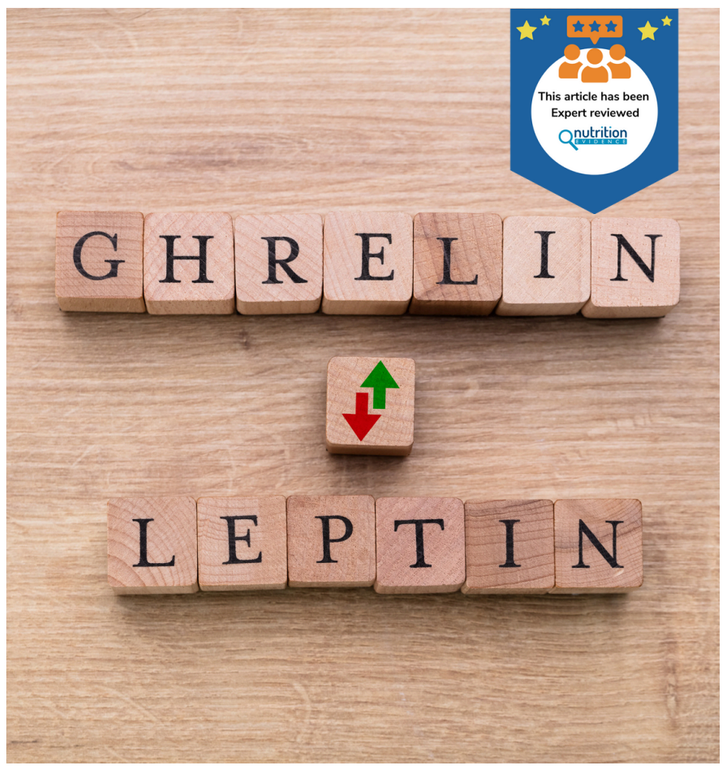
# Metabolic Syndrome & Exercise




## REDUCTION OF LEPTIN LEVELS DURING ACUTE EXERCISE IS DEPENDENT ON FASTING BUT NOT CALORIC RESTRICTION DURING CHRONIC EXERCISE: A SYSTEMATIC REVIEW & META-ANALYSIS.

Fontana, A ; Vieira, JG ; Vianna, JM ; Bichowska, M ; Krzysztofik, M ; Wilk, M ; Reis, VM
PloS one. 2023;18(11):e0288730 With Expert Review from Chloe Steele

**TAKE HOME MESSAGE: For individuals who are obese, undertaking a minimum of 180 minutes of moderate exercise per week may help improve leptin levels.**

Leptin is a peptide hormone produced in the adipose tissue that is responsible for the regulation of appetite, neuroendocrine function, and energy homeostasis. High levels of leptin have been associated with poorer health outcomes such as obesity. People with obesity may struggle to decrease their leptin levels due to the occurrence of a state of leptin resistance. Exercise may help to reduce leptin levels and this meta-analysis aimed to determine how the dose-response of exercise influences plasma leptin levels during training and/or after training. This was a systematic review and meta-analysis of studies from 2005 to May 2023. 25 studies met the inclusion criteria and found that exercise, and caloric restriction plus exercise, had an acute effect on reducing plasma leptin levels. Sub-analysis showed that the intensity of exercise had no differing effects on leptin levels in the short-term. It also showed that the consumption of a pre workout meal had overall less effect on acute leptin levels than those who did not eat before had lower acute leptin levels.

## EFFICACY OF POSTPRANDIAL EXERCISE IN MITIGATING GLYCEMIC RESPONSES IN OVERWEIGHT INDIVIDUALS AND INDIVIDUALS WITH OBESITY AND TYPE 2 DIABETES-A SYSTEMATIC REVIEW AND META-ANALYSIS.

Kang, J ; Fardman, BM ; Ratamess, NA ; Faigenbaum, AD ; Bush, JA
Nutrients. 2023;15(20), With Expert Review from Chloe Steele

**TAKE HOME MESSAGE: Individuals living with obesity or who have type 2 diabetes may find it difficult to control their blood sugar levels after a meal. However, exercise after a meal can aid the uptake and use of sugar in the body.**

Impaired glucose control after eating is associated with poor health outcomes and the development of type 2 diabetes mellitus (T2DM). Exercise has been shown to reduce blood glucose levels. As a result, it has been debated whether to recommend exercise after eating for people with T2DM.
This study aimed to determine the effect of postprandial exercise (PPE) on glucose control. This systematic review and meta-analysis found that postprandial exercise was shown to decrease 24 hour mean glucose concentrations compared to control, with a high level of consistency across studies. There were no differences between whether subjects performed postprandial high intensity interval exercise (HIIE) or continuous moderate-intensity exercise (CMIE). PPE was shown to be more effective in controlling postprandial hyperglycaemia than exercising before a meal. Sub-analysis showed that exercise for less than 30 minutes duration had a reduced effect on postprandial glucose levels compared to exercise duration of more than 30 minutes.


## EIGHT WEEKS OF HIGH-INTENSITY INTERVAL VS. SPRINT INTERVAL TRAINING EFFECTS ON OVERWEIGHT AND OBESE ADOLESCENTS CARRIED OUT DURING THE COOL-DOWN PERIOD OF PHYSICAL EDUCATION CLASSES: RANDOMIZED CONTROLLED TRIAL.

González-Gálvez, N ; Soler-Marín, A ; Abelleira-Lamela, T ; et al. Frontiers in public health. 2024;12:1394328

High intensity interval training (HIIT) has been shown to increase cardiovascular fitness, however its effectiveness on body composition and cardiometabolic risk factors remains unclear. Effects may be due to the intensity at which the exercise is performed, duration of the exercise, and the rest interval.
This small randomised control trial (RCT) aimed to determine the effects of both HIIT, and an exercise known as sprint interval training (SIT), which is performed at higher intensities for shorter durations, on body composition and cardiometabolic factors.
Results showed that individuals in the SIT and HIIT groups showed improvements in fat mass and trunk fat mass. In addition only individuals in the HIIT group also showed improved lean mass, systolic BP, diastolic BP and other markers of metabolic health. Authors concluded that HIIT exercises improved more health-related outcomes than SIT exercises, although both did decrease fat mass.

## LIFESTYLE WALKING INTERVENTION FOR PATIENTS WITH HEART FAILURE WITH REDUCED EJECTION FRACTION: THE WATCHFUL TRIAL.

Vetrovsky, T ; Siranec, M ; Frybova, T ; et al. Circulation. 2024;149(3):177-188
With Expert Review from Chloe Steele

**TAKE HOME MESSAGE: Increasing physical activity in the form of walking from a lifestyle perspective did not effect functional outcomes of HFrEF.**

Heart failure with reduced ejection fraction (HFrEF) can be life limiting. Whilst structured cardiac programmes are of benefit, limitations such as accessibility and time constraints affect adherence. Lifestyle physical activity is an alternative approach to increase activity levels integrated into daily life (e.g. walking). This study aimed to determine whether a lifestyle walking intervention could improve functional capacity in individuals with HRrEF. This was a 6-month randomised control trial of 202 adults with stable HFrEF (left ventricular ejection fraction < 40%). Results showed no differences between the two groups in the number of metres walked. However, the intervention group did increase their physical activity by 25%. Authors concluded that although the lifestyle intervention increased participation in daily physical activity, this did not translate into functional benefits.