

Paris 2024 Paralympic Games: Charles Noakes held his breath!

To prepare for the Paris 2024 Paralympic Games, Charles Noakes, the French Para-Badminton champion SH6 category, used a specific hypoxic training method: voluntary hypoventilation at low lung volume (VHL). It seems to have worked for him...

Training with VHL is a method which consists of repeating short periods of exercise (generally around 10 s) with end-expiratory breath holding.¹ The efforts are therefore made with empty lungs, or almost. Each repetition is followed by a recovery period of 20 to 30 seconds, with normal breathing.

VHL exercise, through the “exhale-hold” technique, induces a marked reduction in oxygen in the body. The decrease in oxygen is equivalent to that generally seen during the same type of effort at altitudes of 3,000 to 3,500 m.² The advantage of this method is that it does not require to go to altitude or use equipment to create hypoxic conditions. It can be applied anywhere, using a variety of exercises. In this sense, it is both practical and economical.

In collaboration with Dr. Xavier Woorons, researcher in exercise physiology at the URePSSS laboratory of Lille University and initiator of the method,³ Mourad Amrani (coach) and Simon Dané (physical trainer) incorporated VHL exercises twice a week into Charles's training in the 3 months leading up to the Paris Paralympic Games.

After a few trial sessions to familiarize the para-badminton champion and test his reactions to this innovative but physically demanding method, an initial period was implemented to prepare for the 4 Nations International Tournament in Glasgow, Scotland (19-23 June 2024). The positive feedback of Charles on his physical sensations during the tournament and the encouraging results he obtained encouraged Mourad Amrani and Simon Dané to continue using the VHL method, this time in preparation for the Paris Paralympic Games.

Of the two VHL sessions implemented each week, one session was devoted to exercises specific to badminton: a variety of shuttlecock shots combined with jumps and rapid movements in different directions. The second session consisted of back-and-forth sprints on the width of a badminton court. Each time, Charles was asked to hold his breath until the breaking point in order to maximize the physiological effects.

The scientific studies carried out over the last few years have shown that VHL training could be beneficial for improving performance in sporting activities requiring the repetition of short and intense efforts (racket sports, combat sports, team sports, cycling, etc...)^{4,5,6,7,8,9,10,11} The method works on two levels: it allows to go further in the effort, in particular by tolerating higher concentrations of lactic acid.^{8,9} It also improves the recovery periods between efforts, by providing a greater amount of oxygen to the muscle.^{7,9,11}

Of course, VHL training represented only part of Charles' preparation for the Paris 2024 Paralympics Games. Nevertheless, the fact that he did not lose a single set in any of his matches, and that he was in remarkable physical condition throughout this major event, suggests that the method may have contributed, at the very least, to his winning the gold medal. According to Charles' own words, *'The VHL method really helped me'*. There is no doubt that the experience will be repeated for future major objectives, and that other athletes competing in other disciplines will want to try out the VHL method to improve their sporting performance.

References

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