

Guidelines to the Implementation of a Dynamic Stretching Program

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PRIOR TO THE BEGINNING OF practice, most teams participate in a brief warm-up/stretching program to prepare the body for activity. Researchers have determined that connective tissue (i.e., muscles and tendons, etc.) is better able to react to potential injury-causing forces following the application of heat and stretch (5, 6). The prepractice warm-up program often consists primarily of static stretching; therefore, many athletes begin practice with minimal core body temperature elevation, and subsequently, their muscles are not properly prepared for activity (8, 9).

■ Importance of Dynamic Exercises for Warm-up

The prepractice stretching period should be treated as an important part of the practice. It is recommended that coaches supervise stretching sessions as they would any other part of practice. Doing this communicates the importance of the warm-up/stretching period and may encourage ath-

letes to keep their attention focused on the task at hand.

It is possible that many athletes fail to understand the function of a warm-up/stretching period and, as a result, may find stretching somewhat boring. However, functional-based dynamic stretching programs have added a new dimension to the usual prepractice warm-up. Dynamic stretching consists of functional-based exercises, which use sport-specific movements to prepare the body for activity (2, 6–8). Dynamic flexibility programs are designed from analyzing the movements associated with a particular sport activity and developing stretches to enhance flexibility and balance necessary for that activity (2, 8). Dynamic flexibility can be used to teach or emphasize sport-specific movements athletes will need during practice and competition and is best used prior to practice or competition instead of during the cool-down. Static-based stretching exercises seem the most effective following the completion of activity.

■ Dynamic Exercises for the Lower Body

Dynamic stretching exercises can be made more difficult by progressing each exercise from a stand or walk to a skip or run. Replacing static stretching exercises with dynamic ones is not difficult. Many times, the actual stretching exercise is the same, but it is preceded and followed by some form of movement. For example, static stretching of the calf may consist of pushing into a wall with the hip in a flexed position. The disadvantage of this stretch is that it does little to elevate core body temperature, and rarely during activity is an athlete pushing with both hands into a fixed object. To make this exercise a dynamic stretch, simply have the athlete walk on his/her toes for a length of 10 yd both forward and backward. To incorporate the shin into the stretch, have athletes walk on their heels. Next, combine the 2 stretches in a heel-to-toe walk. This exercise can be done first walking and later skipping.



Figure 1. Opposite-arm-to-opposite-toe dynamic stretch.

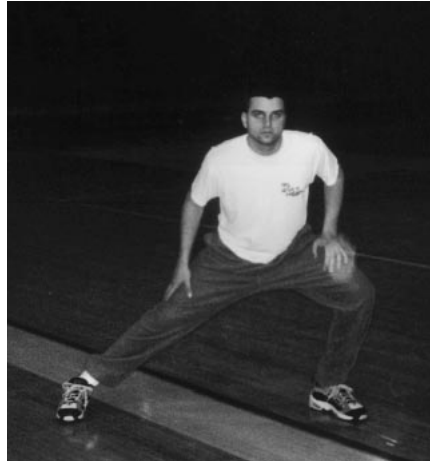


Figure 2. Side lunge dynamic stretch.

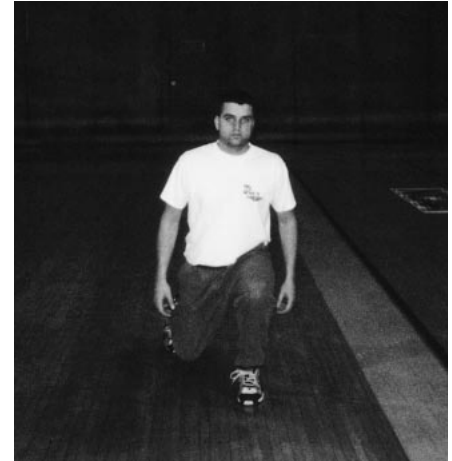


Figure 3. Forward lunge dynamic stretch.

Hamstring stretches done statically in a seated position do not simulate the sport-specific movement that athletes will be performing following the warm-up. Static stretching done standing while bending down to reach the toes places the hip in a posterior pelvic tilt that is not conducive to proper hamstring stretching (11). Stretching the hamstring in an anterior pelvic tilt has been shown to be more effective at improving range of motion (11). Most dynamic flexibility exercises can be done with an anterior pelvic tilt. Emphasis on good posture and leading with the chest and head when bending at the hip ensures an anterior tilt to the pelvis. An opposite-hand-to-opposite-toe hamstring stretch preceded by movement into the desired position closely simulates the fielding motion in baseball or softball and at the same time forces athletes to concentrate on their balance (Photo 1). Quadriceps stretches can be done at a walking or skipping pace in the same manner by having the athletes grab their feet behind them. A heel-to-butt run is also an effective quadriceps stretch for most sports.

Flexibility of the adductor

muscles is important for all athletes. Athletics require quick lateral movements, which may mean the difference between stealing second successfully in baseball or softball or a successful fast break in basketball. Dynamic flexibility programs need to incorporate movement-based stretches for the adductor muscles. This can be incorporated through the use of side and forward lunges (Photos 2 and 3). A sumo groin stretch (Photo 4) is recommended for sports such as football and basketball, which require sudden stopping and change of direction. Stretches that involve a side-to-side swing at the hips are also useful.

■ Upper-Body Dynamic Exercises

The shoulder and neck musculature are often overlooked during the warm-up/stretching period. Static stretching of the shoulder does little to warm up the body or place the shoulder musculature in the positions it will be forced into during competition and practice. Arm circles both forward and backward are effective beginning dynamic flexibility stretches. Athletes should then mimic the

upper-body movements that they will be performing during activity. For example, have softball or baseball athletes simulate fielding a ball, standing up, and making an exaggerated throw. This should be done with the dominant and nondominant hand to stretch out both arms and increase coordination and balance. In a sport like basketball, have the athletes mimic shooting and passing while moving around the court. Additionally, athletes can skip in a forward or backward direction while doing forward or backward arm circles.

■ Concerns, Recommendations, and Research of Dynamic Exercises

Coaches often ask how much time a dynamic flexibility program will take and express concern regarding the safety of dynamic stretching. An effective dynamic stretching warm-up can be accomplished in 10–15 minutes once the athletes are familiar with the exercises. Ballistic stretching has often been considered an injury risk because it causes a contraction of the muscle spindle during stretch (1, 3, 4). Soft tissues surrounding



Figure 4. Sumo groin stretch.

joints can also become damaged before ballistic movements can be stopped (8–10). Dynamic flexibility exercises should be identical to the movements the body will be doing during activity; therefore, dynamic flexibility is not a dangerous ballistic type of stretching. Coaches need to be aware that unsupervised participation in the warm-up/stretching period may cause injury regardless of the type of stretching exercises being performed.

We implemented a dynamic flexibility program with our softball team and recently completed an investigation to determine the impact of a dynamic and static flexibility program on range of motion and number of days injured. A significant increase in range of motion measurements in the hamstrings ($P = 0.00$) and quadriceps ($P = 0.00$) was observed in athletes in both programs from the beginning to the end of the season (7). Injury rates for our softball athletes in the dynamic flexibility pro-

gram were significantly lower ($P = 0.00$) than injury rates for another softball team on a static-based flexibility program (7).

Coaches wishing to implement dynamic flexibility programs need to begin dynamic stretches in the preseason or before if possible. Because dynamic flexibility exercises require balance and coordination, many athletes experience muscle soreness for a period of time following dynamic flexibility exercises (2, 7). After the initial muscle soreness is relieved, participants in static-based stretching programs report higher levels of muscle soreness (7).

■ Conclusions

Dynamic flexibility should be used as a warm-up/stretching technique and should be done continuously with down and back sets. The intensity of a dynamic flexibility warm-up should vary according to the level of the athlete and should not cause undue fatigue. Start dynamic flexibility exercises slowly and progress to faster and more advanced movements. Dynamic flexibility programs must incorporate the whole body and mimic movements performed for each individual sport. To develop a dynamic flexibility program appropriate for your sport, analyze the movements necessary and be creative. ▲

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