RELATIONSHIP BETWEEN GREENNESS AND HEALTH INDICATORS IN URBAN PATIENTS WITH HEART FAILURE

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Abstract – The environment has a significant impact on a person's general well-being. Distance to green space has been found to be an important factor influencing health. Urban green spaces enhance people's quality of life and physical and mental health. According to recent research, living near green space may reduce one's risk of developing cancer, cardiovascular and respiratory diseases, as well as other harmful health issues. In this study, the health data was collected in 2007–2009 in Kaunas, Lithuania. The study participants (144) randomly were divided into two groups, control, and trained groups. Long-term aerobic physical training was applied to the exposure group. General clinical, echocardiography, and spiroergometry parameters were evaluated for the study participants. Greenness was estimated from satellite-derived normalized difference vegetation index (NDVI) in zones with radii of 1 km, 1.5 km, and 2 km surrounding the participants' residences. To assess the effect of greenness on the effects of rehabilitation, changes in health indicators during a period of 6 months in the groups of low/high greenness environment were presented separately for participants in control and training group. For this purpose, the paired t-test was used. For changes in patient characteristics, the effect of greenness within a radius of 1.5 km was stronger, also the effect within a radius of 1 km was similar. It was discovered that in the trained group, people who lived in high greenness experienced the best increases in the distance walked over the course of six minutes (6 MWT) and a decrease in the mean heart rate. Spiroergometry indication improvements were notable and more pronounced for residents of high greenness areas. After 6 months, a decrease in echocardiographic indicators was found when living in low greenness. Living in low greenness was found to raise diastolic blood pressure and reduce 6 MWT in the control group. Only the control group's ejection fraction was non-significant alterations in the low greenness environment. It can be concluded that greater greenness, according to NDVI, may lead to better rehabilitation outcomes for heart failure patients undergoing an aerobic exercise training program.

Keywords –Greenness; health indicators; heart failure; patients