The Effect of Pullout Timing on Breaststroke Turn Performance

Dr Alison Alcock

SCOTTISH swimming

Providing high performance expertise to sport and athletes in Scotland

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Introduction

- Applied coaching question

- 20-40% of swimming races spent turning
- Breaststroke turns slowest and most variable

(Newble, 1982; Thayer & Hay, 1984; Blanksby et al., 1998)

Aim

To determine the effect of the timing of the breaststroke pullout on overall turn performance

Method

- 5 Scottish national-level swimmers
  - 4 “normal” pullouts
  - 4 “early” pullouts

Method

Above-water camera

- Time from the wall to 13 m (s)
- Breakout time (s)
- Breakout distance (m)

Under-water camera

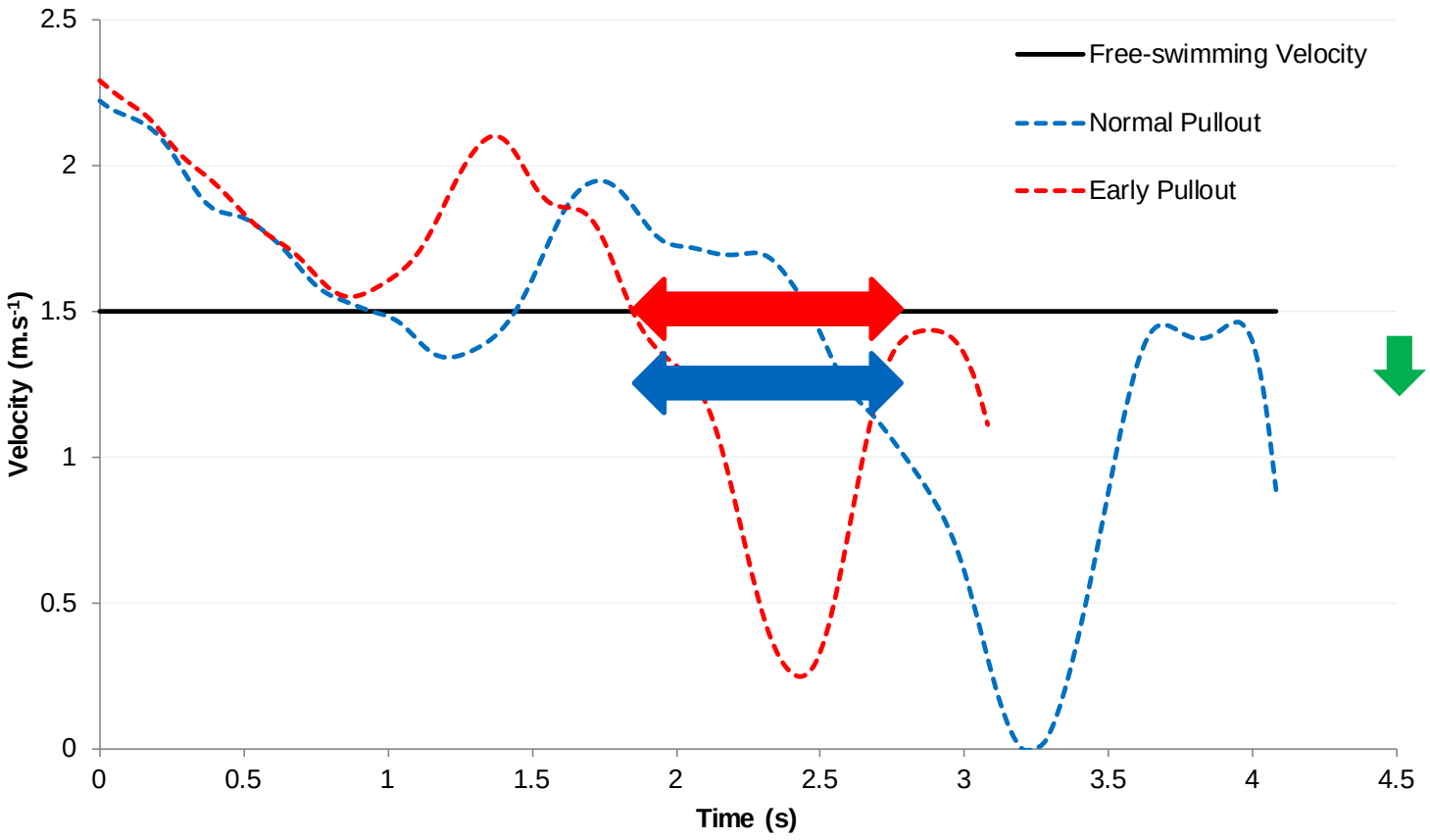
- Initial velocity off the wall ($m.s^{-1}$)
- Velocity profile from feet off the wall to breakout
  - Average free-swim velocity taken from race analysis

Results & Discussion

	Normal Pullout	Early Pullout
Initial velocity off the wall ($m.s^{-1}$)	2.52	2.54
Time to 13 m (s)	8.38	8.08 *
Breakout time (s)	5.88	4.27 *
Breakout distance (m)	9.39	7.41 *

* Indicates significance at $p < 0.01$ level

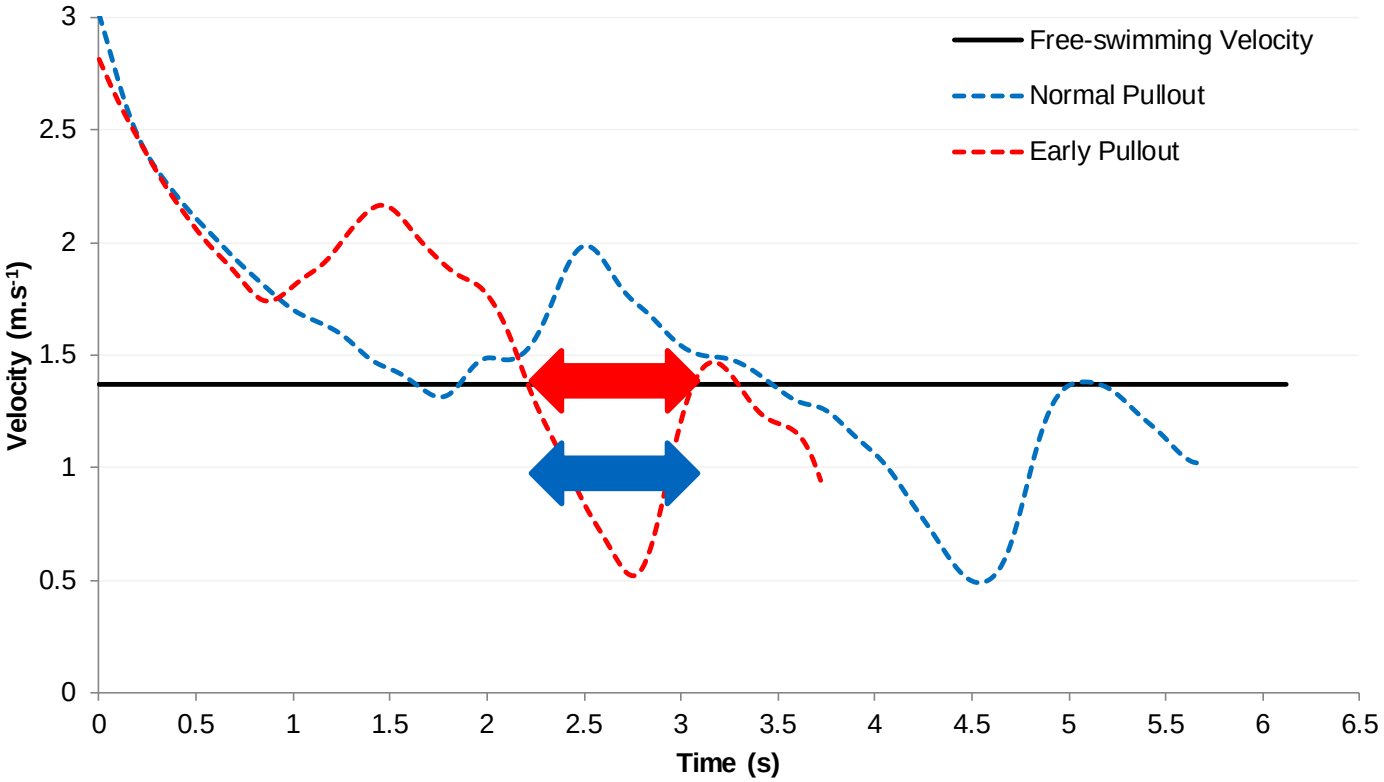
Results & Discussion



Early Pullout

0.12 s to 13 m

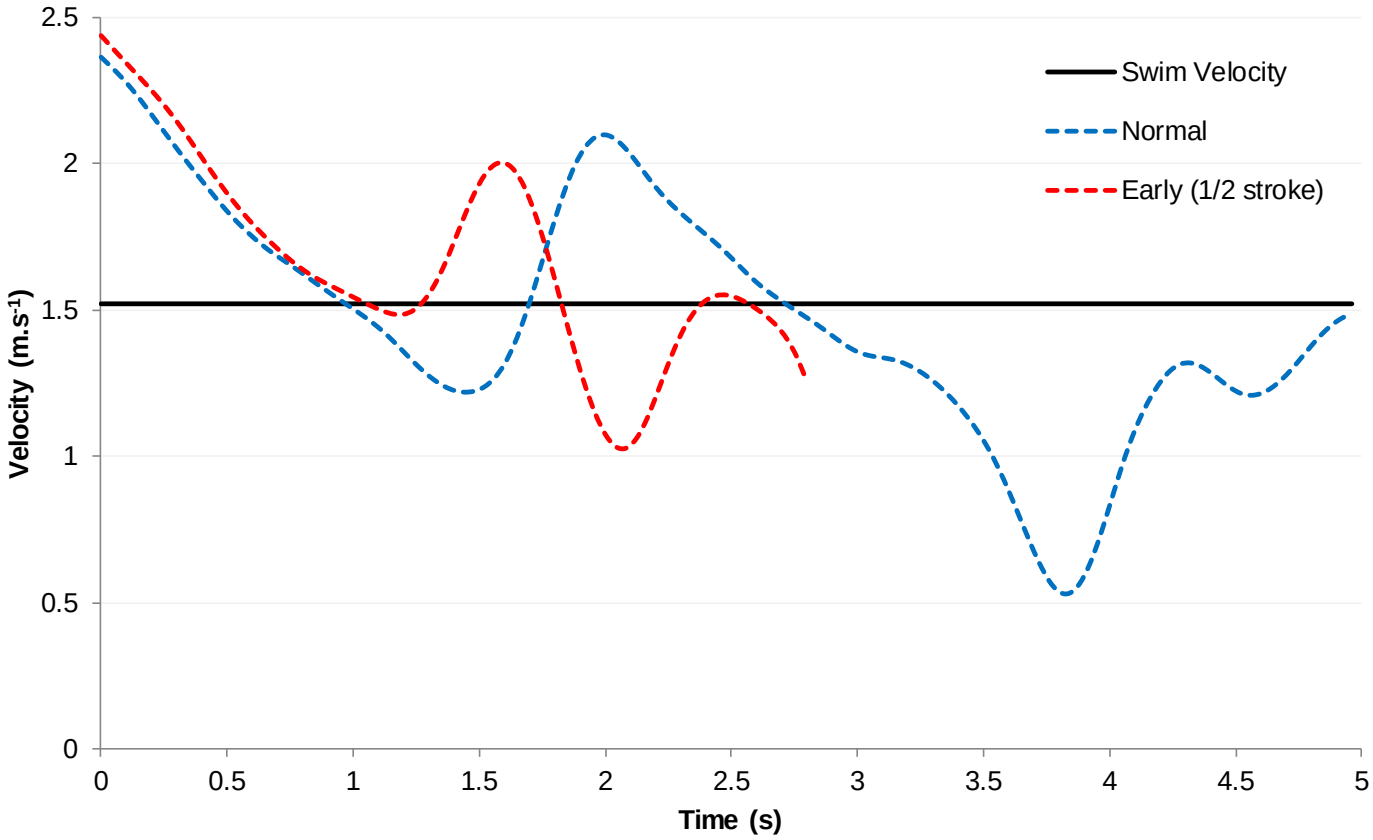
Results & Discussion



Early Pullout

0.4 s to 13 m

Results & Discussion



Half Pullout

0.47 s to 13 m

2.49 m breakout distance

Conclusions

- Timing of pullout significantly affects turn performance
- Optimal timing is dependent on individual's velocity off the wall, rate of deceleration and free-swimming velocity
- Important to practise timing as well as technical execution

Thank you

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