SWIM LIKE A DOLPHIN

How to ensure maximum forward momentum while reducing lateral and vertical movement. By **Tracey Baumann** and **Emma Levy**



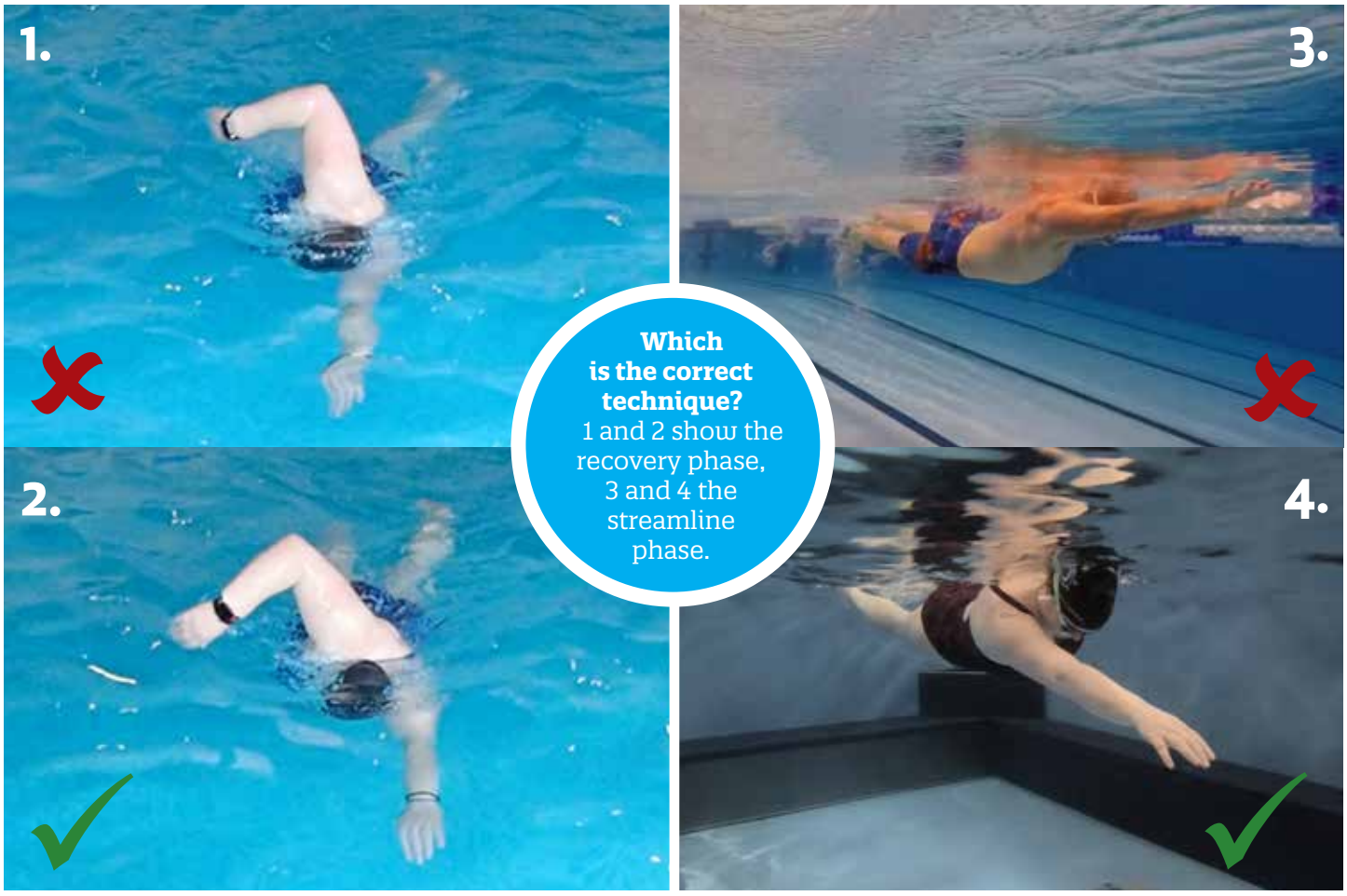
As we have covered in previous articles, humans are not natural-born swimmers. Therefore, it is necessary to learn the correct technique to move through water, both efficiently and effectively. However, as we are born with the instincts of a terrestrial mammal, most of what we teach our swimmers is counterintuitive.

Physics, and hydrodynamics in particular, plays a huge role in swimming technique. We have to contend with gravity both on land and in the water; in water, instead of gravity impacting on our vertical bodies, we are horizontal. There is also buoyancy to consider. Water is not only an unstable medium but is also 800 times more dense than air. When we are swimming we are moving our bodies and limbs through both the air and the water, and in order to channel the energy forwards, we need to control and coordinate all of these moving parts. There are many opportunities for these moving parts to apply pressure in the wrong direction, taking the swimmer off course.

We need to consider both how to control our moving bodies and limbs, and also the direction of pressure we apply. In this article, we will explore how to move the body in a way that ensures maximum forward momentum while reducing lateral and vertical movement as much as possible. In the next article, we will cover how the direction of your 'catch' and the direction in which you apply pressure with your legs can affect your forward momentum.

We begin by looking at our human bodies and how they differ from water-based creatures.

American coach Bill Boomer famously said, "It is this shape of the vessel, and not the size of the engine, that makes the better swimmers." If you consider the body of a dolphin, it has no moving parts; it is one unit, and it moves as one unit. In contrast, human beings have many moving parts that can continually disconnect and get in the way of the water. So the first thing we need to address when working on swim technique is to connect all the body parts under the water, creating one unit that is streamlined, and can move seamlessly forwards in one direction – just like a dolphin.



As soon as any of the body becomes disconnected, it will immediately get in the way of the water, or create drag, and send the swimmer off-line.

Once the swimmer has been able to connect their body parts together and create a streamlined shape under the water, they then have to address the moving parts above the water. It is important to be aware of how much the act of returning the arm to the water (the arm recovery phase of the stroke) can affect the forward momentum of a swimmer. Remember that when we take any part of our body out of the water, it immediately becomes 10 times heavier than it is while in the water. This makes it vital to send this weight sideways and forwards, to ensure that it is not directly above the body that is in the water (image 2). I talk a lot about the direction of energy when I am coaching, particularly in relation to arm recovery. For example, if the swimmer pulls the elbow behind them when their arm exits the water, this will send the energy behind them, usually causing them to over-rotate (image 1). The weight of the arm is now directly above the centre of gravity, making the swimmer sink, resulting in more of a staccato type rhythm to their stroke. It is therefore important to think about the direction that the arm is travelling in as it comes out of the water, to maintain a fluid, forward movement. Sending the arm out and forwards, rather than back and upwards, will keep the joints safe, and the momentum forwards.

Once a swimmer is able to control the direction of movement and energy with the arm recovery, it is then important to ensure that the whole body helps to continue this forward momentum at the point the arm enters the water. The whole body, from the shoulders to the feet, is responsible for sending the entering arm to extension, ie, to the streamline position. The energy must be sent forwards for the swimmer to move forwards. A common error we see during this phase of the stroke is the swimmer directing the energy upwards by reaching their fingertips to the surface of the water (image 3). This is, probably, one of the most counterintuitive parts of the stroke for swimmers to change. As humans, we feel that if we reach as far as we can, we must be doing a great job of hitting a streamline position. In fact, the exact opposite happens. This movement breaks the streamline position immediately, and only serves to send energy up towards the surface. Even thinking of reaching as far as you can will actually slow you down.

So, next time you are in the water, set your intention to think about using your whole body rotation, shoulders to feet as one connected entity, to send your arm forwards, as if you were trying to touch your fingernails on the pool wall in front of you (image 4).

Look out for my next article, where I will cover how the direction of your 'catch', and how and where you apply pressure with your legs, can affect your forward momentum.

EXPERT ADVICE

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