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Factors Associated with Inspiratory Muscle Strength in Patients with Heart Failure

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Objectives: In patients with heart failure (HF), concomitant factors such as hypoxia, oxidative stress, drug use, nutritional deficiencies and systemic inflammation can reduce respiratory muscle strength by altering the oxidative capacity, capillary density and fibril section area of the diaphragm. The aim of the study was to investigate the factors associated with inspiratory muscle strength in patients with HF.

Methods: Twenty-nine patients with stable HF were included in the study. Demographic and clinical data were recorded. Maximal inspiratory pressure (MIP) for inspiratory muscle strength was measured using a mouth pressure device. Handgrip and quadriceps muscle strength were assessed with dynamometer. 6 Minute Walk Test (6MWT) was used to measure functional exercise capacity. Physical activity levels were determined using the International Physical Activity Questionnaire (IPAQ).

Results: The mean age of the patients was 63 years. MIP was positively correlated with ejection fraction ($p=0.002$), handgrip strength ($p=0.004$), quadriceps muscle strength ($p=0.03$), 6MWT distance ($p=0.01$) and IPAQ ($p=0.03$).

Conclusion: This study found that inspiratory muscle strength is associated with ejection fraction, peripheral muscle strength, functional exercise capacity, and physical activity level in patients with HF. Rehabilitation programs in patients with HF should include inspiratory muscle training in addition to aerobic and strength exercises.

Keywords: Inspiratory muscle strength, heart failure, rehabilitation