

Role of Physical Activity and Fitness in the Characterization and Prognosis of the Metabolically Healthy Obesity Phenotype: A Systematic Review and Meta-analysis

Obesity is a chronic relapsing disease associated with physical, psychological, and social problems, including metabolic alterations. Obesity increases the risk of developing hypertension, diabetes, dyslipidaemia, conditions that affect the metabolic profile. To distinguish between individuals living with these conditions, the terms 'Metabolically Healthy Obesity' (MHO) and 'Metabolically Unhealthy Obesity' (MUO) were coined.

The evidence supports that healthy lifestyle behaviours such as regular exercise, limited sedentary behaviours, high levels of cardiorespiratory fitness, and muscle strength offer substantial benefits. Nevertheless, studies to date have not assessed whether MHO or MUO phenotypes can be explained by differences in lifestyle behaviours.

An online search was conducted (PubMed and Web of Science) for studies published until March 21, 2018. 70 studies were incorporated into the analysis, with 80% of these being classified as high quality. It was concluded that MHO individuals engage in more physical activity, are less sedentary, and have higher cardiorespiratory fitness (CRF) which could be contributing to their better metabolic profile.

MHO individuals have a 24-34% higher risk of death compared to metabolically healthy, normal weight (MHNW) individuals. This estimate was lower than previously reported studies but warrants further investigation. It is predicted that differences in respiratory fitness could explain the difference in mortality.

Overall, lifestyle interventions that incentivise physical activity should be targeted not just for weight loss, but to improve cardiorespiratory fitness.

Definitions:

Metabolically Healthy Obesity (MHO) – a person living with obesity who has a 'healthy metabolic profile' (no hypertension, hyperglycaemia/diabetes/ dyslipidaemia)

Metabolically Unhealthy Obesity (MUO) – a person living with obesity who has an 'unhealthy metabolic profile' (existence of comorbidities such as hypertension, hyperglycaemia, diabetes, dyslipidaemia)

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