

CHANGES OF CARDIAC FUNCTION AND LUNG FUNCTION OF THE 21ST DOME-A EXPEDITIONERS AND 20TH CHINESE EXPEDITIONERS IN ANTARCTIC ENVIRONMENT

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Objective: We conducted an in-phase test and comparisons of cardiac and lung functions of Chinese Antarctic expeditioners in Zhongshan station (16 winter people), Great Wall station (12 winter people) and Dome-A (8 summer people) during Dec. 2003 to Mar. 2005 to assess the short-term and long-term effects of high altitude and low levels of oxygen. **Methods:** We examined the cardiac function of expeditioners with the equipment of BioZ.comTM Cardiodynamics made in USA. We examined the lung function of expeditioners with the equipment of Scope Rotary made in Germany. **Results: 1, Cardiac Function:** CO(Cardiac Output) and CI(Cardiac Index) decreased significantly ($p < 0.05$) in Great Wall Station expeditioners after a 15 month stay in Antarctica (return by air). No significant changes in cardiac function were observed in Zhongshan Station expeditioners after a 15 months stay in Antarctica (return by ship). No significant changes in cardiac function were observed in Dome-A expeditioners who worked 2 months in Antarctica (return by ship). **2, Lung Function:** The PEF (peak expiratory flow) of Great Wall Station expeditioners increased significantly ($p < 0.05$) after their 13 months stay in Antarctica. VC (vital capacity), VC MAX, FVC(forced vital capacity), FEV1(forced expiratory volume in one second), FEF25% and MVV (maximal breathing capacity) significantly increased ($p < 0.001$) after Zhongshan expeditioners staying 15 months in Antarctica. Their IC (inspiratory capacity) also increased significantly ($p < 0.05$). FVC (forced vital capacity) of Dome-A expeditioners increased ($p < 0.05$) after working 2 months in Dome-A Station. **Conclusions:** The polar environment produced an improvement in lung function of winter over expeditioners in Antarctica, which was more apparent in Zhongshan Station (62°22'24"S, 76°22'40"E) than the Great Wall Station (62°12'59"S, 58°57'52"E). The Antarctic environment has no significant effect on the cardiac function of Chinese expeditioners.