

# New research tells us technique is critical for masters swimmers

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Peter Reaburn is an Associate Professor in exercise and sport science at CQUniversity. He was the founder of Miami Masters in Queensland, Chair of the 1990 National Swim Organising Committee, spent two years as State President of AUSSI Queensland and 10 years on the National Coaching Panel. He has won national distance swimming championships and was world-ranked in 1500m freestyle as a younger master swimmer. He still swims open water including Byron Bay last year and was winner of the Australian Ironman Triathlon (50-54 years) in 2005. He has recently written the definitive book for masters athletes titled *The Masters Athlete* now in its second reprint and available at: [www.mastersathlete.com.au](http://www.mastersathlete.com.au)

Peter will be writing regular *Bridging the Gap* articles for us.

## Introduction

Funny things happen with age! Yep, the **older I get, the slower I get**. Strange thing is I still *feel* as though I'm swimming with good technique and very efficiently. It's just when I look up at the clock the 1.15 pace for the set of 15 100's has dropped to 1.22 speed, despite feeling the same as I did years ago!

A recent paper has just been published in the highly prestigious peer-reviewed sport science journal *European Journal of Applied Physiology*. The paper looked at swimming efficiency measures including the **energy cost (energy used) of swimming, stroke frequency and distance per stroke, as well as measuring factors affecting resistance** to moving through the water. They looked at these factors in 47 male masters swimmers aged 31-85 years of age. Here's what they did.

## The Research Project

The aim of this study was to measure the energy cost of swimming in **47 male masters (31–85 years old) swimming freestyle at sub-maximal, aerobic, speeds**. They did this using gas analysis at the end of 4 minute swims at a constant pace and mathematically estimating oxygen and energy use during the swims. During the experiments propelling efficiency of the arm stroke, stroke frequency, distance per stroke, and projected frontal surface area were also determined by **video analysis and statistical modeling**.

## What did they find?

No differences between any age group (30-40, 40-50, 50-60, 60-70, and 70-80 years) were observed for height, weight or body fat levels. Stroke frequency (strokes per 25m) was no different between any age group. However, **distance per stroke dropped steadily with age** from 2.3m in the youngsters (30-40 years) to 1.6m in the 70-80 years age group. Interestingly, the **frontal surface area of the swimmers over 60 years of age was greater than all the younger age groups**. This was a result of the **greater body incline in the older**

**swimmers** meaning greater resistance to work against. However, while the energy cost of swimming didn't change with age, the **propelling efficiency of each stroke did decrease with age.**

### **So What?**

The message is clear. **The older we become the more we need to focus on technique, and especially distance per stroke.** Flexibility training as well as strength and power training in the gym or on pool deck with an accredited coach can help with both of these.

For more on the importance of weight, speed and flexibility training for maintaining both health and performance in masters swimmers, see Chapters 7 (Strength and power training for the masters athlete), Chapter 8 (Speed and power training for the masters athlete) and Chapter 9 (Developing flexibility in masters athletes) of my book [The Masters Athlete](#).

*Source: Zamparo, P. et al; (2012). The determinants of performance in master swimmers: a cross-sectional study on the age-related changes in propelling efficiency, hydrodynamic position and energy cost of front crawl. European Journal of Applied Physiology. Published online 17<sup>th</sup> March.*