

Powerstroke® Freestyle Technique Summary

By Marty Gaal

Powerstroke freestyle technique is not just about swimming fast. It is a specific stroke form, or drill, you can use to help yourself swim faster. Powerstroke enables you to swim faster by practicing high force contractions, using your lats as your main mover. “Force” is any action that moves a body. In this case, the force is the concentric contraction of the lats and any secondary contractions (both eccentric and concentric) in your biceps, triceps, deltoids, pectorals, and any other peripheral muscles.



It is important that your arms be in the best position to make the most of this contraction. That is why I teach and preach the high elbow catch, aka early vertical forearm (EVF). There are three main types of underwater pulls in freestyle swimming.

Type I – elbow slip (ES) / elbow leading the stroke

Type II – straight arm pull (SAP)

Type III – high elbow catch / early vertical forearm

Type I (ES) is the weakest, because the hand and forearm do not position themselves in such a way as to create a greater surface area as a “paddle”, which would increase the resistance (provided equal work is being done) and vis a vis the forward propulsion of your body. With an elbow slip, the elbow tends to lead the stroke through the pull, and the hand and forearm remain (relative to the bottom of the pool) horizontal or in between horizontal and vertical.

Type II (SAP) is a more effective pull than Type I, but not as effective as Type III. With a straight arm pull, a swimmer pushes/pulls his arm straight down and then straight back. The hand and forearm thus push water ‘down’ through the first third of the stroke, which does little to propel the body forward. It is not until the 2/3 of the stroke where the hand and forearm have maximized their surface area to push/pull the body forward. From a planar standpoint, the most effective hand/forearm angle is vertical or perpendicular to the bottom of the pool, and parallel or horizontal relative to the back of the pool.

Type III (EVF) is the most effective swim stroke, because with a forearm that goes into a ‘vertical’ position relative to the bottom of the pool at the earliest possible point, the surface area and resistance of the water are maximized, allowing the swimmer to direct virtually all of their ‘force’ into moving forward. EVF also utilizes the lats in the most effective way possible, establishing the hand and forearm as a grip/paddle/anchor in the water, and then levering the body forward by contracting the lat muscles.

My favorite metaphor for the mechanics of the high elbow catch or EVF: Imagine the water is a wall, and you need to pull yourself up and over that wall. Do you slide your elbows along the surface of the wall (Type

I)? Do you press down against the wall (Type II?) Or do you plant your hands on top of the wall and then pull yourself up (Type III)?

These concepts are explained and illustrated in great detail in our Powerstroke: Speed through force and form DVD, which is available at www.powerstroke-dvd.com.