

It's not Just a "Warm-Up"

**Justin Smith, MS, RSCC
Associate Head Coach – Athletic Performance
University of Vermont**

The dynamic nature of sport places high physical demands on an athlete. Speed, acceleration and the ability to change direction are skills that are vital to success in all sports. These movements also place a great amount of stress on the athlete's body. It is becoming more and more important from an injury prevention standpoint, as well as a performance standpoint, to make sure athletes are adequately prepared for the physical demands of their chosen sport. As an athletic trainer or strength and conditioning coach you serve an important role in preparing the athlete for what they are going to see on the field of play. Part of this preparation for play, along with your athletes' mental preparation, is going through a warm-up routine. The concept of warming up has also changed and evolved over the past several years, gone are the days of sitting around in a circle static stretching before a game or jogging before practice. The warm-up has evolved to better match the demands of the specific activity it precedes; it simply does not make sense to move slowly to prepare for a high-speed sport. This article is not meant to be a comprehensive overview of the benefits of a proper warm-up it is meant to provide a brief introduction to some of the ideas and concepts that the University of Vermont Athletic Performance program utilizes with their sports during pre-game warm-ups.

There are many factors to consider when designing a warm-up, which include the number of athletes, amount of space and amount of time available. All of these factors will play a role in the design of your warm-up routine. Typically the two most significant factors are the number of athletes and the team's time available. Being efficient is of the utmost importance when designing a warm-up, therefore utilizing lines instead of a circle will allow the athletes to keep moving and increase the amount of exercises or movements you can accomplish during the allotted warm-up time. The overall goal of the warm-up is to gradually increase intensity over the course of the routine. This increase in intensity is accomplished by increasing heart rate, muscle and core temperature, respiratory rate and blood flow to the muscles. Athletes should break a sweat by the end of the warm-up and "feel" warm. A secondary benefit of the gradual increase in intensity is that it provides the athletes an opportunity to prepare mentally for what they need to do on the field. The warm-up is a great time for captains to take a leadership role and set the tone for the game by having the team "clap" or give a "call back" during the warm up to help focus the team and prepare them to compete. This type of team building activity can increase communication and group cohesion prior to stepping on to the field. Generally speaking, 10-15 minutes are dedicated to the warm-up before moving into the team's stick and ball warm-up. The warm-up routine should prepare the athlete to move seamlessly into this portion of your overall pre-game routine. Warm-ups should be specific to the event that they are being designed for; therefore we perform different warm-ups prior to strength training and practice. The warm-ups for those types of activities still follow the guidelines outlined in the article; however the exercise and movement selection may differ depending upon the demands of the activity.

The warm-up should include movements that are done moving forward, backward and laterally to best simulate the nature of sport. The movements should be sequenced in a way that creates a flow to the warm-up and takes the athlete through the ranges of motion that will be required of the athlete during play. While it is important to increase the temperature of the muscle, it is also very important to prepare the muscle for the speed of movement that it will be required to go through during play. Utilizing form-running drills, short sprints or build-ups during the warm-up will help prepare the athlete for the speed of the game and fine tune their nervous system. By the end of the warm-up, athletes should have broken a sweat, be a little winded and definitely be ready to compete at a high level. If this is not the case after you complete your pre-game warm-up you may want to evaluate what you are doing to get your team ready to play.

The following is a brief overview of the concepts discussed earlier.

Overall Goals of performing a Warm-up

- Prepare athlete physically and mentally for competition
- Reduce the likelihood of injury
- Provide an opportunity for team building/bonding - prepare to compete

Benefits of a Warm-up (abbreviated list)

- Increased heart and respiratory rate
- Increased blood and oxygen supply to muscles
- Increase in core and muscle temperature
- Priming of nervous system
- Reinforce proper movement patterns
- Increase rate of force development
- Mental preparation (focus / intensity / motivation)

General Organization of a Warm-up

- Movements should progress from general to specific
- Drills should progress from simple to complex
- Speed of movement should progress from slow to fast
- Upper and lower body movements should be used
- Movements should be performed in lines in a back and forth manner (efficiency)
- Include drills that take the athlete through all planes of motion

Phases of Warm-up

- General Warm-up – low intensity movements done in place or at walking speed
- Active Warm-up – moderate intensity movements done at walking speed
- Dynamic Warm-up – moderate to high intensity movements done at walking or jogging speed
- Specific Warm-up – high intensity movements done at jogging or running speed

Exercise Examples for each category (abbreviated list)

General Warm-up – in place of moving in space

- Jumping Jacks, Flings, Seal Jacks
- Arm Circles, Arm Crosses, Arm Raises, Trunk Twist
- Squats, Push Ups, Spiderman Lunges, Scorpions

Active Warm-up – moving in space at walking or jogging speed

- High Knee Walk with Psoas Hold
- Ankle Squats
- RDL-Quad Stretch
- Spiderman with Reach
- Walking Lunge with Overhead Reach
- Lateral Lunge
- Backward Lunge & Twist
- Cross-Over + Cross-Behind Lunge
- Straight Leg March
- Leg Swing Kick
- Walking SL RDL
- World's Greatest Stretch

Dynamic Warm-up – moving in space at walking or jogging speed

- Butt Kicks
- High Knees

- Carioca
- Lateral Shuffle
- Backward Run
- Cross-Over Run
- Back Pedal
- Lateral Shuffle with Arm Swings
- Power Skips
- A Skips, B Skips

Specific Warm-up – moving in space at jogging or running speed

- Quick Feet Line Drills
- Build Up Sprints (Jog, Stride, Sprint)
- Short Sprints (5 yd bursts)
- Short Sprint to Back Pedal
- Back Pedal to Short Sprint
- Lateral Shuffle to Short Sprint
- Quick Feet Drills to Short Sprints

The following is an example of what a Pre-Game Warm-up may look like. Keep in mind that you may need to substitute movements to best fit the needs of your athletes. Every athlete and team is different and may require a different warm-up routine. Be creative when designing your warm-up, it needs to be specific to your style of play as well as your athletes. The example provided is just that, an example. It is not a routine to take and implement with your team tomorrow. Sit down with your captains and make them a part of the process of designing the warm-up. As stated earlier you or your captains can add in a leadership or team building component by having the athletes “clap” after you call out an exercise or give a “call back” during certain portions of the warm-up to bring up the intensity and focus as they prepare for the game. A “call back” could be something as simple as “Go Cats!” after the captains call out an exercise.

General Warm-up Phase – In Place

- Jumping Jacks x 10 / Arm Circles x 10 (Fwd) / Flings x 5 e / Arm Circles x 10 (Bkwd)
- Seal Jacks x 10 / Arm Raise x 5 e / Ali Shuffle x 10 e / Trunk Twist x 5 e

- Leg Swings x 10 e (Front to Back) / Prisoner Squat x 10 / Leg Swings x 10 e (Side to Side)
- Scap Push Up x 10 / Spiderman x 5 e / Push Up x 5 / Groiner x 10

Active Warm-up Phase – Moving In Space (15yds each) in lines completed back and forth

- High Knee Walk with Psoas Hold
- Ankle Squat with Piriformis Stretch
- Spiderman with Rotational Reach
- Backward Lunge and Twist
- Walking Forward Lunge with Overhead Reach
- Lateral Lunge Shift with Hip Extension
- Cross Over + Cross Behind Lunge
- Straight Leg March
- Walking Backward Inverted Reach

Dynamic Warm-up Phase – Moving In Space (15yds each) jogging speed

- Butt Kicks
- High Knees
- Carioca
- Lateral Shuffle
- 45 Degree Slides (Fwd and Bkwd)
- Cross Over Run
- Back Pedal
- Power Skip

Specific Warm-up Phase – In Place and Moving In Space (5-10yds)

- 2 Feet Side to Side / 2 Feet Front to Back / 2 Feet Over 2 Feet Back - :5-:7 sec each
- Build Up Sprint (Jog / Stride / Sprint) x 5 yds each
- 2 Feet Over 2 Feet Back to 5yd Sprint x 3 (in groups)

- Build Up Sprint (Jog / Stride / Sprint) x 5 yds each
- 2 Feet Side to Side to 5yd Sprint x 3 (in groups)
- Build Up Sprint (Jog / Stride / Sprint) x 5 yds each
- 5 Squat Jumps to 5yd Sprint

The warm-up is often overlooked and undervalued when it comes to preparing for competition; I hope this brief article provided some insight into the importance and the benefits of a proper pre-game warm-up routine. Cooling down or warming down as it is often referred to, is a concept that is somewhat controversial and potentially out of date in some circles. There is little to no anecdotal evidence suggesting that cooling down after exercise is completely necessary. It was once thought that cooling down after games would reduce delayed onset muscle soreness (DOMS), but this has been disputed by research. Although the research is unclear, in my experience I have found that it is important to have your athletes go through a post-game routine. The main focus of this routine should be to return the athlete to a parasympathetic or baseline state. This can be accomplished by slowly decreasing heart and respiratory rate, decreasing muscle tone or tightness, starting to increase hydration levels and drinking a recovery beverage with protein and carbohydrates. The post-game routine should include slow and controlled movements similar to those completed during the early stage of the pre-game warm-up for a period of 5-10 minutes immediately after competition. This is also when static stretching should be implemented in order to restore the muscles to their optimal length to tension relationship. The average field sport athlete may cover anywhere from five to seven miles during a game so it is very important to restore soft tissue quality and tone after competition, especially in the collegiate setting where you often play multiple games per week and in some cases on back to back days (field hockey, soccer, etc).

The field of strength and conditioning is constantly changing. As a result, it is very important to stay abreast of the current trends and research in order to allow you and your athletes to be successful. As stated before this article is only meant to be a brief introduction to some of the newer concepts that the University of Vermont Athletic performance program uses when designing warm-up routines. I recommend that you continue to read and research this topic and make adjustments to your warm-up as the needs of your athletes change.