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Effect of exercise on levels of cyclo-oxygenase mediators in exhaled breath condensate in elite athletes.

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AIM: Physical exercise requires adaptation from the airways, which includes bronchodilation. Prostaglandins are involved in airway regulation and their plasma level changes during exercise. The purpose of this study was to investigate the effect of symptom-limited exercise on the levels of prostaglandin E(2) (PGE2) and thromboxane B2 (TXB2) in the airways of elite sportsmen. METHODS: Thirty healthy judo competitors, 15 women and 13 men, aged between 16 and 30 years, participated in this study. Subjects completed a standardized maximal treadmill exercise test. Exhaled breath condensate was collected for non-invasive sampling of the airway lining fluid before and immediately after the exercise. PGE2 and TXB2 levels were determined by commercially available radioimmunoassay. Data are given as median (range). RESULTS: Baseline levels of PGE2 and TXB2 were not different between male and female subjects. Exercise caused a significant increase both in PGE2 and TXB2 concentrations in male subjects (from 180 [100-350] to 240 [115-720] pg/mL, $P<0.01$ and from 24 [0-80] to 37 [0-110] pg/mL, $P<0.05$, respectively), but not in female subjects. CONCLUSION: Our data indicate that physical exercise modulates the airway level of PGE2 and TXB2 in healthy subjects. These changes may play an important role in the airway adaptation to exercise.