Swim Assessment
U.S. Army Tri Team

Final Results With Written Opinion

Prepared
December xx, xxxx

About This Document

The first assessment: Sustainability and Consistency

This document is supported with a personal written opinion. It supercedes the draft documents distributed 5 and 7 December.

This document is a benchmark, a learning tool and a goal creator. At this point in training you are competing against yourself. You are swimming as fast as you can. The only way to get faster is to practice consistency and sustainability. This comes from total focus on technique – gliding, balance and power generation/delivery. Speed will come to you once these objectives are satisfied.

This document should allow you to "touch" your times. It should give you a clear sense of what you can do to improve your swimming, and how to do it. If it doesn't we should talk.

Email me with any questions or corrections.

A note about heart rate: Although we planned to take heart rate readings after each set, most people waited too long to get a reading, or didn't get a correct reading. When I looked at the heart rate data, it wasn't usable so I have not been able to incorporate it into the assessment results. It is listed, but most readings are inaccurate.

Perspective

This is the first assessment. It can be taken as often as you wish. Some people took the assessment twice. In each case the second assessment showed improvement. In order to give you continual goal data, the assessment can be taken as often as you like at practice or on your own with another person to record splits and stroke count. An assessment data collection sheet is included in this document.

A second assessment with the same measurement criteria will be given in January. The difference will be set order. The second assessment will be swum as a 250, 500, 750. This is more difficult than the first assessment which was swum as a 750, 500, 250. The difficulty increases in the second assessment because the longer set at the end requires sustainability and consistency focus when you are more likely to be tired. The second assessment will also include heart rate monitoring. Your ending heart rate will be a factor in your efficiency rating.

Your goal in both assessments is to move the maximum distance per stroke possible.

A third assessment will incorporate speed (split times) into distance per stroke and heart rate.

In order to be ready for the third assessment, your technique – gliding, balance and power generation/delivery must be at a high proficiency level. In order to

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help you reach this level, we will focus on creating custom swimming drills at various heart rates that meet your needs. Your commitment will be to understand how these drills contribute to your goal, and conscientiously practice at scheduled workout and OYO swims.

Contents:

Main Graph

The main graph shows your splits (the black, gold and gray vertical bars) and your stroke count (line graph) by 50s. The gold bar/line represents the 750, the black bar/line is for the 500 and the gray bar/line is for the 250. The line should be nearly straight, and the bars should be close to the same height. This would represent a consistent stroke count and a sustained 50 yard split. You can compare your progress, for example your split and stroke count at the 200 mark in all three sets. It should be the same. The data table at the bottom of the graph has splits and stroke count values which allows you to do this.

Contents:

Max Range and Data Tables

The gray tables contain your swim data for the 750, 500 and 250 sets. Above the gray table is your split and stroke range for each set. Both numbers – in the gold cells -- should be small -- less than 5 seconds and fewer than four strokes. It's better if the numbers decreased from one set to the next.

Your name and height is shown at the top. It is used in several calculations. You will also see you total mean (average) number of strokes, total median (most common stroke count), inches you moved forward per stroke and an efficiency index which is the percent of your body height covered in each stroke. The maximum efficiency index for a tri-team member is 134 percent. Your efficiency index can be more than 100 if you exceed your body length for each stroke. There is also a 10 percent improvement goal cell which shows how many average strokes per 50 yards you will need to take in order to improve your efficiency index 10 percent.

Contents:

Graphs 2 and 3:

Split Range and Stroke Range.

Graph 2: Split Range
Optimally, the box on the graph will be narrow and trending downward. This means the difference between your slowest and fastest splits is very small, and you got faster as the set progressed. The bars at the bottom of the graph show your split range. These bars should trend downward or stay even.

Graph 3: Stroke Range
The box should be narrow and be level or trend slightly upward. The upward trend would indicate a slight increase in stroke count as you near the end of the set and hold or increase your speed. A level box line would indicate a consistent stroke count to the end of the race.

What If…

My stroke count increases?
The fix is to pay attention to your arm entry. High elbow, and accelerate your arm as it enters the water. Stretch to find your anchor position. Make sure you have a patient hand. Anchor it with fingers pointing downward for at least 1 second. Set up for your stroke by raising your elbow of your leading hand and pushing straight back when your other arm accelerates as it enters the water. Make sure you pay attention to your patient hand. It stays anchored until the entering arm/hand is in the water. This will decrease your stroke count.

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What If... **My splits and stroke count are inconsistent?**
This is all about pacing. the first indication when you're swimming will be your stroke count, because it's difficult to judge time. So treat this as a stroke count exercise. Follow directions above, and try to bring rhythm into your stroke. Visualize speed skating, or cross-country skiing which will involve your core body. Be aware of bringing your hips into play as you stretch out with a patient hand. Solving inconsistency issues means slowing down on the fastest laps and speeding up on the slowest. Don't be afraid to slow down. When you achieve your pace, the speed will come back to you.

What If... **I'm exhausted after 150 yards?**
When you begin a triathlon you will not have had the chance to drill or warm up properly. Competitors tend to jump in the water and take off much too quickly. The combination of cold water, no warm-up, and no drill sequences means the probability of going anaerobic in the first 150 yards is great. If you are exhausted after 150 yards you went into an anaerobic state at the start. The fix is to relax, lower your heart rate by swimming slowly and smoothly, and then finding your pace as quickly as possible. The athletes who start out quickly, fade quickly. If you control your start by thinking of the first 200 strokes as your warm-up, you will be able to swim the race aerobically and with a low heart rate. The swimmers who raced at the beginning will come back to you by the one-third mark or sooner.

What If... **My stroke count and times for the different sets aren't consistent?**
If you swam a 1:05-second split at the 400 mark of the 500 yard set, and a :55 second split at the 400 mark of the 750, this shows fatigue. Pacing early in a race, and attention to streamlining and efficient power delivery, prevents this.

What If... **In order to conserve my energy I slow down at the end of the swim? This keeps my heart rate low for the bike.**
You're talking about not swimming a descending time. The best strategy is to swim a descending time. However, descending times are not achieved at the end of a race. Your strategy is to swim slowly at the beginning to allow for a proper warm-up. By the end of the race you are warmed-up, on pace, and easily able to beat your starting splits without increasing your heart rate. This allows you to swim a descending time. In addition, you cannot swim fast for 90 percent of the race and then slow down for the last 10 percent in order to conserve energy. You will have used more glycogen than necessary for the swim, you probably will have been anaerobic or borderline, and your slow finish may work against you psychologically when the people you passed earlier begin passing you.

Train Race inspire
West Point Triathlon Team, Swimming Assessment

Swimmer	Height	Total Mean Strokes	Total Median Strokes	Inches/Stroke	Efficiency Index
	72	29	29	62	86%

Speed Index	82.64%			10% Improvement	26 strokes

Summary	Splits (min.sec.00)	Stroke Count/50 yds
Mean	00:46.02	29
Median	00:46.37	29
High	00:47.40	31
Low	00:42.00	27
Max Range	00:05.40	4

750

750-Yard Swim

HR at finish
HR 30 seconds

Yards	Split		Elapsed Time	Stroke Count Split	Stroke Count
50	00:42.00		00:42.00	14/14	28
100	00:45.04	00:03.04	01:27.04	14/13	27
150	00:45.25	00:00.21	02:12.29	15/15	30
200	00:46.84	00:01.59	02:59.13	15/15	30
250	00:46.37	-00:00.47	03:45.50	14/15	29
300	00:45.79	-00:00.58	04:31.29	14/14	28
350	00:46.55	00:00.76	05:17.84	14/14	28
400	00:45.91	-00:00.64	06:03.75	14/14	28
450	00:46.60	00:00.69	06:50.35	14/15	29
500	00:46.50	-00:00.10	07:36.85	14/15	29
550	00:46.82	00:00.32	08:23.67	15/16	31
600	00:46.03	-00:00.79	09:09.70	14/15	29
650	00:47.12	00:01.09	09:56.82	15/15	30
700	00:47.40	00:00.28	10:44.22	15/15	30
750	00:46.14	-00:01.26	11:30.36	15/15	30

Summary	Splits (min.sec.00)	Stroke Count/50 yds
Mean	00:45.77	30
Median	00:46.22	30
High	00:47.89	31
Low	00:41.24	28
Max Range	00:06.65	3

500

500-Yard Swim

HR at finish
HR 30 seconds

Yards	Split		Elapsed Time	Stroke Count Split	Stroke Count
50	00:44.16		00:44.16	15/14	29
100	00:46.88	00:02.72	01:31.04	14/14	28
150	00:45.18	-00:01.70	02:16.22	13/15	28
200	00:46.19	00:01.01	03:02.41	15/15	30
250	00:47.20	00:01.01	03:49.61	15/15	30
300	00:46.21	-00:00.99	04:35.82	14/15	29
350	00:47.89	00:01.68	05:23.71	15/15	30
400	00:46.22	-00:01.67	06:09.93	15/15	30
450	00:46.50	00:00.28	06:56.43	15/15	30
500	00:41.24	-00:05.26	07:37.67	16/15	31

Summary	Splits (min.sec.00)	Stroke Count/50 yds
Mean	00:46.80	29
Median	00:47.22	28
High	00:48.16	30
Low	00:45.00	27
Max Range	00:03.16	3

250

250-Yard Swim

HR at finish
HR 30 seconds

Yards	Split		Elapsed Time	Stroke Count Split	Stroke Count
50	00:45.00		00:45.00	15/15	30
100	00:46.32	00:01.32	01:31.32	13/14	27
150	00:47.31	00:00.99	02:18.63	14/14	28
200	00:48.16	00:00.85	03:06.79	15/15	30
250	00:47.22	-00:00.94	03:54.01	14/14	28

Swim Assessment
Swim Order: 750-500-250

	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750
750 Yards	00:42.0	00:45.0	00:45.2	00:46.8	00:46.3	00:45.7	00:46.5	00:45.9	00:46.6	00:46.5	00:46.8	00:46.0	00:47.1	00:47.4	00:46.1
500 Yards	00:44.1	00:46.8	00:45.1	00:46.1	00:47.2	00:46.2	00:47.8	00:46.2	00:46.5	00:41.2					
250 Yards	00:45.0	00:46.3	00:47.3	00:48.1	00:47.2										
750 Strokes	28	27	30	30	29	28	28	28	29	29	31	29	30	30	30
500 Strokes	29	28	28	30	30	29	30	30	30	31					
250 Strokes	30	27	28	30	28										

Yards

Graph 2: Splits Spread

	750	500	250
High	00:47.40	00:47.89	00:48.16
Mean	00:46.02	00:45.77	00:46.80
Low	00:42.00	00:41.24	00:45.00
Range	00:05.40	00:06.65	00:03.16

Graph 3: Strokes Spread

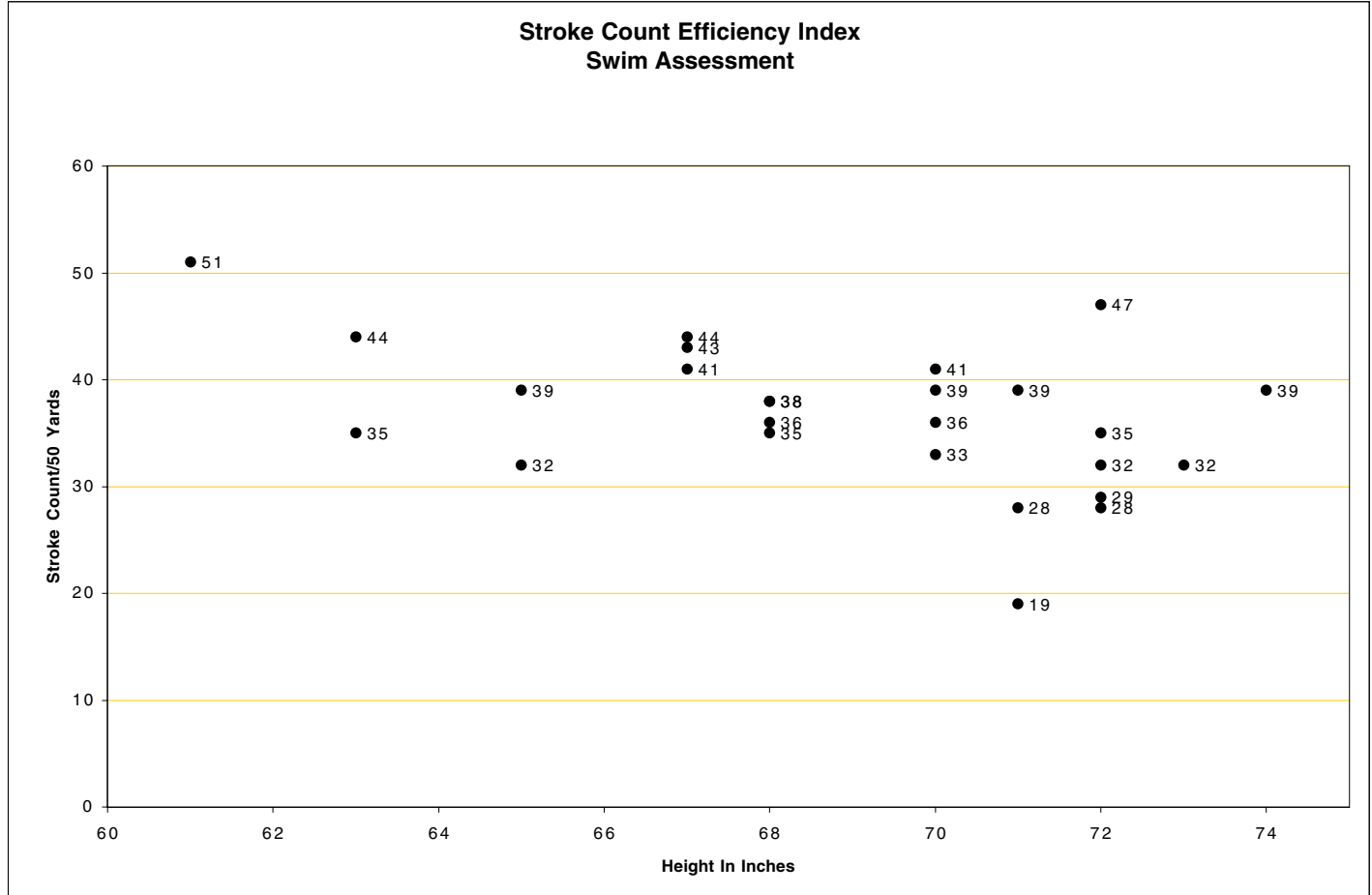|	750	500	250
Most	29	30	28
Least	27	28	27
Range	4	3	3

Rank	Height Inches	Average Stroke Count 1500 yds/50	Inches per stroke	Efficiency Index (EI)*	# of strokes for 10% EI improvement
1	71	19	95	134%	18
2	71	28	64	90%	25
3	72	28	64	89%	25
4	65	32	56	86%	29
5	72	29	62	86%	26
6	63	35	51	81%	31
7	70	33	55	79%	29
8	72	32	56	78%	28
9	73	32	56	77%	28
10	68	35	51	75%	31
11	68	36	50	74%	32
12	70	36	50	71%	32
13	72	35	51	71%	31
14	65	39	46	71%	34
15	68	38	47	69%	33
16	68	38	47	69%	33
17	70	39	46	66%	34
18	67	41	44	66%	36
19	63	44	41	65%	38
20	71	39	46	65%	34
21	70	41	44	63%	35
22	67	43	42	63%	37
23	74	39	46	62%	34
24	67	44	41	61%	38
25	61	51	35	57%	44
26	72	47	38	53%	40

*Efficiency Index is the % of height traveled per stroke

Stroke Count Efficiency Index Swim Assessment

Y-axis: Stroke Count/50 Yards

X-axis: Height In Inches

Data points: 51, 44, 44, 43, 41, 39, 35, 32, 41, 38, 36, 35, 39, 36, 33, 19, 47, 39, 39, 35, 32, 29, 28, 28, 32

Swim Assessment
xx November & xx December xxxx
U.S. Army Tri Team

Written opinion for xxxx xxxxxx
From Lou Tharp, Tri Team Swim Coach
December xx, xxxx

Hi,

OK. It's time for you to go fast. You have an 86 percent efficiency ratio, a percent speed index, and great stroke and splits control. You were tied for fourth in efficiency. Here's what it means:

- It means we can begin generating more power from your core.

- Your stroke count range 4,3,3 and your split range 5.4, 6.6 and 3.1 seconds is evidence that you understand streamlining and reduced resistance.

- Your stroke count of 14-15 is on target for your height.

- You understand focus and pacing, and the best evidence of this is your first two 50 splits in each set. They weren't too fast which kept your splits range low. It was definitely Adult Swim.

- All this means you are a distance swimmer, and in the world of triathlon swimmers you are already in the top 10 percent, and you could continue to finish well at your current proficiency level. But you're not going to let this happen, and, it wouldn't be any fun for me or you.

- Starting in January we can begin new drills to add power generation and delivery to your existing technique. But swimming is a trade-off between power and glide, and we'll need to back out of some rotation and glide in order to introduce power. You'll need to employ some mental and physical patience as we modify your movement in the water to break some new speed thresholds. Swimming drills are the way we'll retrain your nervous system and imprint new muscle memory and body management techniques.

- Your new drills will be:

    o Shark fin for high elbow out of the water.
    o Underswitch for anchor position and rotation.
    o Stone skipper for high shoulders and hip torque.
    o Underhand, breathing every stroke for hand anchor position and bi-lateral breathing practice.
    o Spearing for deliberate reach and hand anchor.
    o Fist swim to maximize anchor and catch.
    o Head tilt for streamlined upper body during breathing.

- We started doing some of these last week, but we really didn't have enough time. Don't worry if you can't remember them.

- I appreciate your commitment to the sport. We will make time to ensure that you are able to continue to grow and let the speed come to you.