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The effect of eight weeks' aerobic exercise combined with green tea consumption on weight and BMI of overweight women

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Extended Abstract

Introduction

The public health sector is increasingly concerned with obesity and overweight, particularly among middle-aged women. In addition to adversely affecting quality of life, these conditions also elevate the risk of metabolic disorders, cardiovascular diseases, and complications associated with hormonal and inflammatory responses. This reality highlights the urgent need for interventions that are safe, effective, and accessible. As practical methods for weight management and obesity-related risk reduction, non-pharmacological approaches, including physical activity and natural supplements, have been suggested. Green tea, a beverage with a significant history in traditional medicine, contains antioxidant compounds, particularly catechins. These compounds enhance fat metabolism, reduce inflammation, strengthen the immune system, and support weight management. Historically, green tea has been consumed for thousands of years. Especially when coupled with physical activity, the consistent consumption of green tea can be a safe and natural approach to enhancing overall health. This investigation seeks to evaluate the effects of an eight-week aerobic exercise regimen combined with green tea supplementation on overweight women's body weight and body mass index (BMI).

Method

This study aimed to examine the impact of eight weeks of aerobic exercise and green tea supplementation on the body weight and body mass index (BMI) of overweight women. During this semi-experimental study, 48 overweight women (age: 58.2±4.54 y; height: 1.59±3.77 m; weight: 73.2±5.77 kg; BMI: 28.9±1.63 kg.m²) were randomly assigned to one of four groups: aerobic training with green tea supplement, aerobic training with placebo, green tea supplement without training, and a control group. The training program was composed of moderate-to-high intensity aerobic training (55–75% of heart rate reserve), which was conducted three times per week for eight weeks. The supplement groups were administered 500 mg of green tea capsules daily (Kam Green, Essential Plant Agriculture and Pharmaceutical Company, Gorgan, Iran), which contain active compounds such as EGCG. BMI and body weight were assessed and analyzed during the pre-and post-intervention phases. Data were analyzed using ANCOVA and Bonferroni post hoc test.

Results

Based on the statistical results, the training plus supplement group exhibited a significant decrease in body weight ($p < 0.05$). This group experienced the most substantial weight loss. The supplement-only group also encountered a substantial decrease in body weight in comparison to the control group ($p < 0.05$). Despite a slight decrease in weight in the training-only group, the change was not statistically significant ($p > 0.05$). Even though changes were observed in all

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intervention groups, particularly in the training plus supplement group, none reached statistical significance ($p>0.05$) concerning BMI.

Discussion and Conclusion

These findings are based on previous research documenting the synergistic effects of aerobic exercise and herbal compounds such as green tea on weight loss. The bioactive compounds in green tea, particularly EGCG, may aid in weight control by regulating hormones such as leptin and ghrelin, increasing fat oxidation, inhibiting fat-absorbing digestive enzymes, and enhancing thermogenesis. Furthermore, sustained weight regulation is facilitated by the regular aerobic exercise, which enhances mitochondrial function, improves insulin sensitivity, and increases energy expenditure. This research determined that the combination of these two strategies yields more effective outcomes than either approach alone. The combination of aerobic exercise and green tea supplementation is a cost-effective, practicable, and safe approach to weight loss for overweight women. This method has the potential to be practical for the prevention of obesity, the promotion of healthy behaviors, and the enhancement of public health indicators, particularly among middle-aged women. Given the constraints of intervention duration and the exclusive emphasis on weight and BMI, future research should incorporate extended interventions and assess body composition, as well as additional metabolic and hormonal markers, to obtain a more comprehensive understanding of the effects of this combined intervention.

The results of this study indicate that the combination of aerobic exercise and green tea supplementation may be a viable approach to weight loss in overweight women. This method may provide a safe and practicable health promotion and weight management solution.

Keywords: Aerobic exercise, Body mass index, Body weight, Green tea, Overweight women.

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