



Fergus M Guppy<sup>1,2</sup>, Rhys Thatcher<sup>3</sup> & Joanne A Wallace<sup>3</sup>

<sup>1</sup>Diabetes Research Group, School of Pharmacy & Biomolecular Sciences, University of Brighton, UK. <sup>2</sup>Brighton Musculoskeletal Research Center, University of Brighton, UK. <sup>3</sup>Institute of Biological, Environmental & Rural Sciences, Aberystwyth University, UK. Corresponding author: F.Guppy@brighton.ac.uk

## BACKGROUND

While the metabolic adaptations to High-intensity Interval Training (HIIT) have been well described<sup>1,2</sup> there is limited research into the effects of HIIT on body composition.

The majority of studies have only examined changes in percentage fat mass, with no measures of either fat or lean mass. These studies have reported reductions in whole body fat percentage ranging from 0.7-2.57%<sup>3-7</sup>

This study aims to examine the effects of a 6-week HIIT programme, both independent of and combined with creatine supplementation, on a three-compartment model of body composition.

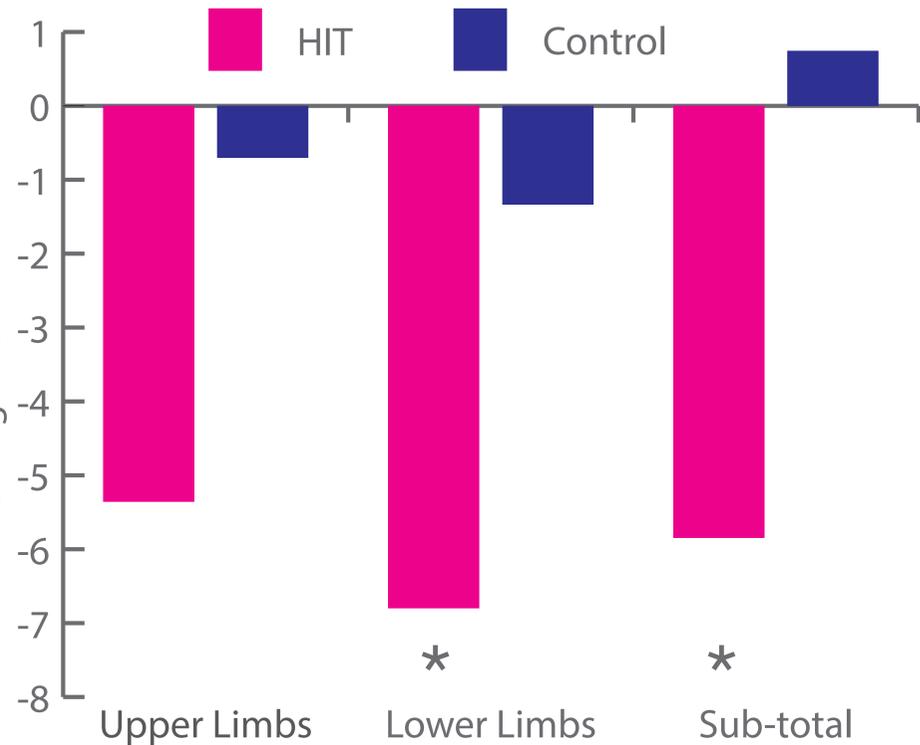


Figure 1. Effect of 6-weeks of HIIT or no training (Control) on fat mass measured by DXA. \* denotes significantly different from control condition.

## MATERIALS & METHODS

Twenty-eight male participants (23.2 ± 5.8 y; 1.78 ± 0.10 m; 78.7 ± 14.4 kg; 24.8 ± 2.7 kg·m<sup>-2</sup>), made a single fasted visit, pre and post a 6-week HIIT and/or supplementation intervention. During which a whole body DXA (Hologic Discovery A, Hologic Inc., Bedford MA) scan was performed.

Participants were randomly assigned in a double blind manner using a block method to 1 of 4 conditions HIIT & Creatine or Placebo; and Control & Creatine or Placebo.

HIIT consisted of 4-6 x 30-second maximal efforts (0.075 x Body Mass [kg]) on a cycle ergometer (Monark 874E, Varburg, Sweden). Participants completed 4 sprints in the first 2 weeks, 5 in the middle 2 and 6 in the last 2 weeks of the intervention. Supplementation consisted of 5 g·day<sup>-1</sup> of either Creatine Monohydrate (CreaPure, Alzchem, Germany) or placebo (micro-crystalline cellulose).

Data were analysed using a factorial analysis of covariance, with the baseline value used as a covariate. Percentage change was calculated as ((Pre-Post)/Pre) x 100<sup>8</sup>. Where no interactions between HIIT and supplement were observed, data was collated into exercise and/or supplementation.

## RESULTS & DISCUSSION

Six weeks of HIIT significantly reduced fat mass in both the sub-total (-5.54%; PRE: 17.43 ± 5.59 -v- POST: 16.36 ± 5.25 kg) and the lower limb (-6.58%; 6.77 ± 2.04 -v- 6.28 ± 1.81 kg) regions compared with non-exercising controls (0.75% & -1.34%, Figure 1).

Six weeks of creatine supplementation was shown to have no effect on sub-total lean (1.84 -v- 1.88%), fat (3.85 -v- 3.19%) or total (0.48 -v- 0.62%, Figure 2) mass, similarly no changes were seen in either upper or lower limb measures.

No significant interactions were observed in this study with creatine having no added effect on sub-total lean (2.27 -v- 1.77 %), fat (-6.39 -v- -4.78%) or total mass (0.06 -v- 0.17%) when combined with exercise.

Six weeks of HIIT is effective at reducing fat mass, but does not increase lean mass, with changes of similar magnitude shown in studies of longer duration utilising non-interval training methods<sup>9</sup>.

This reinforces the use of HIIT as a time-effective method of tackling important health care challenges.

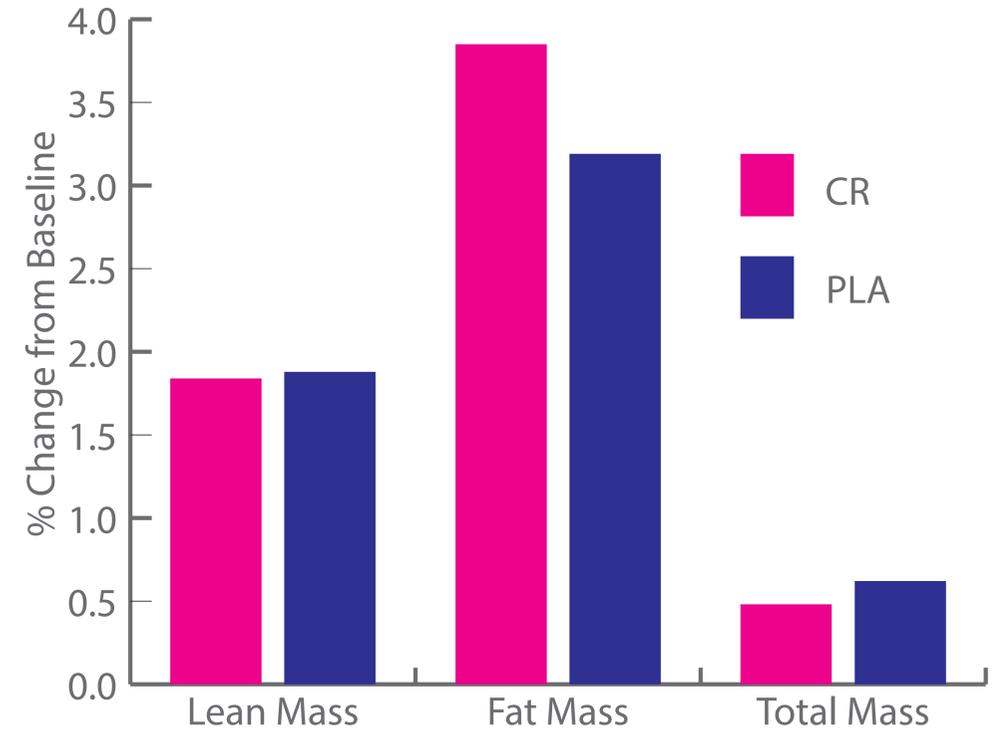


Figure 2. Effect of 6-weeks of Creatine (CR) or Placebo (PLA) supplementation in the sub-total region measured by DXA.

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