectorized machine can be used to perform the upright row.

THE UPPER ARMS

The two primary muscles of the upper arm are the biceps and the triceps.

BICEPS: The biceps brachii is the prominent muscle on the front part of the upper arm. It causes the arm to flex (or bend) at the elbow. As the name suggests, the biceps have two separate heads. In fact, the separation can sometimes be seen as a groove on a well-developed arm when the biceps are fully flexed. The biceps assist the upper torso muscles — especially the lats — in pulling down a rebound.

The primary movement for exercising the biceps is the bicep curl. This exercise has a number of variations that can be performed with a barbell, dumbbells, a machine (selectorized or plateloading), or manual resistance.

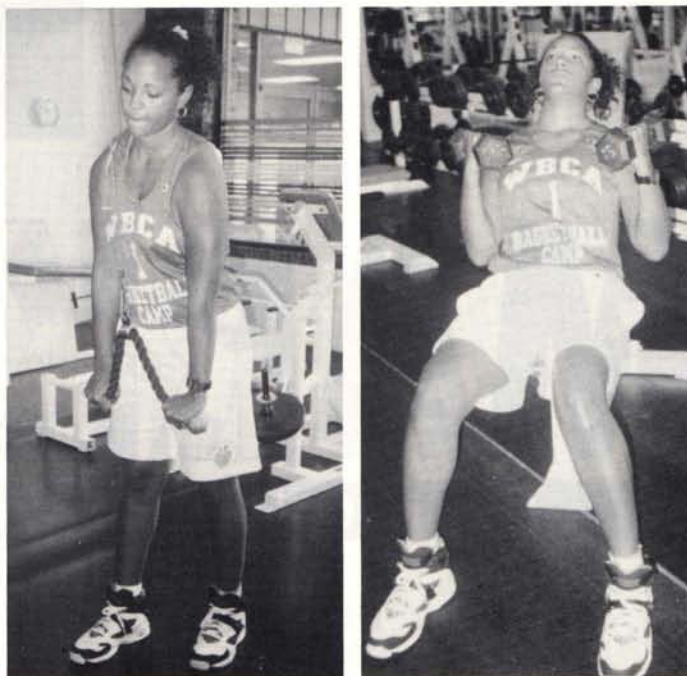
TRICEPS: The triceps brachii is a horseshoe-shaped muscle located on the back of the upper arm. This muscle has three distinct heads — the long, lateral, and medial. The primary function of the triceps is to extend (or straighten) the arm at the elbow. The triceps are utilized in many basketball skills, especially dribbling, passing, and shooting.

The tricep extension is the main movement for exercising the triceps. This movement can be performed in a variety of ways using a barbell, dumbbells, a machine (selectorized or plateloading), or manual resistance.

THE LOWER ARMS

The final muscle group that must be addressed in the upper body resides in the lower arm or the forearm.

FOREARMS: The forearm is made up of 19 different muscles. These muscles may be divided into two groups on the basis of their position



and functions. The anterior group on the front part of the forearm causes flexion and pronation (turning the palm downward); the posterior group on the back part of the forearm causes extension and supination (turning the palm upward). The forearms affect the wrists and hands, which are important in skills such as shooting and dribbling.

Wrist flexion (for the anterior group) and wrist extension (for the posterior group) can be performed using a barbell, dumbbells, a selectorized machine, or manual resistance.

EXERCISE PRESCRIPTION

In general, 8–12 reps should be the recommended goal for any upper torso exercise. Movements for the upper torso exercise should be performed after addressing the hip and the leg musculature. Because the shoulder joint allows movement at many different angles, two exercises should be selected for the chest, upper back, and shoulders followed by one movement for the biceps, triceps and forearms. It is especially important not to exercise the arms before exercising the upper torso. Multi-joint movements done for the upper body require the use of the arms to assist the movement. The arms are the "weak link" in the exercise because they are smaller. Fatiguing the arms first will weaken an already weak link, thereby limiting the workload placed on the muscles of the upper torso.

Keep in mind that attempting to see how much weight your athletes can lift for one repetition is potentially dangerous and really doesn't prove anything anyway. In addition, performing endless numbers of sets is extremely inefficient in terms of time and can significantly increase their risk of incurring an overuse injury — such as tendinitis — due to repetitive muscular trauma. Remember, a basketball game has never been decided by a bench press contest or a posedown! ♦

*Matt Brzycki is the Coordinator of Health Fitness, Strength and Conditioning Programs at Princeton University. He has authored more than 135 articles on strength and fitness and a book, **A Practical Approach to Strength Training**, which is in its third edition. Brzycki has also co-authored the book **Conditioning for Basketball** with Shaun Brown of the University of Kentucky.*