Prevention

STAIR STEP TEST AND SITTING RISING CHAIR TEST AS PREDICTORS OF MAXIMAL OXIGEN UPTAKE

Authors: Luiz Eduardo Fonteles Ritt, Jessica Porto, Thaissa Claro, Daniela Cavalcante, Cristiane M. Feitosa, Eloisa Prado, Gustavo F. Feitosa, Eduardo Darze, Hospital Cardio Pulmonar, Salvador, Brazil

Background: stair step test (number of steps one can go up and down in 6 minutes - SST) and the sitting rising chair test (number of times one can sit and rise from a chair in 2 minutes - SRCT) are simple ways to indirectly evaluate functional capacity. Our objective is to verify the association between the SST and SRCT with peak VO2.

Methods: 167 consecutive patients referred for a cardiac rehabilitation program were submitted to SST, SRCT and a cardiopulmonary exercise test before starting the program. Pearson correlation analysis and multivariate logistic regression analysis were used to test the association between SST and SRCT with peak VO2 and independent predictors of peak VO2, respectively. ROC curve analysis were applied to determinate the best cut points for predict a VO2 ≥ 20 ml/kg/min (this cut point determine a group of patients of lower risk profile based in peak VO2). $P < 0.05$ was assumed as significant.

Results: mean age was 60±16 years, 71% where male, 49% were in NYHA class I and 28% in NYHA II. Mean left ventricle ejection fraction was 58±16%. Indication for rehab was ischemic heart disease in 48% and heart failure for 25% of patients. Mean peak VO2 was 18.7±6 ml/kg/min, mean values to SST and SRCT test were 83±46 and 25.5±17 repetitions, respectively. There was a significant correlation between peak VO2 and SST and SRCT (R 0.64 e R 0.38, respectively; $p < 0.01$). Both SST and SRCT were included in the multivariable regression analysis, just SST remained significantly associated with peak VO2 (R^2 0.40; $p < 0.0001$). The following model predicts peak VO2 based on SST value: $VO2 = 9 + (0.08 \times SST)$. The most accurate cut point for SST to predict a peak VO2 ≥ 20 ml/kg/min was > 87 repetitions (AUC 0.81; IC 95% 0.73-0.88; $p < 0.001$).

Conclusions: SST had a modest correlation with peak VO2 and was capable of predicting patients with better functional capacity based on peak VO2.