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Determinants of Masters Swimming Performance



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Take Home Points on Determinants of Masters Swimming Performance

1. The optimal time to maximize competitive performance in masters swimming is in the first year within a new age group
2. Masters swimming champions in 50m freestyle exhibit a smaller age decrement than those at the bottom of top ten lists
3. Grip strength is one modifiable physical trait that predicts performance among masters swimmer.

Yesterday, Dr. Barbosa examined [performance changes throughout the swimming lifespan](http://www.swimmingscience.net/2014/02/changes-in-swimming-performance-during-a-lifespan.html) (<http://www.swimmingscience.net/2014/02/changes-in-swimming-performance-during-a-lifespan.html>). In this post, we'll complement that topic focusing on the masters swimming literature.

Masters swimming is a world unto itself, with different demands than youth, age group, college, and professional swimming. Whereas younger swimmers have time on their side and biology to accelerate development, masters swimmers face different challenges. In this post, we'll explore the literature documenting factors affecting masters swimming performance. Certainly, some traits (stroke mechanics, conditioning) will affect all swimmers, but some biological forces are unique to the masters population.

PHYSICAL QUALITIES

Physical qualities may distinguish between relatively homogenous groups of swimmers. While some qualities are not modifiable (you can't go back in time and build a giant base if you never had that experience), knowledge of certain traits may guide the training process. Zampagni (2006) sampled 136 elite masters and 125 non elites and found that age, height, and hand grip strength were the best predictors in short-distance events, whereas only age and height were predictors in middle- and long-distance events in both elite and non-elite masters swimmers. You obviously can't modify age, but you can affect hand grip strength, whether directly or indirectly, if hand grip strength is a proxy for neural drive.

AGE

Age would seem to be an obvious factor, but how does it affect performance? As a general rule, "The decline in performance among national champion swimmers, both men and women and in short and long swims, is linear, at about 0.6% per year up to age 70-75, after which it accelerates in quadratic fashion" (Rubin 2013). Fairbrother (2007) noted a similar progression studying freestyle distance competitors at national championships, with the most extreme declines occurring after age 70.

In a similar study examining masters sprinters, Fairbrother (2007) noted that first place finishers exhibited a more gradual increase in time (slowing down) with age than did those closer to tenth place. Its unclear if the champions trained differently than the other competitors or if other health factors or genetics aided their ability to sustain performance.

Another factors affecting championship performance is where the swimmer stands within their age group. Whereas older swimmers have an advantage in the two year age brackets of age group swimming, younger swimmers have the advantage in the masters community. Medic (2011) noted "the odds of a Masters swimmer participating in the championship during the first constituent year of any 5-year age category was more than two times greater than the odds of that athlete participating during the fifth constituent year." In fact, I recall one of my former

teams in which one swimmer made several record attempts at morning practice in the first two weeks after a birthday aged her into the next age group! As swimmers reach the higher age groups, we'd expect five year age differences to be magnified even further.

Conclusion

Masters swimmers constantly battle fatigue. As swimmers reach the higher age groups, we'd expect five year age differences to be magnified even further. As swimmers reach the higher age groups, we'd expect five year age differences to be magnified even further. As swimmers reach the higher age groups, we'd expect five year age differences to be magnified even further.

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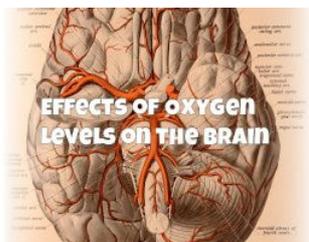
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