

E.COOLINE RAISES QUALITY OF LIFE IN MULTIPLE SCLEROSIS

Observational study to investigate reduction in the fatigue syndrome

The use of climate-neutral cooling vests significantly decreases the Uhthoff phenomenon in multiple sclerosis, as the E.COOLINE observational study in South Germany demonstrates.

The results were unequivocal. Even though previously there have been only a few studies on the effects of cooling products on the quality of life of MS patients, over 90 % of patients rated the cooling effect of E.COOLINE as good to very good and believed that their performance level improved and their symptoms of fatigue decreased.

The comfort of wearing these vests and their capacity for quick and easy handling were rated positively.

Most patients believed that they experienced improved performance, more concentration, and less fatigue both at higher ambient temperatures and during bodily exercise. The fatigue syndrome in particular was repeatedly and explicitly mentioned. Physiotherapists estimated that the onset of fatigue was slower and less intense.

Multiple sclerosis (MS) is a chronic inflammatory disease of the central nervous system. One common symptom of this disease, which occurs in approx. 60–70 % of patients, is the Uhthoff phenomenon. It involves a worsening of the neurological symptoms. The cause is the elevation of bodily temperature through fever, bodily exercise, or simply through elevation of the ambient temperature, e.g. in summer, warm countries, or warm rooms.

In addition to a frequently dramatic worsening of bodily symptoms, the patient becomes more rapidly fatigued ("fatigue syndrome"). Both of these effects produce enormous limitations both in patients' professional life and in their activities of daily living, resulting in a substantial reduction in their quality of life.

The effects, however, are reversible in the sense that these negative symptoms will disappear once the body is cooled. If cooling does not occur, a pronounced Uhthoff phenomenon will severely hamper bodily and mental activities, limit sports activities – which are particularly beneficial for MS patients – and heavily curtail their quality of life, especially during the rather warm and hot summer months.[1]

On the basis of the rapid, easily induced, and long-lasting cooling effect of the COOLINE material used in the vests – which until now has been used for protection in very hot workplaces and for military purposes – a observational study was prepared to see how much MS patients would benefit from cooling vests with the COOLINE material. To this end, investigations were conducted in 8 leading neurological hospitals in South Germany.[2] The initial reactions of doctors and patients are very positive.

The reasons given for this result were: the simple rapid activation of the vests using tap water; the light weight and consequently the high level of wearing comfort; the longlasting effect which ensured it could be used for hours, even an entire day, without premises.

The vest is simply worn over regular clothing, is available in different sizes, and is easy to care for.

A total of 16 multiple sclerosis patients with the Uhthoff phenomenon were outfitted with E.COOLINE vests in a user study completes in 8 hospital centres. The patients ranged in age from 32 to 62 years (mean 44.5 years), had a mean body weight of 79 kg, and were 70/30 % male/female respectively.

The outdoor temperature during the period of use ranged between 20-34 °C. The weight of the vests was between 1 and 1.5 kg in more than 60 % of the patients (approx. 0.8-1.3 kg water per vest). The wearing time was 0.5-8.0 hours (mean wearing time 3.9 hours).

The vests used in the trial consisted of a high-tech material which is capable of binding of water within seconds and releasing it again through evaporation in the presence of high temperatures. The chilling effect of evaporation cools the body like a natural air conditioner – more so in the presence of high temperatures, less so with lower temperatures. The water is bound so tightly in the material that no drops of water appear and one's clothing remains

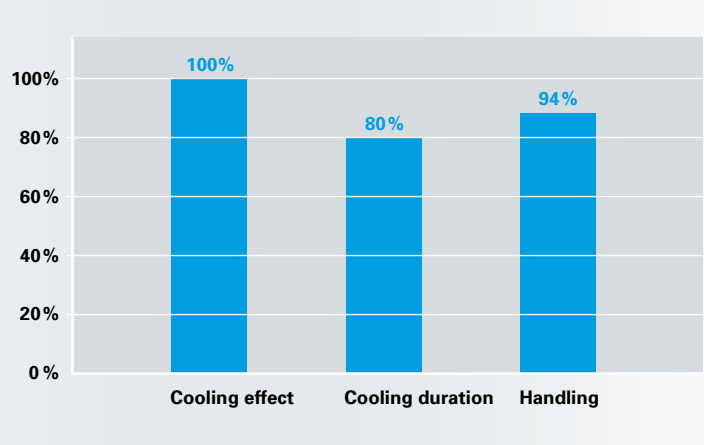

Figure 1: Positive opinion by percentage of patients

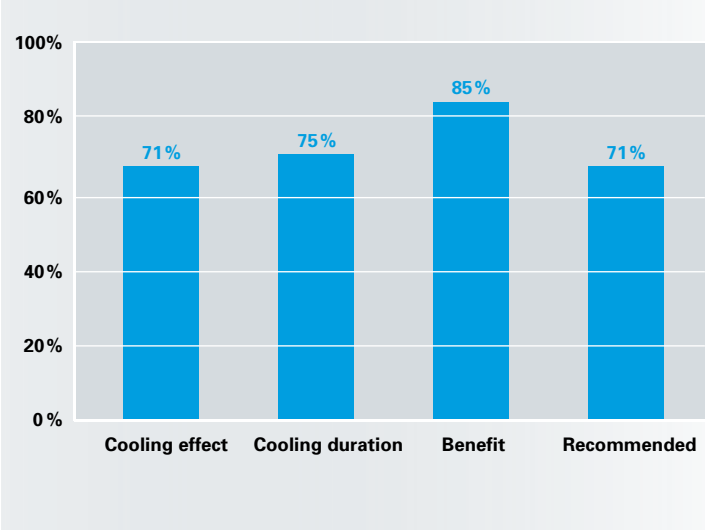

Figure 2: Positive response by percentage of physiotherapists

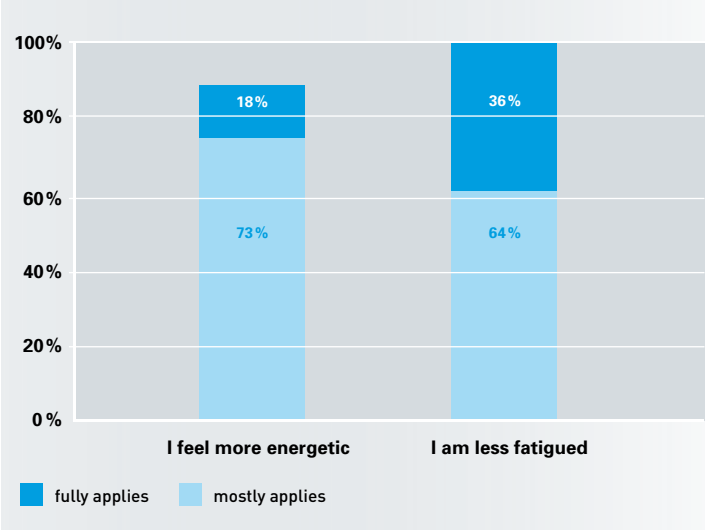

Figure 3: Wearing of E.COOLINE during bodily exercise and high ambient temperature

dry. Because the cooling mechanism is based on natural evaporation, no energy is required through prechilling in a refrigerator or freezer. Furthermore, it means there is no limitation of cooling duration; the process can last up to 10 hours and longer.

The aim of the trial was to lessen the effects of the fatigue syndrome through use of E.COOLINE and improve MS patients' quality of life.

The subjects were questioned about their experience with the cooling product after using the cooling vests.

Answers were sought regarding handling, wearing comfort, cooling effect, and the impact of these upon quality of life, performance level, and symptoms during exercise.

In addition, the attending physicians and physiotherapists were questioned on the given parameters.

Among the answers, the factors "wearing comfort" and "handling" stood out; 94 % of the subjects rated these as good.

Furthermore, 85 % of the physicians and physiotherapists rated handling and the practical benefit of the vests as good or very good.

The cooling effect was rated as good by 100 % of the test subjects and 70 % of the physicians and physiotherapists. The duration of cooling was rated positively by 80 % of the subjects.

One of the central issues of the trial was evaluation of the performance levels of the patients. Many MS patients find it important to exercise their bodies in order to maintain their performance levels. But this is scarcely possible for many of them if ambient temperatures are high. The patients were therefore questioned on the following parameters:

- Performance level
- Completion of sports practice
- Concentration
- Fatigue
- Symptoms

Here a distinction was made between wearing at high ambient temperature, wearing during bodily exercise, and wearing of the vest during bodily exercise at high ambient temperature. In all three cases, more than 90 % of the patients agreed that the cooling vests produced improvement. The score was particularly high on the parameters "improved performance" and "less fatigue". This emerged also from the additional comments of the patients.

Because of the positive response, a desire was frequently expressed that the cost of the vests will be covered by public health programs in the future.

[1]Source:
Deutsche Multiple Sclerosis Gesellschaft DMSG (German Multiple Sclerosis Society)

[2]Trial sites:
- Fachklinik für Neurologie Dietenbronn GmbH, Schwendi
- Asklepios Klinik, Schaufling
- Reha-Zentrum Nittenau, Nittenau
- Kiliani-Klinik, Bad Windsheim
- Marianne-Strauß-Klinik, Berg-Kempfenhausen
- Neurologisches Rehabilitationszentrum QUELLENHOF, Bad Wildbad
- Neurologische Hochschulambulanz, Ulm
- Neurologische Klinik Selzer GmbH & Co. KG, Baiersbronn-Schönmünzach

Masterhead:
Publisher – pervormance international GmbH
Editor – Dr. Thomas Keiser, Gabriele Renner
Mailing address – Mühlsteige 13, 89075 Ulm
Place of jurisdiction/place of fulfillment – Ulm