

# THE BALANCED SWIMMER

Performance Enhancement & Injury Prevention (July 2009)

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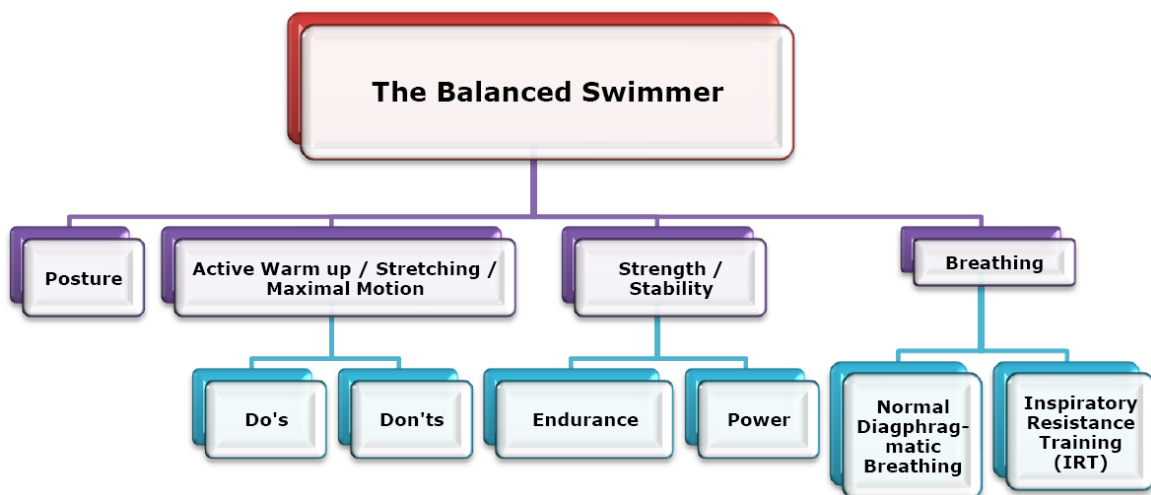
“Stand tall, swim fast”- Ian Thorpe in *Live your Dreams*

These simple words reiterate the importance of excellent posture for swimmers. “**The Balanced Swimmer**” explains how to achieve this in the NZ context. Aiming to complement the countless hours spent training in the pool and on dry land to reach your goals, it centres on the swimmer working intelligently, consistently and effectively in the pool, on the pool deck, in gyms and at home.

Swimming technique requires a complex but repetitive series of skilled motion. It is a delicate balance between stability and instability (or flexibility & in-flexibility). Various soft tissue structures often bear the brunt of the force of any imbalances; some of these tissues are of course fairly commonly and predictably overloaded e.g. the shoulder.

A common mechanism to help assist in establishing “**The Balanced Swimmer**” is the musculoskeletal screen. Swimming New Zealand (in combination with the NZ Academy of Sport) has a network of Physiotherapists who can perform the SNZ swimming specific musculoskeletal screen. This is a very good starting point.

The result is an individual swimming specific musculoskeletal screen to guide the swimmers’ area's to focus on or specific issues to rectify. The results are important but **MUST NOT BE** independent of any strength & conditioning plan or coaching or technical skills. They are enhancements to a swimmers overall programme.



# THE BALANCED SWIMMER

## Posture

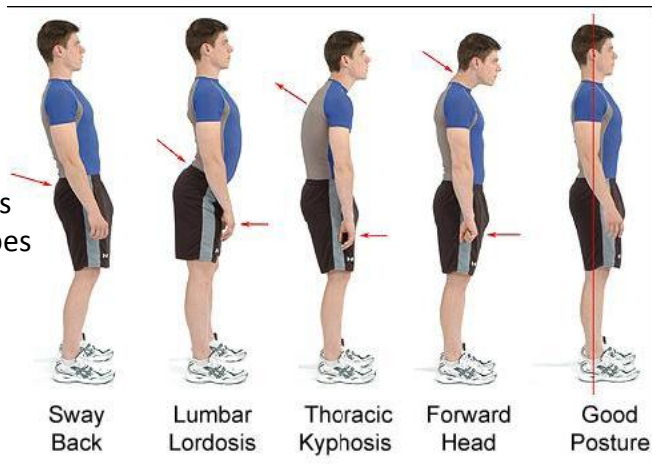
Optimal posture enables the body to efficiently transfer power, increases an individual's tolerance of training and competition loads, reduces the risk of injury and potentially helps a swimmer swim faster.

There are many ways to describe or define what good posture is or may be. The picture to the right is just one of the many descriptions or pictures of different types of posture.

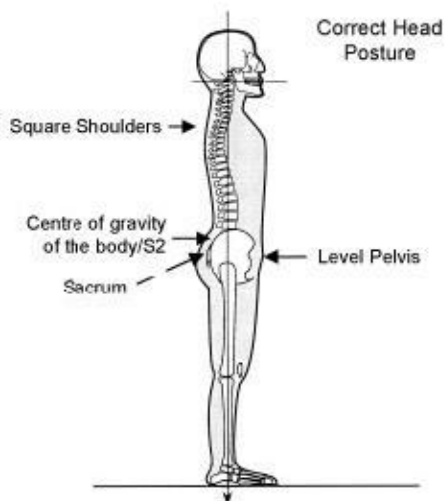
Despite the often confusing methods or descriptions of good posture in general terms Ian Thorpe describes it very well **“Stand tall, swim fast”**.

Remember good posture should be comfortable, natural and relaxed. Years of poor posture makes having good posture seem hard!! **Some general guidelines:**

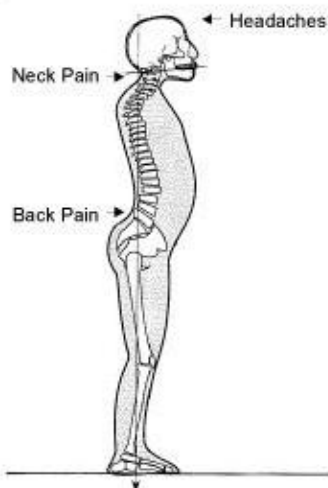
- Maintain a „neutral spine“ position (small natural curves so spine looks like a shallow “S” from the side).
- Lift up the head imagining a thread is pulling directly up.
- Tighten (lightly) your abdominal muscles and bum muscles without losing the arch in your lower back.
- Ensure you are always holding yourself in optimal postures whether that is in front of the TV at home, sitting at a desk at school, university, work, the gym and on pool deck



### Good Posture



### Poor Posture



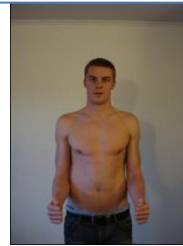
# THE BALANCED SWIMMER

## Active Warm Up

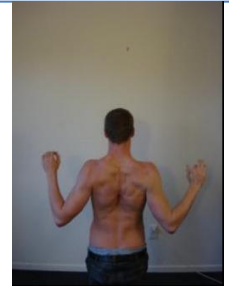
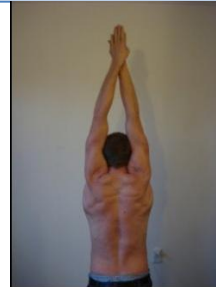
Active warm up specifically aims to warm up and prepare key muscles & movements. These movements are targeted to ensure the right muscles are used in preparation for swimming.

- Key muscles / muscle patterns / motions
  - Mainly scapular / gluteals / abdominals
  - extension or rotation patterns
- To be performed before every pool session 1-2 sets of 10-20 repetitions
- Must engage / switch on deep abdominals by drawing belly button to spine during all exercises

### 1. External rotation



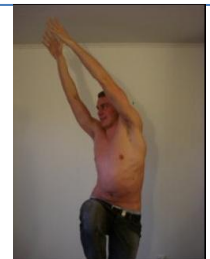
### 2. Streamline - elbows in back pockets



### 3. Under arrest - internal rotation



### 4. Single Leg Floor touch – opposite overhead rotation (do both sides / legs)



*Note: these are just four examples; there are many different patterns and variations*

# THE BALANCED SWIMMER

## Stretching

There has been plenty of research & publications released on the topic of stretching in swimming. There are a lot of myths & conjecture surrounding best / effective stretching practices. Below is what is currently considered best practice.

### DO'S

**Best time to stretch -**

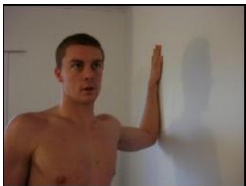
*In 5 – 15 minutes directly before entering pool before training or racing*

**What / how to stretch**

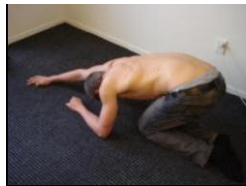
*The pictures below are the commonly seen tight! Issues with swimmers (they are not the only ones!). Stretch for 30 second holds minimum.*

**For additional benefits -**

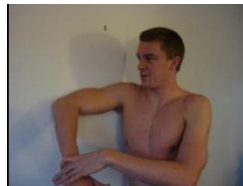
*Stretch at a time independent of training i.e. 2-3 hours before or after training*



**Pectorals**



**Latissimus Dorsi**



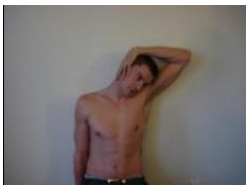
**Shoulder Internal Rotation**



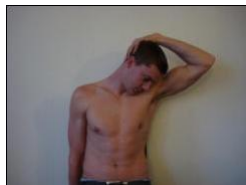
**Trunk Rotation**



**TFL**



**Neck – Upper Trapez.**



**Neck – Levator Scap.**



**Hamstrings**

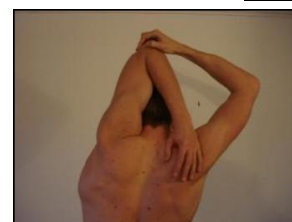
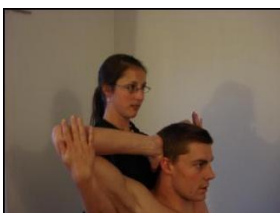
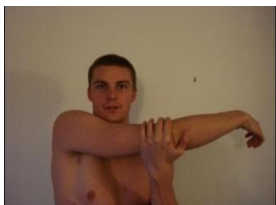


**Gluteals**

### DON'TS

**Bad Stretches**

These are typically only stretching the shoulder joint itself & may in fact encourage shoulder joint instability leading to poor use of good muscles – **THESE ARE DISCOURAGED**



# THE BALANCED SWIMMER

## Strength

Swimmers need to have a specific strength & conditioning programme that incorporates endurance as well as power. For swimmers, strength should be viewed in terms of **strength endurance and strength power**. The specific make up of these components will depend on what events the swimmer competes in.

## Strength Endurance

Swimmers have common predictable deficits along with specific deficits that constantly need work. A musculoskeletal screen from an experienced (or swimming knowledgeable) physiotherapist will assist to identify any individual deficits.

It is important to incorporate key endurance based exercises into your training regimes. These endurance (or protection–enhancement) exercises should be performed 2-4 hours before or after pool sessions (**not before as it exhausts key muscles**).

For strength endurance exercises the loads should be low (so that swimmer is fatiguing towards end of each set) & the repetitions high or time based e.g. 3 sets – 20 repetitions or 1-3 sets of 1- 2 minutes. They should be performed 2-5 times per week.

Predominantly these deficit or protection / enhancement exercises should focus on:

- Serratus anterior
- Trapezius - middles & lower fibres
- Shoulder External Rotators – Infraspinatus & Teres minor
- Posterior gluteus medius
- Transverse Abdominus / trunk rotators



**Transverse  
Abdominus**



**Scaption**



**Hitch Hikers**



**Push Up Plus**



**External Rotation**



**Gluteus Medius**

## Strength Endurance

It must not be forgotten that one needs power to propel the body through the water so strength power is a crucial element of competitive swimming. Specific programming of this element should remain the domain of an experienced strength & conditioning professional as there are age related, technical and / or technique issues that must be considered.

# THE BALANCED SWIMMER

## Breathing

Mechanically efficient breathing is vital to our bodies (swimmers included). The inefficient exchange of oxygen within the lungs can have dramatic effects on a swimmers energy levels & muscular tension. At rest effective efficient breathing should be easy and automatic.

Humans are wired from birth to nose belly breathe (diaphragmatic breathing) at about 50 breaths per minute (infant), 15-25 (child) and 12-14 for adults. Diaphragmatic breathing is important at rest and during light activity.

Importantly poor or inefficient breathing patterns can and do give rise to abnormal symptoms such as muscle tension & pain, tiredness, hyperventilation, increased stress and so on.

Swimmers by the very nature of the sport tend to be mouth breathers. If mouth breathing continues at rest the swimmer will become susceptible to muscle tension, pain, tiredness etc.

This has particular relevance for swimmers who already have poor posture and or existing shoulder pain.

## Relaxed Diaphragmatic Breathing

### What to do:

- Get yourself in a relaxed posture (see picture) 1-3 times per week to perform 5-10 minutes of **low-slow-nose-belly breathing (diaphragmatic)**
- The aim is for the belly to rise when you breathe in (nose) & the belly to fall as you breathe out passively (mouth)
- Try to tune yourself into breathing 12-14 times per minute by the low – slow method
- Ensure you maintain relaxed neck, shoulders and other muscles (breathing out should be relaxed and passive)

*If you are having specific problems for example always waking with a dry mouth or constant sinus irritations or infections, you will need to see both your doctor and physiotherapist (who understands breathing related issues)*



## Inspiratory Muscle Training (IRT)

IRT training is designed to make the muscles of breathing stronger & more efficient. Specific plastic devices which can alter resistance to the inspiration phase of breathing.

There are a number of IRT devices on the market that help aim to improve your inspiratory capacity, strength & efficiency.

IRT **MUST BE** used in combination with low-slow-nose-belly (diaphragmatic) method as explained above. This is more likely to assist the swimmer to improve their breathing efficiency and potentially swimming performance.

