

Winter Meeting, 6–7 December 2011, 70th Anniversary: Body weight regulation – food, gut and brain signalling

Protein and essential amino acid intake in males who do and do not consume protein supplements

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Worldwide, supplement use amongst athletes ranges between 40 and 60%⁽¹⁾. Despite the fact supplement use is commonplace no study has measured the effect of taking supplements on protein and amino acid intake. Additionally the recommended daily intake for protein varies depending on athlete type⁽²⁾. Requirement for protein has also been suggested to vary according to lean body mass⁽³⁾. The aim of this study was to examine protein intake of exercising males who do and do not take protein supplements and investigate whether they were achieving their desired intake level according to current recommendations.

Following ethical approval 65 physically active males who did not take protein supplements and 62 males who took supplements were recruited. Subjects completed a 3 day food diary, were asked if they eat a high protein diet and recorded any supplements consumed. Dietary analysis was completed through CompEatTM. Lean body mass was measured by a DEXA scan. Supplemental protein and essential amino acid intake were obtained from the supplement label.

Table 1. Protein and essential amino acid intakes of males who do and do not take protein supplements.

	Normal diet (n 46) 81 kg		Extra dietary protein (n 19) 83 kg		Extra protein supplements (n 14) 79 kg		Extra dietary protein and supplements (n 48) 87 kg	
	RDA	Mean	RDA	Mean	RDA	Mean	RDA	Mean
Protein (g)	100.56	25.98	112.12	38.56	161.25	51.09	202.75	73.43
% RDA ^a	104.48	27.21	107.39	35.63	136.77	57.81	155.96	65.51
% RDA ^b (g/Kg LBM)	57.72	12.67	63.81	20.35	93.18	26.45	103.99	34.73
Isoleucine ^c (g)	1.54	1.85	1.58	1.90	1.50	6.20	1.65	5.75
Leucine ¹ (g)	3.40	3.26	3.49	3.25	3.32	8.04	3.65	9.37
Valine ^c (g)	1.94	2.28	1.99	2.33	1.90	5.48	2.09	5.97
Phenylalanine ^c (g)	2.67	1.93	2.74	1.97	2.61	3.70	2.87	3.55
Tryptophan ^c (g)	0.41	0.52	0.42	0.52	0.40	1.25	0.44	1.40
Histidine ^c (g)	1.13	1.11	1.16	1.15	1.10	2.10	1.22	2.36
Methionine ^c (g)	1.54	0.92	1.58	0.94	1.50	1.89	1.65	2.42
Lysine ^c (g)	3.08	2.43	3.15	2.58	3.00	6.45	3.31	7.41
Threonine ^c (g)	1.62	1.60	1.66	1.66	1.58	4.47	1.74	5.51

^aProtein RDA based on individual physical activity levels⁽²⁾.

^bProtein intake based on lean body mass is recommended at 2.75 g/Kg LBM.

^cRDA's for essential amino acids based on Dietary Reference Intakes (DRIs) for Macronutrients and Energy.

Protein intake calculated based on physical activity levels⁽²⁾ was 37% and 56% greater than recommended intakes with supplement use. When intake was calculated based on lean body mass, subjects not consuming supplements, taking extra dietary protein only or extra protein supplements only, failed to meet their protein requirements. Subjects relying on diet only for essential amino acids failed to meet their recommended intake for phenylalanine, methionine and lysine with these shortfalls being eliminated through supplement intake.

This work was supported by Strand I funding under the Technological Sector Research grant.

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