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Title: Physical training for asthmatics: Which patients obtain most clinical benefits?

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Body: Background: Recent studies have shown that exercise training improves exercise capacity, health related quality of life (HRQoL) and clinical control in asthmatics; however, not all obtain clinical relevant benefits and can be considered responders. Objective: To investigate baseline characteristics that determines the improvement after an exercise training program in asthmatics patients. Methods: Forty-three adults with moderate or severe asthma performed an aerobic training (35min/twice a week/3 months). It was considered exercise responders those patients that increased $\geq 10\%$ in maximal aerobic capacity (VO_{2peak}) and HRQoL responders those patients that improved $\geq 20\%$ in a specific-asthma HRQoL questionnaire. Discriminant analysis was used to distinguish responders from non-responders based on patient's baseline data. Results: Twenty-eight patients (65.1%) were considered responders in exercise capacity and baseline depression symptoms, ventilatory reserve (VE/VVM) and FEV_1 were significant predictors to training response (accuracy 86%, $p < 0.001$). Twenty-eight patients (65.1%) were considered HRQoL responders and worst baseline HRQoL score, increased free-days asthma symptoms and lower depression score were significant predictors to HRQoL improvement (accuracy 81%, $p < 0.001$). Twenty-one patients (48.8%) were considered responders in both parameter and lower ventilator reserve, worst depression and lower HRQoL were significant predictors (accuracy 79%, $p < 0.001$). Conclusion: Asthmatic patients with impaired HRQoL, better clinical control, fewer depression symptoms and lower ventilatory limitation are significantly more likely to improve physical fitness and HRQoL after a pulmonary rehabilitation program.