Don’t hold your breath: anoxic convulsions from coupled hyperventilation—underwater breath-holding

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Clinical record
We report anoxic convulsions occurring in two medical students competing in a breath-hold dive competition in shallow water. The seizure-like activity occurred during a competition called the “Dolphin Dive”, which was part of a university medical school swimming function. The goal set for the competitors was to swim as far as possible underwater in a swimming pool without taking a breath. Three students participated in the event and two students had convulsions. In both cases, the students hyperventilated before the dive.

Student 1
A 27-year-old man, with a past medical history of asthma, had been involved in underwater hockey and spear fishing, and was previously able to underwater breath-hold for 2 minutes while keeping still. During the competition, he swam about 60 metres and spent 40 seconds underwater. After the dive, he stood up in the water, lost consciousness and was witnessed to have multifocal myoclonic jerks lasting about 1 minute. He recalled some jerking of the limbs when asked afterward.

Student 2
A 27-year-old man, with no significant past medical history, had been involved in underwater hockey and spear fishing. He was previously known to be a good swimmer and a diver and the victims were almost exclusively men (56 cases).5 Victims were often involved in a competition in which they wanted to “beat” someone else’s or their own underwater distance record. The number of fatalities in that particular medical case series was high (23 cases).

Anecdotal observations suggest that underwater breath-holding is a relatively common practice in Australia. The practice is particularly dangerous if coupled with prior hyperventilation. This report provides further evidence that hyperventilating before breath-holding should be discouraged. Swimming pool authorities should be made aware of the potentially dangerous consequences, as should, arguably, children and adults undergoing basic swimming training.

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Competing interests
None identified.
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References

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