Intermittent dieting for the athletes

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What happens when we diet?

- Diet = eat less calories than we burn (calorie deficit)
- Continuous daily calorie deficit over time = fat loss
- Most diets only effective in the short term (plateau)
- Why? Adaptive responses to a calorie deficit
  - In-built mechanisms
  - Push toward set-point body weight/fat point
- Metabolic and hormonal responses
  - Slowing down of metabolic rate
  - Changes in hunger hormones (leptin, ghrelin, PYY)

What happens when we diet?

Result?

Burn less calories at rest AND during exercise (makes fat loss harder)

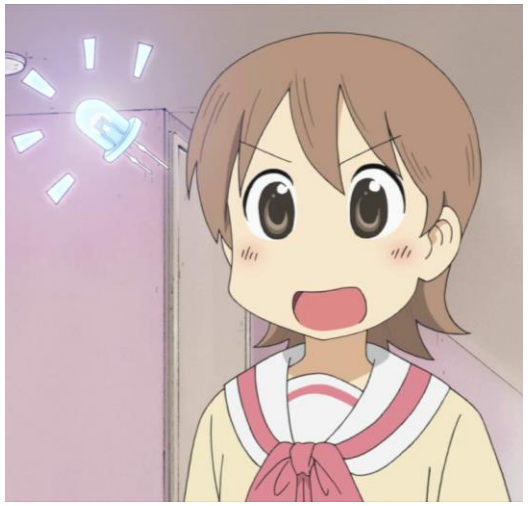
Hunger hormone changes makes us want to eat more (sticking to the diet harder)

= INCREASED DIET FATIGUE

Other things happening in athletes or very lean people

- Significant losses of muscle mass and strength (minor in OW)
- Decline in anabolic hormones (improvements in OW)
- Worse performance
- More irritable
- Higher risk of injury and illness
- Greater perception of fatigue

The idea of intermittent dieting



Negative side effects happen when dieting

- More side effects for lean athletes

Undesirable

- Makes the diet more difficult and less enjoyable/sustainable

The GOOD news

- Many of the side effects begin reversing after a period of higher calories
- Must be AT LEAST calorie balance (i.e. no calorie deficit)

The idea

Breaking up the diet with periods of higher calories might lead to better dieting results by reversing (or minimizing) the negative side effects from the calorie deficit

Possible benefits of intermittent dieting

- Higher calories boost metabolic rate?
  - Increase fat loss efficiency
- Higher calories restore appetite?
  - Release leptin, reduce ghrelin
- Higher calories (carbohydrates) refill glycogen
  - Primary fuel for HIT training (increase performance)
  - Low glycogen slows muscle growth and risks muscle loss
- Higher calories = mental rest from dieting
  - Breaks can improve adherence to deficit
  - Having diet breaks can improve mood
  - Allows for social meals and enjoyment

Types of intermittent dieting

- Refeeds
  - Higher calorie period during diet for 1-3 days
  - Usually once per week
  - EXAMPLE: 5 day diet > 2 day refeed

- Diet breaks
  - Higher calorie period during diet for 1-2 weeks
  - Usually once every 2-6 weeks
  - EXAMPLE: 3 week diet > 1 week diet break

What does the science say? Anecdotes and observations

- Many positive anecdotal reports among coaches and athletes

Mitchell et al., 2017

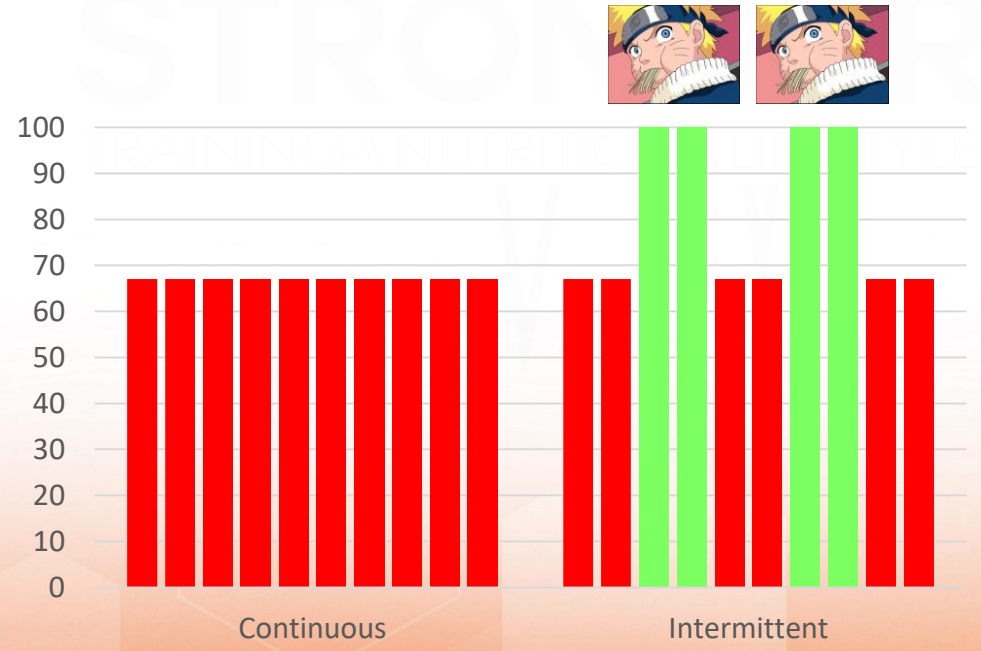
3.1.3. Refeed Days

Refeed days were commonly used during the in-season and primarily aimed to increase energy intake through elevated carbohydrate consumption. Participants discussed positive outcomes including increased glycogen stores which aid training performance, mental recovery, and prevention of further adaptive downgrades in energy expenditure, stimulating weight loss. One participant described it as a "metabolic jumpstart" (Oliver). Compared to preparations without refeed days, participants discussed consuming more total energy, over a shorter preparation, achieving better fat loss and muscle retention using weekly refeed days.

What does the science say? The MATADOR diet break study

Byrne et al., 2017

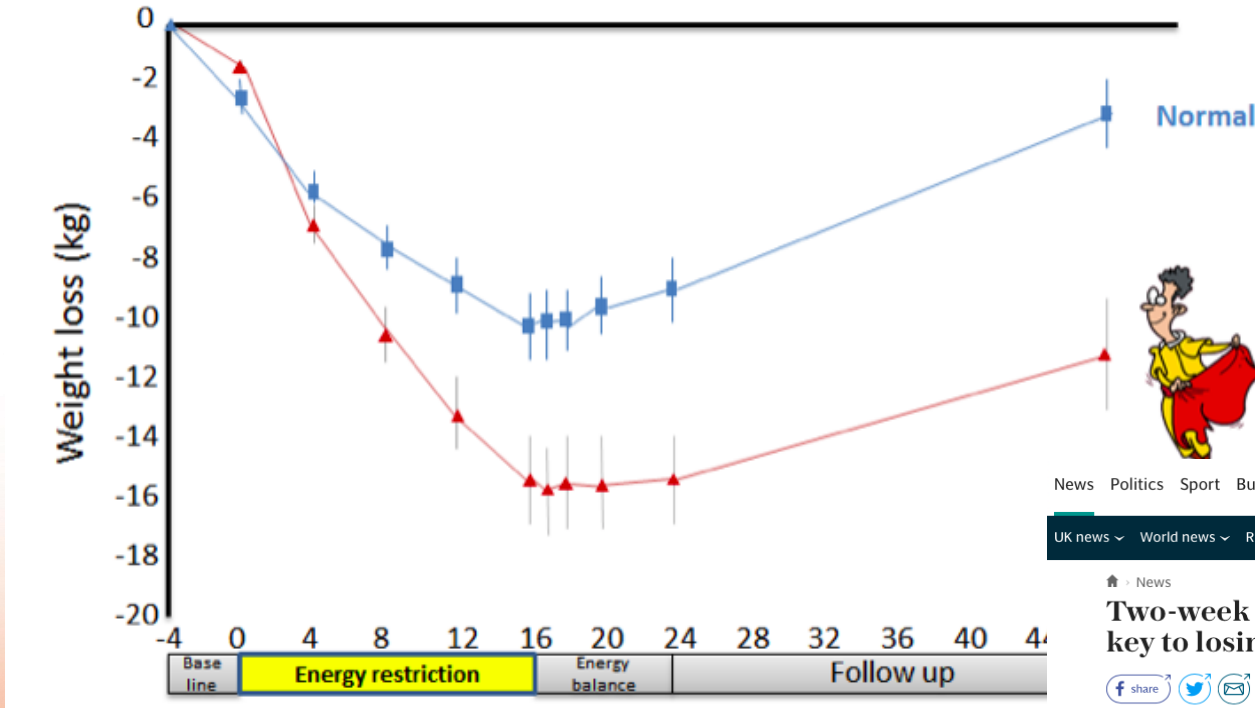
- Group 1: Continuous diet (16-week diet straight)
- Group 2: Intermittent diet (16-week diet BUT 2-week diet break after 2 weeks of dieting)
  - 32 weeks total
- During diet break calories increased to maintain body weight (no deficit)



What does the science say? The MATADOR diet break study

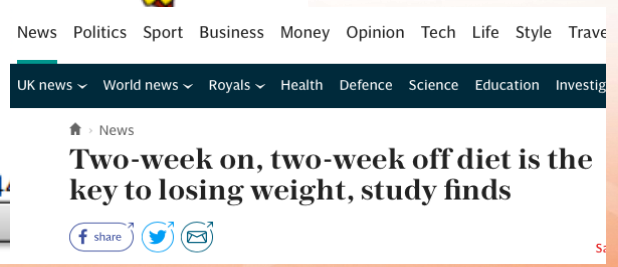
Byrne et al., 2017

- Intermittent group lost more weight and body fat
- Maintained higher resting metabolic rate
- Less fat regain after diet



Continuous

Intermittent



What does the science say? The 3-day refeed study

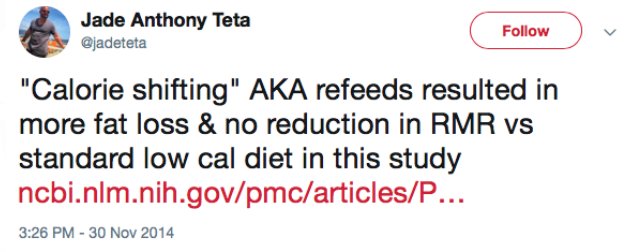
Davoodi et al., 2014

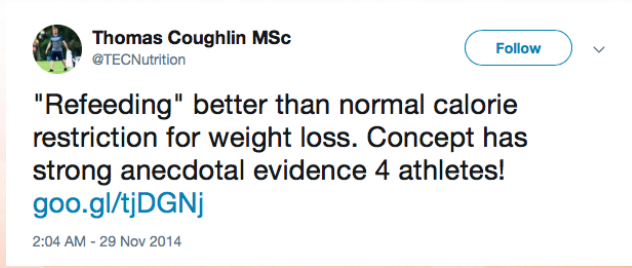
- Group 1: Continuous diet
- Group 2: Intermittent diet > 11 days diet then 3 day refeed

What does the science say? The 3-day refeed study

Davoodi et al., 2014

- Refeed group ate more calories on the diet
- After 6 weeks lost same % body fat (better fat loss efficiency)
- Less fat regain after diet
- Maintained higher resting metabolic rate





What does the science say? The mice 2-day refeed study

- Group 1: Continuous diet for 12 weeks
- Group 2: Intermittent diet for 12 weeks (5-day diet > 2 day refeed)
- Researchers called it a “diet holiday”
- Mice ate 70% more calories on refeed days!

Seimon et al., 2016

PLoS One. 2016 Jan 19;11(1):e0145157. doi: 10.1371/journal.pone.0145157. eCollection 2016.

Intermittent Moderate Energy Restriction Improves Weight Loss Efficiency in Diet-Induced Obese Mice.

Seimon RV[1], Shi YC[2], Slack K[2], Lee K[2], Fernando HA[1], Nguyen AD[2], Zhang L[2], Lin S[2], Enriquez RF[3], Lau J[2], Herzog H[2], Sainsbury A[1,2].

What does the science say? The mice 2-day refeed study

Seimon et al., 2016

- Intermittent group ate 12% more calories during the diet
- No difference in body weight or fat after 12 weeks between groups
- = intermittent group had 2x better weight loss efficiency
- Same reward with less dieting!

News_

Taking a `diet holiday' could improve weight loss

20 January 2016

Avoid the 'all or nothing' approach to weight loss

New research published in PLOS ONE suggests a break from dieting could lead to more efficient weight loss.

Share

What does the science say? The 2-day athlete refeed study

- Group 1: Continuous diet for 7 weeks
- Group 2: Intermittent diet for 7 weeks (5-day diet > 2 day refeed)
- Weight trained athletes!
- Matched weekly calories (Intermittent group lower calories on diet days)
- Increased carbohydrates only on refeed days

Campbell et al., 2020

The effects of intermittent carbohydrate re-feeds vs. continuous dieting on body composition in resistance trained individuals: A flexible dieting study

Bill I. Campbell[1], Danielle Aguilar[1], Lauren Colenso-Semple[1], Kevin Hartke[1], Chris Gai[1], David Gaviria[1], John Gorman[2], Josh Rubio[1], Adam Ibrahim[1], Bobby Barker[1]

What does the science say? The 2-day athlete refeed study

Conclusions

A 7-week 25% caloric reduction in conjunction with resistance training resulted in significant reductions in BM and FM. The Re-Feed group retained more FFM compared to the Continuous group. Future investigations should investigate the mechanisms that potentially explain the extent to which weekly carbohydrate re-feeds contribute to FFM preservation during hypocaloric periods.

- Retained more dryFFM
- Claimed more retention of FFM and RMR?
- Measurement issues

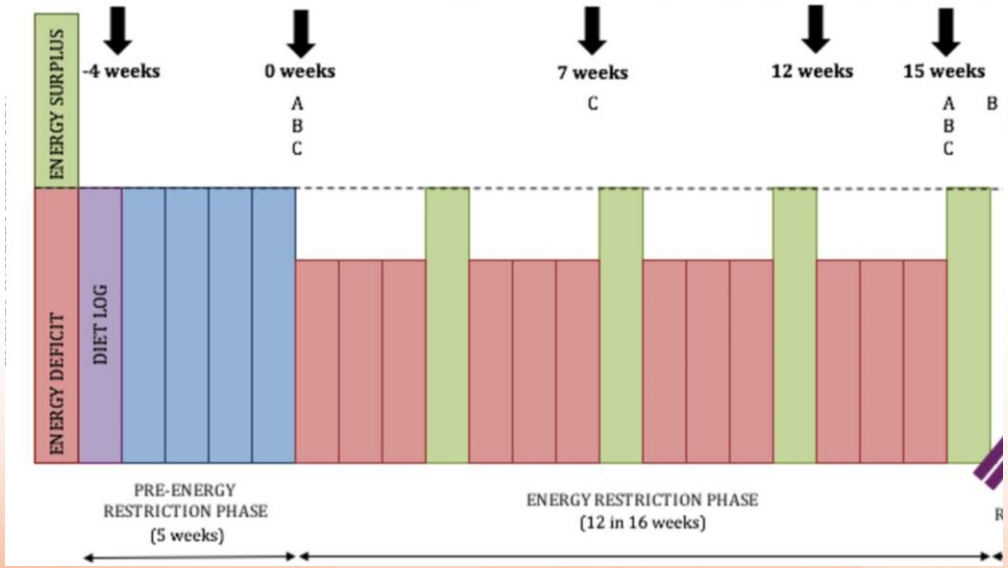
Conclusions

A 7-week diet at a 25% caloric deficit in conjunction with resistance training resulted in reductions in resting metabolic rate. An intermittent-restriction approach with a twice-weekly carbohydrate re-feeds was superior to a continuous restriction in preserving resting metabolic rate during the 7-week hypocaloric period.

What does the science say? The athlete diet break study

Peos et al.,

- 60 athletes (biggest athlete diet study in Australia)
- First diet break study in athletes
- Group 1: 12-week continuous diet
- Group 2: 12-week intermittent diet (3-week diet > 1-week diet break)



What does the science say? The athlete diet break study

PRELIMINARY FINDINGS

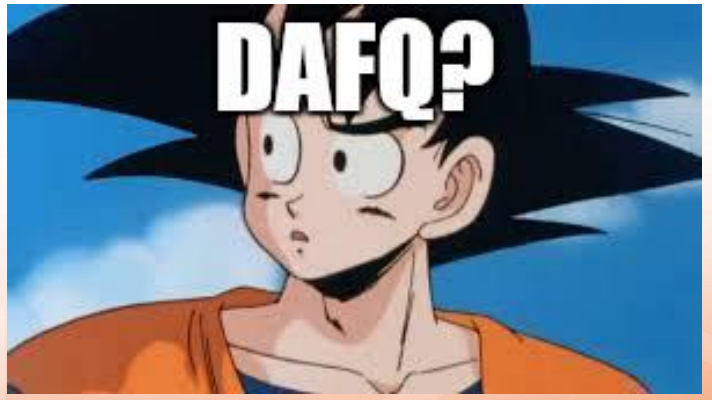
Peos et al.,

- Diet breaks cause short term increase in RMR and FFM
- BUT goes down very quickly once calorie deficit is reestablished
- Minimal differences between groups after 15 weeks of dieting

- Type of diet has little bearing on muscle strength and endurance performance

- More dropping out of the continuous dieting group (adherence)

- Higher hunger reported in continuous dieting group



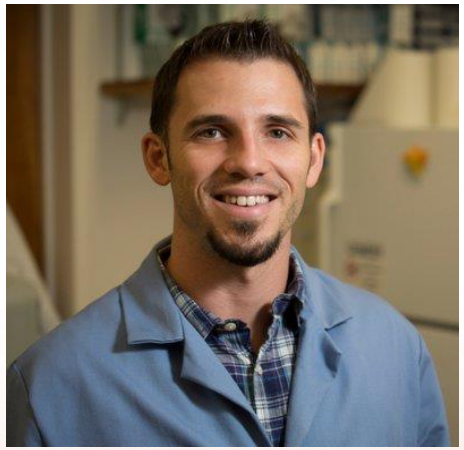
How should WE do it?

Peos et al., 2019

Open Access Review

Intermittent Dieting: Theoretical Considerations for the Athlete

by Jackson James Peos [1,*], Layne Eiseman Norton [2], Eric Russell Helms [3], Andrew Jacob Galpin [4] and Paul Fournier [1]



How should WE do it? Body weight

Peos et al., 2019

Aim for 0.5-1% body weight loss per week during dieting periods

Aim for weight maintenance during refeeds/diet breaks (or slight increase)

How should WE do it? Nutrition

Peos et al., 2019

- 2.0-2.6 g protein per kg of body weight during diet AND refeeds/diet breaks
  - Maintain more muscle mass
  - Less hunger and increased calorie burn from thermic effect of feeding
- 0.5 g fat per kg of body weight during diet AND refeeds/diet breaks
  - Extra fat has minimal benefit!
- BUT when increasing calories for refeeds/diet breaks increase carbohydrates!
  - Refills glycogen (performance, muscle retention)
  - Stimulates leptin release (less hunger, maintain metabolic rate)

How should WE do it? Timing

Peos et al., 2019

- REFEEDS: 2-3 days long, every 1-2 weeks
- DIET BREAKS: 1-2 weeks long, every 2-6 weeks
- Reminder: Lift weights!
  - Reduces muscle loss, maintains performance
  - Increases fat loss efficiency
- Plan refeeds/diet breaks with your high-volume training periods for extra benefits
  - Can tolerate and recover from harder training!

Closing

- Intermittent dieting is a viable weight loss option!
- May be better than traditional continuous diet for most people
- May improve fat loss efficiency (same results for less dieting)
- May maintain more lean mass and higher metabolic rate
- Likely more enjoyable, satisfying and easier to stick to

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