EFFECTS OF ACUTE INHALED SALBUTAMOL ADMINISTRATION ON QUADRICEPS FORCE AND FATIGABILITY IN NON-ASTHMATIC MEN

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Oral beta2-adrenergic agonists administration improves muscle function in non-asthmatic individuals. It remains however unclear whether beta2-adrenergic agonists inhalation as used for asthma management may also improve muscle strength and fatigue following exercise. We performed a double-blind, randomized, controlled, crossover study to assess the effect of acute inhaled salbutamol administration on muscle strength and fatigability in healthy moderately-trained young subject. Quadriceps muscle strength was measured during maximal voluntary contraction (MVC) and during supramaximal magnetic stimulation of the femoral nerve (potentiated single twitch, TwQ) before and after i) 50 maximal isometric one-leg extensions (n=9) and ii) a maximal incremental cycling test (n=10). Each exercise test was performed on three occasions, after salbutamol (2006±1549;g or 8006±1549;g) or placebo inhalation. Before exercise, treatments had no significant effect on MVC (placebo 587±152N vs 2006±1549;g 628±153N vs 8006±1549;g 605±151N, p=0.53) and TwQ (209±93N vs 224±69N vs 253±84N, p=0.22). Maximal torque during leg extensions and maximal power during cycling did not differ between treatments. Similar reductions in MVC and TwQ were observed 30 min (MVC: -11±9% vs -12±7% vs -8±16%, p=0.72; TwQ: -37±11% vs -33±18% vs -32±15%, p=0.89) and 60 min (MVC: -10±10% vs -11±6% vs -8±20%, p=0.71; TwQ: -30±10% vs -28±23% vs -28±14%, p=0.67) after isolated exercise as well as 30 min (MVC: -13±9% vs -9±7% vs -8±5%, p=0.90; TwQ: -30±13% vs -23±15% vs -22±8%, p=0.49) and 60 min (MVC: -14±17% vs -7±9% vs -6±8%, p=0.90; TwQ: -21±21% vs -14±23% vs -9±7%, p=0.49) after cycling. Treatments did not modify maximal voluntary activation (assessed by twitch interpolation) at any time of the exercise protocol (before 93±3% vs 95±5% vs 94±3%, p=0.46; 30 min post-exercise 90±5% vs 91±5% vs 91±7%, p=0.10; 60 min post-exercise 90±6% vs 94±3% vs 93±4%, p=0.24). We conclude that therapeutic or supra-therapeutic doses of inhaled salbutamol have no effect on quadriceps strength, fatigue and recovery as well as on maximal voluntary activation in non-asthmatic men. Supported by the Conseil de Prévention et de Lutte contre le Dopage, France.

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