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• 中文關鍵字	代謝症候群; 運動訓練; 身體活動耐力; 炎症指標
• 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子，但運動對代謝症候群危險性之影響並未被明確探討。本研究第一年針對代謝症候群個案之身體活動功能、血清炎症指標及代謝症候群症狀加以分析，並確立代謝症候群個案之運動強度、運動持續時間和頻率，並進行個案之運動訓練計劃。第二年計劃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，並分析代謝症候群個體運動訓練成效之可能機轉，合乎收案之對象將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，本研究將於計劃第 12 週再次進行資料之收案與分析。第一年計劃由 94 年 9 月至 95 年 5 月止，共有 22 位個案完成 12 週之資料分析，其中運動組及控制組各 11 名，個案年齡介於 38 至 62 歲之間，平均爲 49.3±7.0 歲。分析運動組個案代謝症候群危險因子於 12 週計劃前後之變化，結果在腰圍、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，並未發現顯著之差異。在血清濃度 Cytokines 濃度變化方面，運動組經 12 週之運動計劃後，平均 IL-6 及 MCP-1 濃度顯著下降，但在控制組則未觀察到任何 Cytokines 之變化，而兩組各 Cytokines 平均濃度於計劃前後之改變，並無顯著差異。
• 英文摘要	The metabolic syndrome, 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 metabolic diseases is unknown. A two-year study is proposed to reveal the relationships among physical capacity, inflammation state, and components of the metabolic syndrome, so that, the possible mechanism of exercise training effect on components of the metabolic syndrome may be enlightened for further disease prevention and treatment accordingly. The main purposes of the first year study are to describe physical capacity, inflammation condition, and components of the metabolic syndrome; and to determine the intensity, duration and frequency of exercise training for treating individuals with metabolic syndrome. The eligible participants were assigned randomly into either exercise or control group. The exercise group participated in a 12-week moderate-intensity aerobic exercise program. The functional capacity and biomedical data were collected at baseline, and the 12th weeks of the program. During the first year of the study, 22 subjects completed the 12-week data collection. Of these, 11 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. However, the changes in metabolic syndrome indicators and inflammatory markers between exercise and control groups were not significantly different. This is probably due to a small 2 sample size. Further investigation with a larger sample size is needed to explore the effectiveness and mechanism of physical exercise on inflammatory markers and metabolic syndrome.