

Of gravity and air (or is your head attached?) - Front Quadrant Swimming

Questions that show you understand the concept but may require some additional convincing before you are ready to invest the time and effort necessary to put Front Quadrant Swimming into practice. Let me approach the same concept from a different angle. Then I'm going to follow this new angle a little further and give you even more ideas to add to the complex mix of neural impulses that is your concept of swimming.

Sinking Hips and Legs - Lets go an experiment. Push off the wall with your hands at your sides and see how far you can glide. You will most likely find that your hips and legs begin to sink fairly quickly (we'll call this "hip drop"). The resulting body position is the product of two forces that are constantly at work on your body while you are swimming - buoyancy and gravity. Your lungs, full or partially full of air, act as a buoy, wanting to lift your upper torso toward the surface. In the **arms-at-your-sides position, the center of your body's mass is somewhat lower** - somewhere in the vicinity of your abdomen. Gravity works on your body to pull the center of mass toward the bottom of the pool.

The further away the center of gravity is from the "center of air" the greater the hip drop effect is. You know, or should know, that when the legs and hips ride low in the water you experience dramatically more resistance than when they stay right behind the shoulders in a fully streamlined position.

Obviously, the amount of air in the lungs, the density of bones, the percentage of body fat etc. all impact this picture with minor variations. But **the largest controllable factor affecting your body position is the relative placement of your body parts.**

Making the arms work for us - Push off the wall again with the same force but use a fully streamlined hand-over-hand, wrist-over-wrist, head-squeezed-firmly-between-your-arms position and glide as far as possible. You will note that, in addition to gliding farther, your hips/legs do not sink as far or as fast - perhaps not at all!

By moving the arms from their original position at your sides to a position on the other side of your center of air we have effectively moved the body's center of mass up the torso, closer to or even with the center of air. This results in less hip drop allowing you to maintain a more streamlined position in the water, spending less kicking energy trying to keep hips and legs from dragging on the bottom.

"Where Front Quadrant Swimming comes in - When we swim, our hands are neither always at our sides nor always out front. We have a dynamic situation where our center of gravity is always changing as our arm positions change. We are, however, in complete control of where that center of gravity is at any given time, within a certain range. The sooner we get a recovering arm out in front of the body the less hip drop we experience. The longer we keep the gliding arm in front of the body the less hip drop we have. And, on average, **the longer we can keep both arms out in front of the body the less hip drop we will see.** At this point it should be obvious that Front Quadrant Swimming is just the ticket to help us maintain a high hip position. What more could you ask for?

Is Your Head Attached? - Let's take this body position thing a bit further. The placement and timing of your arms dramatically affects the level of your hips as you swim. By the same token, your head position plays a vital role in your overall body position. **We want your head oriented on your spine just as if you were standing at attention** - imagine a skewer run through the crown of your head, through your thorax and out through your groin (no squirming now!). If you were to "hinge" the head at the neck, tipping it forward, backward or to either side, you would bend the skewer. As long as you do not make motions that would bend the skewer your head is said to be "attached" to your spine.

Experiment:

- Push off on your stomach with your hands at your sides and your head "attached" to your spine. Before you go very far hinge your head, lifting it well up out of the water as if to take a breath and see what happens to your hips. No joy.
- Now push off in side-glide position with your head attached to your spine and the bottom arm outstretched to full streamline - make sure your ear is on your arm. Once you have glided a short distance, hinge your head, lifting it out of the water to the side as if to get a breath of air - don't turn it, just lift it. Where do your hips go? Again, no joy. Regardless of your body orientation, any force you exert to lift your head away from the attached-to-your-spine position is going to show up as hip drop. This is because you are moving your head with muscles that are "anchored" either directly or indirectly to the lower back and hips.
- To demonstrate this, lay face down on the ground, hands at your sides, and lift your head straight up off of the ground. You will feel your hips press toward the ground. The same thing happens in the water.
- Now, still lying on the ground, extend your hands out front, streamline fashion, and lift your head by pressing down on your hands or forearms. You will find that your head and shoulders do rise up but your hips press against the floor again. Guess what? The same thing happens when you are in the water and press down with your outstretched arm to try to raise your head a bit for easier breathing. The moral: Keep your head attached to your spine instead of hinged away from it.

Of gravity and air (or is your head attached?) - Front Quadrant Swimming

"But, Coach! I've always been told I should ride high in the water! What gives?"

The concept of riding high in the water is correct! The application of the concept is usually the culprit. **We want the average depth of the body to be as near to the surface as possible so that when you are on your side in either back or free more of one flank of the body will be cutting through air rather than through water.** However, if you attain a "high" position for your head and shoulders by doing something that pushes your hips and legs down deeper in the water, the extra drag your lower body encounters more than counteracts any positive effect that may have been gained from getting the head and shoulders up. **You will see that faster swimmers do seem to ride higher in the water, but this is a response to moving faster in the water, not vice versa.** Lets go a boating analogy - if you watch a power boat picking up speed you will note that, initially the front end rides higher than the back end (and note that the less streamlined the boat the more this is true) but when the boat captain has that baby cranked wide open and running steady the boat is back to about the same bow/stern height relationship as when it was just sitting still. The whole boat is riding higher - not just the front end. Do all the other things you are learning to go fast - high body position will take care of itself.

Pull Buoy Addiction - Are you one of those people that sighs with relief whenever a pull buoy set comes along? You put that little sucker on and suddenly you are in your element? During swimming sets do you look longingly at your precious float, perhaps reaching out from time to time to touch it between repeats - just for reassurance? You suffer from PBA. The only cure for PBA is to correct your body position. When you feel a need to don the infectious little styro-virus you have undoubtedly broken one of the prime points of maintaining proper body position. As George Zimmer sez "I guarantee it!"