



# Stroke Rate & Stroke Count In The Daily Training Environment

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# The Art of Swimming

- For all its complexity, the art of swimming actually boils down to two simple numbers.
- **Stroke Rate:** How many strokes swimmers complete per minute.
- **Stroke Count:** How far swimmers travel for each stroke.

# Stroke Rate

- Why is it important:
- Stroke rate is largely governed by swim fitness – the fitter your athletes are, the quicker and more powerfully they can move their arms through the water.
- Pacing / Competition Splits / Training Splits
- Controlling / Judging Effort / Competitions / Training
- Competition finishes require an increase in Stroke Rate, whilst maintaining Stroke Count
- Injury Prevention

# What is the ideal Stroke Rate

- There isn't one
- Dependant on:
  - Size, Arm Span, Kick, DPS, Event, Gender, Age.
  - (you may not want to start using SR until they become youth swimmers)
- There are however some common traits:
  - Increase SR in last quarter of race
  - First 25m SR = Last 25m SR.

# Stroke Rate Event Ranges

	Women SR	Men SR
• 50m Free	60 – 64	65 – 70
• 100m Free	53 – 56	50 – 54
• 200m Free	48 – 52	48 – 50 (Thorpe)
• 400m Free	45 – 52	42 – 45 (Yang)
• 800/1500	50 -53	40 – 43
• 100m Back	44 – 49	48 – 51
• 200m Back	40 – 43	42 – 49
• 100m Breast	44 – 53	50 – 55
• 200m Breast	42 – 44	40 – 45
• 100m Fly	54 – 57	50 – 55
• 200m Fly	50 – 54	50 – 55

# How do you achieve

- Take Stroke Rate in Competition Environment
- Practice Stroke Rates in your DTE
- Race Strategy – Have a Plan and Follow It
- Meet Warm Up – Dive 25m/50m at race pace stroke rate

# How Do You Take Stroke Rates

- Strokes over a minute using stop watch set on 3 cycle
- Stroke cycle over 60sec divided by time of 1 stroke cycle
- Middle of First & Last 25m in Each 50m
- Use hand(s) entry point as consistent measuring point
- Lets have a practice!

# Katie Ledecky – 800m Freestyle



# Katie Ledecky – 800m Olympic Final

	Split	Velocity	SR	DPS	Count
0 - 25	00:13.22	1.68	47.0	2.14	
25 - 50	00:28.39	1.67	45.9	2.18	37
50 - 75	00:42.74	1.61	46.9	2.06	
75 - 100	00:58.81	1.58	45.4	2.09	41
175 - 200	01:59.95	1.56	43.1	2.17	40
275 - 300	03:02.10	1.55	44.3	2.10	41
375 - 400	04:04.34	1.54	44.0	2.10	41
475 - 500	05:07.11	1.51	43.8	2.07	42
575 - 600	06:10.02	1.55	46.1	2.01	42
675 - 700	07:12.81	1.53	44.5	2.07	36
775 – 800	08:14.63	1.56	44.9	2.08	44
<b>Average</b>		<b>1.57</b>	<b>44.3</b>	<b>2.13</b>	<b>41</b>

# Daniel Gyurta – 200m Breaststroke

# Daniel Gyurta – Olympic Final

	Split	Velocity	SR	DPS	Count
0 – 25	00:13.04	1.53	40.8	2.26	
25 – 50	00:29.19	1.56	37.7	2.48	15
50 – 75	00:44.78	1.48	35.0	2.53	
75 – 100	01:01.56	1.51	34.7	2.62	15
100 – 125	01:17.18	1.46	41.5	2.12	
125 – 150	01:34.16	1.48	41.4	2.14	18
150 – 175	01:50.06	1.44	46.8	1.85	
175 – 200	02:07.28	1.45	49.3	1.77	22
<b>Average</b>		<b>1.49</b>	<b>40.9</b>	<b>2.22</b>	<b>17.5</b>

# Melissa Franklin – 100m Backstroke

# Melissa Franklin – Olympic Final

	Split	Velocity	SR	DPS	Count
0 – 25	00:13.60	1.69	48.1	2.11	
25 – 50	00:28.82	1.66	45.6	2.18	35
50 – 75	00:43.00	1.61	45.9	2.10	
75 – 100	00:58.33	1.59	45.0	2.13	38
<b>Average</b>		<b>1.64</b>	<b>46.1</b>	<b>2.13</b>	<b>36.5</b>

Where Does Stroke Count Fit Into The Equation  
Or  
Is It Stroke Length  
Or  
Is It DPS

- Competition
- Race Strategy
- Daily Training
- Injury Prevention
- Efficiency



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# Stroke Count – Stroke Length - DPS

- If you can improve your athletes stroke rate, without shortening their stroke length, they will inevitably swim faster.
- Stroke rate is largely governed by swim fitness – the fitter your athletes are, the quicker and more powerfully they can move their arms through the water.
- Stroke length is largely governed by the athletes technique – the better the technique, the more efficiently they will move through the water.
- There is a crossover between the two, because your stroke rate will increase as your technique improves, and your stroke length will increase as you become fitter and stronger, so your stroke count will decrease.
- Improvements in technique, will also assist the athlete in increasing efficiency of moving through the water.

# Competition

- First 50m/25m will have reduced stroke count due start.
- Maintain Start & Turn Protocols
- Maintain free swimming Stroke Count throughout race.
- Competition finishes require an increase in Stroke Rate, whilst maintaining Stroke Count.



# Race Strategy

- Use Stroke Count as part of your athletes race strategy. Use only if they are aware of what their individual SC is and if it is practiced in training.
- Give athlete confidence if they hit their SC.
- Can adjust Race Strategy as required throughout race.
- Enable athletes to hit turns and finishes on full strokes.

# Daily Training

- Practice SC during normal sessions. Get them into the habit of counting their strokes during differing sets.
- Devise SC training sets.
- Relate competition SCs into your training sessions can be speed, distance, start, turn or finish related.

# Efficiency

- Velocity is  $SR \times SC/SL$  (DPS)
- Velocity – Efficiency = less drag = increased propulsion.
- If Stroke Rate and Stroke Count increases this indicates that the swimmer has become?
- If Stroke Rate increases and Stroke Count is maintained this indicates that the swimmer has increased?

# Remember the Theoretical Square Law theory

*The resistance a body creates as it moves through water (drag) varies approximately with the square of its velocity (speed)*

*A swimmer swimming Frontcrawl who by doubling the speed of arm movements, increases four fold the resistance to forward motion*

# Sample Session

- 32 x 25 @ 30
  - 1) ez free
  - 2) SR @ 40
  - 3) ez free
  - 4) SR @ 45
  - 5) ez free
  - 6) SR @ 50
  - 7) ez free
  - 8) SR @ 55+



These are sample SR, shows that you can increase or even decrease through set & can be used in conjunction with SC

# Thank You



# Sample Session

- 400 SR Ladder

150 @ 40 SR

50 – ez free

100 @ 45 SR

50 – ez free

50 @ 50+ SR

These are sample SR, shows that you can increase or even decrease through set & can be used in conjunction with SC

# Sample Sessions

- 16 x 100 - same SR out & in!
  - 1) 10! – 80 ez – 10!
  - 2) 15! – 70 ez – 15!
  - 3) 20! – 60 ez – 20!
  - 4) 100 ez free

Can also be used with SC



# Sample Session

150 – ez

125 – 50\* - 25 – 50\*

100 – ez

75 – 25\* - 25 – 25\*

50 – ez

25 – mini-max

\* = at, above or below Competition SC/SR

# Sample Session

300 - ez

250 – 100\* - 50 – 100\*

200 - ez

150 – 50\*-50 – 50\*

100 - ez

50 – pace SR

- \* = at, above or below Competition SC/SR

# Skill Summary

## LONDON OLYMPIC GAMES 2012 ~ SKILL SUMMARY

LONDON OLYMPIC GAMES 2012 ~ SKILL SUMMARY											
			Winner	Medallists	Finalists				Winner	Medallists	Finalists
Males	Starts	100m Free	5.52	5.59	5.65		Turns	100m Free	6.84	6.87	6.87
		200m Free	5.82	6.07	5.99			200m Free	7.21	7.42	7.38
		100m Back	6.14	6.33	6.35			100m Back	7.08	7.05	7.14
		200m Back	6.52	6.60	6.65			200m Back	7.48	7.64	7.72
		100m Breast	6.10	6.21	6.31			100m Breast	8.28	8.48	8.49
		200m Breast	6.52	6.65	6.67			200m Breast	8.87	8.83	8.91
		100m Fly	5.70	5.68	5.67			100m Fly	7.52	7.53	7.65
		200m Fly	5.66	5.91	6.01			200m Fly	8.24	8.21	8.29
			Winner	Medallists	Finalists				Winner	Medallists	Finalists
Females	Starts	100m Free	6.24	6.41	6.41		Turns	100m Free	7.70	7.81	7.77
		200m Free	6.54	6.69	6.80			200m Free	7.94	8.17	8.29
		100m Back	7.68	7.41	7.34			100m Back	7.98	8.12	8.16
		200m Back	7.60	7.49	7.52			200m Back	8.65	8.79	8.82
		100m Breast	7.54	7.81	7.81			100m Breast	9.60	9.62	9.62
		200m Breast	8.00	7.89	7.82			200m Breast	10.03	10.09	10.08
		100m Fly	6.72	6.45	6.55			100m Fly	8.40	8.35	8.39
		200m Fly	6.54	6.88	6.87			200m Fly	9.04	9.04	9.17