Are there predictors of increase in exercise capacity one year after cardiac rehabilitation?

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Topic(s):
Cardiovascular Rehabilitation

Citation:
Background:
The advantages of physical activity after a myocardial infarction are well established. However little is known about maintenance of exercise capacity and other cardiovascular risk factors like cholesterol, blood pressure and obesity one year after cardiac rehabilitation (CR). The aim of this study was to assess maintenance of exercise capacity one year after completing a CR program.

Methods:
A non-randomized, prospective cohort study was performed. Patients who participated in a center-based CR in 2017 were invited back to the rehabilitation center in October 2018 for some additional tests. The tests include Rockport Fitness Walking Test, assessment of body mass index (BMI) and blood pressure measurement. The primary objective was to examine the evolution of exercise capacity after stopping CR. As secondary outcomes we looked for the best predictors for the exercise capacity one year later.

Results:
45 patients (average age 65.9 years ± 12.1; 75.6% males) were present for additional tests. 39 patients (86.7%) had ischemic heart disease as indication for CR and 6 patients (13.3%) had valve surgery as indication. Mean cholesterol at the end of the CR program was 138.4 ± 31.7 mg/dL. VO2 peak was significantly higher one year later than after completion of the CR program (VO2peak one year later: 28.3 ±10.4; VO2peak after CR: 23.0 ± 6.2; Paired T-test: P <0.0001). Systolic blood pressure (SBP) (SBP one year later: 122.4 ± 13.8; SBP after CR: 134.5 ±18.2; Paired T-test: P <0.0001) was significantly lower and BMI (BMI one year later: 26.8 ± 3.5; BMI after CR: 26.4 ± 3.2; Paired T-test: P=0.011) was significantly higher a year after CR. Diastolic blood pressure (DBP) was not significant different between completion of the CR program and one year later. (DBP one year later: 76.6 ± 7.7 DBP after CR: 73.3 ±8.3; Paired T-test: P=0.054).Multiple logistic regression analysis showed that none of the variables measured at the end of the CR program could significantly predict an increase in VO2 (ml/kg/min).

Conclusion:
This study showed that the exercise capacity significantly increased since the end of CR. SBP also evolved favourably. However DBP was not significantly different one year after CR. BMI was significantly higher one year after the CR program. This suggests that there is still some work to do in the prevention of obesity and the maintenance of BMI. None of the measured variables at the end of a CR program were able to predict the evolution of exercise capacity one year later.