Today sports and science go increasingly hand in hand. Together with private companies, sporting bodies and other research centres, TU Delft is involved in many innovative sports-related projects, particularly in water sports, where materials can be crucial. Jimmy Tigges

Science

From go-faster stripes to sliding tracksuits

“Bring the lab to the sportsman”

Colleague, Anoek van Vlaardingen, feels that innovation in sport is attracting increasing interest within the university. “Sport is a springboard for research applications. It’s great for that!” As Bregman says, “It’s not about the medal, but it’s the spin-off that counts. Just like space travel wasn’t about men on the moon, but about the Tefal pan and the microwave. That’s the real goal. The best result is when an invention filters down into everyday life, where amateurs use clapkates too, making them an interesting commercial prospect.”

“[...]”

The federation banned technologically advanced swimwear

Comfy in your boat

Dr Arjen Jansen, manager of the Sport Products applied research programme, reports prospects for sailing wear that adapts to conditions on the water, that could stop the wind feeling alternately cold and warm depending upon the direction of travel which can affect the sailor’s focus. Wind tunnel testing was performed to find out how important clothing is. Jansen has announced that the Dutch sailing teams at the London Olympics will be using a new product co-developed with Magic Marine. “But my lips are sealed!” he says. “A confidentiality agreement applies until the Games. The product will make sailing more comfortable, so the crews stay focused.” And it’s an irreversible addition to the sailor’s clothing. “Even if it only improves their performance by 1 percent, that could give them crucial metres.” After the Games, the product will be launched commercially. “That’s the goal of this project,” Jansen asserts, “to result in economic activity.”

Last year TU Delft introduced a Sports Innovation minor led by Jansen. One of the first projects was for a well-known footwear brand, aimed at finding a quick way of removing water from shoes. “For trail runners,” he explains, “They spend hours running cross country and traversing streams. Then it’s great to have shoes that dry out fast.”

Sporting scientists

Many more TU Delft scientists are now active in sports innovation. Dr Leo Veldhuis, lecturer in Aerodynamics at the Faculty of Aerospace Engineering and an enthusiastic cyclist, was involved in work on the special ribbed “go-faster stripes” on the Dutch skaters’ suits at the 2008 Winter Olympics in Nagano. Borrowing technology from the aircraft industry, these directed air flow. Today, the same roughness is integrated in the suit material itself. But Veldhuis believes there is yet more potential in other sports, such as tennis, sailing and football. Anywhere where aerodynamics plays a role. “Increasing the friction between the racket and the ball in tennis,” he says, “means you can give the ball more spin.”

Prof. Dr Frans van der Helm, professor of Biomechatronics and Biomechatronics at TU Delft and a Human Movement Sciences graduate of VU University Amsterdam, is studying how we control our muscles to produce movement, research which could help Parkinson’s sufferers, for instance. His department is also studying the ideal blade curvature for a speed skate, and developing a maneuverable wheelchair and improved prostheses for use in disability sports. Together with The Hague University of Applied Sciences and VU University Amsterdam, TU Delft is planning a new centre for adapted sports in The Hague, including a sports technology field to provide an ideal facility for research and development of know-how. The research group led by Dr Ir. Johan Molenbroek, a senior lecturer in Applied Ergonomics and Design, is working on special “sliding” trackbottoms for use in sitting volleyball. “Now they are using trousers from Zeran, a discount clothing chain,” says Anoek van Vlaardingen. “Cheap, but they wear out fast. The new prototypes are still being tested, so it’s unclear whether the team will be wearing them at the London Paralympics.” Molenbroek also teaches a special course on hand protection. Under his guidance, a protective mask with a wide field of vision has been developed for hockey players, as they have to see what is happening on the pitch. Yet another useful innovation – provided the hockey federation approves its use.