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The effects of aerobic, resistance or combined training on Metabolic Syndrome clinical biomarkers: a short review

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ABSTRACT

Background: Metabolic Syndrome (MetS) is a common metabolic disorder characterized by a cluster of factors including dysglycaemia, elevated blood pressure, elevated triglyceride levels, low high-density lipoprotein cholesterol levels, and central obesity. Sedentary lifestyle and low physical activity levels increase the interrelated risk for cardiovascular disease and metabolic disorders. The aim of this short review was to analyse the effects of aerobic, resistance and combined training on MetS clinical biomarkers.

Methods: Following the Preferred Reporting Item for Systematic Reviews and Meta-analyses (PRISMA), a systematic search of relevant English-language articles was performed from earliest record to March 2020. The literature search was performed by three online databases specifically Web of Science (WoS), PubMed and SCOPUS.

Results: The literature search returned 14,912 articles (WoS=2,359; PubMed=1,392 and SCOPUS=11,161); 21 full-text articles were reviewed after screening procedures. From the reviewed studies, aerobic exercise was reported in nine studies and the resistance exercise was reported in five studies. The combined training (or multicomponent exercise) was reported in seven studies.

Discussion: Multiple exercise modes decrease MetS clinical biomarkers, however, aerobic training seems to be the most efficient. Moreover, resistance exercise appears to have a positive effect on MetS prevention when associated with aerobic exercise.

Conclusion: Aerobic and resistance exercises can contribute significantly to metabolic syndrome prevention and reduce the associated risk of cardiovascular disease and metabolic disorders. Combining exercise modes (i.e. combined or multi-component training) could be a valid strategy to control the metabolic syndrome clinical biomarkers.

Keywords: metabolic syndrome; cardiovascular disease; physical activity; exercise.

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