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Sarcopenic Obesity: etiology and lifestyle therapy

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Conflict of interest disclosure

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INTRODUCTION

Obesity: Increase in fat deposition.



Sarcopenic Obesity (SO)

Sarcopenia: Reduction in lean mass and muscle strength.

Khadra D, Itani L, Chebaro Y, Obeid M, Jaber M, Ghanem R, Ayton A, Kreidieh D, E Masri D, Kimura A, Tannir H, El Ghoch M. Association Between Sarcopenic Obesity and Metabolic Syndrome in Adults: A Systematic Review and Meta-Analysis. Curr Cardiol Rev. 2020;16(2):153-162. doi: 10.2174/1573403X16666200214104122. PMID: 32056530; PMCID: PMC7460704.

Sarcopenic obesity by body composition phenotype.

		Muscle mass	
		Low	High
Fat mass	Low	Sarcopenia	Healthy
	High	Sarcopenic obesity	Obesity

Lee DC, Shook RP, Drenowatz C, Blair SN. Physical activity and sarcopenic obesity: definition, assessment, prevalence and mechanism. *Future Sci OA*. 2016;2(3):FSO127. Published 2016 Jul 14. doi:10.4155/fsoa-2016-0028

Age-related losses in skeletal muscle mass



Amount of body **fat** increases after **age** 30



Cruz-Jentoft AJ, Baeyens JP, Bauer JM et al. Sarcopenia: European consensus on definition and diagnosis. Report of the European Working Group on Sarcopenia in Older People. Age Ageing 2010; 39:412-23.

The vicious cycle of unhealthy lifestyle



Wang M, Tan Y, Shi Y, Wang X, Liao Z, Wei P. Diabetes and Sarcopenic Obesity: Pathogenesis, Diagnosis, and Treatments. *Front Endocrinol (Lausanne)*. 2020;11:568. Published 2020 Aug 25. doi:10.3389/fendo.2020.00568



Lombardo M, Boaria A, Aulisa G, Padua E, Annino G, Pratesi A, Caprio M, Iellamo F, Bellia A. Sarcopenic obesity: etiology and lifestyle therapy. Eur Rev Med Pharmacol Sci. 2019 Aug;23(16):7152-7162. doi: 10.26355/eurrev_201908_18761. PMID: 31486518.



Roh E, Choi KM. Health Consequences of Sarcopenic Obesity: A Narrative Review. Front Endocrinol (Lausanne). 2020 May 21;11:332. doi: 10.3389/fendo.2020.00332. PMID: 32508753; PMCID: PMC7253580.

DIAGNOSIS



Godziuk, Kristine et al. Clinical screening and identification of sarcopenic obesity in adults with advanced knee osteoarthritis. ESPEN Clinical Nutrition . 2020 DOI:<u>https://doi.org/10.1016/j.clnesp.2020.08.005</u>.

Therapy

EXERCISE

- Resistance training
- Sustained resistance training

HYPOCALORIC DIET

 Normal-to-high protein intake (0.8 -1.2 g/kg/day)



Petroni ML, Caletti MT, Dalle Grave R, Bazzocchi A, Aparisi Gómez MP, Marchesini G. Prevention and Treatment of Sarcopenic Obesity in Women. *Nutrients*. 2019;11(6):1302. Published 2019 Jun 8. doi:10.3390/nu11061302

Nutrition

Older people should take an average daily protein intake of 1-1.2 g/kg each day.

At least 30 grams of protein per meal to promote protein anabolism.

Protein consumption should be 50% from food of plant origin.



Paddon-Jones D, Rasmussen BB. Dietary protein recommendations and the prevention of sarcopenia. Curr Opin Clin Nutri Metab 2009; 12: 86-90.

Supplementation

To date, pharmacological and hormonal therapy have NOT yet been considered fully effective in the treatment of sarcopenia.



Kwak JY, Kwon KS. Pharmacological Interventions for Treatment of Sarcopenia: Current Status of Drug Development for Sarcopenia. *Ann Geriatr Med Res.* 2019;23(3):98-104. doi:10.4235/agmr.19.0028

CONCLUSIONS

Sarcopenic Obesity can be prevented and treated by adopting a healthy lifestyle.

The ideal approach is based on the targeted intervention to both slow down the course of sarcopenia and promotes a decrease in adipose mass.

In the case of malnutrition, a supplementation with BCAA-based supplements, leucine, vitamin D, and β -HMB might help to improve and reduce the effects of sarcopenia.

General public health prevention strategies, while developing specific food education programs, interventions, and regular exercise practice should be improved



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if you have any questions please do not hesitate to contact me at <u>mauro.lombardo@uniroma5.it</u>

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