Habitual Meal Frequency, Body Composition and Blood Lipid Profile in Non-competitive Bodybuilders

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Introduction

The ultimate aim of bodybuilding is to achieve an aesthetically pleasing physique through gains in lean tissue mass and reductions in fat mass. Favourable blood lipid profile (**BLP**) adaptations have been reported but research is equivocal.

Total energy intake has been suggested to be one of the biggest dietary predictors for optimum body composition with daily distribution of meals less important. However, high quality protein per meal as a means to maintain muscle protein synthesis suggests that higher daily meal frequency (**MF**) may be a more appropriate dietary strategy.

Our **aim** was to investigate the interplay between habitual MF, body composition and BLP in non-competitive bodybuilders.

Methods

Following ethical approval, 44 males and 10 females met participation criteria. Upper and lower 25th percentiles of response to number of eating occasions were calculated.

An "**eating occasion**" was defined as "*the self-determined number of meals an individual uses to achieve their desired energy intake*", while "snacks" and supplementary " liquid meals" were not considered an "eating occasion".

Arranged into a **low group** (LFG) (n=12, 27.9±5.1 years, 80.9±17.8 kg) or **high group** (HFG) (n=12, 27.3±7.2 years, 85.2±16.8 kg) daily MF group, participants (n=24, 27.9±6.1 years, 83.0±17.1 kg), completed a *3-day diet diary*, had a *dual energy X-ray absorptiometry* scan, and *blood lipids* measured.

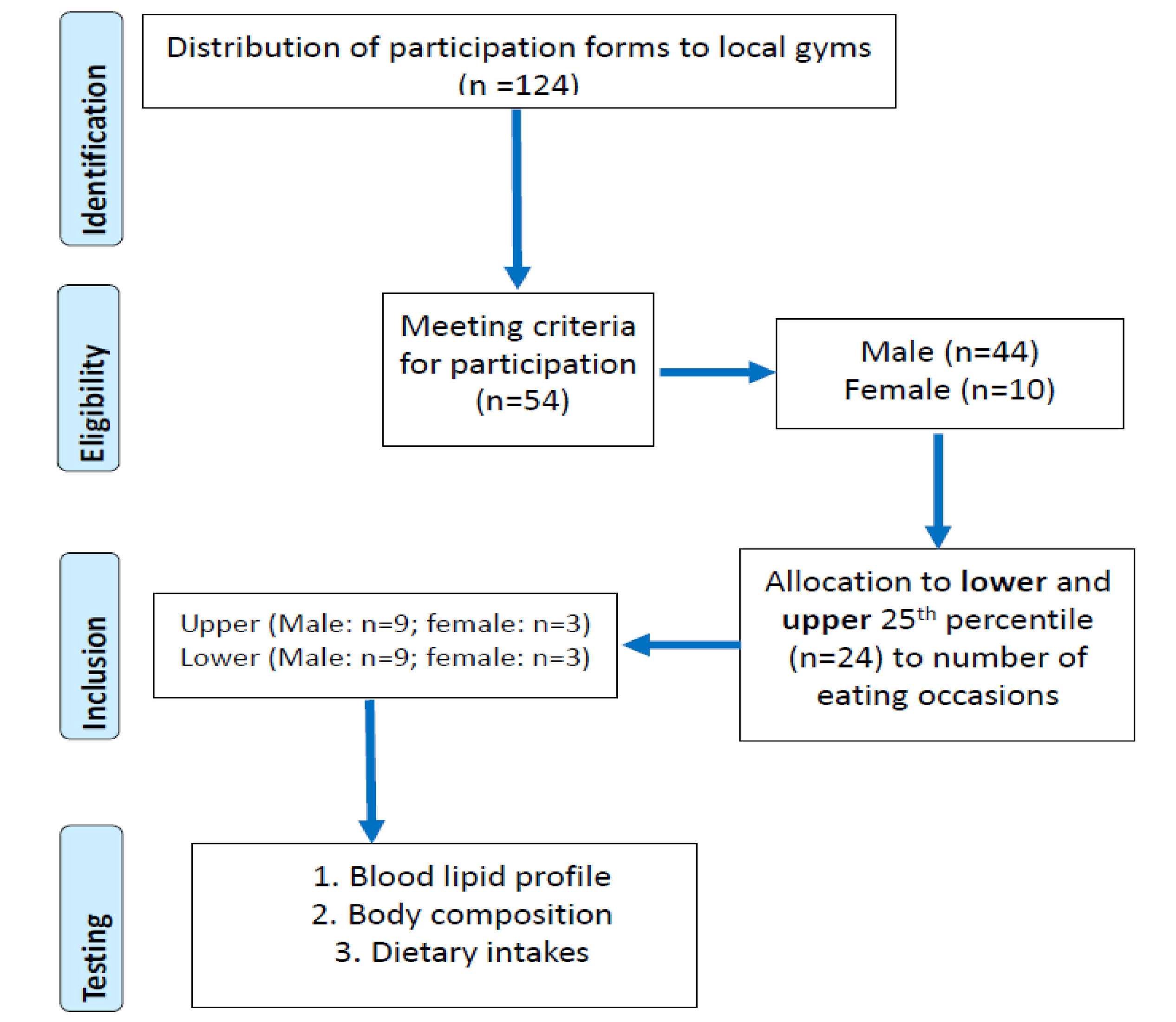

Figure 1. Outline of tests and testing procedures

Results

The meal frequency ranged between 2-3 and 6-8 daily "*eating occasions*" for the LFG and HFG respectively, while the HFG completed significantly (*P=0.000*) more weekly training sessions than the LFG (**Table 1**).

The HFG had significantly lower %body fat (BF) than the LFG (**Table 1**), while a moderate negative correlation was observed between %BF and number of eating occasions (**Figure 2**)

Means (±SD)	Years of training	Training sessions per week (No.)	Eating Occasions (No.)	Body Fat (%)	Fat Mass (kg)	Lean tissue mass (kg)
Low Frequency Group	7.4 (5.8)	4.3 (0.8)	2.6 (0.8)	19.2 (6.7)	15.5 (6.0)	62.1 (14.5)
High Frequency Group	9.8 (8.3)	5.5 (0.7)	6.6 (0.8)	13.9 (3.8)	11.7 (3.6)	70.2 (14.4)
P values	*.419*	***.000****	***.000****	***.027****	*.074*	*.187*

Table 1. Mean values for body composition, training, and meal frequency variables

BLP was optimal according to ACSM classifications.

Despite the HFG consuming more energy (2564±681 kcal) than the LFG (2215±533), the difference was not significant. **Protein intake** in the HFG was significantly higher (***P=0.054***) than the LFG (2.6±1.0 vs 1.9±0.5 g/kg^{-1}/BM/d^{-1}).

Differences were not observed in fat (1.2±0.6 and 1.4±0.6 g/kg^{-1}/BW/d^{-1}) or carbohydrate (2.5±1.4 and 1.9±1.1 g/kg^{-1}/BM/d^{-1} in LFG and HFG respectively) intakes. In percentage terms, the carbohydrate intake in the HFG (25±9.0%) was significantly lower (***P=0.027***) than that of the LFG (35±12%).

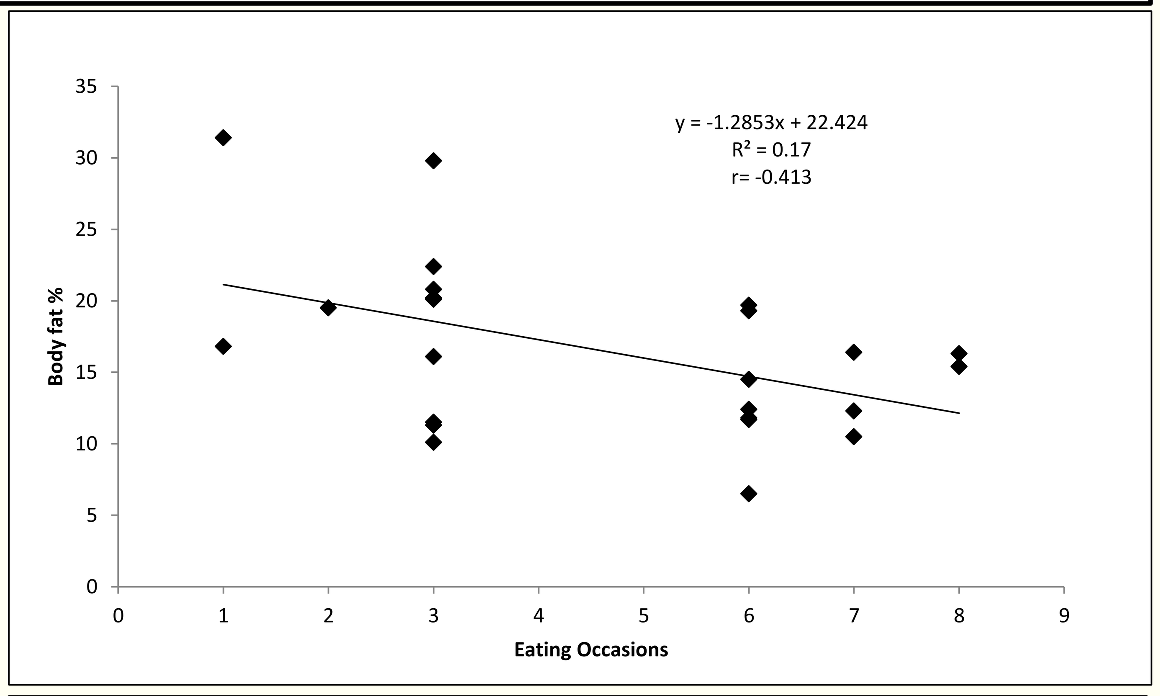

Figure 2. Correlation between %BF and number of eating occasions

Conclusions

In conclusion, BLP was within the optimum healthy range in both groups. Furthermore, higher MF was associated with optimum sport-specific body composition outcomes. This is potentially due to higher consumption of dietary proteins (35% of daily EI) resulting in optimisation of muscle synthetic response and training capacity.

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