

Comment on *Pre-cooling for Performance in the Tropics*

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Sportscience 7, sportsci.org/jour/03/ggs.htm, 2002 (372 words)

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In their [article](#), Brearley and Finn thoroughly review the pre-cooling literature most relevant to sport performance. The article should certainly be used as a guide for practitioners implementing these strategies for training or competition in extreme heat.

A challenge of using cooling strategies in the field is portability and access to freezers and/or power sources. Thus cooling garments, usually ice-vests, have been used extensively, since they require access only to a freezer and the ice-packs can be kept in insulated coolers. As Brearley and Finn state, ice-vest cooling reduces skin temperature without necessarily reducing core temperature. The performance benefits are small but still potentially worthwhile and both physiological and psychological effects may underlie the ergogenic effect. Their review clearly indicates that performances in the range of several minutes to an hour are likely to benefit from pre-cooling, but more work is required to explore the potential benefits of pre-cooling across a range of sporting events.

I advise practitioners to be cautious when purchasing a cooling vest. There are many products on the market using cooling methods that range from ice-packs, to freezer gel packs, to systems using phase-change materials or water absorptive crystals purported to promote evaporative cooling. There is a paucity of published research on many of these techniques. Ice remains the coolant of choice, since it has the greatest heat capacity (and therefore cooling power). When substances are added to ice (typically corn-starch or some type of gel), the heat capacity is reduced and so is the cooling power. Ice-packs usually need to be replaced every 30 min or so, depending on work rate and environmental condition, so users often choose to use gel-packs, even though they are less effective. Evaporative systems based on water-absorbing crystals are ineffective and should therefore be avoided. Not every athlete will benefit from or like pre-cooling, therefore before implementing pre-cooling as a competitive aid, the method should be trialed in training and preparatory events.

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Published Dec 2003

[editor](#)

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