

# **SARCOPENIC OBESITY AND ASSOCIATED METABOLIC COMPLICATIONS: A NARRATIVE REVIEW FOCUSING ON METABOLIC RISKS AND PREVENTION**

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## **RESUMO**

**Introduction:** Obesity is defined by the World Health Organization (WHO) as an abnormal or excessive accumulation of fat, with a body mass index (BMI)  $\geq 30.0$  kg/m<sup>2</sup>. Sarcopenia is defined as the presence of progressive and generalized loss of muscle mass and strength. However, despite being distinct diseases, studies show that they function as a vicious cycle and share common pathophysiological characteristics (such as metabolic complications), making the search for preventive measures necessary.

**Objective:** To investigate the association between sarcopenia and obesity, with emphasis on metabolic alterations and preventive alternatives. **Material and Method:** To carry out this analysis, a narrative review was conducted in PubMed, considering the period 2020-2025/2026. The following descriptors were used: "Sarcopenic Obesity", "Metabolic Syndrome" and "Prevention" combined with the Boolean operators AND and OR and field restriction. Studies involving adult humans and available in English were considered, prioritizing systematic reviews, narratives, and meta-analyses. Articles published outside the defined period, duplicates, or those discussing sarcopenic obesity in other aspects unrelated to metabolic and preventive implications were excluded. The qualitative analysis, of an exploratory- descriptive nature, was organized into three thematic axes: conceptual aspects of sarcopenic obesity, associated metabolic complications, and preventive and interventional strategies. **Results:** From the total of 12 articles, a persistent correlation between obesity and sarcopenia was identified, defining it as sarcopenic obesity, in which there is muscle weakness and increased visceral adiposity simultaneously. This relationship occurs because adipose inflammation induces the differentiation of muscle progenitor cells into a phenotype comparable to that of an adipose cell, and thus the muscle becomes sarcopenic. Furthermore, studies have shown that sarcopenia makes muscle fibers hypotrophic, which opens the way for adipose tissue infiltration, leading to a vicious cycle between both pathologies. It has been noted that individuals with this condition have a greater predisposition to developing metabolic complications when compared to those with obesity and sarcopenia alone, particularly with a higher prevalence of dyslipidemia, insulin resistance, and chronic inflammation. Moreover, the reduction in muscle mass and the increase in adipose tissue between muscle bundles, potentiated by aging, favor the development of type 2 diabetes mellitus due to the advancement of insulin resistance, as well as oxidative stress and tissue lipotoxicity, due to impaired lipid oxidation caused by mitochondrial dysfunction. It has been observed that the combination of a diet rich in complete proteins, micronutrients, and antioxidants with aerobic and resistance exercise is a primary strategy for preventing sarcopenic obesity, mitigating the interconnected metabolic syndromes. **Conclusion:** It is concluded that sarcopenic obesity, correlated with metabolic alterations, emerges as a growing public health problem that requires the formulation of more comprehensive preventive and interventional public policies in order to offer a better quality of life to adults.

**Palavras-chave:** Sarcopenic Obesity; Metabolic Syndrome; Insulin Resistance; Prevention; Exercise.