

European Respiratory Society Annual Congress 2012

Abstract Number: 3500

Publication Number: P1156

Abstract Group: 9.1. Respiratory Function Technologists/Scientists

Keyword 1: Lung function testing **Keyword 2:** Lung injury **Keyword 3:** Lung mechanics

Title: An influence of low frequency noise on lung function

Mrs. Larisa 19164 Kiryukhina kiryuhina_larisa@mail.ru MD ¹, Prof. Dr Dmitriy 19165 Gusarov veda2005@yandex.ru MD ² and Dr. Alexey 19166 Seleznev veda2005@yandex.ru MD ². ¹ Laboratory of Functional Investigations, Research institute of Phthisiopulmonology, Saint-Petersburg, Russian Federation, 191036 and ² Center of Medical and Biological Problems, Research Institute of War Medicine, Saint-Petersburg, Russian Federation, 192007 .

Body: Introduction. The natural irritants of lung mechanoreceptors are the differences of air pressure. In lungs even at insignificant influence of noise, there are waves of compression and vacuum parenchyma, deformation of alveoluses walls, bronchial tubes and blood vessels. Low-frequency noise, practically without distortions getting into a chest cavity, affects lungs already at small intensity. Low-frequency acoustic fluctuations in lungs lead to plethora in lung capillaries, a hypostasis of interalveolar partitions, focal haemorrhage. Aim: To investigate an influence of low frequency noise on pulmonary function. Materials and methods: We examined 28 artillerymen (all men, mean age $40,8 \pm 8,2$ yr, work duration $10,1 \pm 3,6$ yr) and 12 from them in 3 years later. All of them were exposed low frequency acoustic influence (acoustic impulses duration 200-400 msec with peak pressure 140-150 dB at 16-31.5 Hz). We performed spirometry, body plethysmography, investigation of lung elasticity and diffusion capacity for CO (DLCO). Results: 54% of artillerymen from this group had decrease of residual volume (RV), 11% of them had decrease of total lung capacity (TLC) and 7% had decrease of vital capacity, 36% had decrease of lung compliance. 18% of artillerymen had decrease DLCO and 36% of them had decrease of ratio DLCO /VA. In 3 years we observed progress in decreasing of TLC, RV, intrathoracic gas volume, DLCO and DLCO/VA. Conclusion: We concluded low frequency noise had conducted decreasing of static lung volumes and diffusion capacity.