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急性 IHHT 對一般人肌肉無氧代謝反應路徑與體循環之影響

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摘 要

目的：本研究旨在探討低氧-高氧交互應用對生理機制調節之影響。**方法：**研究對象為 6 名健康成人 (25±3.5 歲、身高 176±6.6 cm、體重 70±9kg)。研究測試應用腳踏車測功儀進行，強度為 3w/kg，轉速 70-80 RPM。在低氧環境 (O₂-13%) 運動持續時間為 3 組 2 次 60s (3x2x60s)，組間休息則吸取高氧 (90s)。**結果：**結果分析顯示第二次 (2x) 運動負荷血液乳酸堆積濃度平均值為 5.0±0.7 mmol/l，第六次 (6x) 則為 8.4±1.0 mmol/l，兩次差異 +3.4 mmol/l (p<0.05)。心跳率在 2x 與 6x 平均值差異為 +9 min⁻¹ (p<0.05)。血氧飽和濃度 (SpO₂) 分別為 79±4.9 % (2x) 與 78±5.4% (6x)，兩項平均值差異 -1%。恢復期最高乳酸堆積為第三分鐘 (E3) 與最後採集時間第十五分鐘 (E15) 乳酸堆積濃度分別為 9.2±1.2、5.2±1.3 mmol/l，兩項差異 4.0 mmol/l (p<0.05)。**結論：**結果分析發現低氧負荷下肌肉無氧機制呈現力竭症狀，但是體循環壓力並未達最高心跳率反應。

關鍵詞：低氧環境、乳酸、血氧飽和濃度

Effect of Acute IHHT on Muscle Anaerobic Metabolism Response And Circulatory in Normal People

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Abstract

Purpose: The purpose of this study was to investigate the effect of hypoxia-hyperoxia interaction on the regulation of physiological mechanisms. **Methods:** The subject was six healthy participants (25 ± 3.5 yr, 176 ± 6.6 cm, 70 ± 9 kg) in this study. The test content is divided into Bicycle Ergometer, Intensity was 3W/kg, Revolution Per Minute was 70 - 80 RPM. In Hypoxia environment (O_2 -13%) the duration of exercise was 3 sets of 2 times 60 seconds ($3\times 2\times 60s$). **Result:** The result showed blood lactate accumulation concentration Second time (2x) average was 5.0 ± 0.7 mmol/l, the Sixth (6x) was 8.4 ± 1.0 mmol/l, both average different was $+3.4$ mmol/l ($p<0.05$). Average different of Heart Rate in 2x and 6x was $+9$ min^{-1} ($p<0.05$). Oxygen Saturation (SpO_2) was 79 ± 4.9 % (2x) and 78 ± 5.4 % (6x), both average different was -1%. The recovery period of highest blood lactate accumulation in 3rd minutes and 15th minutes was 9.2 ± 1.2 and 5.2 ± 1.3 mmol/l, both average different was 4.0 mmol/l ($p<0.05$). **Conclusion:** The result showed muscle anaerobic mechanism in Hypoxia load was All Out symptoms but in high pressure of circulation system wasn't have any high heart rate response.

Key words: Hypoxia Environment, Lactate, Oxygen Saturation

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