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Title: Aerobic exercise training cannot be prescribed based on predictive heart rate equations in moderate or severe asthmatic patients

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Body: Background: Recent studies have shown that physical training improves exercise capacity and health related quality of life (HRQoL) in asthmatics; however the best way to prescribe aerobic exercise intensity in these patients remains poorly known. Objective: To evaluate if predictive heart rate equations can be used to prescribe exercise intensity in subjects with moderate or severe asthma. Methods: Ninety-eight adults with moderate to severe asthma aged 36 (ranging from 24–53) years were submitted to a symptom-limited cardiopulmonary exercise testing (CPET) and anaerobic threshold (AT) was determined by two independent experienced reserchers. The association and agreement between maximum heart rate (HR_{max}) achieved on CPET and age-predicted Tanaka's maximum HR [208 – (0.7×age)] were evaluated, respectively, by Pearson's correlation and intraclass correlation coefficient. Similar analysis was applied between HR determined by CPET and heart rate reserve [(FC_{rest} + 0.5 (HR_{max}-HR_{rest})], widely used to estimate exercise intensity at AT. Results: Maximal HR obtained by CPET was significantly lower than age-predictive equation (177.0 vs. 182.8 bpm, respectively, $p<0.05$). There was a weak correlation ($p<0,001$; $r=0,46$) and a weak agreement ($p<0,001$; ICC=0,26) between the achieved and estimated HR_{max}. At anaerobic threshold the HR obtained by CPET was similar to HR predicted equation (128 vs. 131 bpm, respectively, $p>0.05$), however, no correlation or agreement was observed between the HR ($p>0.05$). Conclusion: Exercise prescription for adults with moderate or severe asthma should be determined directly by an exercise test instead of using age-predicted equations.