# Research in Graubünden Ice-Cold Against Sore Muscles

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## Research in Graubünden

# Ice-Cold Against Sore Muscles

How cold applications support regeneration

The International School of Physiotherapy (THIM) and the Scuola universitaria professionale della Svizzera Italiana (SUPSI) are currently training around 350 prospective physiotherapists at their Landquart campus. In addition, THIM and SUPSI share a joint research laboratory. Research projects in the field of rehabilitation sciences and physiotherapy are carried out there. Since 2014, the Vorarlberg native Erich Hohenauer has been a member of the four-person research team led by Ron Clijsen. Hohenauer is particularly interested in the effectiveness of cold applications on physical recovery and performance.

The post-doctoral physiotherapist explains the purpose for which cold is used in physiotherapy: “Cold extracts heat from the body. One can cool the whole body or only individual parts, depending on the desired effect. During intense physical activities such as ice hockey or rugby, the immediate cooling after sport seems to soften the inflammatory reaction of the muscles. The muscles regenerate faster. This procedure is particularly useful for tournaments lasting for several days. The situation is different in training: Those who want to increase their performance should refrain from cooling after exercise, otherwise the training effect will be reduced.”


*Physical recovery in the cold cabin is a trend. Photo: SUPSI*

Hohenauer explains that there are different methods for extracting heat from the body: “Cold drinks and crushed ice cool the body from the inside, even if only to a small extent. Cold packs, cold sprays and cold water baths are suitable for external use. Currently, cooling cabins and rooms are quite popular, even with some prominent athletes.” However, their effectiveness has hardly been scientifically investigated so far. He therefore decided to compare the cooling cabin with the already better researched cold-water immersion: Which method promises better recovery?

The nineteen male participants in his study initially completed 5x20 drop jumps from a 60 cm high box. Ten test persons then persevered for thirty seconds at -60°C and two minutes at -135°C in a cold cabin. The other nine participants individually spent ten minutes at 10°C in a cold-water tub. Hohenauer then asked the

test persons about their subjective well-being and sensation of sore muscles. Through measurements, he was able to determine various physiological changes (e.g. oxygen saturation of the thigh muscles, arterial pressure, and skin temperature). Although the cold water bath caused stronger physical reactions than the cold cabin, the volunteers regenerated equally well with both methods over a period of 72 hours. Hohenauer will continue his research on the topic: “Many variables, such as gender, physique, type of cold application and its duration, influence the result of regeneration, so many questions still remain unanswered”.

**The Expert**

*Erich Hohenauer*

After studying physiotherapy at THIM, Erich Hohenauer initially gained several years of practical experience. He returned to THIM in 2009 and to SUPSI research in 2014. In 2018, he received his doctorate from the Free University of Brussels/Belgium on the topic "Regeneration and performance under the influence of cold". For his next project, in cooperation with the University of Portsmouth/UK, he will investigate the physiological changes induced by cold applications at an altitude greater than 3’500 m above sea level. If you have any questions on this topic, please contact the expert at info@graduateschool.ch by 3 June.

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Find out more about research in Graubünden: www.academiaraetica.ch, www.graduateschool.ch.