



ACTIVE DYNAMIC WARM-UP



Today we have one hour to talk about a topic that can easily be a full day conference. In the past warm ups have almost universally been done incorrectly. Coaches typically rely on past experiences to develop a warm up routine. “When I played high school football we lined up at the center of the field and stretched muscles as a team, and in no particular order.” When I ran track at the University of North Carolina we were given warm up cards to memorize as freshman all athletes completed the same warm up, at practice or competition. This was much better than the high school version, yet still sub-par when it comes to the degree of specificity that we are looking for. At VSP we have chosen to take a less traditional approach to the athletic preparation process that yields the results that we are looking for.

Question

You have 15 minutes until the opening whistle.

How do you prepare yourself to play?



-You have two different options here, that will lead to two very different athletic states. A STATIC PASSIVE warm up or an ACTIVE DYNAMIC warm up.

Definitions:

Static – a slow and constant stretch the includes the relaxation and concurrent elongation of the stretched muscle. Because it is performed slowly it does not elicit the stretch reflex of the muscle.

SIDEBAR

Stretch reflex – when a muscle is placed on a stretch elastic energy is stored into the muscle. When speed is involved in this process a sensory neuron from the muscle spindle innervates a motor neuron in the spine. The motor neuron then causes a muscle action of the previously stretched muscle.

Ex= Pull ups or curls.

Static stretching compromises the elasticity of a muscle. This leads to lesser amount of power output from this muscle.

Ex= old socks

Passive – The term passive refers to the state of the cardiovascular system.

Active Dynamic Warm up. Increased demand on the Cardiovascular system, as well as preserving the elastic integrity of the needed muscle groups for the days activity.

Follow-Up Question

So what's wrong with just jogging around the goal once, circling-up and doing some traditional stretching?



Answer

- Core temperature confusion
- Inappropriate usage of static stretching
- Needed musculature remains inactive
- CNS not stimulated
- Actions do not resemble practice or competition
- Mobility is not accounted for



1. Slight elevation in temp when jogging, then cardiovascular depression when stretching.
2. Static stretching is best used at the end of a workout or game not before. Muscle deactivation results
3. Muscle activation does not take place in any form.
4. The CNS must be stimulated in order for athletes to send Neuromuscular signals to the muscles to fire. The faster these signals are rehearsed the faster and more efficient the process will become.
5. Noting about a static passive warm up resembles the game of soccer. Or any sport for that matter, you could draw comparisons to YOGA but that's all I can think of.
6. All of the attention is on muscles, there is no focus specific to joints.

Why Active/Dynamic Warm-Up?

- Increase core body temperature
- Increase blood flow to working muscles
- Improve elastic and contractile qualities of working muscle groups
- Stimulate nervous system
- Increase joint mobility



I will expand on these bullets in the next few slides.

Performance Enhancement & Movement Preparation

- As core temperature rises, the viscosity of muscles, tendons, and ligaments lowers.

- ▶Increased range of motion → Improved movement mechanics and force production.

- Increased temperature of working muscles.

- ▶A warm muscle contracts with more force and relaxes in a shorter amount of time.



Performance Enhancement & Movement Preparation (cont.)

- Increased blood flow to working muscles.
 - ▣ Increased oxygen delivery → prolonged muscular activity.
- Simple-to-Complex method of exercise progression.
 - ▣ Gradually reach optimal readiness at onset of training.



Performance Enhancement & Movement Preparation (cont.)

- Sport specific movement skills utilized during warm-up.
 - ▣ Increased rate of skill acquisition accelerates training evolution.
- Utilization of Dynamic and Functional movements.
 - ▣ Increased levels of balance, coordination, and remedial strength.



At VSP, we integrate certain movements that have been taught in previous sessions into the warm up, in order to maintain correct mechanics of those movements and keep the athletes fresh on what we have covered in the past

Much like good math teachers go back and review certain principles that will always be needed in future.

Warm-Up Components

- **Thermogenics:** Activities used to increase body temp.
 - Jogging skipping shuffling, jumping jacks, etc.
- **General Mobility:** Activities used to increase blood flow, take joints through ranges of motion, and prepare the body for movement. Generally executed at a low exertion level in the start of the Active Dynamic Warm-Up.
 - arm circles, trunk twists, squats, lunges, ankle circles
- **Muscle Activation:** Isolated movements used to stimulate specific muscles. The targeted muscles are those important to posture, stability, and force application during speed and agility training. Generally performed after core body temperature is elevated, these movements are also interspersed throughout the Transit and Dynamic Mobility movements.
 - hip circles, mountain climbers, crossover squats



Thermogenics: Ex= Jumping Jacks, ½ speed build ups,

Muscle Activation: = mountain climbers (hip flexors and quads), Wide outs, (external rotators of the hip), Supine Straight leg raise (hamstrings)

Warm-Up Components (cont.)

- **Transit Mobility:** An activity that takes joints through a specific range of motion, while traveling over a prescribed distance. These movements are designed to reinforce athletic movement, increase dynamic flexibility, while also increasing the intensity of physical exertion.
 - Carioca (grapevine) high knee skips, skip and scoop
- **Dynamic Mobility:** An activity that takes joints through an explosive or rapid range of motion. While similar to Transit Mobility, activities in this category generally do not travel over a distance and offer a final increase in intensity of physical exertion.
 - -Straight leg high kick, long arm swings, standing leg swings



Transit Mobility. Ex= side slide w/arm swings, carioca, jogging hamstring stretch

Dynamic mobility – Leg swing alt, Prone scorpions, rockers to inside hurdle seat

Injury Prevention

• Lowered viscosity + Increased range of motion = Decreased muscle and joint stiffness.

➤ The result is a reduced likelihood of injury caused by sudden and unexpected movements.

➤ Joint alignment can be reviewed and rehearsed



Can you reduce the risk of ACL injury?

- PEP Program (Prevent Injury, Enhance Performance)
 - 2 year prevention trial with 1,041 female soccer players age 14-18.
 - Control group 1905
 - Used a 15 minute warm-up neuromuscular training program to replace traditional warm-up
 - Focused on stretching, strengthening, plyometrics, and sport specific agility drills

* Santa Monica Orthopedic Group



Risk Reduction

- During 2000 season the trained group had an **88% reduction** in ACL tears



Can you reduce the risk of ACL injury?

- The 5 key components
 1. **Core Control**
 - Ab exercises, rotational exercises, low back exercises
 2. **Technique**
 - More important than the exercise / skill itself
 3. **Strength**
 - All competitive athletes must be involved in some sort of program
 4. **Neuromuscular Control (reaction / unconscious actions)**
 - As the brain learns new skills, it must direct limbs and stabilize joints
 5. **Knee Position (joint alignment)**



Create Your Warm Up

- **Thermogenic** $\frac{1}{2}$ Speed X 50 yds
Arm circles X 5
- **General Mobility** Trunk Twists X 5
- **Transit Mobility** Squats X 5
Lunge w.twist X 5 each
- **Thermogenic** Ankle Circles X 5
- **Muscle Activation** **Carioca X 30 yds each**
- **Transit Mobility** $\frac{3}{4}$ Speed X 50 yds
Hip Circles X 10 each
- **Dynamic Mobility** Crossover Lunge X 5 each
Crossover Skips X 20 yds each
- **Thermogenic** **Leg Swing Series X 5 each**
Full Speed X 50 yds



Thank You

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