Dynamic Flexibility Vs. Static Stretching For Warm Up

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A proper warm-up routine is very important to the health and performance of an athlete. If the body is not adequately prepared for the demands of the upcoming sport or activity, injury is more likely to occur. In addition, it is impossible for the body to perform to the peak of its ability without warm, flexible muscles.

In the past, static stretching was the preferred method of pre-activity warm-up, and is still used to a large extent. A static stretch is a stretch performed with a prolonged hold and is used to increase the length of soft tissue or the flexibility of a specific muscle. This form of stretching has the most profound effect on a specific tissue known as collagen. Collagen is the cellular framework found in our muscles, tendons, and ligaments. Recent research has found that static stretches have a negative neuromuscular effect on the muscle’s performance and may decrease strength in the stretched muscle group for up to one hour. This induced weakness could contribute to an increased risk of injury. Static stretching still is an important aspect of an athlete’s overall health. Static stretches help to reduce injury by maximizing flexibility and improving biomechanics. Static stretching is very useful and beneficial to be done not only after activity, but also to be continued regularly in between athletic activities to increase and maintain muscle length and flexibility.

Recently, however, there have been more warm-up programs that utilize a dynamic approach. Dynamic warm-up involves more active and functional movements that focus more on the neuromuscular system of the muscle complex. These dynamic movements will aid in short-term flexibility gains through stimulation of the Golgi tendon organs, which are hidden deep in the tendons of the muscle and measure muscle tension to protect it from injury. These organs are likely to over react if not appropriately conditioned and prepared for activity. For example, the knee accelerates forward during running and the muscle tension increases rapidly. The Golgi tendon organ can stimulate a protective/reflexive muscle contraction at the time of rapid stretch/acceleration, this mechanism has been theorized to be the cause of a muscular strain. Dynamic warm-ups have a dampening effect on this Golgi tendon complex, making them less reactive during normal activity levels, and without decreasing strength as seen with static stretching. Dynamic warm-ups increase muscular flexibility for the short-term through the neuromuscular system and potentially reduce injury through decreasing reflexive muscle contractions. The reasons listed above point to dynamic activities being ideal components for pre-activity and sport warm-up.

Pictured below are some dynamic flexibility exercises that can be added to any pre-activity warm-up program. These exercises will improve the performance of all the main muscle groups and significantly decrease the chance of injury. Also pictured below are some static stretching exercises that can be utilized after athletic activities and regularly during the week to further decrease chance of injury.

**Dynamic flexibility exercises**

**Deep Lunges with Rotation**

Lunge forward with either foot, keeping knee over 2nd toe, and rotate upper body towards forward leg. Return to standing and repeat immediately with other leg. Exercise should also be done rotating upper body away from front leg. Do about 10 reps of each.

**Side-to-Side Lunges**
Start in low squat position. Slowly shift body back and forth from left to right, staying as low as possible. Shift to left until right leg is straight, then to right until left leg is straight. Do about 10 reps to each side.

**Dipping Birds**

Step forward with right foot, bend forward at the waist, and reach left hand to the right foot without bending right knee. Return to standing, then step forward with left foot, bend forward at waist, and reach right hand to the left foot without bending knee. Do about 10 reps for each leg.

**Sprinter Stretch**

In push-up position, with trunk slightly bent, cross right foot over left foot and pump left foot up and down. Do about 10-15 repetitions, then put left foot over right and repeat.

**Static Stretches**

**Gastroc/Soleus Stretch**

Lean forward against wall or bench with front leg bent and back leg straight with heel on ground. Slowly lean body forward until stretch is felt in back calf muscle. Hold stretch for 30 seconds without bouncing. Repeat for other leg. Do 2-3 repetitions for each leg.

**Standing Hamstring Stretch**

While standing, rest one foot up on bench or step. Both the foot on the step and the one on the ground should be
pointing straight forward. Slowly lean forward at waist until stretch is felt in back of leg that is up on step. Hold stretch for 30 seconds without bouncing. Do 2-3 repetitions for each leg.

**Satan Pose**

![Satan Pose Image]

In lunge position with right knee on ground, grab right foot with right hand and pull foot back until stretch is felt on front of right leg. Then slowly lean body forward onto left leg until stretch is felt on front of right hip. Hold for 30 seconds. Do 2-3 repetitions for each leg.

**Standing IT Band Stretch**

![Standing IT Band Stretch Image]

While standing, cross right foot over left foot. Then shift hips to left until stretch is felt on outside of left hip. Move right foot out away from body further if more stretch is needed. Hold for 30 seconds. Repeat same steps to stretch right leg. Do 2-3 repetitions for each leg.

**Sunrise Stretch**

![Sunrise Stretch Image]

Lying on right side with knees bent up to waist level, place right hand on top of left knee and slowly rotate upper body to the left, keeping left arm straight. Rotate body until stretch is felt in mid back. Move left arm up towards head more until stretch is felt in front of shoulder. Hold for 30 seconds. Repeat for other side. Do 2-3 repetitions for each side.

**Figure 4 Piriformis Stretch**

![Figure 4 Piriformis Stretch Image]

Lying on back with knees up, rest right foot on top of left knee. Reach both hands behind left thigh and pull left leg back until stretch is felt in right buttock. Hold for 30 seconds. Repeat for other side. Do 2-3 repetitions for each leg.

**Articles that support dynamic warm up over static stretching**


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