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• 英文關鍵字	Metabolic syndrome; Exercise training; Physical capacity; Inflammation

• 中文摘要

代謝症候群是指包括高血壓、血脂異常、葡萄糖耐受性異常和胰島素阻抗之症候群，由於代謝症候群爲糖尿病和心血管疾病發生的主要危險因素，故臨床上越來越被重視。研究亦發現代謝症候群與動脈粥狀硬化有相同形態的炎症反應。雖然規律運動訓練能有效改善心血管疾病和相關危險因數，但運動對代謝症候群危險性之影響並未被明確探討。本研究針對代謝症候群個案之身體活動功能、血清炎症指標(inflammatory makers)及代謝症候群症狀加以分析，並探討規律運動訓練對代謝症候群個案之症狀、身體活動功能、及血清炎症反應之影響。本研究採美國 The Adult Treatment Panel III of the National CholesterolEducation Program (NCEP ATP III)之指引，並參考國內國民健康局之建議，將合乎收案條件之代謝症候群個案依隨機方式分配至規律運動組及控制組，所有個案於計劃進行前接受身體活動功能、血清炎症指標以及代謝症候群症狀之評估。運動組隨即參與爲期 12 週，每週三次，每次 30 分鐘之有氧運動訓練計劃，控制組則維持其原有生活型態，本研究於計劃第 12 週再次進行資料之收集與分析。研究期間共有 36 位個案完成 12 週之資料分析，其中運動組 19 名及控制組 17 名，個案年齡介於 36 至 62 歲之間，平均爲 46.4±7.2 歲。運動組個案於運動計劃後較計劃前在腰圍、腰臀圍比、身體活動功能、靜態收縮壓及舒張壓、及血清三酸甘油脂濃度，均有顯著下降情形，然於控制組則未觀察到顯著變化。進一步檢定兩組個案於計劃前後變化之差異，發現運動組腰圍、身體活動功能、收縮壓及三酸甘油脂之改善，顯著優於控制組。在血清細胞激素(Cytokines)濃度方面，運動組經 12 週之運動計劃後，平均血清 IL-6 及 MCP-1 濃度顯著下降，且於計劃前後平均濃度下降情形，亦顯著優於控制組。本研究之結果建議規律運動有助於改善代謝症候群個案之身體活動功能，且規律的運動對代謝症候群危險因數及個體炎症指標的改善，扮演著重要的角色。

• 英文摘要

The metabolic syndrome (MS), a collection of multiple problem including hypertension, dyslipidemia, glucose intolerance and insulin resistance, has been paid

much attention for its high risk of developing cardiovascular disease and type 2 diabetes. Although physical activity is showed to prevent cardiovascular risk factors such as type 2 diabetes, hypertension, hyperlipidemia, the effect of exercise training on the reduction of risk for individuals who are at high risk for MS is unknown. This study is proposed to test hypothesis that regular exercise training would have a beneficial effect on exercise capacity, inflammation markers, and components of the MS. The eligible participants were assigned randomly into either exercise or control groups. The exercise group participated in a 12-week moderate-intensity aerobic exercise program. The physical capacity and biomedical data were collected at baseline, and the 12th weeks of the program. During the period of the study, 36 subjects completed the 12-week data collection. Of these, 19 subjects participated the exercise training program. These exercise participants show significant improvements in hip circumference, waist to hip ratio, physical capacity, systolic & diastolic blood pressure, levels of triglycerides, interlenkin-6 and MCP-1 following the training program. In addition, the changes in metabolic syndrome indicators (hip circumfereme, syslolic blood pressure, physical capacity, triglyuride level) and inflammatory markers (IL-6, MCP-1) between exercise and control groups were significantly different. Results of this study suggest that a moderate-intensity exercise program may have a favorable effect on several MS risk factors as well as inflammatory markers. Further investigation is needed to confirm the mechanism of physical exercise on inflammatory markers and metabolic syndrome.