



## --- Magazine Articles ---

by Coach Emmett Hines

### Distance Per Stroke

How many strokes per length should I be taking?

If you are skillfully applying sculling motions in your stroke you should be able to keep your hand firmly anchored in one plane as you pull your body past your hand. If you are using the fullest extent of your "wing span" in each stroke (i.e.. stretching your stroke out in front and finishing your stroke completely in the rear) you should be able to move approximately the length of your wing span with each freestyle stroke. (In real life we find that some of the best swimmers move even further than their wing span with each stroke. An explanation of why this is possible is beyond the scope of this article.)

Assume you are 6 ft. tall and have approximately a 5 ft. effective wing span measured wrist to wrist. Swimming or pulling with 100% stroke distance efficiency, you should be able to travel approximately 5 ft. with each freestyle arm stroke (10 ft. for each right-left stroke cycle). In a 25 yd. pool you push off from the wall and begin your first arm stroke at approximately the backstroke flags, leaving 20 yds. (or 60 feet) to swim. If you start counting each hand hit as you stroke down the lane at 100% efficiency you should contact the far wall after 12 strokes (or 6 stroke cycles). If you are 5 ft. tall this would work out to more like 14 strokes per length (6'6" about 11 strokes, 5'6" about 13 strokes).

We are, of course, talking about moderate paced swimming. In the best swimmers we see some reduction in efficiency as speed increases. Anywhere from 10% to 40% increase in the number of strokes per length at a flat out sprint. However these same world level swimmers still take fewer strokes per length while sprinting than the swimmers they beat to the wall.

By now you may have taken stock of your own stroke efficiency and found it lacking. "How do I improve my stroke counts?" you ask. First and foremost, start counting strokes. While you are warming up, while you are swimming easy, while you are sprinting etc. Be aware of how many strokes you are taking now at all speeds. Determine what your "normal" number of strokes per length is in easy or moderate freestyle swimming & pulling and also in threshold intensity swimming & pulling and finally in all out sprints. Get out your training diary (I just know you keep a training diary) and write these down.

Next, realize that the numbers we calculated above are considered ideals and that it can take years of training to reach ideals. But, starting right now, you can begin trying to decrease strokes in your all of swims. Do drills aimed at absolute minimal strokes per length using long glides between each stroke. Aim to be down around half of your ideal number - certainly less than 10. Do sculling drills and be aware of where your stroke is sculling dominated and where you let go of the water and just paddle. Also do lots of swimming and pulling at 1 or 2 strokes less than your "normal" numbers at various swimming intensities while trying to keep your speed from suffering.

By doing these things regularly you will find that your "normal" numbers will begin to decrease. When this happens, you win.

**Emmett Hines, head coach of H2Ouston Swims, was the USMS "Coach of-the-Year" in 1993. A version of this article first appeared in SchwimmVergnugen, the monthly newsletter of H2Ouston Swims.**