Optimising Nutrient Timing for Muscle Gain and Fat Loss

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The Irrelevant Stuff

• Published in Peer Reviewed Journal
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Unfortunately, I’m not an ex-internationally capped rugby player, but hopefully you won’t hold that against me.
What we offer for PTs

AIMS

- Optimising nutrient timing for muscle gain and fat loss
- Hierarchical importance of nutrient timing when looking to improve fat loss and body composition
- Dispelling nutritional misconceptions that may undermine fat-loss efforts
- The theoretical model of maximal muscle gain
  - Protein timing (and the specific role of leucine)
  - Carbohydrate timing pre-, intra- and post-training
Weight/Fat Loss Hierarchy

- Energy Balance / Calories
- Macronutrients
  - Protein
  - CHO
  - Fat
- Sleep
- Ergogenic Aids
- Nutrient Timing
- Meal Frequency
- Fibre / Micronutrients

Body Composition Hierarchy

- Adherence
- Macronutrients 3 Laws of Fat Loss

1. You must eat in such a way that leads to you expending more energy than you take in
2. You should eat plenty of protein, except where this conflicts with the First Law
3. You can choose highly palatable foods that you enjoy eating as long as such foods do not lead to your diet conflicting with the First or Second Law
1) True or False?

• Training/Exercising in the morning, before eating, is a good strategy to employ when trying to lose body fat.

FALSE

How could it enhance fat loss?

1. Enhance 24-hour energy expenditure such that the energy deficit is increased
   - Never been shown
2. Suppress appetite such that the energy deficit is increased
   - Not shown to my knowledge but relating to Intermittent Fasting / Time constrained eating this is worth bearing in mind
3. Have a protein sparing effect (with simultaneous increased 24-h fat oxidation) such that fat loss is enhanced with enhanced FFM retention under equivalent energy deficit/weight loss conditions.


2) True or False?

• For weight loss: Eating the majority of your carbohydrates at dinner instead of spreading them evenly throughout the days meals is sub-optimal

FALSE
Nutrient timing very little difference

- E.g. Sofer et al (2011) – Carbohydrates eaten mostly at night
  - lost more weight
  - stayed fuller
  - Reduced abdominal circumference more
  - Other studies have shown the opposite i.e. Front Loading

- The tiny differences come from adherence
  - And any even smaller impact of insulin sensitivity
  - i.e. “Perhaps” eat slightly more carbs after training

- TAKE HOME: Nutrient Time to Suit the Client

3) Breakfast is the most important meal of the day if you:

A. Are trying to lose weight
B. Are training in the morning
C. Want good CV health indices
D. All of the above
E. None of the above

RCTs vs Observations

- Dhurandhar et al (2014) “A recommendation to eat or skip breakfast... contrary to widely espoused views, had no discernable effect on weight loss in free-living adults who were attempting to lose weight.”

- BATH BREAKFAST STUDY (Betts et al, 2014)
  - Contrary to popular belief, there was no metabolic adaptation to breakfast (resting metabolic rate stable), with limited subsequent suppression of appetite (energy intake remained 539 kcal/d greater than after fasting).
  - Cardiovascular health indexes were unaffected by either of the treatments
Breakfast Skipping & Concentration

- The effect of breakfast versus no breakfast on brain activity in adolescents when performing cognitive tasks, as assessed by fMRI – Fulford et al. 2015
  - There was no statistically significant improvement in task performance
- The effect of breakfast prior to morning exercise on cognitive performance, mood and appetite later in the day in habitually active women – Veasey et al. 2015
  - Breakfast was significantly detrimental for working memory mid-afternoon and mental fatigue and tension later in the day
- The relationship between habitual breakfast consumption frequency and academic performance in adolescents - Adolphus et al. 2015
  - Habitual breakfast consumption frequency did not significantly predict performance in cognitive abilities testing

4) Physiologically, which would be the optimal choice for weight loss?
(Total calories all being the same)

A. 2 meal/day  
B. 4 meals/day  
C. 6 meals/day  
D. B = C > A  
E. A = B = C

Eat Little & Often?

"There is no evidence that weight loss on hypoeenergetic regimens is altered by meal frequency"
THEORETICAL MODEL OF MAXIMAL MUSCLE GAIN

Is it possible to lose fat and gain muscle at the same time??

A. YES

B. NO

Quicker if...
- Untrained
- Coming back from injury
- Otherwise it is painfully slow...

Anabolic Window of Opportunity

Burd et al (2009)
**Concepts and Outcomes**

- **Leucine threshold for maximally stimulating MPS**
  - 0.3-0.5g/kg Protein or 2.5-3.5g of Leucine

- **Refractory period**
  - Optimal number of feedings

- **Maximally reducing MPB**
  - Energy intake? Protein? Protein Type?

- **Satellite cell proliferation**
  - Aka... creatine

- **Anything that allows effective/enhanced training**
  - Carbohydrates
  - Supplements

- **Optimise Hormones?**

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**How much protein do we need for maximal hypertrophy?**

- **Aim to have REGULAR servings of protein (4-6 servings/day)**

- **During a surplus/maintenance**

- **Meals**
  - 2-3 x 0.4-0.5g/kg

- **A recovery shake...**
  - 0.3g/kg

- **Plus a slightly larger bolus before bed...**
  - 1 x 0.5-0.6g/kg

= 1.8 – 2.4g/kg

- **Stay upper end during a deficit...**

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**Summary**

- **Nutrient timing is of greater importance when looking to improve body composition compared to fat loss**

- **To optimise maximal muscle gain:**
  - Aim for 4-6 protein feeding/day
  - Ensure each serving contains 0.3-0.5g/kg Protein or 2.5-3.5g of Leucine
  - Eat in a slight calorie surplus

- **It may be prudent to periodise carbohydrate around training to maximize training quality/performance**
Questions?

The greater our knowledge increases the more our ignorance unfolds.
John F. Kennedy

Keep in Touch!

Don’t let this be the last time we speak

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