DOES THE VO2MAX VALUE PREDICT THE FORMATION OF INTRAVASCULAR CIRCULATING BUBBLES DURING DECOMPRESSION OF HEALTHY DIVERS?

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Objective: To study a possible correlation between the individual VO2max value and the quantity of intravascular bubbles formed at the end of a dive.

Methods: 42 male divers took part in this study. At least one week prior to the experimental dive, each subject underwent an incremental maximum test to determine maximal oxygen uptake (VO2max) on a cycloergometer. The divers had been told to avoid any physical exercise 48 hours prior to the dive. The subjects were divided into two sub-groups. Sixteen of them completed a dive in a dry hyperbaric chamber and 26 in the open sea. The two dives had the same profile: 30 min at 400 kPa with a 9 min stop at 130 kPa (French military decompression table MN90). The age, body mass index and the VO2max values of the two sub-groups were similar: respectively 33.3±3.7 years; 24.1±1.5 kg·m⁻² and 51.7±8.1 ml·kg⁻¹·min⁻¹ in the case of the divers in hyperbaric chamber v. 37.8±7.5 years; 24.5±2.1 kg·m⁻² and 48.9±4.5 ml·kg⁻¹·min⁻¹ for those diving in the sea. Circulating venous bubbles were detected on precordial area using a pulsed Doppler 2 MHz, 30, 60 and 90 min. after surfacing.

Results: Bubble formation in both types of dive was significantly correlated to the age and body mass index of the divers. However there was no significant relationship between the VO2max values and bubble formation for the two sub-groups.

Conclusion: While it is still true that VO2max roughly reflects a subject’s level of physical activity, which is known to influence bubble formation, VO2max does not seem to be a good parameter to predict the formation of intravascular circulating bubbles during the decompression of healthy divers.

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