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PD-9

Effect Of Exercise on Endothelial Function among Non-Communicable Diseases Adults with Overweight or Obese: A Systematic Review and Meta Analysis

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Introduction:

High-Intensity Interval Training (HIIT) and Moderate-Intensity Continuous Training (MICT) both provide notable benefits for endothelial function, metabolic health, and cardiovascular fitness in adults with non-communicable diseases who are overweight or obese. HIIT, due to its efficacy in enhancing VO₂ max and vascular function, may offer significant benefits in mitigating cardiovascular risk. This study underscores the need of structured exercise training in the management of vascular health, considering the growing prevalence of non-communicable diseases (NCDs).

Methods:

A literature search was conducted using the internet database PubMed to compare HIIT and MICT studies focused on endothelial function, specifically assessed by FMD, in adults with NCDs with overweight or obese.

Results:

HIIT led to a notable enhancement in FMD (0.48%; p=0.007) with a 41.14% increase, in contrast to 8.33% in MICT. VO₂ max showed a greater enhancement in HIIT (1.00%; p=0.003), with increases of 17.68 ml/kg/min (HIIT) compared to 13.17 ml/kg/min (MICT). HDL levels showed a modest increase in HIIT (5.61 mmol/L) compared to MICT (4.63 mmol/L) (p=0.022). Glucose results favor in HIIT than MICT. In contrast, LDL cholesterol exhibited a marginally greater decrease in MICT (-0.06; p=0.12). However, results suggest no clear advantages on neither HIIT nor MICT in reducing triglycerides. The results indicate that high-intensity interval training is more effective for improving vascular health and aerobic capacity, whereas moderate-intensity continuous training may be more beneficial for reducing LDL cholesterol levels.

Conclusion:

HIIT demonstrates greater effectiveness for improving FMD and VO₂ max, HDL, and glucose whereas MICT is more effective for reducing LDL. A 12-week HIIT program (4×4 min at 85–95% HR max, 3 times/week) has the potential to greatly improve vascular health and overall fitness levels.