



Ilona KARPIEL¹, Maciej MYSIŃSKI¹, Kamil OLESZ¹, Mirella URZENICZOK^{1,2}, Marek CZERW^{1,3}

¹ Łukasiewicz Research Network – Krakow Institute of Technology, The Centre for Biomedical Engineering, Krakow, Poland

²PhD, Faculty of Biomedical Engineering, Department of Biosensors and Biomedical Signals Processing, Silesian University of Technology, Poland

³Department of Biosensors and Processing of Biomedical Signals, Silesian University of Technology Zabrze, Poland

MONITORING OF RESPIRATORY PARAMETERS AS A FACTOR SUPPORTING THE IMPROVEMENT OF THE EFFICIENCY OF EXERCISERS

Keywords: Telemedicine, Biomedical sensors, Biomedical signals, Respiratory monitoring

Proper breathing allows you to control the physiological and psychological reactions to stress, which is extremely important in sports. In addition, oxygenated and well-nourished muscles are more flexible and less susceptible to injury. However, in everyday life, breathing disorders can be the cause of many ailments.

The aim of the study is to check whether the respiratory parameters monitoring system, which includes a specially designed elastic belt worn on the chest, together with a mobile application, can significantly help improve the efficiency of exercisers.

An induction belt with a smartphone application was used for the research, which allows you to record and monitor breathing in normal conditions and during intense physical activity. The device was created as a result of a project financed by the National Center for Research and Development, which is dedicated to patients with respiratory diseases. Comparative measurements were carried out on healthy people, which were carried out on a classic treadmill (speed 5 km/h) and on a Vacu class treadmill used for intensive training of the lower half of the body. In this case, the vacuum-based Vacu technology is additionally supported by infrared rays, with the ability to set the intensity of the load provided for aerobic training in a sealed capsule.

The obtained results indicate the validity of ongoing supervision of respiratory parameters in order to maintain full control over its course and optimize the intensity of training, which will contribute to balancing the heart rate, better oxygenation of muscles, less fatigue after training and shortening recovery time.