

Influence of long-term swimming exercises on cardiac index, life duality and level of depression in patients with heart failure with pEF and diabetes mellitus type 2

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Introduction: In the number of studies it was proved that specific physical activity can significantly improve the control of Heart Failure (HF). Physical exercises improve mobility, strength and cardiovascular fitness, can easily be performed in patients with HF.

Purpose: To investigate the effect of regular swimings on cardiac output, life duality, anxiety and depressive symptoms in patients with HF and DM type 2.

Material and methods: 62 patients (20 women and 42 men, mean age 55.3±7.9 years) with HFpEF and DM type 2 were included in prospective observation during 6 months. The intensity of physical activity was 6 points due to Borg scale (60–70.0%). Hospital Anxiety and Depression Scale (HADS), MLHFO and SF-36 surveys were used. The water temperature was 32°C throughout the study.

Results: It was set that lowest scores QL in patients with HF and DM type 2 were obtained on the scales of physical (PF, GH and RP) and psycho-

logical (RE, VE and SF) health components ($p < 0.05$). The life duality in patients with HF and DM type 2 depended on the degree of physical activity. The reliable improvement of both physical ($p < 0.05$) and psychological components ($p < 0.05$) of health after regular swimming is proved (table). According to MLHFQ was set reducing the restriction of physical and social activity after regular swimming. Water exercises increased efficacy of pharmacological therapy on 61.8% ($p < 0.001$) according to MLHFQ. According to the HADS scale anxiety and depression disorders were reduced from higher to lower level in 88.0% patients. After 6 months of swimming exercises it was set increasing of cardiac index by 12.0% ($p < 0.05$).

Conclusions: It has been established that regular swimming exercises in patient with Heart Failure and Diabetes Mellitus type 2 has favourable effect for cardiac index by 12.0% ($p < 0.05$), life duality ($p < 0.05$) and decrease the level of anxiety and depression disorders ($p < 0.05$).

LQ in HF and DM after long-term swimming

Parameters	Initial	Final
Physical Functioning (PF)	37.3±12.3	68.2±10.9*
Role limitation due to physical health (RP)	39.2±7.98	48.1±9.14*
Bosy Pain (BP)	52.5±5.81	49.2±10.2*
General Health (GH)	36.5±13.5	53.1±7.15*
Role limitation due to emotional problems (RE)	38.3±9.26	53.1±9.7*
Vital energy (VE)	40.8±8.62	59.8±10.8*
Mental Health (MH)	46.4±10.7	64.6±8.45*
Social Functioning (SF)	36.9±17.39	65.2±14.6*

*The reliable changes in dynamic of observation ($p < 0.05$).