



Hard race -tough technology



It will be almost twenty-six years to the day since the very first triathlon event was held in San Diego, California: it will be the opening day - and one of the opening events - of the Sydney Olympics, the first Games of a new millennium. And at 10 o'clock on the morning of September 16, 2000, the crack of a starter's pistol will signal the beginning of the first Olympic Women's Triathlon. A 1.5km swim, a 40km cycle ride and a 10km run face the world's finest multi-discipline female competitors.

The men's event is scheduled for the following day, September 17, over the same course and distances. In both events, the competitors equipment and apparel will feature technology not even remotely available to their counterparts twenty-six years ago.

Cycles - built with titanium alloys and carbon fibre - where the shape of frame tubes and the wheel profiles have been engineered to create the minimum wind resistance, shaving decimal points of a second in time to create success.

Swimwear, created out of fabrics that ease the swimmer's passage through the water, in some cases creating a vortex around the body that moves the drag-creating disturbance quickly to the rear. Wetsuits smoother than sealskin with every seam taken inside, presenting the cleanest possible surface to the water.

Running and cycling differ in the demands placed upon footwear, although twenty-six years ago it is more than likely that one shoe was forced to encompass both disciplines. Nowadays triathlon-specific cycling shoes are developed around the paramount requirement for speed in the transition area between disciplines, with tabs to assist in rapid foot entry and broad straps backed with hook 'n' loop fastenings to remove all the 'fiddle' of regular lacing.

Speedo Aquablade trisuit and Olympic hopeful Sian Bryson (UK).

Gloves, helmets, shorts, tops - both singlet and bra styles to cater for gender-specific requirements, legwear and eyewear have all been developed in the particular from standard athletic apparel into high-tech products for triathletes.



International profile

Triathlon events have become high profile in an international context, possibly because of extensive media coverage given to the Ironman series. Ironman was inaugurated on what was described as '...a nice day in Hawaii' in 1978. It has also been suggested that Ironman events are the nearest thing to licensed lunacy ever devised.

The initiator, Cmdr. John Collins (US Navy), based the programme on three existing endurance events: the Waikiki Rough Water Swim (2.4 miles), the Around-Oahu Bike Race (112 miles, originally a two-day event) and the Honolulu Marathon (26.2 miles). Fifteen men participated in the initial event held on February 18, 1978; twelve managed to complete the race. Now Ironman has become a world series of events with its own adherents and regular viewing slots on international sports television programmes.

Not surprisingly, such coverage, and the continuing necessity to develop performance-enhancing specialist equipment and apparel, triggered the interest of a number of commercial organisations in triathlon as a whole. Significantly, some of them accepted the role and responsibilities of sponsorship - either of teams and individual athletes, or of a series of events.

Triathlete dance?

In the latter category lies a company about which the uninitiated could be forgiven for questioning the logic behind the association with triathlon. Danskin Inc's roots are firmly embedded in dance - either of the frenetic variety involved in aerobics or of the corps de ballet. DuPont Supplex and Lycra characterise the company's product ranges - the body-hugging and forming garments gracing gymnasiums and dance studios throughout the world.

The Danskin Women's Triathlon Series was started in 1990 - thus it is now in its eleventh year. Maggie Sullivan, Danskin's vice president sports marketing and director of the series, gave World Sports Activewear some background:

"Women's interest in sport and fitness was shifting and changing in the late-80s and early-90s. So too was the product offering from Danskin...from legwear to a far broader assortment of activewear designed and manufactured for women only. It was felt by the management that it was in order for a marketing property to be developed to send a strong message to our consumers and potential customers that Danskin was 'not just for dancing'...Enter the Danskin Women's Triathlon Series - a property owned, structured and executed by Danskin for participation by its only consumers - women."

The Danskin Women's Triathlon Series has been the primary marketing tool for the brand for over a decade. It has served as both a retail bridge and as a means of improving marketing relationships via the pre-race training seminars conducted in

retail stores. It has provided Danskin with an on-going opportunity to reach out and touch its consumers while simultaneously facilitating an opportunity to support the retail element.

Participation in the Series has gone from 150 women entering the first race in 1990, to just under 3,000 registered for the Seattle, WA, race this August. In 1999, four out of the five largest race entries in the United States were Danskin races - which is an outstanding achievement if one remembers that all the company-sponsored events are gender specific. There is always a home for altruism in such events and Danskin has forged a relationship with the Susan G Komen Breast Cancer Foundation because of its sponsorship. The millennium will be the ninth year of support for the charity and Danskin makes a donation equal to ten per cent of all the entry fees.

Naturally Danskin's involvement with triathlon has had a significant effect on product development and design. Maggie Sullivan continued:

"Several of Danskin's 'key' items happen to be precisely the pieces that 'work' for training and competition in triathlon. The fabric specification is Supplex with Lycra. The products from the current range include the Racer Back Bra Top, the 5" or 7" Bike Short, the Race Back Shimmel and our woven Supplex Run Short. Our licensee Danskin Cyclewear manufactures 'cycling specific' shorts and a Tri Swimsuit."

Surprisingly, Danskin does not have a relationship with the US Olympic Women's Team, although the company does note that the current Australian favourite for the Olympic title - Michelle Jones - was under contract for five years during the period when it could be said that she was gaining her not inconsiderable expertise.



Danskin's RacerBack Bra Top and Bike Short.



Have a Danish

Newline is the brand name for Performance Group A/S, established 20 years ago in the Danish province of Vodskov with one objective. To quote chief executive and founder, Helge Petersen: "To be market leader in the production of functional clothing for active people."

The company's involvement with triathlon began a few years ago when a number of 'running' customers developed an interest in the more extreme event and commented that the standard Newline athletic products left something to be desired in context. Since a comprehensive range of biking and training products was already in existence, it was but a short development step for Petersen's team to produce fabrics and designs matched to the rather more specialised requirements of triathlon. Together with athletes from the Danish Triathlon Association and some of the most influential clubs in Denmark, the company began to develop the new concept, working on function, fit, and quality as the design parameters.

The latest product range of eleven items destined for the Spring/Summer 2001 season uses a Dupont CoolMax and Lycra mix almost throughout - just one design (a protective suit) being in polyester Microtouch. Newline says that the qualities exhibited by CoolMax are exactly those required for the combined demands of the three disciplines. Earlier designs specified another brand of elastane, but the developed elasticity and recovery were found to be inferior to DuPont's product and so Lycra became the fibre of choice.

Newline says that the partnership with the Danish Triathlon Association has meant that all the products have undergone continuous testing in race conditions. Ole Kragh Neilsen, marketing coordinator for the company, comments:

"The thing that is very important to the triathletes is the fit of the clothing. When doing such an extreme sport for a period of eight to 10 hours, you must be comfortable. Products should not create a strain on the body. We always have the athlete's body core [temperature] in mind."

The sponsorship route elected by Newline is a three-pronged attack on the market. Sponsorship of the national team and Peter Sandvang - the long-distance World Champion for 2000, and the underwritten support for the 2001 Long Distance World Triathlon Championship to be held in Fredericia, Denmark. The last item also marks the twentieth anniversary of the founding of the company in 1981. At the Sydney Olympics the Danish triathletes will not only be wearing Newline competition apparel, but also a highly visible corporate uniform supplied by the company.

Newline's involvement with Peter Sandvang is a two-way affair in that the athlete's contract commits him to being a part of the clothing development process. He has regular input into both specification and testing schedules - and many of his personal likes and dislikes have now

been incorporated into current designs. How that will also aid his colleagues on the Danish tri-team remains to be seen, but Newline is quietly confident of a successful entry in Sydney.

Kiwi confidence

Scott Unsworth is the man behind the New Zealand company Orca. As a former Commonwealth Games Triathlete himself, he began training others and became aware of the apparent lack in the marketplace of performance gear designed specifically for triathlon.

He comments: "It's a unique sport - it places huge demands on the athlete, expecting them to switch seamlessly from one sporting discipline to the next. And this means the gear they wear has to keep up. There are so many factors a triathlete has to take into consideration - how fast can I get this wetsuit off at transition? How quickly will this tri-suit dry when I'm on the bike? There was very little out there offering practical solutions for these real demands."

Unsworth continues: "When I started the company, the name Orca was chosen for some very specific reasons - the Orca killer whale is a mammal that is the master of its environment."



World Long-Distance Champion (2000) - Peter Sandvang is sponsored by Newline.

Powerful, aggressive, intelligent, uncompromising - an air-breather that rules in the water. A perfect killing machine, every feature designed for that one specific purpose. It's this simplicity and purity that we work to instill in the gear we develop."

Orca is well known for creating one of the world's fastest wetsuits - the Predator. The company says that it has always been committed to supplying serious athletes with the best gear available, and now is quickly establishing a reputation for its range of performance orientated Bodywear. The latest additions to this range are about to hit the market, and in keeping with the performance qualities of the Predator suit, the Orca Bodywear features race-proven designs in the latest fabrics. Chlorine resistant, UV protective and reputedly incredibly comfortable, the gear is designed to combine high performance specifications with good looks.

The entire design process is carried out in-house, at the Orca HQ design studio in Auckland. Rather than starting with computer models or set patterns, the apparel is initially shaped on live athletes. This, says Orca, is to ensure that the completed garments can be guaranteed to perform when being worn. Once the form has been decided the 'look' is applied - several styles in the Bodywear range incorporate sublimation printing to transfer black organic shapes onto the material to create the striking black-and-white markings of the killer whale.

"That look is important," says Unsworth. "When athletes feel good about themselves, their performance lifts a notch. But the gear has to deliver on its promise. Materials and construction are the real 'make or break' factors.

"For instance, we decided first that comfort and high wicking characteristics were the key areas we needed to cover in our Bodywear - we then went hunting until we found European fabrics that met these needs. Breathable Aquafleece padding, UV protective materials, strong and non-chafing flat lock stitching - everything you'll find in our garments is there for a reason. We start with those real-world needs - then we use the technology that gives us what we want."

Even tougher ...

Team Unlimited created the Xterra race on the island of Maui in 1996. As if reality of the Ironman and standard triathlons wasn't enough, this race was designed to offer an even greater challenge by taking the traditional format off-road to '... offer new and different challenges for the athlete'.

In 1998, the race was expanded to four regional races leading up to a championship event. In 1999, the Xterra America Tour was added. This brought the Xterra races to 10 cities across the mainland USA, culminating in the Championship on Maui. For 2000, the series has been extended to include Xterra International, with races in Great Britain, Japan, and Canada.

XterraGear is in partnership with the Team Unlimited, the owners of the Xterra race format. The former company doesn't offer individual

sponsorship as such, but does provide several athletes with products to achieve that all-important exposure as well as performance feedback on designs and textiles.

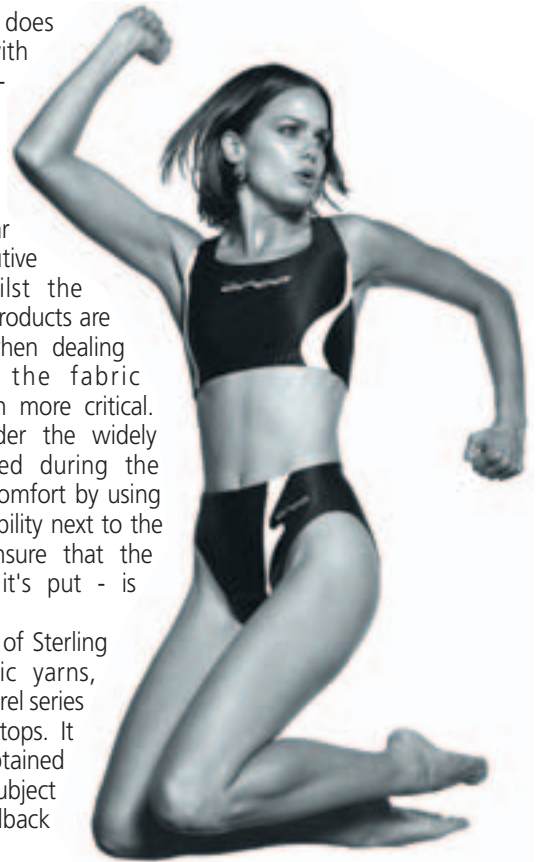
Commenting on the textile content of XterraGear products, Bob Russell, executive vice-president, said: "Whilst the materials we use on all our products are obviously very important, when dealing with triathlon apparel the fabric specification decision is even more critical. The ability to perform under the widely varying conditions presented during the course of a race, providing comfort by using fabrics with a high wicking ability next to the skin and elastane fibres ensure that the wicking layer stays where it's put - is extremely important."

XterraGear is a major user of Sterling Fibers MicroSupreme acrylic yarns, particularly in its training apparel series - singlets, socks and fleece tops. It says that the performance obtained from these products is the subject of continually positive feedback from triathletes.

When it gets down to race day the number one product is a Tri Short designed and made by De Soto Clothing Inc. in a nylon and Lycra combination with an anti-microbial fleece pad. This short is designed to be able to be worn continuously throughout all three elements of an event, saving the athlete a great deal of time in the transition periods. Complementing the short is the Tri Jersey also designed and made by De Soto. As with the Tri Short this top is made of nylon/Lycra and can be worn through all stages of the competition.

Xterra's women's collection, designed by Shebeest, the women's triathlon clothing designers of San Diego, consists of the AeroSports bra - made with CoolMax and Lycra with a Supplex liner - and the Veloci-V sleeveless top. The latter garment uses Drystyle mesh side panels for temperature control and includes a built-in shelf bra liner. Drystyle is a performance boosting fabric that has an almost weightless soft hand. Its temperature regulation abilities derive from a mixture of 63% nylon, 23% polyester and 14% Lycra yarns.

The Xterra events are still relatively new, but nevertheless are attracting a strong following among those dedicated to carrying out their leisure pursuits away from blacktop roads and the confines of controlled swimming areas. The textile-based products that are being developed therefore require an element of risk-assessed safety to be built-in. The majority of the fabrics used appear to be slightly heavier than average, with a 'gutsy' appearance. Designs have the look of 'construction' rather than 'make up' - probably also making a definitive contribution to the tougher image projected by the particular race.



Orca's sublimation printing technique highlights the killer whale markings on bratop and briefs.



Led by textiles

Many internationally famous companies in the sportswear industry lay claim to being 'performance-led'. Some truly are, but only a very few could claim to be 'performance textile-led', and of those it is unlikely that more than a handful could match the development work of Speedo International in the context of the triathlon event.

Arguably the world's most gruelling sport, it obviously demands garments that are of the highest possible technical specification. At the core of the Speedo Triathlon garment collection is DuPont's CoolMax fabric with an incorporated (PBT) (polybutylene terephthalate) yarn. The combination has given Speedo a fabric that is lightweight, possesses a high degree of tolerance to chlorine and acts to disperse water away from the body. The last attribute helps to achieve and maintain a constant body temperature.

Eschler-supplied linings that are both antibacterial and hydrophobic have also been the subject of extensive development by Speedo. They are incorporated into every piece of triathlon clothing in those areas of the garments where abrasion may be the outcome of retained water or perspiration.

Perspiration-prone areas, such as under the arms, are ventilated by the application of Mini Mesh, a lightweight and quick-drying mesh fabric which also helps to stabilise body temperature during periods of intense activity. Mini Mesh is complemented, says Speedo, by the application of another development - so far unnamed - where metallised yarns are knitted into fabrics for cycling garments. These reflect both visible light and UV rays, enabling the designer to stabilise the temperature in specific target muscle groups.

Launched in March 2000 was Speedo's bio-mimetic Fastskin (known as Glideskin in North America). Neoprene-based, this fabric is completely hydrophobic and feels slippery to the touch. The outer surface is imprinted with a design which simulates the dermal denticles (or placoid scales) of sharkskin and this pattern creates a series of miniature pressure pockets, increasing water flow around the body and reducing drag. So efficient is this innovative system that the company found it necessary to obtain approval for its use from triathlon's controlling body - the International Triathlon Union.

Quite apart from revolutionary materials, the key feature of the new FAST.SKIN wetsuit is its dynamic cut, which includes a unique single seam arm and shoulder panel to maintain freedom of movement. Intended to fit like a second skin, the garment is nevertheless three-dimensional in application so that the fit is enhanced. The panelling is adjusted in the water to assist the athlete in achieving the maximum efficiency. A longer length reverse zip fastening on the wetsuit also enables a fast transition from the swim to bike phase. The wider opening over the hip speeds up the process of removing the suit, of great importance to triathletes when every second counts.

Of the new suit, Joe Fields, President of Speedo International, said: "Our aim was to create a high performance, multi-disciplined wetsuit which meets the ultimate challenge for this environment. We have succeeded in doing this by incorporating and adapting the Fastskin technology from pool

to open water swimming. Extensive testing shows this to be the fastest wetsuit ever made."

Speedo's well-known Aquablade fabric technology has been applied to a full range of triathlon garments to enable athletes to race in competitions without the need for a separate wetsuit. This allows them to move effortlessly from one element of the competition to another, saving valuable seconds.

The Aquablade range consists of a Speedsuit, Singlet, Speedshort, women's Tri-suit, and duathlon shirt and short. It was found that the same hydrodynamic principles used to engineer Aquablade also applied out of the water, actually working to improve the body's aerodynamics. The Aquablade Speedsuit was found in laboratory tests to decrease by up to 15% the drag experienced by the triathlete in competition.

The company's sponsorship programme almost guarantees visibility on the podium in Sydney with such individual recipients as Sian Brice and Steph Forrester of the UK squad and Marie Overbye from Denmark, linked to team involvement with the United Kingdom, New Zealand, Spain, South Africa, The Netherlands, the USA and Canada. Finally - although not sponsoring all her garments - Speedo are supplying swim goggles and wetsuits to Michelle Jones of the Australian team.

Growth and technology

Triathlon is a relatively 'young' event in sporting terms. But, by its very nature, it has had a similar effect to that of international conflict on the developing technology employed in its competition. Like warfare, its participants have the basic requirements of comfort and ease in operation. Again like warfare, technology has been brought to bear accordingly.

If the analogy is doubted, consider that the winners' timings in the 1979 Ironman were in excess of 11 hours for the men and 12 hours for the women. By 1999, both genders were returning sub-8 hours. With the greatest respect for the biological sciences, it has to be accepted that textile technologies employed on behalf of the competitors have played an enormous part in such improvements in performance.

Derryck Draper



Xterra Series competitors about to enter the water.