Lung function after acute and repeated exposures to extremely cold air (−110°C) during whole-body cryotherapy

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Summary

Whole-body cryotherapy (WBC) is one mode of cold therapy, during which rheumatic patients are exposed to very cold air (−110°C) in minimal clothing. It is also proposed to have a bronchodilatory effect. The aim was to examine the effects of WBC on lung function in healthy humans after acute and repeated exposures. Twenty-five healthy, non-smoking subjects participated in the study. They were exposed to WBC for 2 min three times per week for 12 weeks. The peak expiratory flow rate (PEF) and forced expiratory volume in 1 s (FEV1) were measured before and after (at 2 and 30 min) the first WBC, and then similarly at 4, 8 and 12 weeks. At all time points, after 30 min of the WBC the PEF values were slightly lower compared with values before the WBC, and the reductions reached statistical significance at 1 month (5·1 ± 1·2%), and at 3 months (3·2 ± 1·7%). After 30 min of the first WBC, the FEV1 was significantly reduced by 2·3 ± 0·8%, but no other changes were observed during the study. In conclusion, the WBC induced minor bronchoconstriction in healthy humans instead of proposed bronchodilatation. The WBC seems not to be harmful for lung function, but should be used with caution in susceptible individuals.