

國立臺中教育大學 107 學年度研究所碩士班招生考試

運動科學概論試題

(含運動生物力學及運動生理學)

適用系所：體育學系碩士班（運動科學組）

- 一、如果你有一套測力板系統，你可以做甚麼研究？試寫出一個 200 字以內的
研究計畫摘要。(25%)
- 二、影響羽球單打比賽成績的力學因素有哪些？試簡要說明之。(25%)
- 三、詳讀下文，回答問題。(50%)

Effect of green tea extract supplementation on glycogen replenishment in exercised human skeletal muscle

Abstract

The purpose of this study was to investigate the effects of 8-week green tea extract (GTE) supplementation on promoting postexercise muscle glycogen resynthesis and systemic energy substrate utilisation in young college students. A total of eight healthy male participants (age: 22.0 (SE 1.0) years, BMI: 24.2 (SE 0.7) kg/m², VO₂max: 43.2 (SE 2.4) ml/kg per min) participated in this study. GTE (500 mg/d for 8 weeks) was compared with placebo in participants in a double-blind/placebo-controlled and crossover study design with an 8-week washout period. Thereafter, all participants performed a 60-min cycling exercise (75% VO₂max) and consumed a carbohydrate-enriched meal immediately after exercise. Vastus lateralis muscle samples were collected immediately (0 h) and 3 h after exercise, and blood and gaseous samples were collected during the 3-h postexercise recovery period. An 8-week oral GTE supplementation had no effects on further promoting muscle glycogen resynthesis in exercised human skeletal muscle, but the exercise-induced muscle GLUT type 4 (GLUT4) protein content was greater in the GTE supplementation trial (P <0.05). We observed that, during the postexercise recovery period, GTE supplementation elicited an increase in energy reliance on fat oxidation compared with the placebo trial (P <0.05), although there were no differences in blood glucose and insulin responses between the two trials. In summary, 8-week oral GTE

supplementation increases postexercise systemic fat oxidation and exercise-induced muscle GLUT4 protein content in response to an acute bout of endurance exercise. However, GTE supplementation has no further benefit on promoting muscle glycogen resynthesis during the postexercise period.

- 1.請寫出上述期刊論文的中文題目。(10%)
- 2.請寫出期刊論文的研究目的。(10%)
- 3.該期刊論文中受試者的質量指數為何?(5%)最大攝氧量值為何?(5%)
- 4.上述期刊論文中綠茶萃取物補充劑量為何?(5%)補充多久?(5%)
- 5.該期刊論文之研究結果推論為何?(10%)