

Strategies designed to reduce excessive body temperature during exercise are explored

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Doing exercise in hot environments leads to early fatigue owing to a range of physiological factors including high body temperature. The ability to maintain body temperature in an atmosphere of high temperatures declines with age, which is why people over 60 are the most vulnerable population during heat waves.

There are two main strategies of proven effectiveness when it comes to preventing health problems and fighting against the reduction in performance in hot atmospheres: heat acclimatisation and rehydration. In recent years, many other strategies have also been explored to reduce and/or delay increases in core (or internal) temperature and therefore enhance sports performance. Strategies include ice water baths, the intake of slushies, the application of bags filled with ice, and the use of compression clothing, among others.

Heat-dissipating clothing and sweat efficiency

Manufacturers of heat-dissipating compression clothing claim that it offers temperature-controlling benefits when the heat dissipates as a result of an improvement in sweat efficiency. Yet so far, there have been no studies supporting these claims of compression clothing for the upper part of the body where most of the sweating takes place.

In his thesis, Iker Leoz has investigated the utility of a type of compression garment designed to dissipate heat as a strategy for reducing increases in body temperature during exercise in various

environmental conditions in a healthy and [physically active](#) population. "We carried out four studies, all published in international impact journals: three of them on young, physically active participants; and a fourth one in which we recruited older individuals with an average age of 66 and physically trained; the participants exercised in thermoneutral environments between 20 and 23 C; warm environments at 25 C; and hot ones at 40 C," said Leoz.

The studies showed that the use of heat-dissipating compression garments offers no temperature-controlling benefits in physically active young people during [moderate exercise](#) at a temperature of 20 C, even though during passive recovery, the use of garments of this type could help to lower body temperature.

In a hot atmosphere (40 C) and also in the case of physically active young people, heat-dissipating compression garments failed to mitigate not only cardiovascular but also temperature control stress during moderate exercise. And as Leoz found, cardiovascular stress could increase at that temperature during active recovery and even increase the consumption of oxygen and production of CO₂.

In the case of trained cyclists with an average age of 66, garments of this type increased body temperature. For this reason, Leoz recommends that this population should not use heat-dissipating compression clothing, as it could increase the onset of hyperthermia (raising of body temperature above the normal levels).

The study into intense efforts (treadmill bout to the point of exhaustion) revealed that heat-dissipating [compression garments](#) not only failed to improve the performance of recreational runners, but also lowered it. This clothing was also found to have the potential to increase heart rate after an intense effort. "Recreational cyclists should be made aware of the possible adverse effects of this type of clothing," said the researcher

in his thesis.

More information: Iker Leoz-Abaurrea et al. Increased Thermoregulatory Strain When Wearing an Upper Body Compression Garment During Moderate Exercise in Trained Older Adults, *Journal of Aging and Physical Activity* (2017). [DOI: 10.1123/japa.2016-0106](https://doi.org/10.1123/japa.2016-0106)

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