

SWIM FAST!

It is every swimmers dream to be the best, the sleekest, and the fastest. Swimming is a sport of endurance, discipline, and technique; swimmers rely on all of these resources and qualities to reach the goal of utmost importance – SPEED! In a nutshell, the objective of competitive swimming is to fight for the fastest possible personal time. In order to achieve this all-important goal (in addition to training) swimmers must hone their technique and find ways of making themselves as fast as possible. Ways that swimmers and coaches alike have found to be useful in reducing time are shaving and wearing fast suits.

FAST SUITS

While shaving has been known as an easy and cost-effective method of literally shaving off seconds, a new discovery by modern swimmers and companies has been made. Speedo has been the leader in the research and experimentation (and not to mention manufacturing) of these new creations. Best known as Fastskins, the function of these suits is to increase speed by reducing drag. Great, how much do they cost? Roughly \$100 - \$300. “Wow! Just for a swimsuit?” most people would say. However Speedo and many of the world class and elite swimmers would argue that these are not just any swimsuit; these suits have time and time again shaved off critical tenths of a second. This wouldn’t sound like much to a non-swimmer, however – when competing in events that have such close result times, the difference of few tenths of a second could mean wearing a gold medal around your neck or no medal at all.

Here is an example of how big a difference of even a few hundredths of a second can

make :

Ranking of the 2004 Olympics 100 meter Backstroke Final

- | | |
|--|--------------------------------------|
| 1. Aaron Peirsol (USA) Time: 54.06 | 5. Matt Welsh (Aus) Time: 54.52 |
| 2. Markus Rogan (Aut) Time: 54.35 | 6. Laszlo Cseh (Hun) Time: 54.61 |
| 3. Tomomi Morita (Jpn) Time: 54.36 | 7. Steffen Driesen (Ger) Time: 54.63 |
| 4. Lenny Krayzelburg (USA) Time: 54.38 | 8. Marco di Carli (Ger) Time: 55.27 |

(key = seconds . tenths & hundredths of a second)

Figure 1, courtesy of

http://www.athens2004.com/en/SwimmingMen/results?rsc=SWM041101&frag=SWM041101_C73A1

How They Were Made and How They Work

The Fastskin FSII (by Speedo) is inspired by sharks and engineered and executed by computers¹. The modeling used by the engineers revealed that friction drag is responsible for about 29 percent of total underwater drag (which is quite a bit more than the previously thought 10 percent). A pattern of different fabrics was arranged to copy the effect of shark skin, which was used to fight friction drag. By creating contours similar to that of shark skin, water passes over the material ridges and avoids the valleys that cause drag in between them. Pressure drag is another detrimental type of resistance, which is reduced by placing bumps of rubber across the chest. In addition to all of these drag reducing innovations, Speedo has also added titanium-silicon scales which aid the swimmer in the end of their strokes by gripping the water better. The end

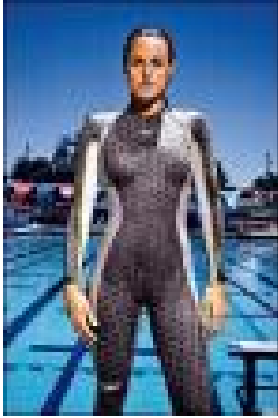


Figure 2, Fastskin FSII photo courtesy of www.materialspieler.com



Figure 3, Fastskin FSII photo courtesy of www.fluent.com

result of all of this technology is an alleged 3.5 percent drag reduction; which really equates to 3.5 percent more efficient swimming and improvement in times. Just enough to “skim” by!

BODY SHAVING – not just for girls

No matter the level of competitive swimmer, the taper and shave down is a routine well-known in the swimming world, and perhaps as widely practiced. The full body shave down, and it is *full body*, comes the night before the competition, after the last practice of the taper season². After several weeks, and even sometimes months comes the time to bring out the weed whacker and a pack of new razors. “What is the purpose of shaving the entire body?” is a frequently asked question, and the common and obvious answer would be to rid the body of excess hairs. However, this is only partially true, even though it does make the individual more hydrodynamic in the water, the true advantage lies within the skin, so to speak. The real purpose of shaving is to remove all of the

dead skin cells on the outer layer of the epidermis. Even though the skin naturally sheds dead skin cells, the use of a razor takes them all off at one time. The effect of this removal is the exposure of a fresh layer of more sensitive skin cells, which creates a more precise feeling for the water. This would naturally cause an individual to have more control of their movements and most definitely result in faster times.

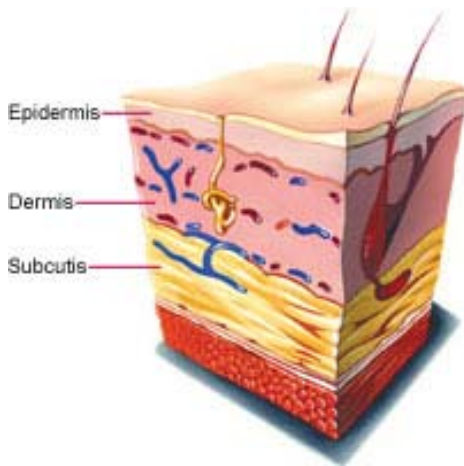


Figure 4, Skin Image courtesy of www.cellagon.de

The End of the Race

Even with training and great technique, it may not be enough, so swimmers rely on other methods to speed up their times. It is understood in the swimming community that wearing a fast suit can not make an individual into a Michael Phelps, but it can help one make what speed they have slightly faster. In addition to speedy swimwear, shaving is the vastly more economical approach to becoming faster. Although its physical effectiveness is questionable, the psychological effects are profound; providing an added edge of confidence. Any

choice a swimmer makes is bound to aid them in the quest for speed. So suit up, shave down, and SWIM FAST!

¹ They used adapted computational fluid dynamics (CFD) software developed for Formula One race cars.” Quote courtesy of:
<http://www.swimwest.org/html/modules.php?op=modload&name=News&file=article&sid=1290>

² Taper season – a period of several weeks in which practices become gradually less strenuous in order to allow for muscle recuperation before a large competition. During this period of time, swimmers refrain from shaving to become accustomed to the drag and dull sensitivity of the skin. (This shaving has questionable direct impact with times, sometimes only a fraction of a second, however, it certainly gives a physical and psychological edge to the individual.)

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PHOTO CITATIONS

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