

The influence of "Fastskin" swimming suit on physical load

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Introduction

The "Fastskin" suits were first introduced at the Fina World Swimming Championship (Athena, March, 2000). To date over 60 swimmers wearing "Fastskin" have broken world records. Manufacturers claim that the suit reduces friction drag and that a body slips through water more smoothly. The suit appears to reduce muscle vibration thus increasing productivity from muscles. According to them, the suit reduces resistance by 7% and improve results by 3%. Some test in flumes have shown that passive drag can be reduced as much as 10% in some swimming positions for some of the suits. The full length swimsuits appear to have most benefits in streamlining. The benefits decrease as the swimmers perform the flutter kick and full stroke (Benjventura et al., 2001). Scientists still dwell whether the suit has beneficial effect on buoyancy. Speedo claims that the suit is neutrally buoyant. One result of underwater weight of swimmers when wearing "Fastskin" indicated also that the swimsuit does not aid buoyancy (Benjventura et al, 2001). Those findings are in contrast to the one reported for a test not involving underwater weight (Forbes Carlile and John Woolford, 2000). Swimmers claim that the suit helps their legs be higher in the water. Distance swimmers, on the other hand, claim that the suit feel buoyant for the first 200-250m of the race but after that they begin to feel "dragged down" by the suit.

Subjects and methods

The sample consisted of 10 male swimmers who completed two times 400m crawl. First swim was in regular suit and second, two days after, in the "Fastskin" suit. Pace lights were placed at the bottom of the pool to dictate the pace. Swimmers completed both 400s in the same time (10 seconds of their personal best time). Five variables were measured to test the influence of "Fastskin" on endurance

- (HR1) Heart rate, before the test
- (HR2) Heart rate, after the test
- (BL1) Blood lactate (mmol/l), before the test
- (BL2) Blood lactate (mmol/l), after the test
- (N of Str.) Number of strokes per 50m

Results

Table 1 illustrates the values of mean, SD and (non)-significant differences between the same variables in two tests.

	Regular Suit		Fastkin Suit		p values
	Mean	SD	Mean	SD	
HR1	85,4	11,74	93,2	19,54	0,29
HR2	154,6	13,10	143	12,32	0,02*
BL1	1,81	0,64	1,70	0,29	0,66
BL2	9,20	2,37	6,42	2,41	0,002*
N of Str.	32,2	4,52	30,4	3,83	0,005*

Table 1. Means, SD and p values for lactate (BL), heart rate (HR) and number of strokes per 50/m

Although the first heart rate (before the test) was higher when swimmers had their suits on the results show that swimmers had significantly lower heart rate after the test was completed in the suit. The blood lactate (after the test) when wearing the suit was almost 3 mmol/l lower.

Discussion/Conclusion

Additional analysis showed that swimmers had nearly even stroke rate during the entire race when wearing the leg suit (first 200 they averaged 30.4 strokes per 50 meters and in second 200 they had 31.8 strokes). When swimming in regular suit they averaged 31.3 strokes in the first half of the test, but their stroke deteriorated in the second half (34.4). This would be contrary to the beliefs that the suit becomes "drag suit" after 200 m. because the fabric absorbs the water. The results of this study could point to the fact that "Fastskin" appears to have beneficial effect on endurance; it seems that the swimmers fatigue less in the suit for having lower heart rate and blood lactate at the same speed. Also the study showed that swimmers had less strokes in 400m (~ 2 strokes/50 m.) and for the same result when swimming in legskin. Swimmers seemed to benefit the most in second half of the 400 test for having less strokes (~ 3 strokes/50m) when wearing the "Fastskin" suit. As the obtained results are in contradiction with the results of the similar study of Roberts et al. (2003), but confirm what Mallendorf et al. (2004) had found, we think that placebo effect should not be excluded and more detailed research should be performed.

References

- Benjventura N et al. *J Sci Med Sport*. 2002;5(2):115-23
- Mollendorf JC et al. *Med Sci Sports Exerc*. 2004;36(6):1029-35.
- Roberts BS et al. *Med Sci Sports Exerc*. 2003;35(3):519-24
- Rushall, B.S. *The bodysuit problem: What the Scientists Report* (2000)
- Rushall, B.S. In: *ASCA Newsletter: (2000) Vol.1.pp. 1-9.*
- Speedo. *Speedo "Fastskin" Swimsuit- Information booklet and CD ROM, 2000.*

The swimmers were measured using a standard swim-suit and compared to a Fastskin-3 and its offspring, the Speedo LZR Racer X with underwater cameras and a drag measuring system at the InnoSportLab De Tongelreep at the Dutch national swim center in Eindhoven. The extra efficiency means that you can swim faster, for longer. When testing was performed at Iowa State with some of their athletes the Fastskin found the suit helped improve oxygen economy by 11 percent. Tech suits have an effect on stroke rate and stroke length. In a study done with French elite swimmers the researchers found that a F... APPLIED SCIENCES: Physical Fitness and Performance. Effect of Fastskin Suits on Performance, Drag, and Energy Cost of Swimming. CHATARD, JEAN-CLAUDE^{1,2}; WILSON, BARRY^{3,4}. Author Information. To investigate the effect of fastskin suits on 25- to 800-m performances, drag, and energy cost of swimming. Methods Performance gain (%) in the six swimming distances when wearing an FB and an L fastskin suit and when compared with the normal swim condition. Measurements were performed in a 25-m pool. *Significant difference between FB and L conditions. FIGURE 2-1: Individual performance gain (%) and swimming velocity in the six swimming distances when wearing an FB and an L fastskin suit and when compared with the normal swim condition.