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Who are the best decompensated heart failure inpatient responders to aerobic exercise trainning?

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Introduction:
Exercise training is an excellent tool to promote functional capacity in chronic heart failure (HF) patients. Although its benefits in this population, it needs to be demonstrated in decompensated HF patients. A way to optimize an intervention is to evaluate who are the good responders and understand the causes of no response. Knowing the factors of good response is also important to emphasize the feasibility of an intervention and to deliver it to the ones who get the most benefit of it.

Purpose
To identify the characteristics that lead a patient to have a better response to an aerobic exercise training program for decompensated HF inpatients – ERIC-HF (early rehabilitation in cardiology – heart failure)

Methods
50 patients who performed ERIC-HF program (clinicaltrials.gov, Identifier: NCT03838003) during the phase of stabilization were evaluated in terms of their sociodemographic, functional and physiological characteristics and performance during the program. The main variable used to understand the performance of the patients was the variation of the distance walked in the 6-minute walking test (6MWT), performed as soon as the patient was able to do it (6MWTinitial) and at discharge (6MWTdischarge). A multivariate linear regression with stepwise algorithm and Durbin Watson test were used in order to determine which variables are related to a better variation on the 6MWT, namely: age, LCADL and Barthel index scores at admission and discharge, number of days of hospitalization, number of cardiovascular risk factors, NYHA class, etiology of HF and ventricular function. It was assumed a significance level at $p<0.05$.

Results:
Patient's average age was 71 (±11) years old, 34 are male, 80% are in NYHA class III and 73% have severe left ventricular depression. Patients present a median of 76 points in BI at admission (minimum of 45 and maximum of 97) and a median of 32 at LCADL (minimum of 24 and maximum of 45 points). The mean distance walked in the 6MWTinicial performed by the patients was 199,9 (±115,9) meters and 287,6 (±128,9) meters at 6MWTdischarge, representing a 87,7 (±170,6) meters difference.
According to the linear regression an equation was obtained: Difference of the 6MWT = 454,694-1*6MWTinitial+2,981*Barthelinitial-5,554*age. This equation explains 65% of the variation of the model in this sample of patients. Using this variables it's possible to predict how much distance a patient will walk at the end of the rehabilitation program, and understand the predicted performance in the program.

Conclusions
Patients with lower functional capacity evaluated by 6MWT, but with higher BI scores and youngest, are the ones who probably will have the most significant results from the rehabilitation program.