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$\frac{\mu}{\mu} /$ (stroke rate)

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$\frac{\mu}{\mu} /$ (stroke length)

- μ

$\frac{\mu}{\mu} /$ (swimming velocity)

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μ

$2 / 1.2 = 1.67 \mu /$

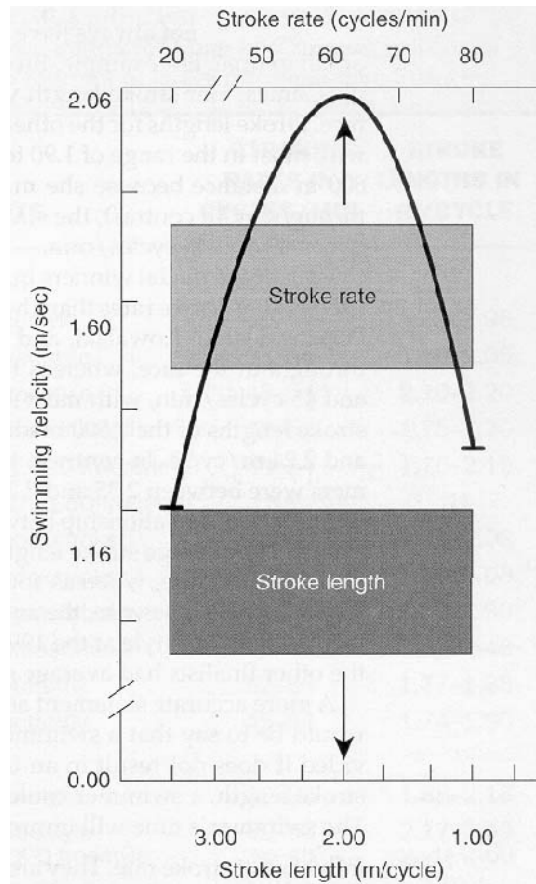
μ μ μ 

Figure 20.4 The relationship between stroke rate, stroke length, and swimming speed. The fastest speed for any particular race distance is achieved by using some optimum combination of stroke rate and stroke length. In this example, the swimmer's fastest velocity of 2.06 m/sec is achieved by stroking at a rate of 62 cycles/min with a stroke length of 2.00 m/cycle. Velocity drops off at higher stroke rates because of a loss in stroke length. Velocity also drops off at slower stroke rates because they are so slow that even a major increase in stroke length cannot produce a fast velocity.

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- 50μ μ μ
- 100μ μ μ
 10 / min μ 50μ
- 200μ μ μ
 μ 100μ
- 400μ μ μ
 μ , μ μ
 $(4-5$ / min) μ 200μ
- $800 \& 1500\mu$ μ μ ,
 μ μ (2 -
 5 / min) μ 400μ

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μ : 60 / min (1 sec /)
: 1.75 μ /
: 1.75 μ / sec
50 μ . : 28.57 sec

μ μ 63 / min (0.95 sec /)
: 1.71 μ /
: 1.80 μ / sec
: 27.77 sec

μ μ 1.84 μ /
 μ : 59 / min (1.02 sec /)
: 1.80 μ / sec
: 27.77 sec

μ

μ

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1998

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() () - μ - (μ)
 μ - () μ μ μ

• μ μ

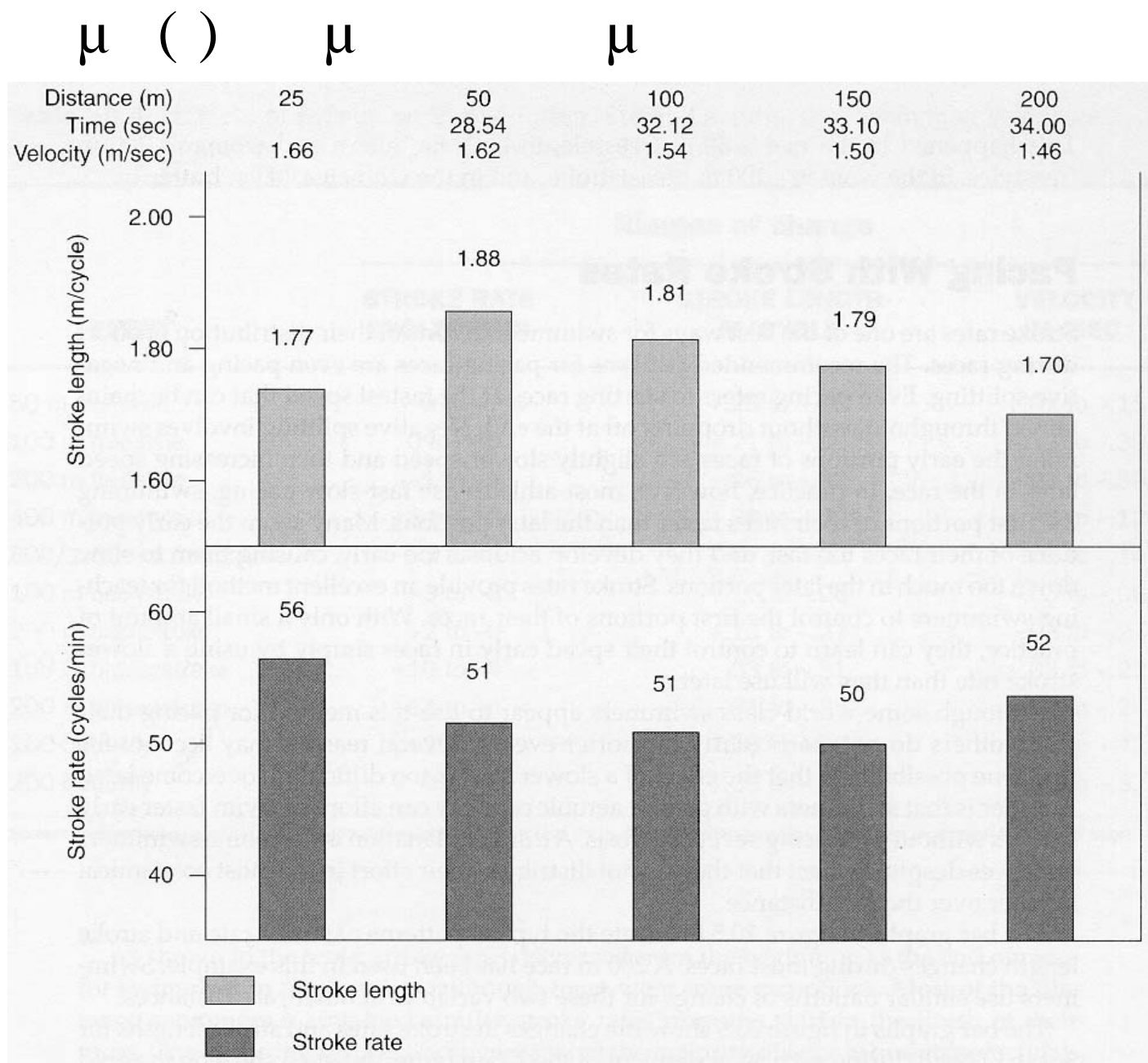


Figure 20.5 The stroke rate and stroke length changes for Susan O'Neill when she won th 200 m butterfly at the 1996 Olympics with a time of 2:07.76.

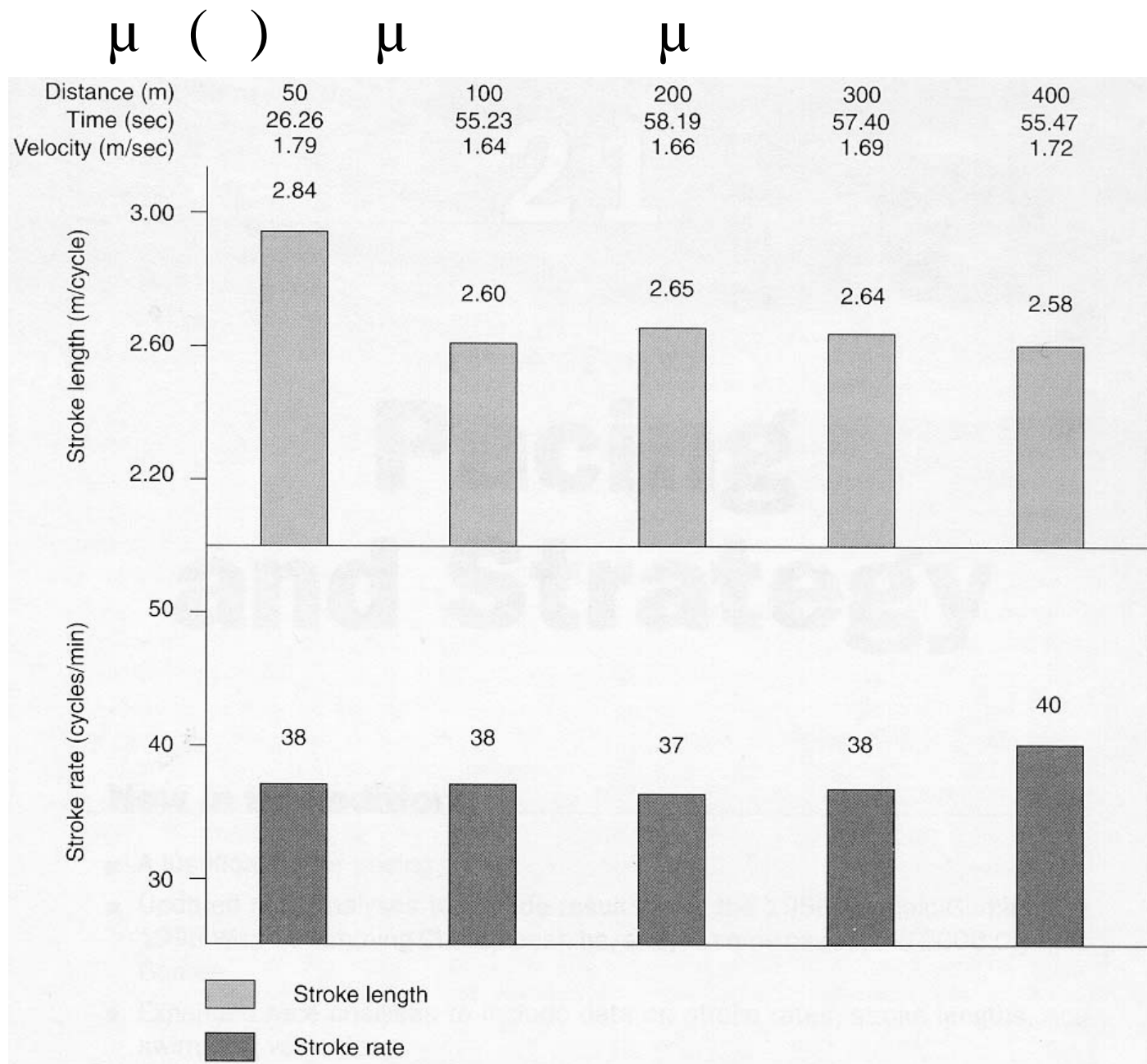


Figure 20.6 The stroke rate and stroke length changes for Ian Thorpe when he won the 400 m freestyle at the 1998 World Swimming Championships with a time of 3:47.48.

Maglischo, E. W. (2003). *Swimming fastest*. Champaign, IL: Human Kinetics.