

Evaluation of The Respicon-1 on Physical Performance

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ABSTRACT

Improving high physical performance by breathing feedback was studied at TNO. In order to examine if breathing feedback has a positive influence on physiological performance parameters during demanding tasks where respiratory protection is needed, a first study has been carried out. The experiments are done with twelve subjects on three different work stages (light, moderate and heavy exercise) to validate the principle of breathing feedback. On the first day subjects could cycle voluntary, but on the second day subjects received feedback on their breathing pattern based on the results of the previous day. Data were analysed on performance measures, heart rate and oxygen consumption.

Main result of the experiments averaged over all work stages was a significant lower heart rate in the feedback condition, but a significant higher oxygen consumption. The latter result was not expected, but can be explained by an improved gas exchange in the lungs by a better breathing pattern caused by the feedback of the Respicon-1. This leads to a possible decreased contribution of the anaerobic energy supply.

At least the results give grounds for further research to the use of breathing feedback in enhancing physical performance in demanding tasks. If so some adaptations have to be made to the Respicon-1, by which breathing patterns can be individualised and made self-learning.