

# **The World Swimming Coaches Association**

## **Pre-Competition Warm-Up for Swimming** *By Alex Clarke – VIS*

The pre-competition warm up is common in many different sports and has long been implemented based on theoretical and traditional beliefs. However there are many physiological benefits which need to be considered.

Firstly there is an increase in tissue and muscle temperature.

This is due to the friction that takes place within the sliding filaments during a muscle contraction combined with the dilation of intramuscular blood vessels.

This increase in temperature also results in nerve impulses traveling more rapidly, improving the rate of muscle contraction and reaction time (Hedrick 1992). Additionally, increased blood flow and circulation to the working muscles allows for increased oxygen delivery to muscle cells.

Another benefit of warming up is that it prepares the muscles and joints to function through their full range of motion, which decreases stiffness and may assist with injury prevention. A properly conducted warm up also has psychological benefits as it may decrease stress and anxiety for a maximal effort.

Pre-competition static stretching has long been thought of as a way of reducing muscle and tendon injury.

**However** research to the contrary is evident, and has indicated that static stretching can produce a significant decrement (of approximately 5-30%) in strength and power production of the stretched muscle group (Young and Behm, 2002).

This performance decrement may be due to neural inhibition and increased muscle-tendon compliance which leads to a reduced rate of force transmission from the muscle to the skeletal system (Young and Behm, 2002).

**Instead of static stretching**, a warm up progressing from activities involving gross motor patterns to those involving swimming specific movements is recommended (Zentz, Fees, Mehdi & Decker, 1998).

### **Sample General Warm Up**

Body Blade in streamline position ..... 2 x 40 sec  
Leg Swings .. .. . 2 x 12 each side  
Stationary Hurdles ..... 2 x 12 each side  
Bent Over Toe Touches... .. 2 x 12 each side  
Bent Knee Lower Rotations..... .. 2 x 10  
Back Extensions. .... . 2 x 8

### **Sample Specific Warm Up**

Stretch Cords (Free) ..... 2 x 40 sec  
Streamline Kick..... 2 x 20 sec  
Med Ball Seated Rotational Throws .... 2 x 4 each side  
Start Simulations / Box Jump ..... 3 x 4  
Single Arm Med Ball Throw Downs ..... 3 x 4 each arm

### **General Warm Up**

A general warm up is one in which the athlete performs non-specific sub maximal exercises to increase body temperature and joint range of motion required for swimming. General warm up activities may include leg and arm swings, skipping, stretch cords and band exercises. It is recommended these exercises include rest periods, and last around 5-10 minutes (Thomas, 2000). **It is important that warm up times are monitored**, as too long a warm up will result in fatigue and too short a warm up may not elicit a beneficial physiological response. **Warm ups should also be rehearsed during smaller competitions** and be a reflection of normal pre-training routines. Introducing unfamiliar movements on the day of a major competition may result in a significant performance decrement.

### **Specific Warm Up**

It is the immediate pre-race warm up that may have the greatest impact on performance; therefore, the optimal short duration, pre-race warm up should be identified (Mitchell and Huston, 1993). **A specific warm up involves exercises or activities which simulate swimming specific movements.** These exercises often increase in intensity until efforts become greater than or equal to the intensity experienced in competition.

The aim is to achieve or recruit the specific muscle fibers and neural pathways required to achieve optimal neuromuscular performance (Young and Behm, 2002). Exercises may include light stroke specific movements with bands of stretch cords and progress to something more explosive such as a single arm medicine ball throw down, which will mimic the freestyle pull-through phase. In addition, it is important to include exercises which will further activate the central nervous system, such as those where the athlete has to react to a stimulus like a voice command during a start simulation.

Set by the coaches, the pool warm up often follows the general and specific warm ups and is based on event discipline, distance and events already completed.

However, the order of the last two categories is open to debate. Some coaches will want their athletes completing explosive dryland exercises prior to competing, where as others will want the final part of the warm up to take place in the pool performing stroke specific actions. Further to this, it is important to take into consideration time spent in the marshaling area and other pre-race routines and the impact this has on subsequent performance.

**Individual factors are also important when considering a warm up program**, with race distance being an important influence. For example, a 50m sprint freestyler will require a different warm up to that of an 800m swimmer. Intensity and duration of the warm up will also need to be adjusted to the individual athlete's training age, dryland / gym experience and training load. ♦

### **References**

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