

The Fastskin Revolution: From Human Fish to Swimming Androids

By Jennifer Craik

Abstract

The story of fastskin swimsuits reflects some of the challenges facing the impact of technology in postmodern culture. Introduced in 1999 and ratified for the Sydney 2000 Olympic Games, fastskin swimsuits were touted as revolutionising competitive swimming. Ten years later, they were banned by the world's swimming regulatory body FINA (the Fédération Internationale de Natation), with the ban taking effect from January 2010 (Shiple 2009). The reason was the controversy caused by the large number of world records that were broken by competitors wearing polyurethane swimsuits, the next generation of the original fast skin suits. These suits were deemed to be providing an artificial advantage by increasing buoyancy and reducing drag. This had been an issue ever since they were introduced, yet FINA had approved the suits and, thereby, unleashed an unstoppable technological revolution of the sport of competitive swimming. Underlying this was the issue about its implications of the transformation of a sport based on the movement of the human body through water without the aid of artificial devices or apparatus. This article argues that the advent of the fastskin has not only transformed the art of swimming but has created a new image of the swimmer as a virtual android rather than a human fish. In turn, the image of the sport of swimming has been re-mapped as a technical artefact and sci-fi spectacle based on a radically transformed concept of the swimming body as a material object that has implications for the ideal of the fashionable body.

Keywords: Bodysuits, swimming, technology, sportswear, consumer culture, spectacle, fashion.

Introduction: Re-fashioning the Swimming Body

The development of the fastskin swimsuit coincided with the lead-up to the Sydney Olympic Games held in 2000. It was also the year of the new millennium and considerable debate about the consequences of that transition had dominated the previous decade. This produced a conjunction between public interest in developments in sporting excellence and public debate about the representation of Australian identity in staging the Games. Of particular concern was the re-working of the traditional concept of the Australian body as emblematic of national identity and character. During 2000, three competing concepts of the 'Aussie' body came to the fore: the fastskin swimmer, the embodiment of Australian identity in fashion, and the popularity of 'outback' or rural dress globally. Each concept involved the intersection of the body, clothing and gesture to produce different ideas about the truly Australian social body – the body of the nation. Perhaps because of the pending Olympics, of the three concepts, the fastskin body became enshrined as the quintessential Australian body of the moment, building on the stereotype of the surf-loving Australian. As fashion journalist, Maggie Alderson, observed: 'If there is a positive stereotypical image of Australian style it is spunky Bondi life-savers in small Speedos and way-cool salt-bleached surf dudes in cord board shorts and wild printed shirts' (Alderson 2000). This longstanding image of the true Australian body exemplified the relationship between body and space in Australian culture, but this was challenged by the advent of the fastskin. As swimming commentator, Brent Rushell noted:

No swimsuit has made this kind of splash since [pop singer] Brian Hyland immortalised a certain yellow polka-dot bikini in the 1960s. And, unlike that itchy-bitsy number, Speedo's fastskin isn't raising a ruckus because it risks anyone's modesty. A throwback – at least in silhouette – to the era of genteel seaside bathing, the new suit encases swimmers from neck to knee. (Rushell 1999)

Instead of revealing more flesh, as successive controversies about swimwear had agonised about, the fastskin covered most of the body – although this supertight cocoon in fact produced an equally provocative silhouette that highlighted muscles and genitalia. The suit attracted widespread controversy – partly about its technical attributes and partly about its creation of a new body. The fastskin unsettled commentators, whether professional or public. Swimmers largely embraced the suits as enhancing their performances and transforming the sport of swimming: "You feel so streamlined through the water. It's like you're cutting through the water like a hot knife through butter," [Grant] Hackett said. "This suit is a real advancement and evolution for the sport" (quoted by Kogoy 2008).

Some swimmers, though, expressed reservations about whether the fastskin created an unfair advantage and turned the art of swimming from a sport to a technical performance:

Australian swimming star Libby Trickett told the BBC: 'It [the fastskin] has taken the limelight from people's performances and that's not right. I don't think the sport should have headed in the direction it has, in terms of neoprene and polyurethane suits. I don't believe that is right for our sport at all and it's disappointing it's gone in that direction and it's disappointing that FINA allowed it to progress the way it did.' (quoted by BBC Sport 2009)

However, it could be argued that the horse had well and truly bolted and that the sport of swimming had been changed forever. This, of course, was to be expected. In recent years, competitive sport has become increasingly more competitive as athletes and their minders seek new ways to improve performance and gain that extra edge on opponents. As a result, considerable investment has been made in researching performance enhancing techniques and equipment, putting sport at the forefront of new technologies that have produced new fabrics and textiles based on state-of-the-art knowledge about ergonomics, aerodynamics, anthropometry, biomechanics, and other specialisations. A new kind of sports clothing has been one product of this research and this has transformed the nature of sportswear for competition, recreation and as casual wear (O'Mahony & Braddock 2002). In short, sportswear has become centre stage in the pantheon of fashion.

Since the invention of nylon, there have been considerable improvements in the design of swimwear for competition but, whereas swimwear had been getting briefer and briefer, experiments with designs that covered most of the body revolutionised the sport (Craik 1994). In 1992, at the Barcelona Olympic Games, Speedo introduced the S2000 which it promoted as the world's first 'fast suit' followed by the Aquablade for the 1996 Atlanta Games and worn by 77% of winners (Parnell 2008). However, the real revolution came with the Fastskin that was approved in November 1999 by the international regulatory body, FINA, for use in the 2000 Sydney Olympic Games (Farlex 2000; Craik 2005).

The Fastskin suit was modelled on the way a shark's skin aids its propulsion through the water via tiny ridges. By designing a suit made of Teflon-coated lycra that was moulded to streamline the body's contours, performance was promoted as improving by 3 per cent. The full body suit was designed to streamline the body's silhouette, cut down drag and resistance through the water, compress the muscles into performance and control bodily deviations from maximum performance (O'Mahony & Braddock 2002: 119-124; Natural History Museum 2008).

The Controversy: Equipment or Performance Enhancer?

In the lead up to the 2000 Olympic Games there was a heated international furore as to whether these suits broke FINA's own regulations that banned any 'device' or equipment that aided a swimmer's performance as defined in the regulations:

FINA rule SW 10.8: 'No swimmer shall be permitted to use or wear any device that may aid his speed, buoyancy or endurance during a competition (such as webbed gloves, fins, etc). Goggles may be worn.'

The issue was whether the body suit was a performance altering apparatus rather than a swimming costume (Coach Sci 2000; Fastskin 2010b). Indeed, Adidas explicitly advertised its suit as: ‘the EQUIPMENT BODY SUIT a recognition that it is not a costume but equipment that falls into the same category as fins, paddles, etc. ... allowing swimmers to be faster and more efficient through the water’. Speedo also advertised the fastskin as ‘customised performance-enhancers that give a swimmer a competitive edge’ (Rushell 1999).

Four criticisms were levelled at the fastskin. First, the mimicking of shark skin by ridges designed to reduce drag and turbulence by directing water flow over the body was deemed to constitute a device. Second, the super stretch fabric and super tight fit compressed muscles and reduced muscle vibration artificially. Third, the effectiveness of the suit depended on whether it was a generic suit or customised by using body scanning technology to determine the placement of seams and contours. And fourth, a ‘gripper’ fabric was inserted into the forearm to mimic the skin and maximise the swimmer’s feel for the water.

Outstanding issues about the type of fabric, fabric coatings, bodily compression and buoyancy were central to the question of whether the suits were the key to improved performances and thus in breach of FINA’s own rules (Shipley 2009). Many leading swimmers and coaches were convinced that it constituted ‘a piece of equipment’ rather than a ‘costume’ (coach Paul Bergen quoted by Coach Sci 2000). American swimmer, Bill Pilczuk lobbied for a ban, saying:

‘The whole suit floats you. The more buoyancy you get, the less you have to pull through the water,’ he said. ‘When you put material that floats on people who have more muscle, they can float better. I don’t think it’s a very level playing field.’
(quoted by Coach Sci 2000)

The manufacturers defended the suit with Speedo’s Vice president, Stu Isaac arguing that the suit constituted the ‘management of existing forces rather than generating active forces’ (Speedo 2000). The international debate intensified during the Australian National Swimming Titles and Olympics selection trials held in May 2000 with debate about whether the suit contravened national regulations about costumes and specifically whether the difference between Speedo Fastskins and generic fastsuits exacerbated the hierarchy of ‘star’ versus ‘squad’ swimmers. By the time the Sydney Olympics took place, the controversy had abated and the smashing of numerous world records proved the effectiveness of the new swimsuits. Overall, times were faster and 83% of record-breaking swimmers wore the new suits (Fastskin 2010c, d, h, i).

Despite the furore, swimmers were quick to adopt the suit and they quickly became the norm for competitive swimming. However, the suits were not the robust costume some might have wished for. They were very tight – two sizes less than a swimmer’s usual size – and difficult to put on. They were also prone to tearing or filling up with water. Opinions were divided as to the full length design and soon other models were devised – sleeveless, topless and knee-length – to suit the needs of different swimmers. Despite initial controversy, the suits quickly trans-

formed the sport of swimming. Fastskins had arguably created a new body technique and inevitably, perhaps, the controversy continued to simmer away. Researchers around the world performed studies aimed at determining whether the suits did in fact reduce drag and create buoyancy though the results have been indeterminate (eg. Toussaint 2002).

While scientific testing continued, fastsuits became adopted by amateur swimmers too and the technology adapted for leisure swimwear. The new look of the swimming body had become normative. This in turn produced new ideas about the ideal swimming body with some commentators lamenting the trend towards full body suits as ‘very sad for the viewing public ... [who] love seeing the healthy bodies of the sports stars – they’ve got sensational bodies. Why would you go and hide them?’ (Max Markson quoted by Katrina Beikoff 2000). In other words, the cultural debate centred on the loss of ‘sex appeal’ or the ‘perve factor’ – that is, the desire of spectators to gaze voyeuristically at the bronzed, toned and oiled athletic bodies of competitive swimmers (Harari 2000). The new body was less recognisably human – more like a fish or perhaps an android – a shiny capsule gliding through the water like Mr Condom or Darth Vader (Harari 2000), or, as American swimmer, Amy Van Dyken quipped ‘like spacemen’ (quoted by Brooks 2000). A new swimming body was born.

Raising the Stakes: How Fast is too Fast?

Speedo – quickly joined by other manufacturers – continued to experiment with improvements to the design, releasing the Fastskin FSII for the 2004 Athens Olympic Games (Fastskin 2010g; Swim-Faster.com 2010). This drew on computational fluid dynamics to follow the flowlines around the body; different suits were designed for women and men, and for different strokes. Speedo promoted the suits through an aggressive advertising campaign that featured leading swimmers portrayed as human fish with shark gills simulated on their necks. This proved to be a promotional coup and the majority of swimmers at Athens wore this Speedo. Body suit, although it was not as performance improving as hoped – more a revision than a revolution in design. In 2007, Speedo launched the FS-Pro and in 2008 the LZR Racer.

The LZR heralded a major improvement in design (incorporating 50% polyurethane) using fused panels that streamlined the body rather like a corset to keep the body high in the water and reduce drag and turbulence (Dayton 2008; Swim Info 2008; Kogoy 2008; Fastskin 2010e, f). Prototypes were tested in NASA’s wind tunnel and the water flume at the University of Otago. Some were impractical and even the final design required 15-20 minutes to put on and could ‘only be worn half a dozen times before the compression is gone and it loses its effectiveness’ (Parnell 2008). Bizarrely, the new suit was likened to a corset which ‘improved posture and buoyancy’, ‘better use of oxygen’, ‘repelled water and had the psycho-

logical effect of making swimmers feel ‘they could swim faster’ (Parnell 2008). Australian swimmer Alice Mills said: ‘these suits make the Fastskins feel like a normal pair of training togs. These ones are incredibly smooth and fast’ (quoted by Parnell 2008).

Despite the enthusiasm of swimmers for the LZR, the suit was denounced by rival brand, Arena, as ‘technological doping’ (Parnell 2008). Other brands (including TYR, Nike, Mizuno, Asics, Blueseventy, Descente and Adidas) soon matched the LZR and a fierce advertising war ensued while new brands proliferated keen to capitalise on the potential benefits of gold medals and sponsorship deals.

By 2009, brands other than Speedo were the winning suits. ‘Rapidly evolving swimsuit technology [was] influencing results so much that sports newspaper *L’Equipe* listed the French team for the world titles by suit when it was announced this week’ (Jeffery 2009). At the same time, manufacturers and national swimming bodies lobbied FINA to ban the suits or at least clarify the guidelines for permissible suits in the light of FINA’s existing regulations in order ‘to avert an irrecoverable loss of credibility for swimming sports’ (Cristiano Portas, head of Arena, quoted by Parnell 2008).

The issue came to the boil at the 2008 Beijing Olympics when a record number of records were broken mostly by swimmers in the LZR (Matheson 2008). The manufacture of 100% polyurethane suits – especially the Italian Jaked J01 (Jaked 2010) and Adidas Hydrofoil suits – inflamed the debate still further and led most national swimming bodies to ban polyurethane suits in their competitions (Moloney 2008a, b; Moloney 2009; Jeffery 2009; Swim Coach Tools 2010). Further pressure was put on FINA to ban the suits. Australian swim coach, Forbes Carlile commented that: ‘All FINA sees is the glamour and world records. They see themselves as entrepreneurs, not as the custodians of the sport’ (quoted by Parnell 2008).

The stakes were high with the growing number of manufacturers and the extensive investment in research into refining the design (Fastskin 2010a-j). Advertising and marketing campaigns strove to bleed market share from rival brands and secure sponsorship deals with swim teams and high profile swimmers. Myths and counter-myths were rife while the public (aided by spectacular media coverage) remained mesmerised – if somewhat sceptical – about the wonder suits and the record breaking feats of swim celebrities.

Even the swimmers were critical of the implications of the new generation suits. British swimmer, Rebecca Adlington commented:

I think it’s a shame to be honest. Swimming always used to be a level playing field. I can remember watching when they were just in trucks and 100% textile suits, whereas now it’s very, very different. The technology has just taken off in the last year, it’s come from nowhere. We need to go back to putting rules in place, just to make it a fair playing field for everyone. (Adlington quoted by BBC Sport 2009)

The Ban: Putting the Genie Back in the Bottle

After more than 130 world records had been broken in less than a year after the launch of the LZR, FINA's congress, comprising representatives from national swimming bodies – as opposed to FINA's bureau – voted to ban suits that were full length and/or made from polyurethane (Shiple 2009). Permitted were waist-to-knee suits ('jammers') for men and shoulder-to-knee suits for women, however these must be made from 'allowable textiles' (although that was not defined) (BBC Sport 2009; see also Shiple 2009; Swim Coach Tools 2010). In 2010, almost 500 suits that met these conditions were approved (FINA 2010). Critics have responded that by focusing on the length of the suits and not defining 'textiles', FINA has 'circumvent[ed] vexing questions of fabrics, impermeability and buoyancy' as issues that still need 'to be hashed out' (Shiple 2009). So, rather than ending the controversy, another debate has ensued about whether the sport of swimming has been irrevocably changed and lamenting the ineffectiveness of the international regulatory body (Fastskin 2010a, j).

A study of the use of fastskin swimsuits by elite male swimmers at the 13th FINA World Championships in 2009 shows that swimmers preferred to use swimsuits that covered the torso and the leg "probably contributing [to an] extended body compression and a higher drag decrease" (Neiva et al. 2011: 91) and mainly chose two types – the Powerskin X-Glide Full and the Jaked01 Full which they thought produced a better performance (Neiva et al. 2011: 92). However, the authors concluded that "further investigation could be done to know the mechanisms of performance related [to] the polyurethane swimsuits" (Neiva et al. 2011: 92).

Of course, FINA is in a bind since it realises that the health and wealth of the sport of swimming is inter-linked with the fortunes of the swimwear industry which makes a significant contribution 'to the federations and athletes in terms of promotion and financial support' (Cornel Marculescu of FINA, quoted by Parnell 2008). FINA also faces the enormous task of testing new suits as they come on the market to determine whether they meet the new rules 'if only to stop manufacturers acting like snake-oil salesmen as they spruik the hidden powers of their suits' (Parnell 2008). And, of course, the suits are not the only technological development changing the face of swimming; there are also calibrated cameras, computer simulations, and various types of monitors, scanners and sensors. Swimming as a sport is undergoing major transformations of which the body suits are just a visible symbol.

Conclusion: The Technical Body versus the Humanised Android

The impact on swimming as a sport has been to create a gulf between elite and non-elite competition swimmers, as well as between these and recreational swimmers. The fastskin suits have also fuelled a whole new market segment of

high tech swimwear and accoutrements that has trickled down to the design and look of swimwear for everyday consumers, using new fabrics such as 75% polyester and 25% elastane to create 'a fashionable look' (Fastskin 2010c; see also O'Mahony & Braddock 2002; Salazar 2008). Increasingly, too, consumers want everyday sportswear 'to be manufactured in performance materials that were easy to care for, stretchable and comfortable' (Quinn 2002: 186). Sportswear has become 'so chic it is virtually indistinguishable from casual wear' while performance sportswear has been influenced by everyday sportswear and become increasingly stylish (Quinn 2002: 186). Quinn concludes that:

As sportswear and fashion slowly fuse together, the work of [Fashion Active Laboratory and Nova USA] and other designers reveals a complex relationship between them. While we question where the boundaries between them now lie, the axis between the two reveals a mutual concern for aesthetics and performance, and an appreciation for new design methods. (Quinn 2002: 186)

So, while the debate appears to have been about technological and biomechanical matters, computer aided design and inter-disciplinary research, it has also become a cultural debate about body techniques, the relationship between the body and clothing, the power of promotion and marketing, the dynamics of consumer culture, the agenda-setting role of the media, the role of spectacle (and voyeurism) in contemporary society, and the politics of performance and success. Swimmers in body suits look excessively streamlined and segmented into pieces – a little like the recommended cuts for a carcass in a butcher's shop. Bodies have become a collage of body pieces and a play between the concealment and revelation of the natural body. The suits also create androgynous bodies with the aim of 'smoothing out' bumps and lumps, especially of female swimmers. Photographs of the suits posed swimmers in heroic stances like science fiction super humans; the naked body squeezed into a shiny sausage skin or condom. Photos of swimmers underwater emphasised the efficiency of the suits as measured by the extent to which they assisted the body to be propelled through the water like a mechanical plesiosaurus.

Implicit in this debate has been assumptions about how swimming bodies should look as much as rules as to how the body should work as a swimming device. Until the fastsuit, debates about swimming and swimwear had focused on the tension between revelation and concealment – the naked versus the clothed body. Swimwear had become more and more brief over time with accompanying moral panic about how far could this trend go? The fastskin suit however was based on the reverse logic, namely using the new fabrics to cover up as much skin as possible. As American swimmer, Jenny Thompson, observed: 'People thought that the less material the better, the skimpier the swimsuit the faster. Now it's the opposite. Now because the material is so fast, it's the more material the better' (quoted by Brooks 2000). Spectators have been divided in their reaction to this trend with some denouncing it but others embracing the suits as enhancing 'all their bits. These are completely full on. They're as tight as can be, really' (quoted

by Harari 2000). The resulting look is slightly androgynous although the compression of bodily lumps and bumps also signals gender attributes as imprisoned rather like S & M gear or transvestite costumes. This ambiguous look inevitably has provoked a revised set of guidelines about swimwear design and its relationship with the body. The concept of modesty has been one casualty as a 'warts and all' silhouette has become the norm.

While the spectacle of the swimming body has remained a potent symbol of contemporary culture and its discontents, this symbol also references other cultural discourses such as the obsession with winning in western culture, the power of marketing and lobbying, and the emerging development of new techniques of swimming produced by the efficacy of the body suit. Yet, these issues have been strangely muted in the decade-long controversy about the fastskin. The understanding of bodysuits as a voyeuristic – if not erotic – *habitus* for the iconic post-modern body demands further attention. Nonetheless, there is evidence that there have not only been applications of the body suit to other sports (such as athletics, gymnastics, football, basketball) but there are new concepts of swimwear design and its relation to the body as a consequence of the fastskin revolution. The jury remains out as to whether the fastskin has been a positive or negative development for the sport of swimming and images of the ideal human body.

In the context of Australia national culture, the image of the swimmer as national icon has been re-worked to accommodate the fastskin body. Once the bastion of the image of masculine prowess, sun worshippers and outdoors healthiness, the new Aussie body is now encased in neck-to-knee swimming costumes – whether children, life-savers or beach go-ers. Fear of sunburn, melanoma, and sea stingers has re-invented the Aussie body that is clothed in globally successful surf wear brands like Mambo, Billabong, Ripcurl, Quiksilver and Brothers Neilsen. These have created a new 'image of freedom, health, fitness and a frisson of rebellion' (Alexandra Joel quoted by Rhonda Payget 1999).

In the national celebration of the body in the outdoors, casual and irreverent environment, the Aussie body has long been regarded as the locus of personal identity whose body techniques are elided with the sense of self. Champion swimmers have always been national heroes in the pantheon of Australian icons. They epitomised the migrant nation's control or mastery of the land. As well as more recent champions, the success of long distance champion swimmer Annette Kellerman in Hollywood cemented this national obsession. In this mission, the natural body is given precedence over the artificially-aided one. As swimmer, Susie O'Neil said after breaking the 200 metre butterfly record in 'normal togs':

I really wanted to do it in short swimmers just for my own piece of mind. I thought that if I got it in the longsuit I might just have maybe thought it was the suit that swam the time. Now I know it was me. (quoted by Sports News 2000)

In short, the swimsuit is an extension of the body surface due to the play between flesh and fabric that creates a tension between revelation and concealment as well

as orchestrating the performance of the body. Fastskin suits manipulate how the body feels and behaves – both in and out of the suit. According to swimmers who have worn the fastskin, this is both a sensory feeling and a sensual one, once again raising the dynamic between partially revealed or concealed bodies, on the one hand, and sensuality and sexuality, on the other. The history of swimming and swimwear is a history intertwined with conventions of, and discourses about, modesty, manners and sexuality and how these are conveyed, embodied or exaggerated by the partially clad body and the wet body in the complex process of constructing different versions of the social body. In this sense, the fastskin suit has become a decisive technique of the postmodern body and role model for cultural discourses about the body of the future. Indicative of this, the updated version of Speedo's TLZR Pulse used nylon and spandex micro-fibres that are super-lightweight and water-repellent in a collaboration:

With one of the most forward-looking fashion designers, Rei Kawakubo for Comme des Garçons. She transferred a calligraphic painting by Japanese artist Inoue Yu-ich onto the suit; the graphic print reads *Kororo*, which means 'heart, mind, spirit, feeling' (Calderin 2009: 246).

If confirmation that the fastskin suit has involved the transformation of the human body, this is surely proof.

Jennifer Craik is Professor Research of Fashion and Textiles at RMIT University, Melbourne, Australia, lecturer in the Bachelor of Fashion Design at Canberra Institute of Technology, and Adjunct Professor of Cultural Heritage at the Australian National University. She researches fashion and dress, and arts and cultural policy. Publications include *The Face of Fashion* (1994), *Uniforms Exposed* (2005), and *Fashion: The Key Concepts* (2009). E-mail: Jennifer.Craik@rmit.edu.au

References

- Alderson, Maggie (2000): 'Relax, It's Australian', *The Sydney Morning Herald*, 2 May 2000.
- BBC Sport (2009): 'Hi-Tech Suits Banned from January', 31 July, http://newsvote.bbc.co.uk/mpapps/pagetools/print/news.bbc.co.uk/sport2/hi/other_sports/swimming/8161867.stm?ad=1 (accessed 28/09/10).
- Beikoff, Katrina (2000): 'Swimming has Lost Its Sex Appeal', *The Daily Telegraph*, 29 March 2000.
- Brooks, Janet Rae (2000): 'Sleek Swimsuit Makes Waves with Olympians', *The Salt Lake Tribune*, 13 April 2000.
- Calderin, Jay (2009): *Form, Fit, and Fashion*, Beverly: Rockport Publishers.
- Coach Sci (2000): 'The Bodysuit Problem', 20 July 2000: <http://coachsci.sdsu.edu/swimming/bodysuit/testimon.htm> (accessed 29/09/10).
- Craik, Jennifer (1994): *The Face of Fashion. Cultural Studies in Fashion*, London and New York: Routledge.

- (2005): 'Formandet av australiska kroppar och en nationell kultur' ("Fashioning Australian Bodies and National Culture"), Bo Nilsson (ed.): *Påklädd uppklädd: Om kläder, kropp och odentitet*, Stockholm: Norstedts Akademiska Förlag, 73-110.
- Dayton, Leigh (2008): 'Swimmers Happier in Someone Else's Skin', *The Australian*, 26 March 2008, 14.
- Farlex (2000): 'SPEEDO Introduces Fastskin – The Fastest Swimsuit Ever Made', *Business Wire*, 16 March 2000, The Free Library:
<http://www.thefreelibrary.com/SPEEDO+Introduces+Fastskin+--+the+Fastest+Swimsuit+Ever+Made-a060827273> (accessed 28/09/10).
- Fastskin (2010a): 'Controversy – Should Fastskin Swimsuits Have been Allowed?', 3 September 2010: http://fastskin.blogspot.com/2010_09_01_archive.html (accessed 29/09/10).
- (2010b): 'FastSkin Controversy – Revealing Some Facts', 24 February 2010: <http://fastskin.blogspot.com/2010/02/fastskin-fast-like-shark.html> (accessed 29/09/10).
- (2010c): 'FastSkin FS Pro – Offering Record Breaking Features', 8 July 2010: <http://fastskin.blogspot.com/2010/07/fastskin-fs-pro-offering-record.html> (accessed 29/07/10).
- (2010d): 'FastSkin FSII: Women's Raze Recordbreaker Kneeskin and Men's Raze Jammer', 14 May 2010, <http://fastskin.blogspot.com/2010/05/fastskin-fsii-womens-raze-recordbreaker.html> (accessed 29/09/10).
- (2010e): 'Fastskin LZR Racer Elite: Technology Behind It', 25 May 2010: http://fastskin.blogspot.com/2010_05_01_archive.html (accessed 29/09/10).
- (2010f): 'FastSkin LZR Racer Tri-Pro: Features That Beat Competition', 3 June 2010: http://fastskin.blogspot.com/2010_06_01_archive.html (accessed 29/09/10).
- (2010g): 'FastSkin Timeline – Brief Insight into Its History', 25 February 2010: <http://fastskin.blogspot.com/2010/02/fastskin-move-quickly-move-faster.html> (accessed 29/09/10).
- (2010h): 'FastSkin, Sydney Olympics and Moments When History Was Being Made', 28 July 2010: http://fastskin.blogspot.com/2010_07_01_archive.html (accessed 28/09/10).
- (2010i): 'Speedo Aquablade Swimsuit – An Economical Alternative to Fastskin', 21 July 2010: <http://fastskin.blogspot.com/2010/07/speedo-aquablade-swimsuit-economical.html> (accessed 29/09/10).
- (2010j): 'Speedo FastSkin – One Side of the Story', 22 February 2010: <http://fastskin.blogspot.com/2010/02/fastskin-innovative-technology-for-best.html> (accessed 28/09/10).
- FINA (2010): 'FINA List of Approved swimsuits', Media Release, 4 January 2010: http://www.fina.org/project/index.php?option=com_content&task=view&id=2768&Itemid=49 (accessed 29/09/10).
- Harari, Fiona (2000): 'Suits Take the Perve Out of the Pool', *The Australian*, 17 May 2000.
- Jaked (2010): 'Mission':
http://translate.google.com.au/translate?hl=en&sl=it&u=http://www.jaked.it/&ei=F5eiTPbGDZGAv-gOy8Yz4Aw&sa=X&oi=translate&ct=result&resnum=1&ved=0CCoQ7gEwAA&prev=/search%3Fq%3Djaked%2Bswimwear%26hl%3Den%26rlz%3D1T4ADRA_enAU371AU371%26prmd%3Di (accessed 28/09/10).
- Jeffery, Nicole (2009): 'Rice Well-Placed in Swimsuit Wars', *The Weekend Australian*, 2-3 May 2009, 43.
- Kogoy, Peter (2008): 'Olympic Gold Medals Hinge on Fast "Corset"', *The Australian*, 13 February 2008: <http://www.theaustralian.news.com.au/story/0,25197,23204428-5014197,00.html> (accessed 13/02/08).
- Matheson, Clare (2008): 'Speedo Makes Waves at Olympics', 18 August 2008: <http://news.bbc.co.uk/2/hi/business/7558622.stm> (accessed 28/09/10).
- Moloney, John-Paul (2008a): 'Call for Ruling on Super Suits', *The Canberra Times*, 29 March 2008, p. C1.
- (2008b): 'Officials Strip Juniors of State-of-the-Art Suits', *The Canberra Times*, 20 December 2008, C1.

- (2009): 'FINA's Credibility Crisis Could Have Been Avoided, If It Had Remembered ... The Suit That Never Was ...', *The Canberra Times*, 1 August 2009, B1.
- Natural History Museum (2008): 'Olympic Swimsuit Mimics Shark Skin', 15 August 2008: <http://www.nhm.ac.uk/about-us/news/2008/august/olympic-swimsuit-mimics-shark-skin18219.html> (accessed 28/09/10).
- Neiva, Henrique, João Paulo Vilas-Boas, Tiago Barbosa, António Silva & Daniel Marinho (2011): "13th FINA World Championships: Analysis of Swimsuits Used By Elite Male Swimmers", *Journal of Human Sport & Exercise*, 6:1, 87-93.
- O'Mahony, Marie & Sarah E. Braddock (2002): *Sportstech: Revolutionary Fabrics, Fashion and Design*, London: Thames and Hudson.
- Parnell, Sean (2008): 'Slippery Business', *The Australian*, 31 May 2008: <http://www.theaustralian.com.au/news/features/slippery-business/story-e6frg8h6-111116490096> (accessed 29/09/10).
- Payget, Rhonda (1999): "Book Review: *Parade: The Story of Fashion in Australia* by Alexandra Joel," *Law Society Journal*, 37:1.
- Quinn, Bradley (2002): *Techno Fashion*, Oxford and New York: Berg Publishers.
- Rushell, Brent (1999) 'A Serious Threat to the Very Nature of Competitive Swimming or Not?', *ASCA Online*, 19 December 1999: http://www.swimmingcoach.org/articles/200002/20002_1.htm (accessed 05/07/00).
- Salazar, Ligaya (ed.) (2008): *Fashion V Sport*, London: V&A Publishing.
- Shiple, Amy (2009): 'FINA Opts to Ban All High-Tech Swimsuits', *Reach for the Wall.com*, 24 July 2009: <http://reachforthewall.com/2009/07/24/suit-story/?hpid=artslot> (accessed 29/09/10).
- Speedo (2000) 'SPEEDO Introduces Fastskin – The Fastest Swimsuit', Company Press Release, 16 March 2000.
- Sports News (2000): 'O'Neil May Switch to "Fastskin" Suit for Faster Times', *The News International* (Pakistan), 19 May 2000.
- Swim Coach Tools.com (2010): 'New Year, New Suit Rules', 1 January 2010: <http://www.swimcoachtools.com/NewYearNewSuits.aspx> (accessed 28/09/10).
- Swim-Faster.com (2010): 'The Speedo Fastskin fsii Swimsuit Story', <http://www.swimming-faster.com/> (accessed 28/09/10).
- Swim Info (2008): 'Industry News: Speedo LZR RACER Debuted in London, Sydney', Lane 9, *Swimming World Magazine*, 13 February 2008: <http://www.swimmingworldmagazine.com/lane9/news/17020.asp> (accessed 13/02/08).
- Toussaint, Huub (2002): 'The Fast-Skin "Body" Suit: Hip, Hype, But Does It Reduce Drag During Front Crawl Swimming?', XXXV Congresso de Natação, Portimão 2002: <http://www.ifkb.nl/B4/plaatjes/sharkportugal.pdf> (accessed 28/09/10).