

Ondervoeding in de geriatrische revalidatie

Wilco Achterberg



1

Geen belangenverstrekking

- Zijn GR patienten ondervoed?
- (Hoe) moeten we het meten?
- Werkt het als we aanvullende voeding geven?
- Wat gaan we morgen doen?



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2

vragen

Screen u alle revalidanten op ondervoeding? Ja/nee

Screen u heupfractuur revalidanten op ondervoeding? Ja/nee

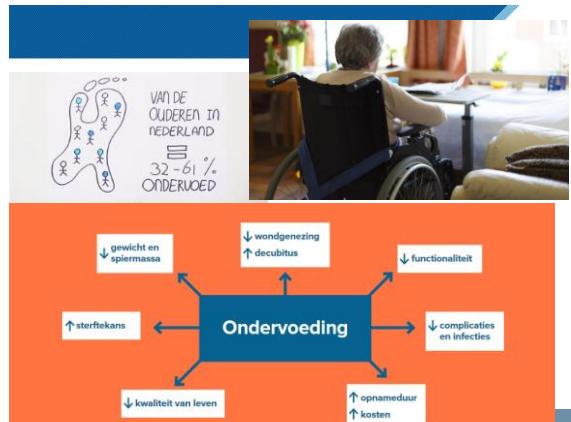
Waarmee screen u?

- SNAQ
- SNAQ65
- MNA
- Ander instrument
- **Wat moet je vastleggen bij een revalidant?**
- Gewicht
- BMI
- VVMI
- Albumine
- Anders?



Geeft u standaard extra calorie/eiwitten? Ja/nee

3



4

Voorkomen ondervoeding in de GRZ

Komt veel voor in alle groepen (fracturen, CVA, oncologie, orgaanfalen)

Tijdens revalidatie vaak (te) weinig vooruitgang

Gerelateerd aan slechte uitkomsten

5

Hertroois D, Rehabilitation patients: undernourished and obese? J Rehabil Med. 2012 Jul;44(8):696-701.

SNAQ,
Short Nutritional Assessment Questionnaire Residential Care (SNAQRC),

SNAQ65+,
Malnutrition Universal Screening Tool

Mini nutrition Assessment-short form.

SNAQ⁶⁵⁺

	1 gewichtsverlies	2 Bovenarmomtrek	3 Eetlust en functionaliteit	4 Behandelbeleid	minder dan 4 kg	25 cm of meer	wenig eetlust en verminderde functionaliteit	4 kg of meer	minder dan 25 cm	min ondersteund	misschien op ondervoeding	ondersteund
1												

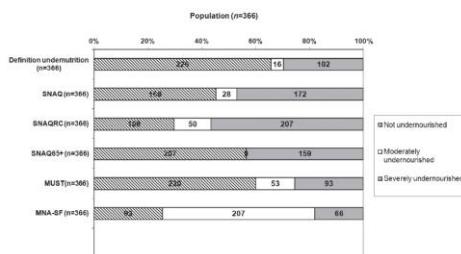
Het stappenplan

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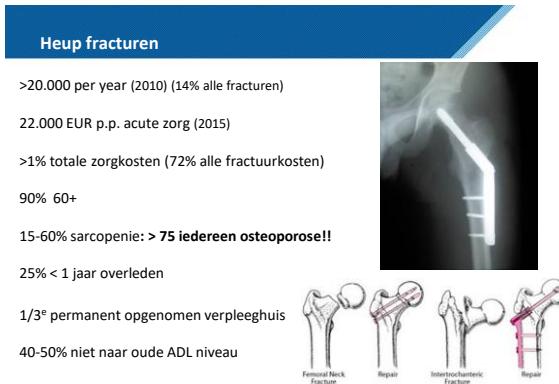
In the undernourished group, 28% were overweight (BMI 25-30) and 19% were obese (BMI > 30).

1



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7



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9

SNAQ/MNA-SF

SNAQ
Short Nutritional Assessment Questionnaire
www.stuuroepsonderzoek.nl

Screening

A. Bent u de afgelopen 3 maanden minder gaan eten om gevoeling van verminderde eetlust?
 0 = sterk verminderde eetlust
 1 = voorbijgaand verminderde eetlust
 2 = geen verminderde eetlust

B. Gevoelens gedurende de afgelopen 3 maanden
 0 = geen last
 1 = voorbijgaand last
 2 = gedurende tussen 1 en 3 kg
 3 = geen gehaltevermindering

C. Mobilitas
 0 = heel te slap gehouden
 1 = moeite om zelfstandig te kunnen staan, maar gaat het niet louter
 2 = geen zelfstandig meer kunnen staan

D. Heeft u gedurende de afgelopen 3 maanden last gehad van psychische stress of een ernstige ziekte?
 0 = ja
 1 = nee

E. Psychopathologische problemen
 0 = geen psychopathologische problemen
 1 = voorbijgaand psychopathologische problemen
 2 = geen psychopathologische problemen

F1 Body Mass Index (BMI) (gewicht in kg) / (lengte in m)²
 1 = BMI tussen 19 en 21
 2 = BMI tussen 18 en 19
 3 = BMI tussen 17 en 18
 4 = BMI 16 of meer

● geen actie
 ●● 3 x per dag een tussentijdse verstrekking
 ●●● 3 x per dag een tussentijdse verstrekking en behandeling door een diëtist

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11

Table 1. Characteristics of rehabilitation patients divided by nutritional status and age

	<65 years n=269			≥65 years n=97		
	Severely UNP	Moderately UNP	Not UNP	Severely UN	Moderately UN	Not UNP
Total, n	80 (30)	32 (12)	157 (58)	22 (23)	11 (11)	69 (71)
Sex, female, n	25 (31)	12 (18)	69 (44)	0.16	1 (17)	30 (43)
Age, years, mean (SD)	48 (1.4)	50 (1.6)	50 (1.0)	Severely UN vs not UN 0.18	Severely UN vs not UN: 0.23	Severely UN vs not UN: 0.8
				Moderately UN vs not UN: 0.98	Moderately UN vs not UN: 0.8	Moderately UN vs not UN: 0.8

The SNAQ65+ is the recommended screening tool due to its high diagnostic accuracy (sensitivity 96%, specificity 77%, positive predictive value 62%, negative predictive value 90%) and quick and easy use. The MNA had the worst diagnostic accuracy, with a sensitivity of 44%.

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8



ARTICLE
Prevalence of malnutrition in a cohort of 509 patients with acute hip fracture: the importance of a comprehensive assessment

M Diaz de Bustamante¹, T Alarcón^{1,2}, R Menéndez-Colino^{2,3}, R Ramírez-Martín¹, A Otero^{3,4,5} and J González-Montoro^{3,4,5}

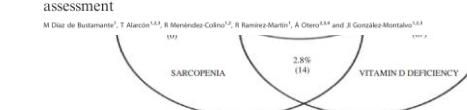


Figure 1. Venn diagram. Association between protein-energy malnutrition, sarcopenia and vitamin D in the 509 patients included. Data shown as % (n).

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10



Screening for malnutrition in patients admitted to the hospital with a proximal femoral fracture

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Alternative 1:

- BMI <18.5 kg/m²

Alternative 2:

- Weight loss (unintentional) >10% indefinitely of time, or >5% over the last 3 months combined with:

- BMI <20 kg/m² if <70 years of age, or <22 kg/m² if ≥70 years of age

- FFMI <15 and 17 kg/m² in women and men, respectively.



Fig. 1. The ESPEN diagnostic criteria for malnutrition.

BMI body mass index, FFMI fat free mass index.

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12

2

Table 1
Patient characteristics of all patients and malnourished* patients.

Characteristics	Total N=437 (%)	Malnourished (ESPN) N=74 (16.9%)	Normal (ESPN) N=363 (83.1%)	p-value	
Age (mean ± SD)	79.2 (±12.8)	82.0 (±12.2)	78.6 (±12.8)	0.037	
Gender (F)	309 (69.6)	57 (77.0)	243 (66.9)	0.088	
Cognitively impaired	203 (46.4)	49 (66.2)	95 (26.7)	<0.001	
ASA Classification	I II III IV V	27 (6.4) 188 (44.2) 42 (10.2) 21 (4.9) 11 (2.5)	1 (3.7) 20 (10.6) 7 (3.3) 14 (3.9) 1 (1.4)	26 (7.2) 168 (46.3) 44 (12.2) 14 (3.9) 1 (0.3)	<0.001
Ratio ADL	0-1 2-5	206 (46.2) 112 (25.6)	114 (44.6) 27 (36.5)	203 (77.0) 85 (23.4)	<0.001
Living situation	Home and independent Home with homecare Nursing home Total	263 (59.2) 62 (14.2) 22 (5.0) 347 (78.4)	31 (41.9) 10 (13.5) 28 (37.8) 70 (100)	232 (63.9) 52 (14.3) 68 (18.7) 355 (100)	0.001
BMI (mean)	23.2 (±3.9)	28.2 (±2.2)	24.3 (±3.3)	<0.001	
SNAQ score	<2 ≥2	88 (20.1) 299 (74.8)	53 (71.6) 74 (100)	33 (96.7) 135 (72)	<0.001
MNA-SF	Total	16 (3.7)	5 (6.8)	11 (3.0)	



Table 2
Nutritional status of all femoral neck fracture patients according to the MNA-SF and SNAQ score.

SNAQ	MNA-SF	Total	At risk (1-4)	malnourished (>7)	Total
Not malnourished (0-1)	2 (0)	2 (0.5)	1 (2.8)	1 (2.7)	149 (39.9)
Moderately malnourished (2)	0 (0)	11 (2.5)	6 (14.8)	6 (14.8)	17 (3.9)
Severely malnourished (>3)	0 (0)	34 (7.8)	37 (8.5)	37 (8.5)	71 (16.2)
Total	228 (52.2)	194 (35.2)	59 (12.6)	59 (12.6)	437 (100)

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13

Conclusions

Screening + : 20.1% (SNAQ score) tot 47.8% (MNA-SF)

28.4% van alle onderzoedde patienten negatieve SNAQ score....

Wat kiest u, SNAQ , SBNAQ65+, of MNA-SF?



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15

SUMMARY OF FINDINGS FOR THE MAIN COMPARISON [Explanation]

Multimutrient supplements (oral) versus control for hip fracture aftercare in older people					
Outcomes	Interventions	Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence	Comments
	Assumed risk Control	Corresponding risk Multimutrient supple- ments (oral) versus control			
Mortality by end of study	Study population	RR 0.81 (0.49 to 1.31)	968 (15 studies)	⊕⊕⊕ low ¹	The statistical test for subgroup differences between the results for the 15 studies including malnourished participants and those 10 trials not including malnourished participants did not show a significant difference between the two subgroups for mortality
Follow-up: 1-12 months	72 per 1000 ¹ 59 per 1000 (36 to 95)				
	High risk ¹				
	250 per 1000 203 per 1000 (123 to 328)				
Participants with complications (e.g. pressure sores, infections) at end of study	Study population	RR 0.71 (0.59 to 0.86)	727 (11 studies)	⊕⊕⊕ low ¹	Only 2 trials targeting malnourished people reported these data
Follow-up: 1-12 months					

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17

Table 3
Predictive values of the SNAQ and MNA-SF.

	Sens	Spec	PPV	NPV
SNAQ	71.6	90.4	60.2	94.0
MNA-SF	100	62.8	35.4	100

Sens sensitivity, Spec specificity, PPV positive predictive value, NPV negative predictive value.



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14



Cochrane Database of Systematic Reviews



Nutritional supplementation for hip fracture aftercare in older people (Review)

Avenell A, Smith TO, Curtain JP, Mak JCS, Myint PK



Cochrane Database of Systematic Reviews

Multidisciplinary rehabilitation for older people with hip fractures (Review)

Handoll HHG, Cameron ID, Mak JCS, Panagoda CE, Finnegan TP

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16



41 trials, 3881 patienten

Matige tot (heel) slechte wetenschappelijke kwaliteit

Zelden goed 'blind' behandeld, incomplete uitkomsten, selectieve rapportage

Dus kloppen deze uitkomsten?

18 trials Multinutriënten (energie, eiwit, vitamine, mineralen)

Mortaliteit: 0,81

13 trials MN: complicaties 0,71 (decubitus, infectie, thrombose, verwondheid)

6 trials (heel erg late kwaliteit): dood/complicaties 0,67

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18



There is low-quality evidence that oral multinutrient supplements started before or soon after surgery may prevent complications within the first 12 months after hip fracture, but that they have no clear effect on mortality.

There is very low-quality evidence that oral supplements may reduce 'unfavourable outcome' (death or complications) and that they do not result in an increased incidence of vomiting and diarrhoea.

Adequately sized randomised trials with robust methodology are required. In particular, the role of dietetic assistants, and peripheral venous feeding or nasogastric feeding in very malnourished people require further evaluation.

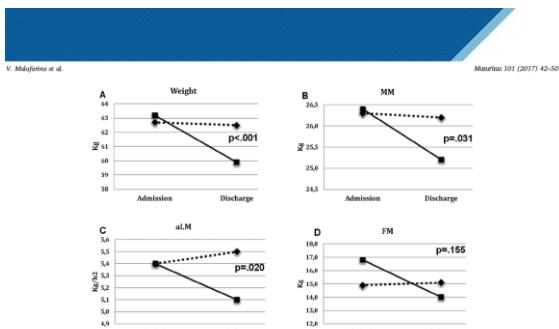
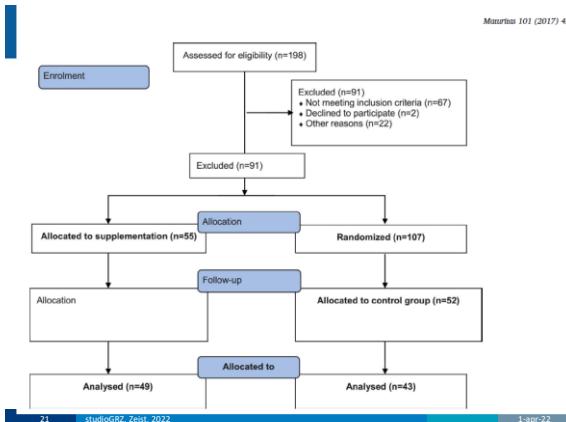


Fig. 2. Body composition study. Panel A: loss of weight among individuals in the control group (solid line), while in the intervention group weight was gained (dotted line). Panel B and C: increases in muscle mass (MM) and in appendicular lean mass (aLM) in the IG (dotted line), compared with the CG (solid line), in which a decrease in both values was observed. Panel D: fat mass (FM) in both the IG (dotted line), and in the CG (solid line).



Interventie

107 patienten gerandomiseerd (excl: DM, BI<40)

2 flessen HMB aanvullend

((220 ml x 2, total:660 kcal)

(Ensure® Plus Advance, Abbott Laboratorios S.A.)

1.5 kcal/mL, 24% protein (9.1 g/100 mL), 29% fat (5 g/100 mL) and 46% carbohydrates (16.8 g/100 mL).

The supplement was enriched with CaHMB 0.7 g/100 mL, 25(OH)D 227 IU/100 mL and 227 mg/100 mL of calcium

BMI, FAC, BI

Effectiveness of nutritional supplementation on sarcopenia and recovery in hip fracture patients. A multi-centre randomized trial

Vincenzo Malafarina^{a,b,*}, Francisco Uriz-Otano^c, Concetta Malafarina^d, J. Alfredo Martinez^{a,c,f,g}, M. Angeles Zuleit^{a,c,f,g}

Maturitas 101 (2017) 42-50

1-apr-22

Table 2
Nutritional and biochemical measurements.

Variables	Control group (CG)		Intervention group (IG)	
	Admission	Discharge	Admission	Discharge
Height (m)	n 45		n 49	
Weight (Kg)	63.2 ± 14.7	n 44	59.9 ± 14.1	62.7 ± 12.9
IMM (Kg/m ²)	26.0 ± 5.4	24.7 ± 5.1	24.9 ± 4.4	24.6 ± 4.6
Hæmoglobin (g/dL)	10.5 ± 1.2	12.0 ± 1.2	10.6 ± 1.2	11.6 ± 1.0
Total protein (g/dL)	5.7 ± 0.5	6.1 ± 0.5	5.8 ± 0.5	6.5 ± 0.5
Albumin (g/dL)	3.0 ± 0.4	3.4 ± 0.4	3.1 ± 0.4	3.6 ± 0.3
prealbumin (mg/dL)	17.1 ± 4.8	19.8 ± 5.2	16.0 ± 5.9	n 35
Creatinin (mg/dL)	n 44	n 49	n 49	21.9 ± 5.1
0.5 ± 0.3	0.9 ± 0.3	1.0 ± 0.4	0.9 ± 0.4	
Total Cholesterol (mg/dL)	n 44	n 43	n 49	n 39
169.5 ± 35.7	176.9 ± 39.6	155.0 ± 37.4	168.9 ± 35	
Triglycerides (mg/dL)	n 42	125.3 ± 50.9	130.8 ± 53.5	131.1 ± 48
25(OH)D (ng/mL)	n 40	9.2 (7-14)	12.2 (7-19.6)	20.8 (16-30)
CRP (mg/L)	n 42	n 38	n 48	n 37
24 (7.2-36)	6.5 (2.2-10)	20.3 (4.5-35)	4 (1.8-11)	
IL-1 (pg/mL)	n 36	127.1 ± 45.4	n 35	19.4 (13-24.1)
IL-6 (pg/mL)	1.1 (0.4-5.8)	5.6 (2.5-8.4)	0.9 (0.4-4.5)	6.8 (4.2-9.2)
TNF- α (pg/mL)	13.9 (8.6-21.1)	5.6 (2.5-8.4)	11.8 (6.8-18.5)	9.5 (5-14)
Glycemia (mg/dL)	n 45	n 40	n 49	n 43
94.4 ± 11.1	88.5 ± 12.2	94.9 ± 12.3	91.9 ± 14.1	
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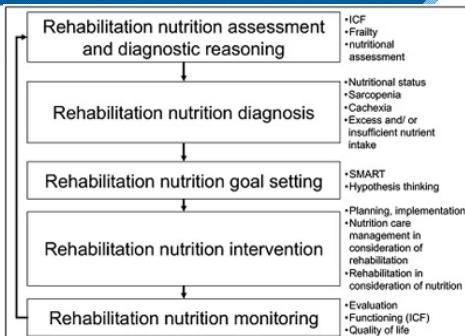
Table 4
Sarcopenia parameters, hand grip strength, gait speed and bioimpedance measurements.

Variables	Control group (CG)		Intervention group (IG)		<i>p</i> value
	Admission	Discharge	Admission	Discharge	
Gait-speed (m/s)	-	0.4 ± 0.3	-	0.4 ± 0.3	0.367
Hand-grip (kg)	13.8 ± 4.2	14.6 ± 4.7	15.6 ± 7.6	16.8 ± 8.8	0.952
Strength (kg)	4.4 ± 3.7	4.3 ± 4.4	4.3 ± 3.3	4.6 ± 3.8	0.348
HBM by Segal et al. [34]	4.5 ± 1.6	4.1 ± 1.7	4.5 ± 1.4	4.6 ± 1.4	0.020
LM by Segal et al. [34]	5.1 ± 2.4	5.1 ± 2.4	5.3 ± 2.2	5.5 ± 2.2	0.020
SMM	23.6 ± 16.0	23.7 ± 7.8	20.3 ± 9.9	24.3 ± 8.6	0.368
ASMM	18.1 ± 5.6	17.3 ± 4.6	18.8 ± 5.3	18.1 ± 4.8	0.028
MSM	24.2 ± 19.9	23.9 ± 11.3	26.1 ± 10.4	26.1 ± 10.4	0.001
FMM	46.6 ± 9.5	45.4 ± 7.7	47.8 ± 9.5	47.1 ± 8.7	0.018
FM	16.8 ± 13.4	14.0 ± 10.9	14.9 ± 10.6	15.1 ± 9.7	0.155

Results are expressed as Mean ± SD. *p* value = result of the *t* test used to compare the differences between values upon discharge minus values at admission. ASMM: appendicular lean mass, ASMM: appendicular skeletal muscle mass, FMM: fat free mass, LM: lean mass, MSM: Skeletal Muscle Mass.

To our knowledge, this is the first study to assess the effects of an oral nutritional HMB supplement in elderly patients with hip fractures admitted to rehabilitation facilities. This study demonstrates that patients who receive nutritional oral supplementation suffer fewer complications and less sarcopenia, and – conversely – undergo an improvement in body composition and have a better functional and nutritional status upon being discharged. Former studies showed the benefits of oral nutritional supplementation on weight [19] and complications [20].

Ok, wat moet er dus gebeuren?

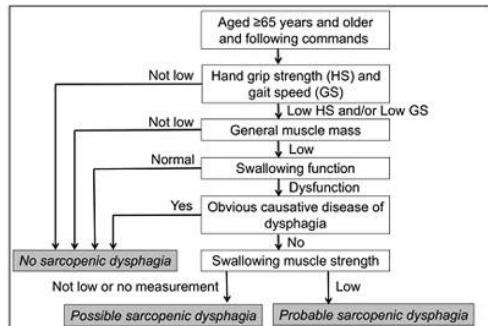


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25

Maak slimme afspraken



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26

Technologie? E-coach

Happe L, Sgraia M, Hein A, Diekmann R



Iterative Development and Applicability of a Tablet-Based e-Coach for Older Adults in Rehabilitation Units to Improve Nutrition and Physical Activity: Usability Study

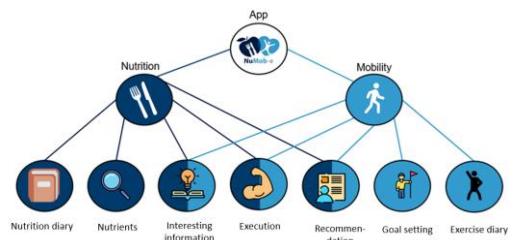
JMIR Hum Factors 2022;9(1):e31823
<https://humanfactors.jmir.org/2022/1/e31823>

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27

L U M C



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28

Doe maar gewoon....



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29

Eiwit

- 0,8 g/kg/dag (WHO,..)
 (HEALTH ABC: 43% haalde dat niet)

- 1-1,2 g/kg/dag (PROT-AGE group)

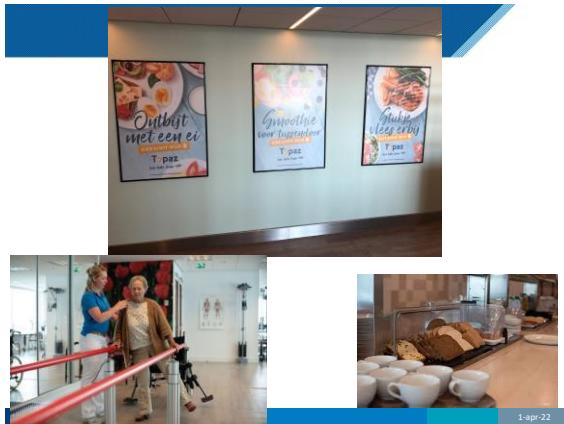
- Meer eiwit, betere mobiliteit op langere termijn, minder sedentair, meer stappen



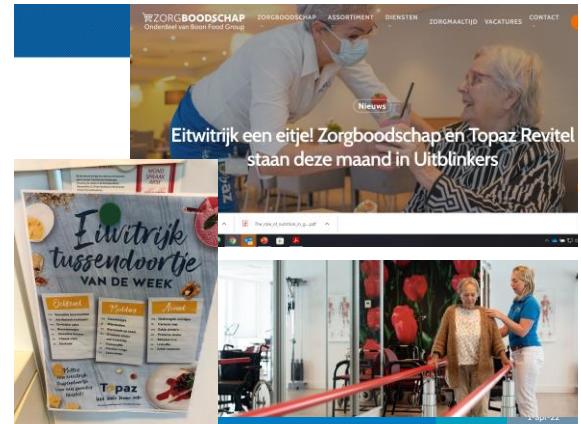
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30



31



32

KEY POINTS

- Malnutrition is wide spread in geriatric rehabilitation patients.
- Malnutrition affects rehabilitation outcome in a negative way and should be treated during the rehabilitation process.
- Intervention with energy and protein suggested the positive effect of rehabilitation programs.
- More evidence with geriatric rehabilitation inpatients is desirable in this regard.

Current Opinion in Clinical Nutrition & Metabolic Care 21(1):14-18, January 2018.

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33

Wat kan ik u meegeven?

Er is Meer en beter wetenschappelijk onderzoek nodig!

Maar goed screenen en goed voeden (eiwit!) is om allerlei redenen nu al goede zorg!

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34

Wat gaat u maandag veranderen?

Als je vandaag bedenkt, wat je morgen moet doen, heb je het overmorgen al gedaan

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35

36