Proactive vs Reactive approach: The role of nutritional support in minimizing lean muscle loss

Silvia Leite, PhD, MSc in Human Nutrition
Nutritionist Brasilia Brazil
University of Brasilia, Master Reseacher

No disclosures

Silvia Leite, PhD, MSc in Human Nutrition
Nutritionist Brasilia Brazil
University of Brasilia

Silvia Leite

PROACTIVE VS REACTIVE

Sarcopenic Obesity

Muscle mass loss

Proactive vs Reactive approach role of nutritional support in minimizing lean muscle loss

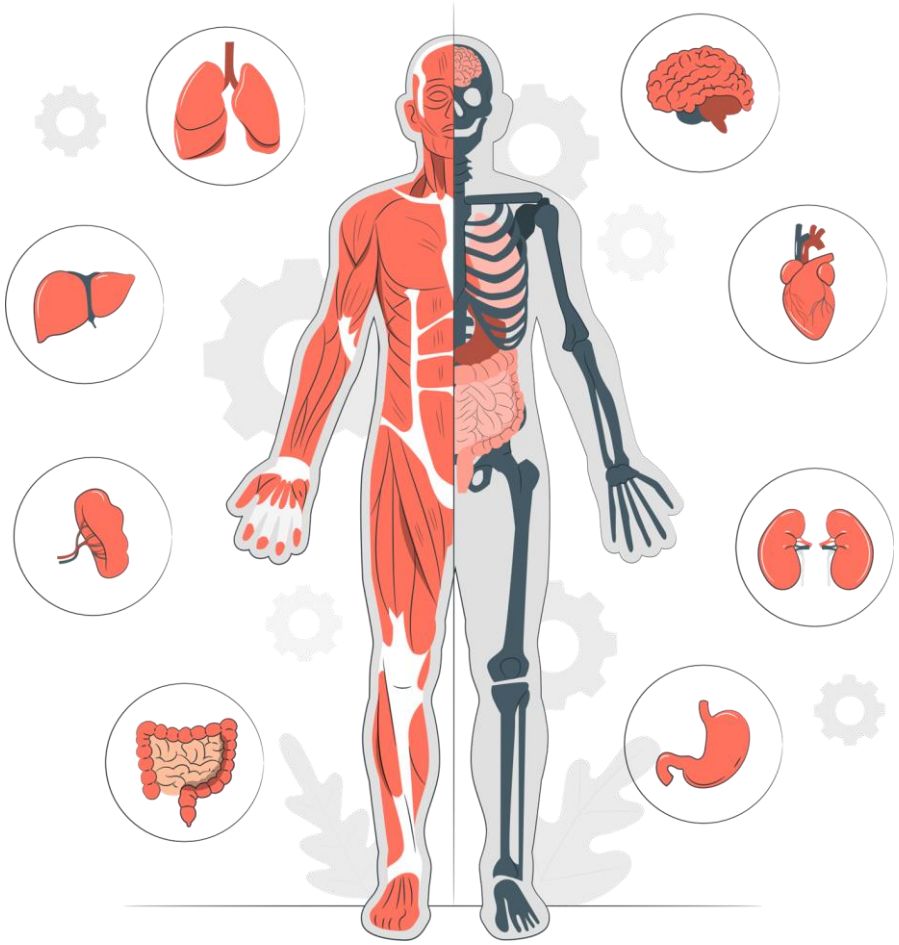
Silvia Leite

1)Pre-operative

2)Post operative

3)Recurrent weigh gain treatment

(OMM)



Silvia Leite

Original article

Prevalence of sarcopenic obesity according to different diagnostic methods and cut-off points in candidates for bariatric surgery

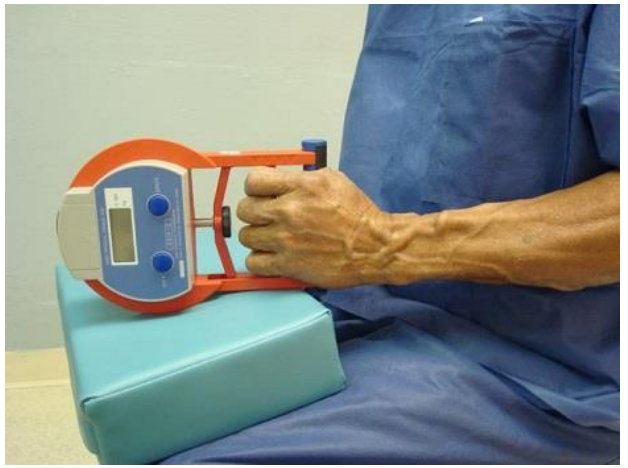
Elena González Arnáiz [a, b], Diana Ariadel Cobo [a, b], Brisamar Estébanez [b], David Barajas Galindo [a], Begoña Pintor de la Maza [a], Ana Urioste Fondo [a], Carmen Dameto Pons [a], María J. Cuevas [b], María D. Ballesteros Pomar [a, b, *]

[a] *Department of Endocrinology and Nutrition, Complejo Asistencial Universitario de León, Gerencia de Salud de Castilla y León (SACYL), Alto de Nava s/n, 24071 León, Spain*
[b] *Department of Biomedical Sciences, Institute of Biomedicine (IBIOMED), University of León, 24071 León, Spain*

1) Pre-operative

Sarcopenic Obesity

15 ~ 23 %



1)Pre-operative

Original article

Prevalence of low skeletal muscle mass following bariatric surgery

Judith Molero [a], Romina Olbeyra [b], Lilliam Flores [a, b, f], Amanda Jiménez [a, b, c], Ana de Hollanda [a, b, c], Alba Andreu [a, c], Ainitze Ibarzabal [d], Violeta Moizé [a, b, f], Sílvia Cañizares [e], José María Balibrea [d], Amadeu Obach [e], Josep Vidal [a, b, f, *]

Table 2
Weight changes in subjects categorized as with or without low-SMM at baseline, 12 months, or 60 months follow up.

	Baseline		12 months		60 months	
	Without low-SMM (n = 759)	With low-SMM (n = 193)	Without low-SMM (n = 819)	With low-SMM (n = 58)	Without low-SMM (n = 445)	With low-SMM (n = 131)
TBWL relative to baseline (%)						
12 months	43.0 (13.5)	40.7 (12.3)[a]	43.2 (13.1)	32.6 (12.6)[c]	23.1 (11.9)	38.3 (13.9)[c]
60 months	35.6 (15.0)	32.4 (14.1)[a]	36.3 (26.3)	26.3 (15.1)[c]	36.5 (14.2)	29.9 (14.4)[c]
Proportion of subjects with TBWL relative to baseline <20%						
12 months	2.8	5.1	2.4	15.5[c]	1.8	5.6[a]
60 months	12.3	17.5	11.7	30.0[b]	9.9	24.4[b]
Weight change from 12 to 60 months follow up						
Absolute value (kg)	6.5 (9.4)	6.3 (10.0)	6.4 (9.6)	6.8 (8.1)	6.5 (9.4)	6.4 (10)
Weight regain >10 kg (%)	31.0	34.4	31.8	29.3	29.3	41.7[a]

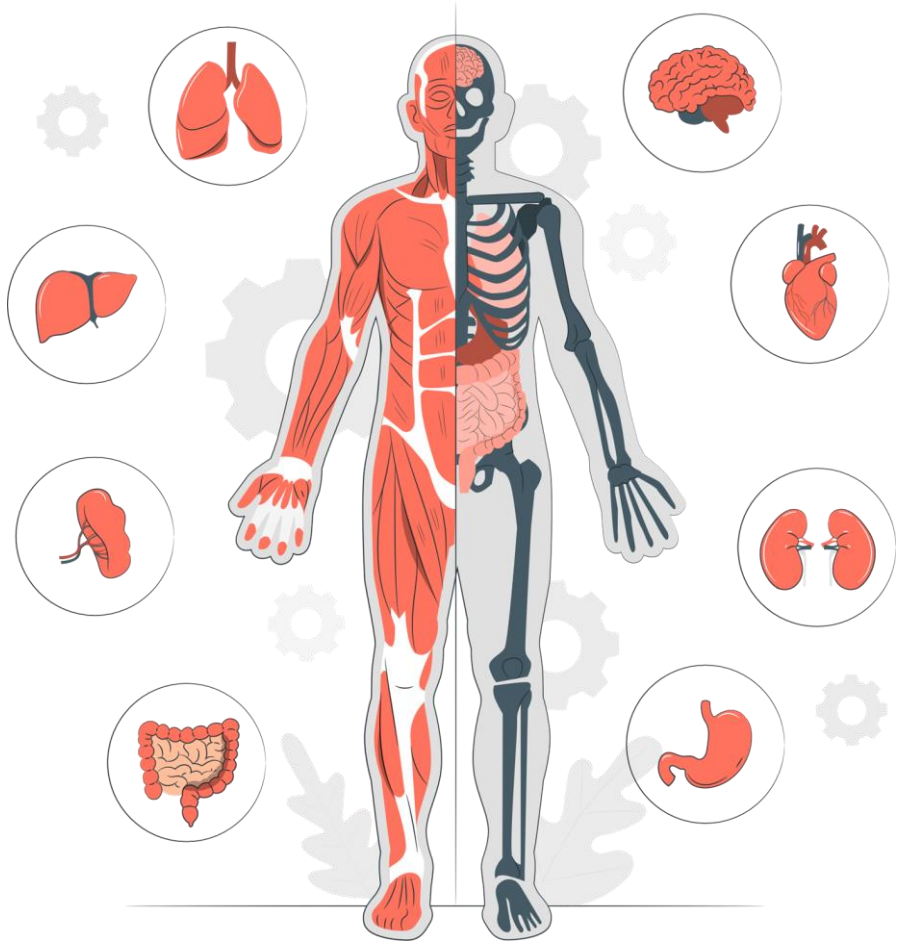
Silvia Leite

2) Post operative MBS

- Preventing excessive muscle mass loss

↓ BMR
- Reduced mobility
- Increased risk of osteoporosis

What is expected to happen ?



Results from different treatments

Medical weight loss versus bariatric surgery: Does method affect body composition and weight maintenance after 15% reduction in body weight?

Michelle G. Kulovitz Ph.D. [a,*], Deborah Kolkmeyer M.S. [b], Carole A. Conn Ph.D. [a], Deborah A. Cohen D.C.N. [a], Robert T. Ferraro M.D. [b]

[a] Department of Individual, Family, and Community Education, University of New Mexico, Albuquerque, New Mexico, USA
[b] Southwest Endocrinology Associates, Albuquerque, New Mexico, USA

Results from different procedures

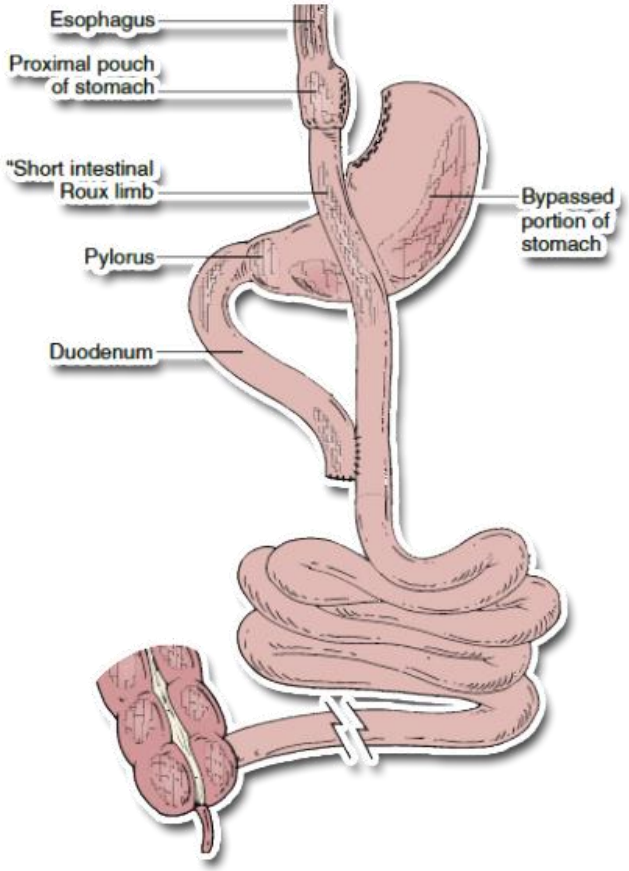
Fat-Free Mass and Skeletal Muscle Mass Five Years After Bariatric Surgery

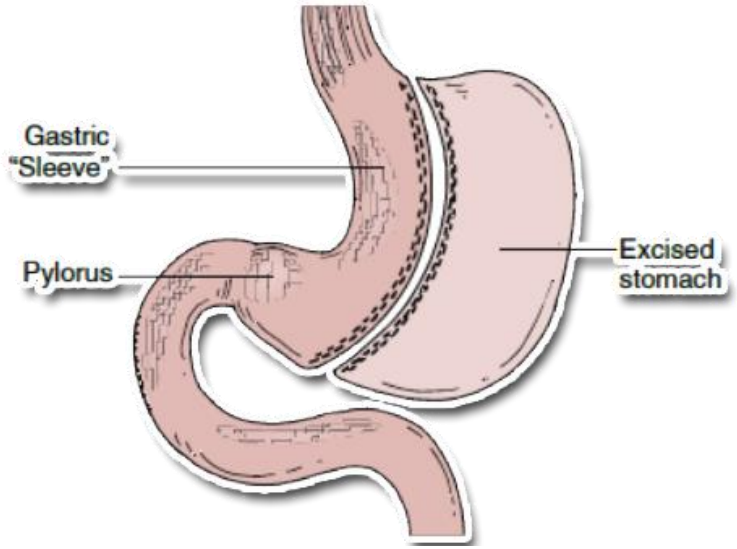
Lance E. Davidson[1], Wen Yu[2], Bret H. Goodpaster[3], James P. DeLany[4], Elizabeth Widen[5], Thaisa Lemos[2], Gladys W. Strain[6], Alfons Pomp[6], Anita P. Courcoulas[7], Susan Lin[8], Isaiah Janumala[2], John C. Thornton[9], and Dympna Gallagher[2,10]

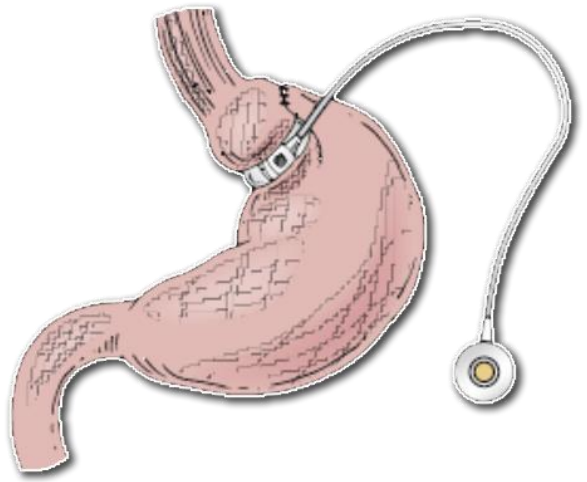
Davinson, 2018

Silvia Leite

Results from different procedures



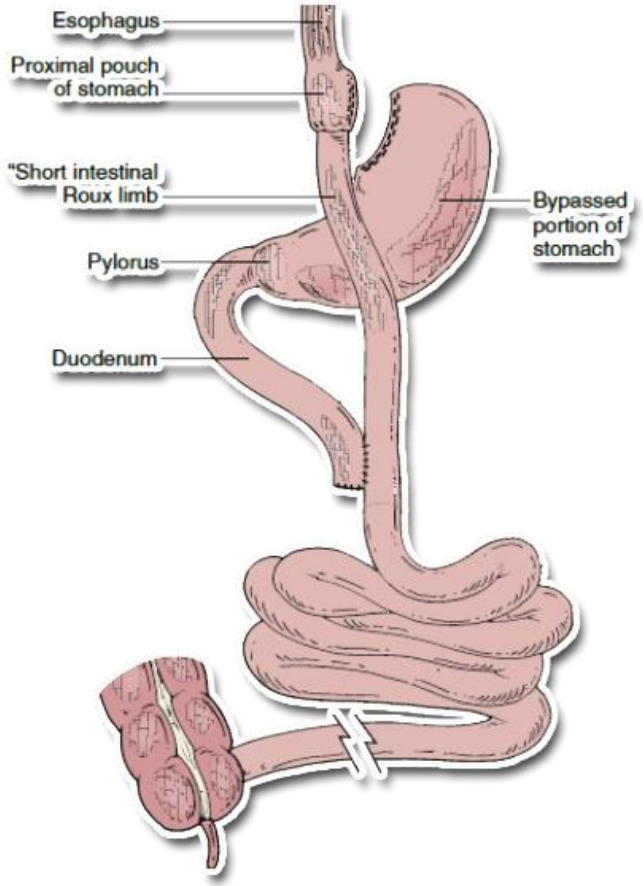




16-23% muscle mass loss/1st year
> 2y ageing (2kg)

Davinson, 2018

Results from RYGB procedure



Cole, 2017
9 year study (RYGB)
1st year: 16% FFM loss

Cole, 2017

Body Composition, Sarcopenia and Physical Performance After Bariatric Surgery: Differences Between Sleeve Gastrectomy and Roux-En-Y Gastric Bypass

Vanessa M. A. Baad[1] · Louise R. Bezerra[1] · Narriane C. P. de Holanda[1,2] · Ana C. O. dos Santos[1] · Amanda A. M. da Silva[1,3] · Francisco Bandeira[1,4] · Taisy C. F. Cavalcante[1,3]

Table 5 Body composition and physical performance in SG and RYGB stratified by time of surgery

Time	1–2 years				2–5 years				> 5 years			
Variables	All	SG	RYGB	*p*	All	SG	RYGB	*p*	All	SG	RYGB	p
Total BMD (g/cm^2)	1.25 ± 0.09	1.25 ± 0.09	1.26 ± 0.09	0.899	1.21 ± 0.10	1.22 ± 0.11	1.18 ± 0.07	0.287	1.19 ± 0.09	1.28 ± 0.04	1.17 ± 0.09	0.001
LS BMD (g/cm^2)	1.26 ± 0.14	1.27 ± 0.12	1.25 ± 0.17	0.864	1.19 ± 0.13	1.20 ± 0.14	1.17 ± 0.11	0.592	1.21 ± 0.15	1.30 ± 0.12	1.18 ± 0.15	0.100
TF BMD (g/cm^2)	1.09 ± 0.13	1.10 ± 0.12	1.09 ± 0.16	0.828	1.08 ± 0.12	1.08 ± 0.12	1.07 ± 0.11	0.765	1.04 ± 0.14	1.16 ± 0.08	1.00 ± 0.14	0.008
FN BMD (g/cm^2)	1.05 ± 0.12	1.04 ± 0.12	1.05 ± 0.13	0.871	1.03 ± 0.12	1.03 ± 0.12	1.03 ± 0.13	0.892	1.00 ± 0.14	1.09 ± 0.08	0.98 ± 0.15	0.025
ASMM (Kg)	19.2 ± 2.3	18.1 ± 1.8	20.4 ± 1.8	0.095	20.5 ± 3.9	20.5 ± 4.0	20.5 ± 3.9	0.969	19.9 ± 5.3	24.7 ± 6.3	18.4 ± 4,1	0.019
SMM (Kg)	44.4 ± 4.7	41.9 ± 2.0	46.9 ± 5.5	0.085	44.2 ± 6.9	43.9 ± 7.2	45.6 ± 5.3	0.357	43.5 ± 10.2	51.8 ± 10.5	40.9 ± 8.9	0.025

Results are presented as means ± SD. Data were analyzed by one-way ANOVA followed by Tukey's test, was accepted significance $*p < 0.05$. *SG* sleeve-type bariatric surgery, *RYGB* Roux-en-Y gastric bypass, *BMD* bone mineral density, *LS* lumbar spine, *TF* total femoral, *FN* femoral neck, *ASMM* appendicular skeletal muscle mass, *SMM* skeletal muscle mass

Silvia Leite

Muscle Strength and muscle los

Preserved Muscle Strength Despite Muscle Mass Loss After Bariatric Metabolic Surgery: a Systematic Review and Meta-analysis

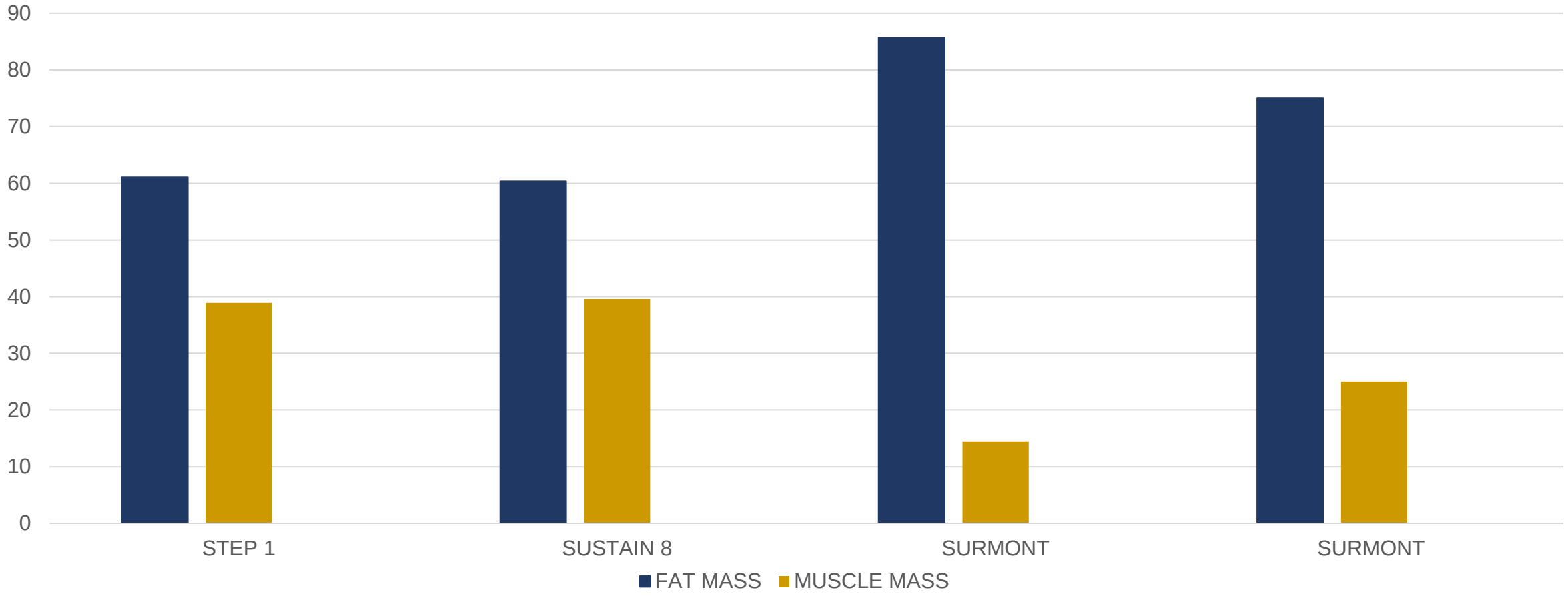
Han Na Jung[1] · Seon-Ok Kim[2] · Chang Hee Jung[3,4] · Woo Je Lee[3,4] · Myung Jin Kim[3,4] · Yun Kyung Cho[3,

Received: 15 May 2023 / Revised: 16 August 2023 / Accepted: 18 August 2023 / Published online: 20 September 2023

Silvia Leite

3 - Recurrent weigh gain treatment

Use of OMM



Silvia Leite

Sarcopenic Obesity
Excessive muscle mass loss

- A vicious cycle of weight gain and muscle loss
- Reduced mobility
- Increased dependency and disability.
- Risk of weight recurrence
- Risk of osteoporosis
- Frailty, comorbidities, and mortality, especially in the older population

Batsis & Villareal, 2024; Domini et al 2022

Silvia Leite

PROACTIVE VS REACTIVE

- PRE : 20%
- POS: 23 %
- OMM: 40-15%

PROACTIVE - PREVENT SARCOPENIC OBESITY

Batsis & Villareal, 2024; Domini et al 2022

Silvia Leite

PROACTIVE

1.> 60g of protein + physical training for strength.
2. High quality protein (+ 3g leucine/d)
3. RYGB Peptides (instead of whole protein)
4. OMM (at least 60g/day, > 0.8g/Kg BW/d) and strength training to avoid sarcopenia

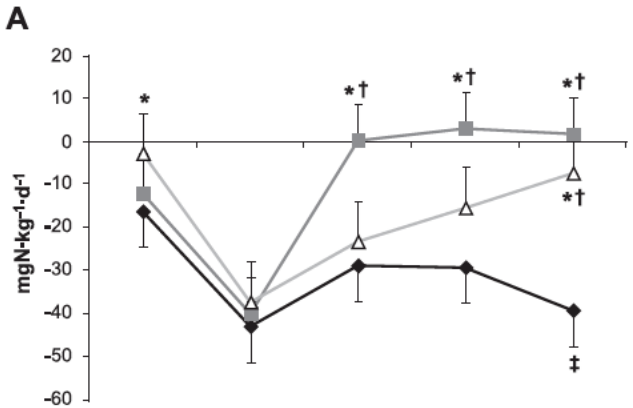
IFSO Consensus 2023, Batsis & Villareal, 2024; Domini et al 2022

Proactive vs Reactive approach role of nutritional support in minimizing lean muscle loss

Silvia Leite

Effects of high-protein diets on fat-free mass and muscle protein synthesis following weight loss: a randomized controlled trial

Stefan M. Pasiakos,*,[1] Jay J. Cao,[†] Lee M. Margolis,* Edward R. Sauter,[‡] Leah D. Whigham,[†] James P. McClung,* Jennifer C. Rood,[§] John W. Carbone,[‖] Gerald F. Combs, Jr.,[†] and Andrew J. Young*



Proactive vs Reactive approach role of nutritional support in minimizing lean muscle loss

Silvia Leite

Clinical Nutrition 43 (2024) 708–718

Contents lists available at ScienceDirect

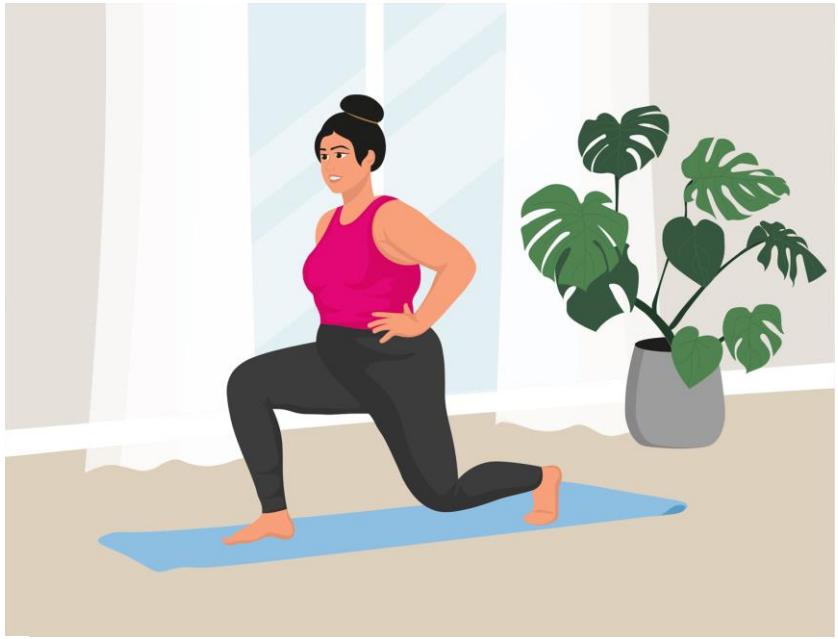
Clinical Nutrition

journal homepage: http://www.elsevier.com/locate/clnu

Meta-analyses

The effects of protein intake higher than the recommended value on body composition changes after bariatric surgery: A meta-analysis of randomized controlled trials

Mahdieh Golzarand [a, *], Karamollah Toolabi [b, **], Parvin Mirmiran [a, c]



Effects of dietary protein intake on body composition changes after weight loss in older adults: a systematic review and meta-analysis

Jung Eun Kim, Lauren E. O'Connor, Laura P. Sands, Mary B. Slebodnik, and Wayne W. Campbell

Silvia Leite

How to prevent excessive muscle mass loss

Adequate protein intake (at least 60g/day, > 0.8g/Kg BW)

Physical training for strength.

Hypoabsorptive procedures at least 100g/day

IFSO Consensus 2023, Meckanick 2019; 2 DRI's 2005

Proactive vs Reactive approach role of nutritional support in minimizing lean muscle loss

Silvia Leite

High quality protein (>3g leucine) Peptides

Protein Supplementation with Short Peptides Prevents Early Muscle Mass Loss after Roux-en-Y-Gastric Bypass

by Marta Comas Martínez [1,2], Enzamaria Fidilio Meli [1], Fiorella Palmas Candia [1], Efrain Cordero [1], Irene Hernández [1], Ramon Vilallonga [3,*], Rosa Burgos [1], Anna Vila [2], Rafael Simó [1,4] and Andreea Ciudin [1,4,*]

Review

Essential amino acid ingestion as an efficient nutritional strategy for the preservation of muscle mass following gastric bypass surgery

Christos S. Katsanos Ph.D. [a,b,*], James A. Madura II M.D. [b], Lori R. Roust M.D. [b]

Leucine Regulates Translation Initiation of Protein Synthesis in Skeletal Muscle after Exercise[1,2]

Layne E. Norton and Donald K. Layman[3]

Division of Nutritional Sciences, Department of Food Science and Human Nutrition, University of Illinois at Urbana-Champaign, Urbana, IL 61801

Proactive vs Reactive approach role of nutritional support in minimizing lean muscle loss

Silvia Leite

Review

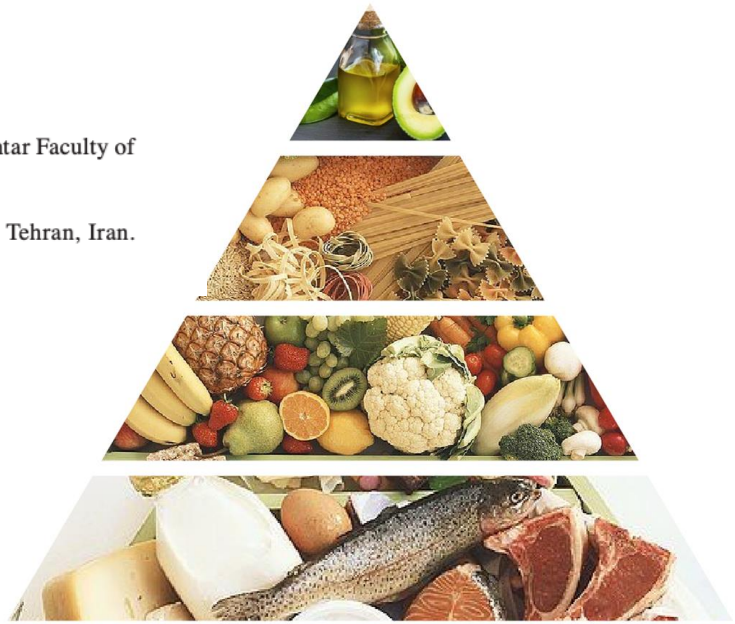
J Nutr Health Aging.2023;27(10):842-852
Published online September 25, 2023, https://doi.org/10.1007/s12603-023-1986-x

The Implication of Nutrition on the Prevention and Improvement of Age-Related Sarcopenic Obesity: A Systematic Review

B. Abiri[1], F. Hosseinpanah[1], Z. Seifi[1], S. Amini[2], M. Valizadeh[1]

1. Obesity Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran; 2. Department of Nutrition, Shoushtar Faculty of Medical Sciences, Shoushtar, Iran.

Corresponding Author: Majid Valizadeh, MD, Obesity Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail address: valizadeh@sbmu.ac.ir

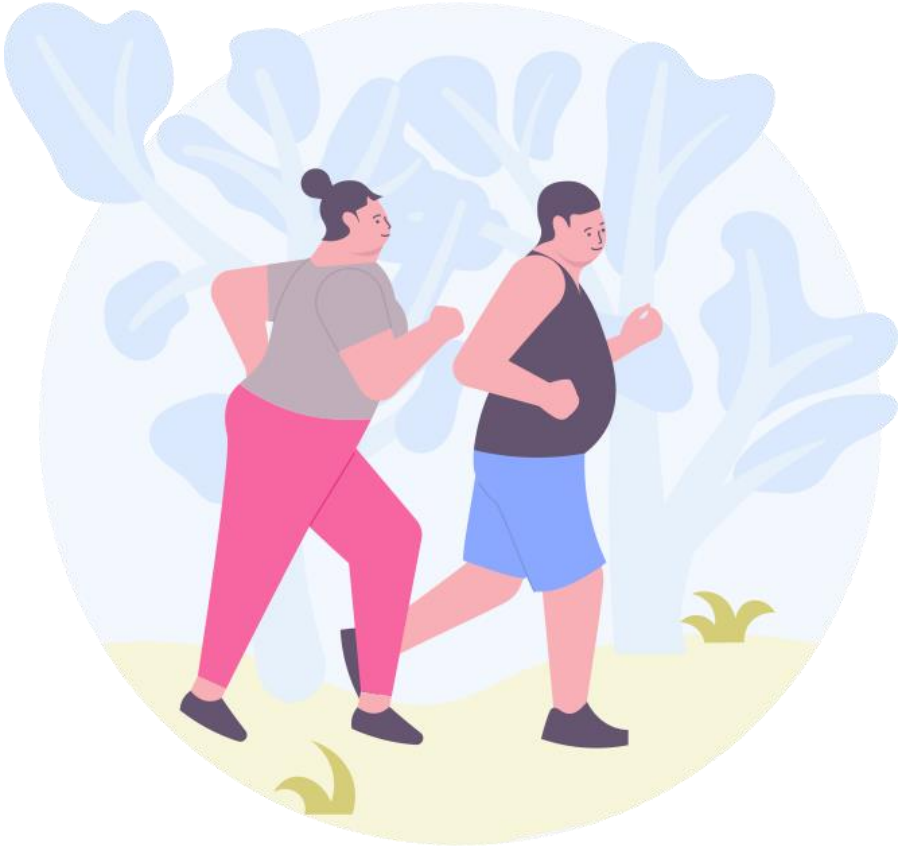


Silvia Leite

Conclusion

Proactive > Reactive

- Average muscle mass loss among patients submitted to MBS: 20-23%
- First year: highest percentage of WL/muscle loss
- Cornerstones: protein intake and PE
- Protein quality (leucine/peptides RYGB)
- Further studies are needed



THANK YOU

silvialeitefaria@gmail.com