Sports Medicine and Biomechanics

Effects of different types of exercise on inflammatory marl in cancer patients: A systematic review and Bayesian netw meta-analysis

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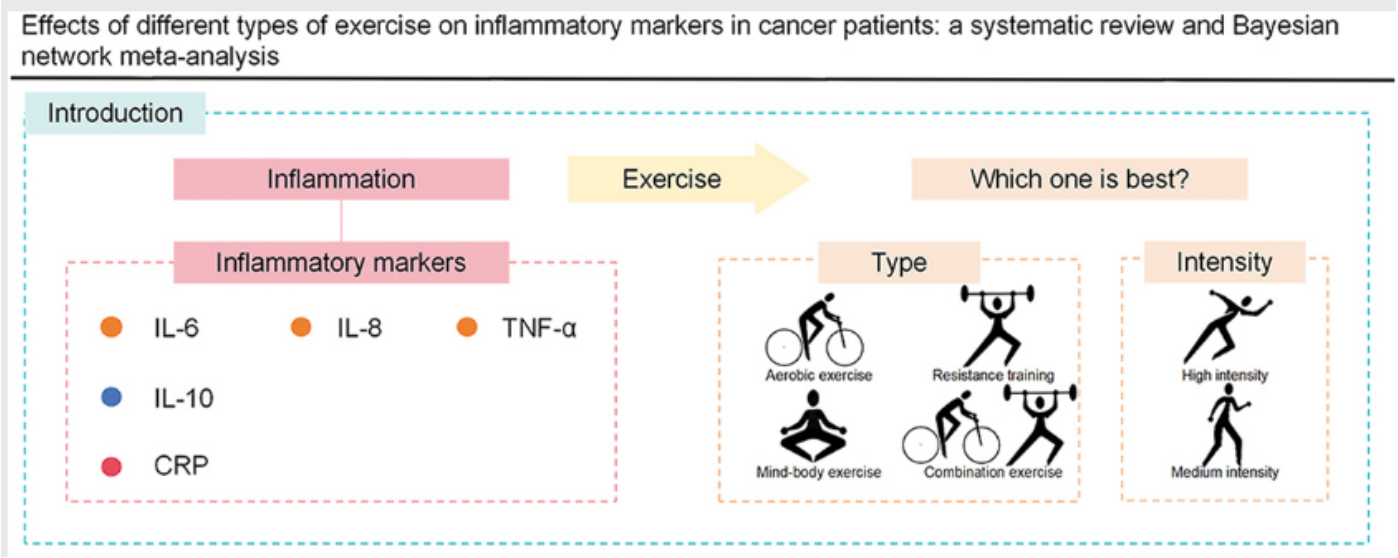
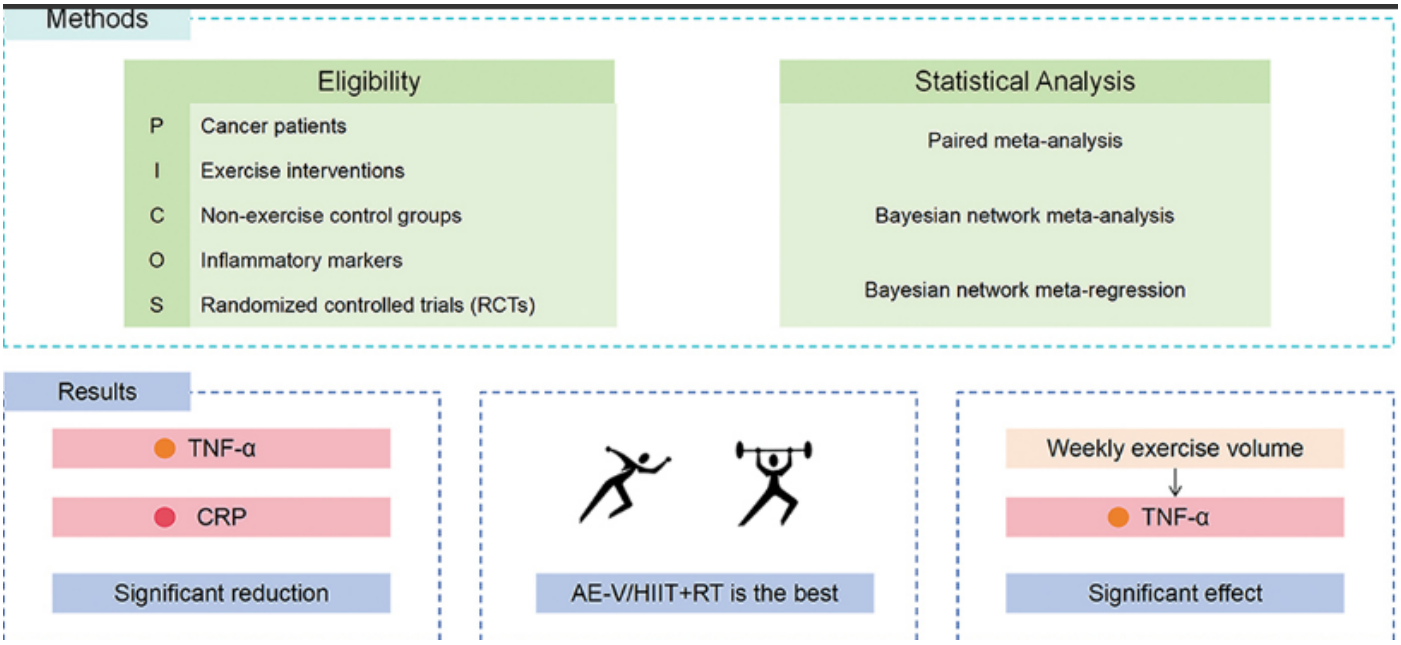
ABSTRACT

This systematic review and network meta-analysis (NMA) was to investigate the effects of different exercise modalities on inflammatory markers in cancer patients. Using the standardized mean difference (SMD) as the effect size, a Bayesian random-effects network meta-analysis and regression analysis were conducted. Searches were performed across five databases for randomized controlled trials (RCTs) involving cancer patients, with exercise as the intervention, reported outcomes related to inflammatory markers, and interventions lasting more than four weeks, up to June 2024. A total of 57 RCTs (3106 patients) were included. The Cochrane risk of Bias Tool was utilized to assess the RCTs, and the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) tool was employed to evaluate the quality of evidence. NMA results indicate that regular exercise is effective in reducing inflammation in cancer patients, with combined high-intensity aerobic and resistance exercises proving to be the most beneficial. The type, intensity, and total volume of exercise are critical factors in achieving positive outcomes. It is recommended to design exercise programs for cancer patients that combine aerobic and resistance training, with a gradual increase in intensity to ensure safety.




Methods
Eligibility
P
Cancer patients
I
Exercise interventions
C
Non-exercise control groups
O
Inflammatory markers
S
Randomized controlled trials (RCTs)
Statistical Analysis
Paired meta-analysis
Bayesian network meta-analysis
Bayesian network meta-regression
Results
TNF-α
CRP
Significant reduction
AE-V/HIIT+RT is the best
Weekly exercise volume
TNF-α
Significant effect