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Health



Priming the Pump

Mark Galland, MD, Orthopaedic Surgery and Sports Medicine

We are all familiar with the standard warm-up routine that has been implemented for decades: “jog a lap” followed by a brief stretch of the larger muscle groups, or general calisthenics—then, begin the workout. There is no planning nor purpose; we just do the drills for the sake of doing them. What if the warm-up was designed around the activity being performed or to address a biomechanical imbalance that was inhibiting the athlete’s performance? This appears to be a better way to train an athlete. Let’s first identify what happens to the body during the warm-up and how it can improve our performance.

Physiology

As you read this article, your heart rate (HR) is approximately 70 bpm, respirations (R) 12 per minute, and your blood pressure (BP) about 120/80. Now imagine getting up from your seat doing some arm swings, toe touches, maybe a hammy stretch and then beginning your workout. OUCH! That hurts just thinking about it! Instead, how about skipping rope for 2 minutes, joint mobility drills (more on this later), a few minutes of myofascial therapy on the foam roll (focusing on the major muscle groups used in the workout), dynamic flexibility/stretching, and finishing off with some prehab/activation exercises to wake up the tiny intrinsic muscles that stabilize the joint. Now, let’s check our vitals and compare them to our resting state: HR = 120-130 bpm, R = 30-50 per minute, BP 180/100. Quite a bit different! It’s almost as if we were in the middle of our workout, so now “we are ready to roll.” Before engaging in strenuous activity, we must first signal our bodies that something intense is about to take place (i.e. activate the central and peripheral nervous systems.) The increase in respirations, HR, and BP allow for more blood flow to our muscles, delivering oxygen and nutrients to power performance. The increase in core body temperature warms up the muscles and tendons making them more extensible and pliable. Is it easier to stretch a piece of rubber when it’s warm or when it’s cold?

Stretching (Static Vs. Dynamic)

What is the best way to stretch before a workout and after a workout? As we stated earlier, a warm muscle/tendon is more easily stretched than a cold one, but the way a muscle is stretched can affect subsequent athletic performance. When performing a static stretch (holding a stretch for 15-60s) the power production and strength potential of the muscle is reduced considerably. This is exactly the opposite of what we

are trying to accomplish, so a static stretch doesn’t appear to be the best choice. (There are some instances where static stretches are useful pre-workout, but that’s a topic for another discussion). To achieve our warm up goals, we recommend movement-based flexibility routines (also referred to as dynamic flexibility/warm-up or movement prep) with our athletes. By stretching multiple muscle groups at the same time through specific movements, the body is prepared for the type of training that will be performed during the workout. We have found that the athletes have a better “carry over” into their work out without a decrease in performance. Here is an example of how one might structure a warm up for a lower body training session.

- General Body Warm Up – jump rope (2 mins)
- Myofascial Therapy (foam roll) – calves, quads, hams, it band (30 sec each)
- Hip Mobility – fire hydrants x 5 ea dir.
- Movement Flexibility Patterns – spiderman lunges x 5ea, leg cradle/quad walk x 5ea (2 min)
- Activation – overhead squats on foam x 10, tuck jumps x 5 (2 min)
- Main Work Out – incorporate 2-3 warm up sets for the main lift.
- Static Stretch (following the workout) – upper extremity (30s per muscle group)

Visit us on Facebook & YouTube for video descriptions of exercises: www.facebook.com (search for The-Iron-Ath-Elite) & www.youtube.com/user/TheIronAthElite.



These students are stretching after a track workout. Static stretching is best done after a workout when muscles are warm (Photo by Teri Saylor).

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