

FREESTYLE TECHNIQUE

In his fourth technical article, and his second on freestyle, Nick addresses legs, pulling pattern and breathing.



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LEG ACTION

Teachers could argue that it doesn't matter whether you use a two beat, four beat, six beat or even a crossover kick. However, the one constant is that swimmers should kick from the hip flexors, the muscles at the top of the legs, and not from the knees. Use a whole leg motion and try to rotate the hips when you swim. When I'm swimming at an easy aerobic pace, I often use a crossover kick. I wouldn't

necessarily recommend it, but it helps keep my legs up as my feet cross over with each stroke. My feet certainly move to a more appropriate six beat kick, where there are three kicks to every arm stroke, when swimming at a strong aerobic or anaerobic pace. Long elastic hip flexors help optimise the kick action where full leg length is clearly evident.

Statistics show that a strong

freestyle kick is a mark of a winner. The world's elite Olympic swimmers all share this quality and so often this separates the best from the rest. It sets the tone for the entire stroke, aiding balance and power, and is also a crucial factor as muscles tire.

Complexities

Ankle swimming flexibility is a common complexity resulting in an anchor

behind the swimmer if limited range is evident. Excess drag is created due to toes being pointed downward and less efficient structures, such as the knees, compensate if ankles are not working optimally. This can be a frustration for swimmers, teachers and coaches. Some swimmers are naturally blessed with mobile ankles, whilst others work intensely to increase plantar flexion. Ankle mobility and flexibility is most sought after across the world of swimming.

However, swimmers can be proficient with limited ankle mobility. But this complexity must not be ignored due to the importance of 'underwaters' as well as general stroke

mechanics and the effective nature of the kick action. Many swimmers do achieve a 'toe point' but, for most, this does not come naturally and therefore we must determine the limitation. For some, plantar flexion is easily achieved but there are others who may never achieve a full toe point and, of course, there are those in between who can achieve with a systemic approach. I have certainly found that the use of fins is highly beneficial across this area of development.

There are three areas to identify – one, joint issue; two, soft tissue issue; three, motor control limitation. A fully trained physiotherapist can of course identify.

Common faults

Watch out for any irregular kicking action. Tight hip flexors can result in kicking from the knee. Lack of ankle flexibility results in reduced propulsion and a weaker leg kick. Kicking out of the water, where the feet splash the surface, reduces effectiveness.

Best practice

Drive the kick action from the hip working the anterior and posterior position where the hip flexors and glutes are working accordingly. Use fins to help support the development of ankle mobility. Allow only the toes and soles of the feet to break the surface, creating turbulent white water.

PULLING PATTERN

The pulling pattern is a continuous alternating stroke as one arm is pulling while the other is recovering. A long reaching stroke with the arm in line with the shoulder will maximise efficiency and help optimise pulling leverage as well as aid body movement. Think of this as entering the fingertips at 11 and one o'clock rather than 12 o'clock. Freestyle swimming now sees the finger tips entering the water compared to thumb and forefinger years back.

The thinking is a direct pull back with a high elbow and an early vertical forearm creates maximum leverage, rather than sweeping out, round, in and back in an 'S' shape pattern. In reality, there will still be a minimal 'S' pattern but very much elongated. Early leverage is essential following the 'catch' where high pressure is placed across the palm of the hand and forearm with a strong wrist connection to create a strong paddle, rather like the oar of a rowing boat. Be sure that the elbow is very slightly lower than the shoulder and the hand is very slightly lower than the elbow to save on



excess strain through the shoulder. The pull is now very much a unilateral pull where the hand and forearm paddles towards the same hip, maintaining high pressure, and so avoids slipping across and releasing water to the opposite

side. The high hand and straighter arm recovery is very much a power stroke and often seen in the 50m and 100m Freestyle in both men's and women's events. The palm of the hand drives out the water close to the

thigh, creating a flinging arm recovery generating extra power from the core of the body. The hand then sweeps up and drives past the head at which point the finger tips start to angle toward the water, as demonstrated here by GB international, Ben Proud.

Complexities

If you are hunched over as you travel through the water, you are unable to reach as far and maximise the pull of each stroke and therefore become self-limiting. Most people lose thoracic spine mobility due to a sedentary posture or poor body mechanics and this poor posture transfers to the water. The thoracic spine consists of 12 segments, called vertebrae, which run from the base of the neck down to the abdomen. Both the spine and shoulders must move as one unit to endure training loads. Most soreness and pain stem from a lack of stability, mobility or even motor control. Indeed, several simple techniques can be done quickly throughout a day to increase the flexibility and range of motion of your thoracic spine.

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Common faults

Watch out for any pause of the hand at the leg prior to recovery. Slipping or releasing the water when pulling – where the hand and forearm moves to the opposite side of the body – reduces strength (power). Pulling with a straight arm underwater also reduces strength (power) and leverage.



Ben Proud shows how the fingertips start to angle toward the water and demonstrates fingertip entry in line with the shoulder, below.



Snaking, lateral deviation, is a common fault and most often occurs when the hand enters the water in line with the opposite shoulder.

Best practice

Stretching is now a major point of emphasis for elite swimmers to reduce injuries in the water and maximise optimal movement. Spending between

30 and 40 minutes on dynamic stretching prior to warming up using the correct techniques will ensure the best injury prevention. Static stretching post exercise also sees the same focus. Age group swimmers are now taking the same best practice to support injury prevention and range of movement as they work towards achieving efficiency.



BREATHING [AQUATIC BREATHING]

Breathing bilaterally on every third arm stroke with a straight neck line can help to support balance in the stroke. Breathe as the hand reaches forward underwater as the opposite hand pushes back close to the outside of the upper leg. Achieving full length of stroke makes for easier execution of the breath due to the body position being more on its side than flat. We must remember to keep the head in a streamline position. To do this, a sideways pivot of the chin helps to keep the head in the spinal line. Achieving this will help support the shoulders around the horizontal axis, given the extreme weight of the head of between 4.5kg and 5.5kg. Start to return the face back to the water as the hand travels past the eyeline following a strong intake of breath.

Complexities

Most of us normally breathe from the chest. However, as swimmers, we need to develop efficient tummy breathing known as 'diaphragmatic breathing', which can take many years. This is done by contracting the diaphragm. Air

enters the lungs, the chest rises and the tummy expands when breathing in this way. Research has shown that when swimming in the prone or supine position, lung function is reduced by 30 per cent. So developing tummy breathing is essential for both optimal performance and enjoyment.

Common faults

Watch out for breathing too early or too late as this interrupts the flow of the stroke. Excessive head motion distorts the body movement and position. A high head position sees arching of the back and increased levels of drag. This often happens with recreational swimmers or young participants who breathe in and out with their head above the water and are, therefore, always breathless.

Best practice

The head position should remain fixed throughout the non-breathing stroke cycle with no vertical, lateral, or rotational movement. Keep one eye in the water and one eye out when breathing. Breathe in strong whenever

a breath is taken rather than shallow followed by a slow release of air from the nose and mouth with a fixed head position.

Good practice summary

Start the kick from the hip as long elastic hip flexors help optimise the kick action where full leg length is clearly evident. The pulling pattern is a continuous alternating stroke as one arm is pulling the other is recovering. A direct pull back with a high elbow and an early vertical forearm helps to create maximum leverage. Achieving full length of stroke makes for easier execution of the breath due to the body position being more on its side than flat. Develop tummy breathing known as 'Diaphragmatic breathing' as this is essential for both optimal performance and enjoyment. **ST**

Watch out for the next article which will address the technicalities of backstroke in respect of body position (movement), timing (coordination) and stroke rate (tempo).