

# Letters to the Editor

## Commentary on “*Fatal air embolism in a breath-hold diver*” and the implied dangers of technical freediving

We read the recent publication titled “*Fatal air embolism in a breath-hold diver*” with great interest.<sup>1</sup> In this case report, the authors describe a breath-hold (BH) diver who breathed from a compressed gas cylinder at 10 metres’ seawater (msw) and then ascended without exhaling. Upon surfacing, he became unconscious and was noted to have bloody sputum. Resuscitation at the scene was unsuccessful, and the young man died. A subsequent computed tomography scan demonstrated extensive pulmonary barotrauma (PBt) and cerebral arterial gas embolism (CAGE).<sup>1</sup>

Appropriately, the authors cite that this type of injury is rare in true BH divers. Additionally, there are only a few case reports of PBt and/or CAGE secondary to BH divers who have breathed from a scuba cylinder.<sup>2,3</sup>

However, a growing segment of BH divers, who are referred to as technical freedivers, use breathing from compressed gas cylinders at depth to facilitate deeper and longer dives.<sup>4</sup> As one would surmise, instructors teaching this technique train students to exhale gas prior to the surface to avoid PBt. A safety diver is typically employed to remind a diver upon ascent that they need to exhale prior to surfacing.<sup>4</sup>

Kirk Krack, a professional BH diver and pioneer of technical freediving, breathes from compressed gas cylinders as deep as 20 msw. With this technique and others, such as the use of diver propulsion vehicles to aid in descent, technical freedivers can reach and enjoy underwater settings once relegated to scuba divers only. In 2016, Krack and others visited Truk Lagoon and used technical freediving approaches to dive the multitude of sunken WWII wrecks.<sup>4</sup>

As classes teaching technical freediving expand, the number of participants employing the techniques, such as breathing from compressed cylinders at depth, will increase. Undersea medicine physicians should certainly be aware of these practices and educate those participating about the potentially deadly consequences of not exhaling prior to reaching shallow water or the surface.

### References

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### Key words

Barotrauma; Breath-hold diving; Cerebral arterial gas embolism; Diving deaths; Sputum

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