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Effects of aerobic exercise on vascular wall thickness—a meta-analysis of pre-clinical trials on rat model

Abstract:

Exercise instigates adaptations in structural as well as functional organization of the body at tissue and organ levels. However, the effect of exercise on vascular wall morphology is still under investigation. The objective of the review is to provide a meta-analysis of data from the previously published research to provide compiled analysis to determine the effect of exercise on the thickness of large-sized vessel walls. The meta-analysis was executed at the Ziauddin College of Rehabilitation Sciences with an extensive literature search using the databases and search engines such as PubMed, CINAHL, Web of Science, Scopus and Google Scholar between September 2022 and January 2023. Studies were appraised according to an estimate of mean difference and pooled effect size was calculated using a random effect model. The risk of bias was also calculated using SYRCLÉ'S Risk of Bias Tool and CAMARADES. Over all five eligible pre-clinical trials using rat models with pertinent data to determine the effect of exercise on vessel wall thickness were included in the meta-analysis. The results of meta-analysis showed that aerobic exercise significantly reduces the vessel wall thickness (SMD -0.854 5%; CI: -1.365 to -0.344; $p < 0.001$). Moreover, no significant publication bias was found through funnel plot and statistical test (Eggers $p = 0.276$; Begg's $p = 0.624$). However, the extensive review of the literature currently available on the topic has shown mixed findings that are consistent with the study and vice versa. Therefore, it indicates the need for sub-group analysis with different types of exercises for more peculiar clinical approaches

Biography

Fatima Hamza completed MPhil in Physical therapy from Ziauddin University in 2024 and currently serving as senior lecturer in the same university. She is author of 3 papers, and serving as the reviewer in couple of academic journals.