

不同运动方式对肌肉减少性肥胖老年人体成分和身体功能的影响

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摘要: 研究背景: 国家卫生健康委等部门联合印发的《“体重管理年”活动实施方案》中提出, 从 2024 年起, 通过三年的时间努力构建规范的体重管理支持性环境, 提升大众体重管理意识, 普及健康生活方式, 助力全民拥有强健的体魄。据统计, 截止至 2023 年, 我国 65 岁以上人口已达 21.1%。随人口老龄化速度的不断加快, 老年人的健康问题也备受社会关注。有研究指出, 随着年龄的增长, 体重会逐渐上升, 并在 50-60 岁时达到峰值, 衰老和体力活动减少带来的肌肉质量下降和脂肪堆积, 最终会导致肌肉减少性肥胖。肌肉减少性肥胖与衰老、不良生活方式(如久坐、缺乏运动等)、炎症及慢性疾病等原因有关, 在老年人群中较为常见, 会导致跌倒、骨折、代谢性疾病, 增加老年人的死亡率。对于肌肉减少性肥胖人群而言, 减少体脂量、增加肌肉质量、改善力量及身体功能是其提升生活质量的核心目标。运动作为一种无创的、经济的, 非药物治疗方式, 可以改善体成分(如体重、身体质量指数、体脂率、去脂体重、肌肉质量等)以及身体功能(如肌肉力量、30s 坐站测试、步行速度等), 因此通过运动干预治疗并改善肌肉减少性肥胖并改善相关症状, 对老年人来说是可行且至关重要的。**研究目的:** 各运动方式对肌肉减少性肥胖的影响以及不同的干预侧重点还尚无定论, 因此本研究比较不同运动方式对老年肌肉减少症患者体成分和身体功能的影响, 填补该领域的研究空白, 为后续研究提供思路, 为延缓老年肌肉减少症进展提供科学依据。**研究方法:** 系统检索和查阅相关文献, 检索时限为 2000 年 1 月至 2025 年 5 月; 检索数据库为中国知网(CNKI)、Web of Science; 英文检索词为: “sarcopenic obesity”, “sarcopenic adiposity”, “obesity with muscle depletion”, “sport”, “exercise”, “resistant training”, “resistant exercise”, “aerobic training”, “aerobic exercise”, “mind-body exercise”, “Tai Chi”, “Baduanjin”, “Yijinjing”, “combination training”, “exercise intervention”, “exercise prescription”; 中文检索词为“肌少性肥胖”, “少肌性肥胖”, “肥胖性肌少症”, “有氧运动”, “抗阻运动”, “身心运动”, “太极拳”, “八段锦”, “易筋经”, “联合运动”。共检索到文章 1019 篇, 其中英文文章 931 篇, 中文文章 88 篇。纳入标准: ①研究对象为 ≥ 60 岁; ②随机对照实验中选取的研究对象需满足肌肉减少性肥胖的

诊断标准,即满足中国肥胖问题工作组、亚洲肌肉减少症工作组(Asian Working Group for Sarcopenia, AWGS)、欧洲老年肌肉减少症工作组(EWGSOP)等提出的肌肉减少性肥胖的诊断标准;③干预方式为有氧运动、抗阻运动、身心运动、联合运动;④文章结局指标为体成分和身体功能。排除标准:①多次发表的文献;②与本研究主题不相关的文献;③研究对象本身具有如糖尿病、高血压等慢性疾病的文献等。文章质量评价:按照严格的纳入和排除标准对文章进行筛选,最终共纳入 62 篇文章进行综述。**研究结果:**肌肉减少性肥胖症导致的肌肉减少与脂肪堆积带来的共同影响会降低老年人的生活质量,增加老年人跌倒与死亡的风险。有氧运动对肌肉减少性肥胖人群的研究较少,在改善去脂体重及 BMI,降低体脂率方面更有优势。抗阻运动更侧重于提升肌肉减少性肥胖老年人的肌肉力量和肌肉耐力以及身体功能。经过文献筛查发现并未有研究探查中国传统功法如太极拳、八段锦、易筋经对肌肉减少性肥胖人群的影响,但是已有较多研究证明中国传统功法可以有效改善肌少症和超重/肥胖人群的肌肉力量、体成分和身体功能。联合运动在提升肌肉减少性肥胖老年人的肌肉力量、肌肉耐力、步行速度方面更有优势。**研究结论:**不同运动方式对提升肌肉减少性肥胖老年人的体成分和身体功能的侧重点有所不同。有氧运动可通过增加能量代谢、促进脂肪棕色化等方式控制体重,改善去脂体重、BMI 和体脂率,在改善体重及 BMI 方面优于单纯抗阻训练;抗阻运动通过促进肌肉蛋白合成、活化卫星细胞等方式增加肌肉组织的生成,从而提升肌肉力量、耐力并改善身体功能;联合运动综合上述两种运动方式的优势,通过改善体成分和肌肉功能从而增强身体功能表现。肥胖导致的体内炎症和脂肪堆积可能干扰训练效果,建议该人群选择长周期、高训练量的运动方式进行干预以改善身体成分和身体功能。虽暂无身心运动针对肌肉减少性肥胖人群的研究,但已有许多研究证实了中国传统功法对肌少症和超重/肥胖人群改善肌肉力量、体成分和身体功能的有效性,未来可作为研究重点。

关键词: 有氧运动; 抗阻运动; 身心运动; 肌肉力量; 肌少症

The influence of different exercises on body composition and physical function among older adults with sarcopenic obesity

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Abstract: Background: In 2023, the population aged over 65 in China reached 21.1%. The health issues of the elderly have also drawn attention as the aging process at an accelerated pace. Fat accumulation and lower muscle quality caused by age and unhealthy lifestyle will lead to sarcopenic obesity, which is related to falls, fractures, metabolic diseases, and increases the mortality rate among the elderly. Exercise is a non-invasive, economical, and non-pharmaceutical way to improve body composition and physical function. This study aims to compare the influence of different exercises on body composition and physical function among older adults with sarcopenic obesity. **Methods:** Selecting Embase, PubMed, Cochrane Library, and Web of Science published up to August 19, 2025, utilizing a comprehensive list of keywords related to sarcopenic obesity and exercise outcomes('sarcopenic obesity', 'sarcopenic adiposity', 'obesity with muscle depletion', 'sport', 'exercise', 'resistant training', 'resistant exercise', 'aerobic exercise', 'mind-body exercise', 'Tai Chi', 'Baduanjin', 'Yijinjing', 'combination training', 'exercise intervention', 'exercise prescription'). Inclusion criteria: (1) Subjects were aged over 60; (2) Subjects met the sarcopenic obesity diagnostic criteria; (3) Intervention: resistant exercise, aerobic training, mind-body exercise, and combination exercise. Exclusion criteria: (1) Re-publishing literature;(2) Crossover study is excluded;(3) Participants with serious diseases or irreversible muscular diseases that affect the experimental results. **Results:** Sixty-two studies were included. The combined impact of fat accumulation and lower muscle quality caused by sarcopenic obesity decreases the quality of life of the elderly and increases the risk of falls and death. Aerobic exercise is effective at reducing fat-free mass, BMI, and body fat rate. Resistant exercise and combination exercise are focused on improving strength, endurance. No research has explored the influence of traditional Chinese exercises, such as Taijiquan, Baduanjin, Yijinjing, on people with sarcopenic obesity. Some studies have shown that traditional Chinese exercise can enhance strength, body composition, and physical function in people with sarcopenia and those who are overweight or obese. **Conclusion:** Different exercises had different effects on elderly people with sarcopenic obesity. Aerobic exercise decreases body mass by increasing energy metabolism, reducing free-fat body mass, BMI, and body fat rate, and the effect on BMI and body mass is better than resistance exercise. Resistant exercise increases muscle tissue generation by promoting muscle protein synthesis and activating satellite cells, then enhancing strength, endurance, and physical function. The combination exercise integrates the advantages of the above two exercises, increasing physical function by enhancing body composition and muscle function. Inflammation and fat accumulation caused by obesity will interfere

with the exercise effect. It is recommended that these people should choose long-period and high-intensity exercise to improve body composition and physical function. Currently, no study explores the effect of mind-body exercise on people with sarcopenic obesity. Many studies have confirmed the effectiveness of traditional Chinese exercise on strength, body composition, and physical function among people with sarcopenia or obesity, thereby future studies can focus on this field.

Keywords: Aerobic exercise; Resistant exercise; Mind-body exercise; Strength; Sarcopenia

