Measuring fitness in divers

Dr Astrid Bendomir, 2011

ABSTRACT

Background: Commercial divers require an annual medical examination by an HSE approved diving doctor to assess their continuing fitness to dive. Most medical assessments are straightforward with few identifiable health issues; however the single most common cause for a review or failure of the medical is the diver not achieving the expected fitness of 13 METS (metabolic equivalent) or 45 ml/Kg/ min oxygen consumption (VO₂ max).

Aims: To assess the Chester Step Test using a retrospective analysis of diving medical results and a questionnaire study of diving medical assessors’ practice. The cohort was represented by 129 divers who had a total of 174 diving medicals. To avoid bias the divers were only male commercial divers examined at a single location.

Methods: Health and Safety Executive (HSE) Approved Medical Examiners of Divers (AMEDs) were contacted via email or fax and invited to complete a set of questionnaires to assess the ‘Practice of AMEDs when assessing physical fitness in divers’. Additionally, nine doctors and six nurse/screening technicians agreed to plot the charts for a set of progressive heart rates taken from 10 different diving medicals to calculate the VO₂ max to rate aerobic fitness. The 129 divers were assessed for factors that could affect the result of the VO₂ max such as age, body mass index, alcohol intake, and smoking and for occupational factors that may influence the VO₂ max result.

The 50 most complete data sets were selected with the view of seeing if there is a way to manually draw a ‘line of best fit’ that more closely reflects the VO₂ max calculated by the computer software.

Discussion: It is anticipated that the manual drawing of a ‘line of best fit’ is likely to give a range of non reproducible results and that standardization of the way the ‘line of best fit’ is drawn is needed.