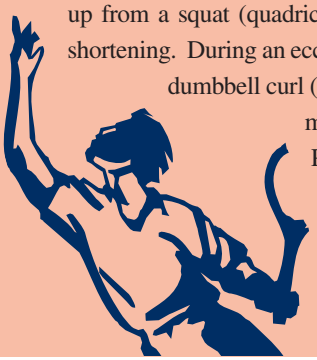
Plyometric Training For Athletes

By David Koch ATC

Plyometrics is a term that is frequently misused, misunderstood, and sometimes even feared by athletes, coaches and parents. Plyometrics however, when used properly with other types of training, can be an excellent way to improve athletic performance and prevent injury.

Plyometrics is a training method for developing explosive power. Explosive power is demonstrated in most athletic activities such as a basketball player jumping for a rebound, a tennis player serving or a sprinter coming out of the starting blocks. Therefore, it makes sense that plyometric training techniques to increase explosive power would be beneficial to most competitive athletes.

In order to understand plyometric training, we must first understand how our muscles work. There are two types of muscle contraction: Concentric (positive) and Eccentric (negative) muscle contractions. During a concentric muscle contraction such as curling a dumbbell (biceps) or standing up from a squat (quadriceps, gluteus maximus), the muscle fibers are shortening. During an eccentric muscle contraction such as lowering the dumbbell curl (biceps) or squatting down (quadriceps, gluteus maximus), the muscle fibers are lengthening. Plyometric training incorporates eccentric (negative) muscle contraction followed immediately by explosive concentric (positive) muscle contraction to help train our bodies to better perform the explosive movements required during athletic competition. For example, jumping back up on a box immediately after landing is an excellent plyometric exercise to increase vertical leap for sports like volleyball and basketball.



Performing plyometric exercises as any explosive athletic activity does carry some risk for injury. However, if performed correctly with proper warm-up and technique, plyometrics may actually help prevent injury during competition. Recent research has shown that plyometric training can be performed safely by children as young as 12 years old if done properly. Injuries most frequently occur from trying to utilize a "one size fits all" plyometric program for a group of athletes.

The keys to a safe plyometric program are:

1. Assessing each individual athlete's ability to perform plyometric drills
2. Using a logical progression from easy to more difficult activities based on each individual's performance
3. Ensuring that each activity can be performed with proper technique
4. Warm-up properly before

There are many references available to assist with this program development including books such as High Powered Plyometrics by James C. Radcliffe and Robert C Farentinos; Essentials of Strength Training and Conditioning edited by Thomas R. Baechle; websites such as the University of Oregon Plyometrics Page, www.uoregon.edu/~j15; and videos such as Jump! Jump! Jump! by Vern Gambetta and Steve Odgers. So as a parent, coach or athlete looking to improve athletic performance, a well-designed plyometric program may be just what is needed.

Cheerleading Injury Rates
Jump to New Highs

By Kristen Miller ATC

Between 1990 and 2002, over 208,800 youths (ages 5-18) visited the emergency room for cheerleading-related injuries. Poor practice facilities, riskier stunts, limited access to medical personnel and poor supervision and coaching may contribute to the increase in injuries. Injuries rose 110%, averaging 16,100 per year but the number of participants, ages 6 and up, rose only 18% to about 1.5 million nationwide. With this dramatic increase in the rate of injury per participating cheerleader, the need for good coaching-with an emphasis on safety-is becoming more and more important.

Sixty-two percent of cheerleading injuries happen at school and most occur during tumbling or stunting routines. The most common injuries are still minor muscle strains and ligament sprains. However, over half of the reported catastrophic sporting injuries (those involving severe skull and spinal damage) between 1983 and 2004 resulted from cheerleading.

The American Association of Cheerleading Coaches and Advisors (AACCA) and the National Council for Spirit Safety and Education (NCSSE) provide safety training for coaches. The AACCA website (www.aacca.org) provides detailed safety rules for high schools.

Some general guidelines include:

- All practices should be supervised by a trained coach and located in a safe environment with appropriate safety equipment.
- The squad's activity should be determined by the squad's ability level.
- All cheerleaders should receive proper training before attempting tumbling, stunts, pyramids and jumps.
- Proper training of spotting techniques should be mandatory for all squad members.
- All cheerleading squads should adopt comprehensive conditioning, strength training, and flexibility programs to increase skills and decrease risk of injuries.

Uniform requirements regarding safety training and certification for cheerleader coaches could help reduce the risk of injury and improve injury management. By August 2006, the NCAA will require all cheerleading squads to be supervised by a safety-certified coach. It is anticipated that this requirement will also make its way to the high-school level.