Beneficial effects of a six-month nutrition therapy on body composition and physical function in old adults after hospital discharge

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Background

Malnutrition is common among old adults. Studies on nutrition interventions show only limited effects on anthropometrics or physical function.

Objective

A six-month randomized controlled study to investigate the effects of nutrition therapy following the principles of nutrition care process (NCP) in community-dwelling old adults discharged from hospital.

Methods

106 participants (>65 years) randomized into intervention group (n = 53) and control group (n = 53). Intervention group received individual nutrition therapy (5 visits) and free delivered energy- and protein rich foods. Anthropometrics, dietary intake and short physical performance battery were measured at baseline and at endpoint.

Results

The control group experienced weight loss (-3.5 ± 3.9 kg; P<0.001), while the intervention group experienced weight gain (1.7 kg ± 2.5 kg, P<0.001). Lean body mass being the main component of the weight changes.

Dietary intake increased in the intervention group (937 ± 534 kcal/day, P<0.001) during the six-month study but decreased in the control group (-832 ± 407 kcal/day, P<0.001).

SPPB score increased only in the intervention group (1.3 ± 2.1, P<0.001) and the control group was 3 times more likely (P=0.019) having difficulties to walk.
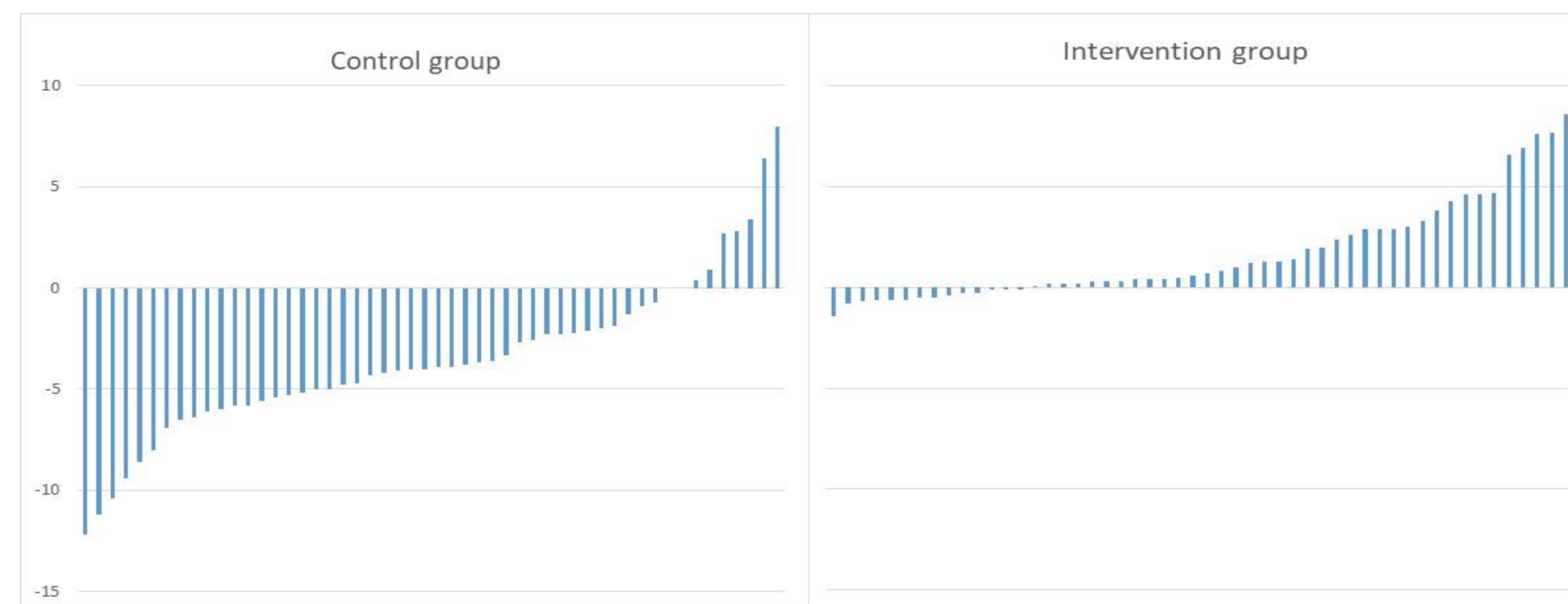

Figure 2 Individual crude body weight changes (in kg) 6 months after discharge in the control and in the intervention group.

Conclusion

The time after hospital discharge leads to weight loss in most old adults receiving the current standard care in Iceland.

However, a 6-months nutrition therapy, provided by a clinical nutritionist following the principles of NCP in combination with free delivered supplemental energy- and protein dense foods has outstanding effects on body composition, nutrition status and physical function.

Table 1. Baseline characteristics							
	Control (n = 53)			Intervention (n = 53)			
Variables	mean	±	SD	mean	±	SD	P-value*
Age (years)	81.8	±	6.0	83.3	±	6.7	0.228
Female (%)	52.8			71.7			0.045
Higher education (yes in %)	66.0			69.8			0.677
Lives alone (%)	66.0			66.0			0.999
Alcohol (yes in %)	45.3			37.7			0.430
Smoking (yes in %)	9.4			3.8			0.241
ISNST score	4.5	±	1.3	5.1	±	1.7	0.047
MMSE score	25.9	±	2.9	26.1	±	2.8	0.702
No. of ICD-10 diagnoses	10.5	±	3.8	10.3	±	4.9	0.877
No. of medications	12.4	±	4.2	12.2	±	5.8	0.893
Height (m)	1.7	±	0.1	1.7	±	0.1	0.326
Weight (kg)	76.5	±	19.1	78.3	±	18.3	0.615
BMI (kg/m^2)	26.9	±	5.3	28.5	±	6.5	0.188
Waist circumference (cm)	104.4	±	14.0	103.6	±	13.8	0.739
Mid arm circumference (cm)	28.3	±	4.0	29.8	±	5.7	0.114
Calf circumference (cm)	34.0	±	4.5	34.9	±	4.9	0.349
Fat free mass (kg)	50.1	±	11.1	49.1	±	10.0	0.642
Fat percent (%)	34.0	±	7.7	37.3	±	7.5	0.041
Handgrip strength (kg)	21.5	±	8.5	19.7	±	6.8	0.119
SPPB (score)	2.4	±	2.0	2.5	±	1.8	0.839

*P-value based on chi square test for categorical variables, independent samples t-test for normally distributed continuous variables and Mann Whitney U test for not normally distributed continuous variables. ISNST = Icelandic Nutrition Screening Tool; MMSE = Mini Mental State examination; ICD-10 = International Classification of Diseases, version 10; BMI = body mass index; SPPB = short physical performance battery

Appendix 2 Unadjusted baseline and endpoint values in the control- and intervention group.							
		Control group (n = 52)			Intervention group (n = 52)		
		Mean	±	SD	Mean	±	SD
Body weight (kg)	baseline	76.7	±	19.3	78.3	±	18.4
	endpoint	73.2	±	19.4	80.0	±	17.6
Body mass index (kg/m^2)	baseline	27.0	±	5.3	28.5	±	6.5
	endpoint	25.9	±	5.5	29.1	±	6.1
Waist circumference (cm)	baseline	104.4	±	14.1	103.5	±	13.9
	endpoint	101.9	±	14.4	103.7	±	13.6
Upper arm circumference (cm)	baseline	28.2	±	4.1	29.8	±	5.7
	endpoint	27.4	±	4.9	31.3	±	6.0
Calf circumference (cm)	baseline	34.0	±	4.5	34.9	±	5.0
	endpoint	33.7	±	5.9	35.9	±	4.6
Body fat (%)	baseline	34.0	±	8.0	37.0	±	7.4
	endpoint	36.1	±	7.4	37.3	±	7.0
Lean body mass (kg)	baseline	50.3	±	12.2	47.4	±	10.6
	endpoint	46.8	±	11.9	48.5	±	10.8
Grip strength (kg)	baseline	21.4	±	8.5	19.6	±	6.8
	endpoint	21.3	±	9.3	20.4	±	8.9
SPPB (score)	baseline	2.4	±	2.0	2.5	±	1.8
	endpoint	2.8	±	2.2	3.8	±	2.0
ISNST (score)	baseline	4.5	±	1.3	5.1	±	1.7
	endpoint	3.7	±	2.2	2.0	±	1.2
		Yes in %			Yes in %		
Being able to perform "side-by-side"	baseline	71.2			76.9		
	endpoint	75.0			90.4		
Being able to perform "semi-tandem"	baseline	67.3			65.4		
	endpoint	57.7			82.7		
Being able to perform "tandem"	baseline	36.5			42.3		
	endpoint	48.0			69.2		
Being able to perform "chair test"	baseline	80.8			86.5		
	endpoint	65.4			80.8		
Having difficulties to walk	baseline	28.8			34.6		
	endpoint	46.2			25.0		

ISNST = Icelandic Nutrition Screening Tool, SPPB = short physical performance battery.

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