# Drifting into unconsciousness: Jason Zirganos and the mystery of undetected hypothermia

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Swimming authorities must enforce minimum temperature rules in open water swimming because some open water swimmers—particularly those who are well acclimatised to cold—are unable to judge how cold they are. This potential problem was confirmed in the study of Saycell *et al* in this issue of *British Journal of Sports Medicine*.[1]

Cold habituation from repeated exposure to cold water can produce a 'hypothermic' adaptation to cold in which the acclimated individuals lose their perceptual and physiological responses to cooling. They do not shiver as much and paradoxically feel more comfortable as their deep body temperature falls. This was clearly demonstrated in the classic studies of Channel swimmers published in 1955 by Pugh and Edholm.[2] Pugh's investigations of the greatest open water swimmer of his generation, Jason Zirganos (figure 1), showed that, during resting immersions in cold water, Zirganos' deep body temperature fell more quickly than it should have for a man of his build and subcutaneous fat thickness. The swimmer was unaware of this cooling as he sat in 16°C water, comfortable and reading his newspaper. At the same time Pugh, a tall, thin man, unacclimatised to cold, was in an adjacent immersion tank cooling at about the same rate but desperately uncomfortable and almost tetanic with shivering.

The lack of perceptual insight into their thermal state means it is possible for open water swimmers to swim to unconsciousness. This occurred when swimmers attempted to cross the Cook Straight in New Zealand (Phil Rush, three-way Channel swimmer, *personal communication* to M J Tipton, 2009). It is certainly theoretically possible; unconsciousness occurs, on average, at a deep body temperature of 30°C–33°C, whereas muscle function is maintained down to a temperature of about 27°C. Swimming hard with sufficient thermal mixing between the (cold) exercising limbs and the deep body tissues lowers body temperature rather uniformly, and this may result in unconsciousness before swim failure. Normally, this does not occur as the steep gradient between the water, superficial tissues (exercising limbs) and deep tissues ensures that neuromuscular incapacitation and swim failure occur before profound hypothermia.

I return to Jason Zirganos and a final tragic tale founded on the consequences of his inability to perceive deep body cooling. In 1953, he swam in the Bosphorus (8°C) for 4 hours; he was removed from the water semi-conscious regaining full consciousness 3 hours later. As he was unaware of hypothermia and did not feel particularly cold, it was assumed that he had been poisoned. A year later, at the age of 46 years, Zirganos attempted to swim the 22-mile North Channel of the Irish Sea (9.4°C–11.7°C). After 6 hours, and only three miles from the Scottish Coast, Zirganos became unconscious and blue; he did not feel 'cold' prior to this. He was hauled from the water, and a doctor, using a pen knife, exposed Zirganos's heart to reveal ventricular fibrillation. Direct heart massage having failed, Jason Zirganos was pronounced dead at the scene (L G 'Griff' Pugh, *personal communication* to M J Tipton, 1982).

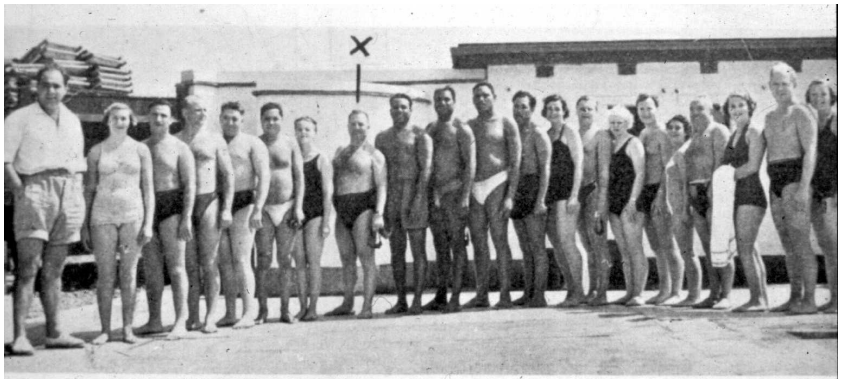

**Figure 1** Competitors in cross-Channel race, 1951. Jason Zirganos marked by cross. (Reproduced by kind permission of the *Daily Mail*.)

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2 Pugh LG, Edholm OG. The physiology of channel swimmers. *Lancet* 1955;269:761–8.