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Association between physical fitness and b-vitamin status in Spanish elderly people

R. Aparicio-Ugarriza[1,2], J. Mielgo-Ayuso[1,2], R. Luzardo-Socorro[1,2], R. Seco[3], M.M Biblioni[3], E. Argelich[3], X. Capó[3], G. Palacios[1,2,4], J.A. Tur[3,4] and M. González-Gross[1,2,4]

[1]*ImFINE Research Group, Spain,* [2]*Faculty of Physical Activity and Sport Sciences (INEF), Technical University of Madrid, Spain,* [3]*Research Group on Community Nutrition and Oxidative Stress (NUCOX), University of the Balearic Islands, Spain and* [4]*CIBERobn CB12/03/30038, Spain*

Physical fitness (PF) is associated as an independent predictor of all-cause diseases and mortality[1,2]. On the other hand, low concentrations of b-vitamin are prevalent with advancing age. Furthermore, some authors suggest total homocysteine (tHcy) seem to be a functional indicator of these vitamins deficiencies[3].The aim of this study was to assess the association between PF, b-vitamin status and tHcy levels in Spanish population over 55 years. Battery of 4 PF tests was applied to a sub-sample of a PREDIMED study (427 participants, 57 % women, 55–88 years). The score for each test was from 0 (worst) to 3 (best result) points. Subjects were classified in two groups according to total scores: i) low fitness: 0–8; and ii) high fitness: 9–12 points, stratified by gender. Blood samples were collected. Data were analyzed using one-way ANOVA.

Table 1. Vitamin B and homocysteine levels by different level of fitness.

	Male (n = 129/55)			**Female (n = 173/70)**		
	Mean	SD	**p**	Mean	SD	p
tHcy (µmol / dl)						
Low fitness	15·08	4·79	0·021	11·79	3·71	0·521
High fitness	13·43	3·29		11·42	4·37	
Vitamin B_{12} (ng/ mL)						
Low fitness	347·73	151·11	0·558	478·15	605·70	0·524
High fitness	333·31	122·81		430·15	194·64	
Serum folic acid (µg/ mL)						
Low fitness	9·97	3·97	0·034	11·17	4·52	0·093
High fitness	11·33	3·83		12·27	4·47	
RBC folate (ng/ mL)						
Low fitness	376·2	109·7	0·374	351·9	119·6	0·213
High fitness	395·0	84·3		374·7	121·1	

Data are expressed by mean and standard deviation (SD). tHcy: total homocysteine; RBC: red blood cell folate. Data are controlled by age, city and total METs/hour.

The table 1 shows serum folic acid and tHcy in males was significant better ($p < 0·05$) in those who had high PF level than those had low PF. However, there were not significant differences in all biomarkers in females. In conclusion, males with high physical fitness have shown better serum folic acid and tHcy levels than low physical fitness. Supported by Instituto Salud Carlos III (PI11/01791).

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