Summer Meeting hosted by the Irish Section, 16–19 July 2012, Translational nutrition: integrating research, practice and policy

Effects of multicomponent exercise on blood lipids in the elderly

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According to recent Eurostat projections, the Irish population over 65 years will increase from 11% in 2010 up to 22% in 2060[1]. This will lead to a workforce decline and increased health care costs with a consequent economical impact[2]. To address the challenges of an aged population, multicomponent training (MCT) has been shown to be effective in preserving functional abilities, reducing the risk for falls and improving health and quality of life in the elderly[3]. However, there is very little data regarding the effects of this training program on metabolic health[4]. Thus, the aim of the present study was to examine the effect of MCT on blood lipid profiles in an older Irish population. The study was approved by the Human Research Ethics Committee of University College Dublin and written informed consent was obtained.

Twenty one healthy, sedentary women ($n = 14$) and men ($n = 7$) aged between 65 and 75 years (70 ± 3 years) completed a 12-week, twice a week supervised MCT program (attendance level $= 90 \pm 9$%). Classes took approximately 60–75 minutes and exercises were designed to improve functional ability, strength, balance, coordination, flexibility and cognitive function. Fasting blood samples were collected prior to and following the MCT intervention and serum total cholesterol, triglycerides, LDL-C and HDL-C and NEFA were measured. Total body composition was measured by dual energy x-ray absorptiometry. Subjects completed an EPIC FFQ to assess baseline dietary intakes[5].

Table 1. Pre and Posttraining values for biochemical

	MCT[a]		
	Pre	Post	*p-value*
Weight (kg)	74 ± 9	74 ± 9	0.32
Body fat (%)	35.7 ± 7.8	35.4 ± 8	0.17
TC (mmol/l)	5.48 ± 1.07	5.51 ± 1.19	0.82
TG (mmol/l)	1.31 ± 0.81	1.32 ± 1.04	0.88
LDL-C (mmol/l)	3.94 ± 0.78	3.86 ± 0.95	0.42
HDL-C (mmol/l)	1.56 ± 0.58	1.57 ± 0.62	0.80
NEFA (mmol/l)	0.56 ± 0.24	0.65 ± 0.33	0.25

[a]Multi-component training, Data are mean $\pm$ sd. Pre and Post Student's t-test.

In the present study subjects reported energy intakes of 1849 ± 568 kcal, with % energy from protein 19 ± 4%, fat 31 ± 5%, and carbohydrate 47 ± 8%. No significant changes in body composition or blood lipid concentrations were found after a 12 week MCT training program (see Table 1). Previously, it has been observed that MCT could improve blood lipids but the exercise intervention was longer and more frequent than the current study[4]. In conclusion, MCT is an effective strategy to improve functional health but the characteristics of exercise interventions may influence the potential impact of MCT program on metabolic health.

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4. Carvalho J, Marques E *et al*. (2010) "Multicomponent exercise program improves blood lipid profile and antioxidant capacity in older women." *Arch Gerontol Geriatr* **51**(1): 1–5.
5. Wareham NJ, Jakes RW *et al*. (2002). "Validity and repeatability of the EPIC-Norfolk Physical Activity Questionnaire." *Int J Epidemiol* **31**(11914316): 168–174.