

# 臺灣身體活動與運動科學學會暨 2022 大墩體育運動聯合學術研討會

論文發表摘要範本如下：

## 運動後能量再回填對於餐後血脂肪清除率之探討

陳芳喬<sup>1</sup> 張沂欣<sup>2</sup> 巫錦霖<sup>1</sup>

<sup>1</sup>國立中興大學運動與健康管理研究所 <sup>2</sup>國立台灣體育學院運動健康科學學系

**目的：**研究中指出餐前單次的有氧運動可以降低餐後血脂升高的現象，然而運動造成的能量的負平衡是否會影響餐後血脂肪清除率目前仍然不清楚。本研究以低強度走路運動並以葡萄糖填補運動時所消耗的熱量，探討能量填補與運動降低餐後血脂之影響。**方法：**以6名沒運動習慣的健康成年男性隨機進行三組：控制組(C)、運動組(EX)、運動加葡萄糖補充組(EXG)。EX及EXG組在實驗前一天下午進行1小時50%VO<sub>2max</sub>的走路運動，其中EXG組在運動後以葡萄糖補充因運動所消耗的能量，C組則完全休息，三組均在隔天早上給予高脂肪餐，收集並分析餐前、餐後30min、1、2、3、4、5、6h的血液樣本。實驗數據以雙因子變異數分析(repeat measure two-way ANOVA)進行統計分析。**結果與結論：**本研究在血液生化分析發現：EXG組的餐後三酸甘油脂濃度明顯低於C組(p=0.002)，而EX組則有低於C組的趨勢(p=0.089)。EXG組及EX組之間並沒有顯著差異。此外，這三組在血液中的胰島素以及血糖都沒有顯著差異。結論：本研究顯示在運動能加速餐後血脂肪的清除率，但是運動後能量的平衡與否並不會影響高脂肪餐後的血脂肪清除率。

**關鍵詞：**餐後血脂、有氧運動、能量回填

**通訊作者：**巫錦霖，[psclw@dragon.nchu.edu.tw](mailto:psclw@dragon.nchu.edu.tw), +886-4-22840845 ext 602

# THE EFFECT OF CARBOHYDRATE AND EXERCISE ON POSTPRANDIAL LIPID METABOLISM RELATED GENE EXPRESSION

**Ching-Lin Wu<sup>1</sup>, Mei-Huei Tseng<sup>2</sup>, Tsung-Jen Yang<sup>3</sup>, Cheng-Kang Chang<sup>4</sup>**

<sup>1</sup> Graduate Institute of Sport and Health Management, National Chung Hsing University, Taiwan.

<sup>2</sup> Department of Exercise and Health Science, National Taiwan College of Physical Education, Taiwan. <sup>3</sup> Department of Physical Education, National Taiwan College of Physical Education, Taiwan.

<sup>4</sup> Department of Sport Management, National Taiwan College of Physical Education, Taiwan.

**Introduction:** Postprandial lipemia may attenuate by exercise, subsequently, to reduce the risk of cardiovascular diseases. The underlying mechanism of lipid metabolism in the liver is not fully elucidated. Peripheral blood mononuclear cells (PBMCs) gene expression has been suggested to represent lipid metabolism in the liver. Therefore, the purpose of this study was to investigate the effect of carbohydrate and exercise on lipid metabolism related gene expression after high fat meal.

**Methods:** Eight healthy, active male subjects completed 4 experimental trials in a randomized order and cross-over design. After overnight fast, subjects either ingested 75 g fructose (F) or 75 g glucose (G) and rest or exercise at 60% VO<sub>2</sub>max for 1 hour (F+EX, G+EX) before an oral fat tolerance test. Blood samples were collected during 6 hour postprandial period. Peripheral blood mononuclear cells (PBMCs) were harvested to obtain RNA to determine ApoA-I, Apo B, LDL-receptor (LDLR), VLDL-receptor (VLDLR) and HMGCoA reductase (HMGCR) mRNA expression using real-time PCR technique. **Results & Conclusions:** The results showed that F and F+EX induced higher plasma ApoA-I and lower plasma total cholesterol and LDL-C than G and G+EX. There were no significantly differences in ApoA-I · Apo B · LDLR · HMGCR · VLDLR gene expression between trials. However, there was a trend that ingesting F trial indicated a lower VLDLR gene expression. The current data suggested that ingestion of different carbohydrates and exercise before a high fat meal did not influence postprandial lipid metabolism related gene expression.

**Key words:** postprandial lipemia, exercise, gene expression

**Correspondence:** Professor Ching-Lin Wu, [psclw@dragon.nchu.edu.tw](mailto:psclw@dragon.nchu.edu.tw), +886-4-22840845 ext 602