



What is it?

- Cooling products to help sportsmen regulate their body temperature and perceived temperature.
- With individual cooling, the emphasis is on comfort and efficiency; during a match, for example in a short break or between different periods of a game, the sportsman can quickly cool his body down by wearing a cooling vest and/or cooling trousers.
- Active cooling of the body can be an important contribution to a top sportsman's ability to perform and recover, especially in the weather conditions expected during the Beijing Olympics where the climate in August is characterized by very high temperatures and a relative humidity of 85-90%.
- During the Olympic Games, sportsmen in certain disciplines will compete several times each day which can lead to the body becoming overheated. The quicker he recovers after exertion, the quicker he will be ready for his next performance.

What does it do?

- The individual cooling system consists of a vest and a pair of trousers, into which a cooling system has been fixed. The cooling system consists of a long series of tubes, through which ice-cold water is pumped.
- The water is cooled by melting ice which is stored in a separate reservoir. The ice, pump and battery are worn in a bum-bag around the middle.
- The tubes are integrated into the clothing and held in place by stitching with Dyneema®.
- When filled with liquid, the whole system weighs less than 3 kilograms and is therefore ideal for use during a match.
- The sportsman's perceived temperature will be considerably reduced with the result that he is ready for further exertion faster.



Individual Fact cooling sheet

More about the product

- The cooling vest and trousers sit close to the body and are simple to use.
- The location of the cooled tubes has been chosen so as to efficiently cool the most important parts of the body, namely the chest, shoulders and upper-arms.
- The special connections, made from a synthetic rubber material for optimal flexibility and insulation, provide for quick connection and disconnection from the system.
- With this new range of cooling products (see also Team cooling), DSM is able to meet NOC*NSFs (Netherlands Olympic Committee and Sport Federation) express wishes of making similar products available to the Dutch Olympic team for the 2008 Games.
- After the 2004 Games in Athens, experts from DSM Research together with external parties considered how the desired cooling capabilities could be accommodated in such a small and mobile system as possible.
- The cooling products are also suitable for use outside of sport - such as in medical applications, for example the treatment of trauma or preventing heat stress in the elderly during a heat wave. These products could also be used in employment situations, where employees may be exposed to high temperatures for long periods.

Who uses individual cooling?

Amongst others, (Paralympic) athletes, male and female hockey players, footballers, rowers, yachtsman, cyclists, softball players and baseball players.

Athletes' experiences

Sharon Walraven, wheelchair tennis player: *"On account of my paraplegia I suffer many problems associated with regulating my temperature, especially if I'm somewhere warm. My temperature sometimes rises to 40°C and then you can no longer put in top performances!" The cooling vest works quickly, which is also very important. "We have 90 seconds per change. I quickly pull the vest on and it cools my body down."*

Guus Vogels, keeper for the Dutch hockey team: *"If you leave the pitch and put the vest on, it cools immediately, it works instantly. Every player has his own preference, some wear it for quarter of an hour, others are ready after just a few minutes, it's just what you prefer. But it certainly helps to get you back out onto the field feeling fit and boosts your speed."*



Individual cooling



What is it?

- A compressor technology which can be used to create a cooling bath for sportsmen at any location.
- With team cooling, the emphasis is on recovery - a sportsman's muscles need to be cooled as quickly as possible to speed up recovery after exertion.
- By sitting in a cooling bath, the after-effects of exertion (muscle pain, leg swelling) are reduced and the sportsman feels "recovered" much quicker.
- The sportsman is ready for further performance a lot quicker. This is particularly important for sportsmen who need to perform at a high level for several consecutive days.
- Until now, team baths have only been cooled by ice.
- DSM and NOC*NSF (Netherlands Olympic Committee and Sport Federation) have taken the initiative in developing this compressor technology in cooperation with InnoSportNL, Innovacent and TNO, especially for the Olympic Games in China.
- It is the first time that a system for team cooling has been tackled so professionally.

What does it do?

- Power exerted while playing sport can cause damage to muscles, especially to old, weak tissue. After exertion, muscle break-up can occur to the damaged tissue and this in turn gets replaced by new, strong tissue.
- After physical exertion, there is a natural replacement of damaged tissue. During this process, which is boosted by higher muscle temperature, a sportsman is less able to perform.
- If there is insufficient time for this process to be completed, the after-effects of exertion (muscle pain, leg swelling) can be reduced by rapidly cooling the muscles (aftercooling).
- The chances of aftercooling having a positive effect are greatest if the sportsman is immersed for 10-20 minutes in cold water at a temperature of 10-15°C. By doing so, the muscles are cooled and break-up is halted.

Team cooling Fact sheet



More about the product

- The cooling units are designed to cool around 800 to 900 liters of water from 25°C to 10 °C within 2 hours. This is enough for an 8-person bath.
- The system works on 220V or 110V. Heat is channeled off by tap water (water cooled unit) or by tap water/forced air (water and air cooled).
- Air cooling is particularly suited to outdoor use, whereas water cooling is convenient for use in changing rooms. The tap water is simply drained off, preventing the room from warming up.
- The systems are cube shaped with dimensions of around 1 meter and weight of approximately 100 kilos.
- The cooling units are mobile and, where possible, will be installed in the changing rooms at competition and training venues in China.
- A total of 7 systems will be delivered to the Dutch sportsmen.
- With this new range of cooling products (see also Individual cooling), DSM is able to meet NOC*NSFs (Netherlands Olympic Committee and Sport Federation) express wishes of making similar products available to the Dutch Olympic team for the 2008 Games.

Who uses team cooling?

Male and female hockey players and rowers. There is also a cooling bath available for general use in the Olympic village.

Athlete's and coach's experience

Laurence Docherty, midfielder for the Dutch men's hockey team: *"It's always a question of getting used to the cooling bath once you first get into it - you really notice that your body has to adjust and get used to the cold water. But the cooling bath certainly has an effect on my body because my muscles become more relaxed. I can feel my blood flowing, waste being controlled better and I don't suffer from cramp as much. My legs feel much lighter and more relaxed after a cooling bath than after just using the shower."*

Marc Lammers, national coach for the Dutch ladies' hockey team: *"This new method of team cooling is a real improvement. When you're on location, you don't have to buy in ice any more, and it's much better to cool the water down and regulate its temperature with the cooling unit."*

Team cooling