

Performance and Dynamic Warm Ups

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Warm Up

Warm up defined: A preparatory activity designed to improve injury resistance as well as physically and psychologically prepare an athlete for training/competition.

The warm up is the transition between resting state and exercising. The warm up for sport has received much attention over recent years. The traditional warm up has come under scrutiny and coaches, conditioning specialists and sport scientists have looked at improving it.

Dynamic Warm Up

We recommend the DWU for the coach and athletes to learn and apply to training sessions and competition.

Dynamic stretching is defined as repetitive contractions of an agonist muscle to produce quick stretches of the antagonistic muscle (Kurz, 1990).

The benefits of the DWU:

- The DWU is progressive (as opposed to traditional) and allows the athlete to immediately begin training/competition at high intensity. The dynamic warm up will elevate the body's systems (heart rate, core temperature etc) then the systems will return to normal during the non active static stretch.
- Separates the 'external world' from training/competition, can enhance team cohesion and be used as a routine/ritual to enhance psychological preparation.
- Emphasizes multiple plane, multiple joint movements in functional positions that prepare for the demands of sport.
- Is an active process that requires strength. Adequate strength in extreme joint positions is necessary to prevent joint structure damage by outside forces (Kreighbaum and Barthels, 1990).
- To improve sports performance, active stiffness should be reduced and active ROM should be improved (Gambetta, 1997). The DWU is an active process.
- Performed in a controlled manner that allows for the range of motion (ROM) used in sport and the length of the movement available for force production and reduction (Gambetta, 1997). In other words the DWU incorporates specific muscle contraction patterns.

- DWU (primarily in moving component) emphasizes the ability to control gravitational loads and ground reaction forces that occur in deceleration. Therefore balance and proprioception is activated in the joints, muscles and tendons. This is specific preparation for sports requiring changes of direction in movement.
- Coordination and ideal motor patterns are learnt and reinforced to improve movement skill and improve body awareness. For example core control, ankle inversion, athletic stance, vision reaction, jumping skill and acceleration deceleration patterns are all incorporated.
- Rehearsal of sport specific movement patterns that gradually move toward training/competition matched speeds and loading situations. By the end of the DWU the movements become sport specific and the athlete will be ready to move directly into training or the actual sport warm up.

The DWU is efficient and effective. All the above-mentioned benefits can be attained within a 15 minute warm up. The DWU can be modified to suit any sport and can be used as a general warm up before the sport specific warm up.

The following warm up is a sample dynamic warm up that has been used successfully on elite athletes. It is also recommended for any level athlete. Technique is the prime concern in the DWU.

(Please refer to the photos)

Dynamic Warm Up Guidelines

- a. Progress from standing to moving exercises
- b. Progress from “swing” to “pull” to “skip” exercises
- c. All exercises are held for 1-2 seconds only under mild tension
- d. Exercises gradually progress from about 10% to 95% full stretch
- e. “Pull” exercises involve a light muscle pull that does not go to full range of motion
- f. Complete 8-10 repetitions for each exercise (and each limb or side of the body)
- g. Concentrate at all time on maintaining full body control, correct posture and balance
- h. All exercises progress directly from one to the next with no rest or pauses in between
- i. In the extreme ranges of motion (by the last few repetitions and during the ‘fast’ activities) you should concentrate on using muscle strength to move the joint through full range of motion and not just momentum.
- j. Teams should concentrate on performing all exercises in synchronicity
- k. Learn proper breathing pattern (diaphragmatic) in order to improve relaxation and mental preparation.

Dynamic Warm Up Exercises

Standing Stationary Component

- | | |
|---|--------------|
| a. ½ neck circles | Figure 1& 1A |
| b. Arm swing across chest | Figure 2 |
| c. Golf swing | Figure 3 |
| d. Full arm circles: forward backward reverse | Figure 4 |
| e. 4 way wrist stretch | Figure 5 |
| f. Hip circles | Figure 6 |
| g. Butt wiggles | |
| h. Straight trunk rotations | Figure 7 |
| i. Bent trunk rotations | Figure 8 |
| j. Full trunk twists | |
| k. Knee circles | Figure 9 |
| l. Knee bends | |
| m. Ankle rolls | Figure 10 |
| n. 180°/360° cat jumps | |

Moving Component

- | | |
|---|---------------|
| o. Heel walk – heel/toe walk – skip | Figure 11&11A |
| p. Butt kick walk – pull – skip | Figure 12 |
| q. High knee walk – pull – skip | |
| r. Hurdle walk – pull – skip | Figure 13 |
| s. Side cross walk – skip | |
| t. Lunge step forward – wide – cross over | Figure 14&14A |
| u. Forward sprint – slow – medium – fast | |
| v. Backward sprint – slow – medium – fast | |

Conclusion

This warm up may be modified to suit the sport needs. A brief 2-3 minute individual static stretch may be held for muscles that the individual athlete feels necessary to further stretch. It may only be brief as the entire body system is excited and ready to move into the sport specific warm up, training or competition.

References

1. National Strength and Conditioning Association. Essentials of Strength Training and Conditioning, 2nd Edition. Champaign, IL: Human Kinetics. 2002;
2. Designing Resistance Training Programs. 2nd Edition, IL Human Kinetics.1997.

Standing Stationary Component



Figure 1: Semi Neck Circles-Front



Figure 1A: Semi Neck Circles-Back



Figure 2: Arm Swing Across Chest



Figure 3: Golf Swing



Figure 4: Arm swing

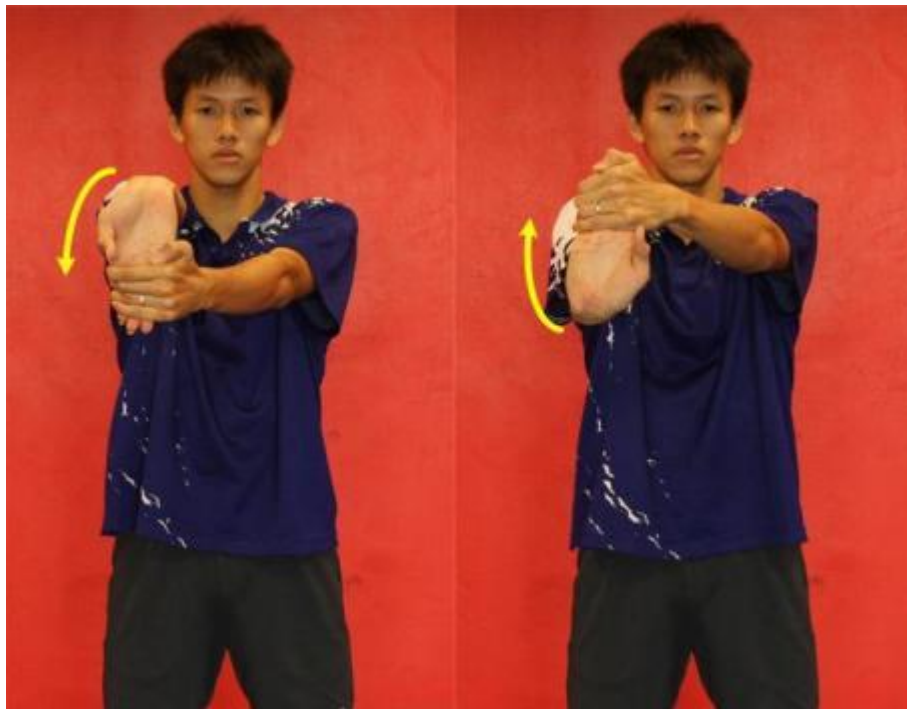


Figure 5: 4 way wrist stretch

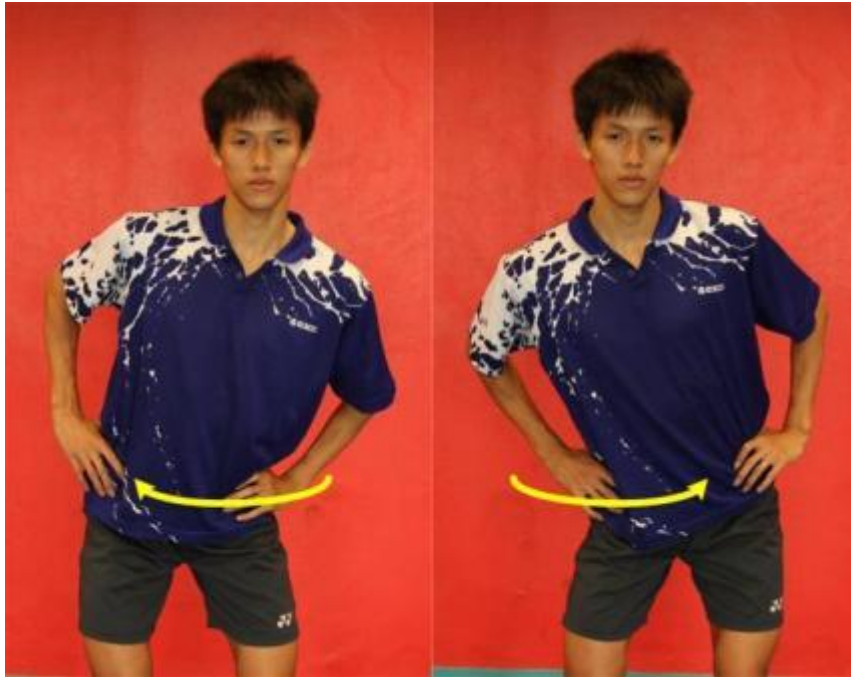


Figure 1: Hip Circles



Figure 7: Straight Trunk Rotations



Figure 8: Trunk flexion



Figure 2: Knee swing



Figure 3: Ankle Rolls

Moving Component



Figure 11: Heel walk



Figure 11A: Toe walk



Figure 12: Butt kick

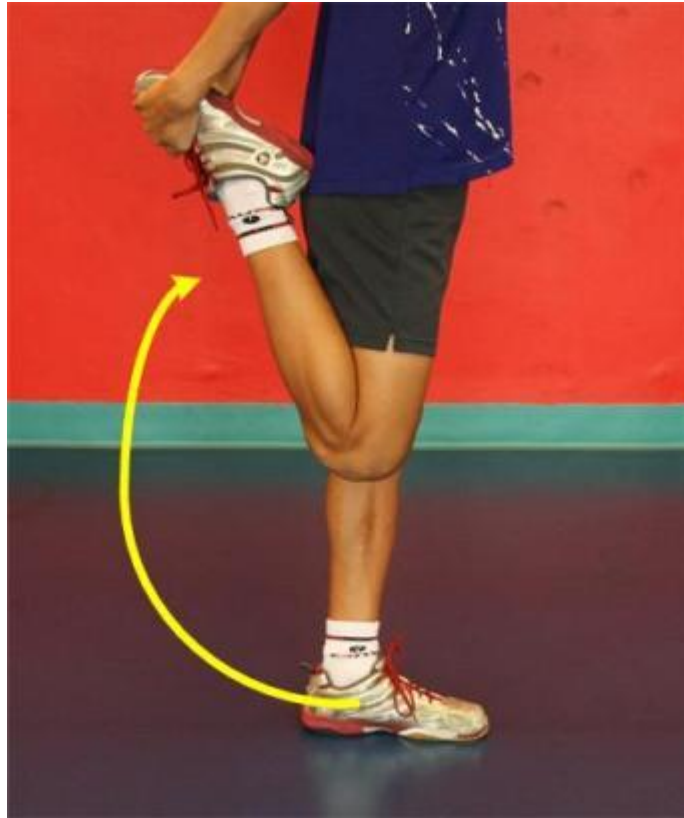


Figure 12A: Butt Pull



Figure 13: Hurdle Walk



Figure 14: Cross over Lunge



Figure 14A: Side lunge

* These exercises have been considered by the Performance Conditioning Unit coaching staff to be suitable if all safety measures are observed and correct technique is used. However, readers are advised to seek professional advice on their personal condition before attempting these exercises. The authors will not be held liable for any injuries sustained as a result of following any of the training methods and techniques shown in any articles.

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