






Insulin, Testosterone and Thyroid: What You Need to Know to Maximise Your Results



MARTIN MACDONALD



Mac-Nutrition  










Do I even lift?
ABOUT ME



Mac-Nutrition  

The Irrelevant Stuff

- **Published in Peer Reviewed Journal**
Human angiotensin-converting enzyme 1/D and alpha-actinin 3 R577X genotypes and muscle functional and contractile properties. [Experimental Physiology, 2009; 94(1):81-9]
- **Qualified Higher Education Lecturer**
 - Lecturer at 2 Academic Institutions
- **2 Postgraduate degrees from recognised academic institutions**
 - Clinical Nutrition & Sports Nutrition
- **Undergraduate degree**
 - Sport and Exercise Nutrition
- **Vocational Qualifications**
 - ISAK accredited & CSCS
 - REPS Level 2 (just to be sure)



Unfortunately, I'm not an ex-internationally capped rugby player, but hopefully you won't hold that against me...

Mac-Nutrition  

HOME | ABOUT | ARTICLES | SHOWREEL | CLIENTS | CLINICS | CONTACT

MARTIN MACDONALD
BRINGING THE COMMON SENSE OUT OF NUTRITION

Mac-Nutrition

Podcast, Writer & Media Expert, Brand Ambassador, Public Speaker, University Lecturer, Clinical Nutritionist, Natural Bodybuilder, Exercise Specialist, Sports Nutritionist

What we offer for PTs

Mac-Nutrition Mentorship

Mac-Nutrition UNIVERSITY
WISDOM | CONFIDENCE | INTEGRITY

COMING SOON

AIMS

- **Hormones and the regulation of body-fat levels**
 - Insulin, Testosterone, Thyroid + Leptin, Cortisol, Ghrelin
- **Reversing metabolic adaptation**
- **Effectively overcoming fat-loss plateaus**
- **Eating to reach your genetic potential for muscle gain**
 - Tomorrow...





HORMONES AND THEIR ROLE IN REGULATING BODY FAT LEVELS

Mac-Nutrition  

Setting the scene





- **Who thinks hormones play a large role in regulating body fat levels?**
- **Who thinks consistently elevated cortisol levels will stop someone getting lean?**
- **Who thinks calories play a larger role in determining body fat levels than hormones?**


Mac-Nutrition  

A note on 'hormones'



- **You are not going to learn any 'zen'**
- **Hormones clearly play a massive role... you just can't change them all that much.**

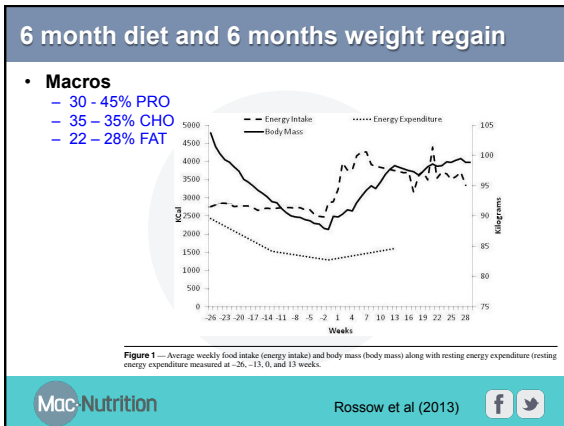
Great seminar yesterday on nutrient timing + mindset with @PRPLtd take home message was learning how our thoughts affect our hormones #boom

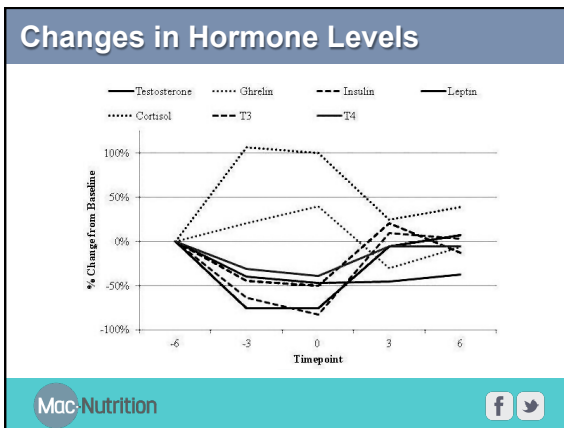
   

1 RETWEET 1 FAVORITE 

3:48 PM · 8 Jan 2014

Mac-Nutrition  





The Insulin Hypothesis is Dead



LAST MINUTE SLIDE SORRY!

- Hall et al, 2015
- Most expensive study ever
- Most accurate measurement of energy in AND energy out ever
- Very cleverly designed study
- Has nothing to do with what a diet should look like
- Categorically showed that you do NOT need to reduce insulin to lose body fat

Mac-Nutrition f t

How do hormones affect fat loss?



Hormone	Effect	Notes
Insulin	No Effect	Practice 'healthy' behaviours
Testosterone	Minimal Effect	Can't change it much
Thyroid Hormones	Big effect	Can't change them much
Ghrelin (PPY, CCK, GLP1 etc)	Small indirect effect	Can be overridden somewhat
Cortisol	Small permissive effect	Will change as a 'result of'
Leptin	Regulatory effects	Practice 'healthy' behaviours

Mac-Nutrition  

A Final Note on Hormones

- Hormones are indeed a key predictor of success
- However, how much can we manipulate them naturally?

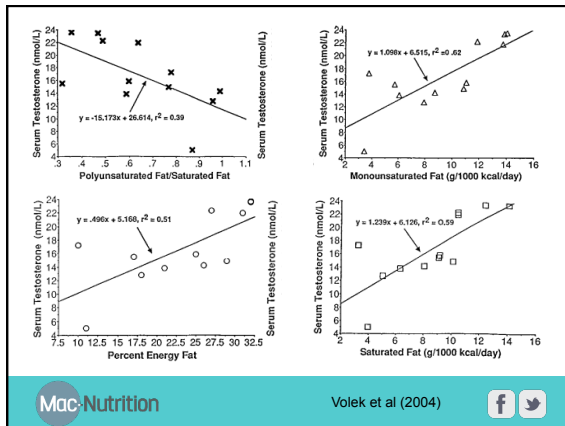
"Don't try to manipulate hormones. Try to manipulate people..."
- Me, FitPro 2016

Mac-Nutrition  



Just don't depress it...
MAXIMISING TESTOSTERONE

Mac-Nutrition  



Lower dietary fat intakes

- **Are correlated with reduced resting serum testosterone concentrations**
- **in males**
 - Hamalainen et al., 1984; Reed et al., 1987; Volek et al., 1997
- **and females**
 - Goldin et al., 1994; Ingram et al., 1987
- **Individuals consuming a diet containing 20% fat compared with a diet containing 40% fat have significantly lower concentrations of sex steroid hormones.** (Hamalainen et al., 1984)

Mac-Nutrition (Broad and Cox, 2008)

SO WHAT DOES DETERMINE BODY FAT?

Mac-Nutrition


Energy Balance: Ad Lib vs Tracking





Mac-Nutrition  

Energy OUT


- **BMR is affected by...**
 - Calories
 - Body Weight
 - Muscle Mass
 - (Age, Gender, Height)
- **EEE is affected by...**
 - The amount of training/exercise completed
- **NEPA is affected by...**
 - Occupation
 - Lifestyle
- **NEAT is affected by...**
 - Dieting/Calories





Mac-Nutrition  

Adaptive Thermogenesis!

- **It's Real!**
- **It can turn a legitimate kcal deficit into a maintenance 'diet'**
 - 15-20% lower expenditure after dieting
- **Does it keep adapting?**
 - 10% vs 20% bodyweight reduction – maximal reductions in EE
- **What if I maintain all my muscle?** (Johanssen et al, 2012)
- **Reverse dieting / Building Metabolic Capacity**
 - Currently very little research, 'learn' with caution



Mac-Nutrition  




HOW TO OVERCOME FAT-LOSS PLATEAUS



Mac-Nutrition  

Add Progression/Change Method

- Progress Tracking method
- Use a plan
- Intermittent fasting
- Cycle calories



Exact Macros
Macro Ranges
Intermittent Macro Tracking
Cheat Day Track
Calorie Track
Semi Track
Protein Track
PN Portion Control
Score based
Adherence based
Habit based
Ad libitum (photo diary)
Ad libitum

Mac-Nutrition   Credit: Shredded By Science

Expanding your scope of success

- Can you help more people/achieve better results by having an 'open mind'?



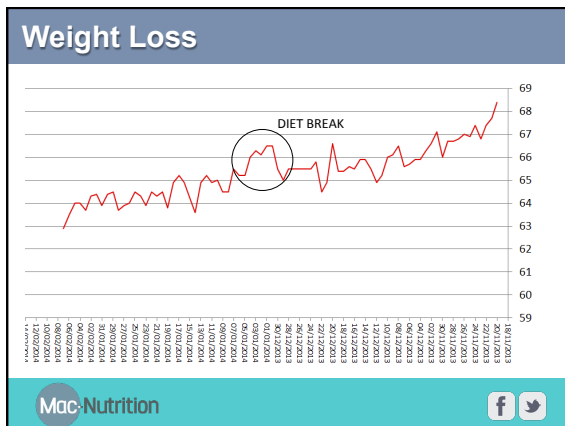
- Intermittent Fasting

Mac-Nutrition  

45 Year Old, Weight Loss-Resistant Female

20-Nov	21-Nov	22-Nov	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	1-Dec
Weights and MET 10000 - 10000 DONE				Gym 09:00-10:00 Vinyasa and CHAUDEBO MIN	Gym 09:00-10:00 DONE		Gym 09:00-10:00 DONE with Sarah			Gym	
	Marital Arts MESSID (1.0m to 10th being sleep)			Marital Arts DONE			Marital Arts DONE 10ACE				Marital Arts
did not have the fruit, had 3 goosebuds, dinner hot, legs did not	all worst good, muscles ache big time		Did not have the fruit, had 3 goosebuds, dinner hot, legs did not	all worst good, muscles ache big time	all worst good, muscles ache big time	all worst good, muscles ache big time	all worst good, muscles ache big time	all worst good, muscles ache big time	all worst good, muscles ache big time	all worst good, muscles ache big time	all worst good, muscles ache big time
<p>LONDON WORK DAY. THROU TO GET WELL, BUT COULD NOT GET AWAY</p>											
TOTAL											
Kcal	Protein	Carb	Fat								
924	119.1	23.4	39.4								
%Kcals	52	10	38								

Mac-Nutrition



Energy Intake

- Never eat less than your estimated BMR
- Plenty of calculators for this

BMR (Harris-Benedict)

Men:

$$65 + (13.7 \times \text{wt in kg}) + (5 \times \text{ht in cm}) - (6.8 \times \text{Age})$$

Women:

$$655 + (9.6 \times \text{wt in kg}) + (1.8 \times \text{ht in cm}) - (4.7 \times \text{Age})$$

Mac-Nutrition

Adaptive Metabolisms

- If I were to force overfeed someone by 1000kcal/day Monday to Saturday, then let them do what they want on the Sunday, for 3 months..
- How much weight would they gain?



Mac-Nutrition



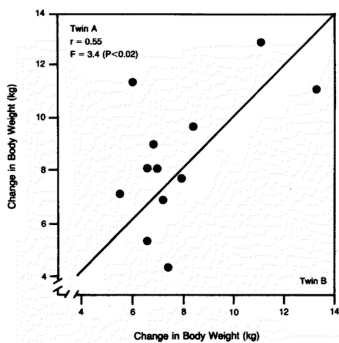
Kcals In/Out: Twin Studies

- Twins were overfed 1000 kcal/ day (6 days out of 7) for 100 days.
- Weight gain ranged from 9 to 30 pounds between the different pairs of twins
 - Weight gain within each twin pair was similar
- The between twin variance in weight gain was three times the variance within pairs.
- When looking at gains in upper body fat or abdominal visceral fat, the between twin variance was six times greater than within pairs.

Mac-Nutrition

Bouchard and Tremblay (1988)





Mac-Nutrition



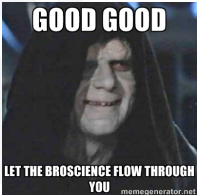


REVERSE DIETING

Mac-Nutrition  

Increase Kcals for Weight Loss



- Short term change for the LONGTERM goal
- Occurrence in those with starve binge cycles
- Fat gain time course vs 'Recovery' from Adaptive Thermogenesis



Mac-Nutrition  

Luxuskonsumtion – Boosting metabolism

- Cheat meal?
 - Nope
- Refeed day
 - Nope
- 3-7 day refeeds/diet breaks?
 - Its likely you'll get some recovery in NEAT
 - Efficacy of the small change in hormones is too understudied
- Potentially drop fat low and ramp carbs...
 - Due to low levels of de novo lipogenesis from carbohydrate
- E.g. 3 day CHO overfeeding resulted in 28% increase in leptin and 7% increase in TEE (Dirlewanger et al, 2000).

Mac-Nutrition  



MN

EATING TO REACH GENETIC POTENTIAL FOR MUSCLE GAIN

Mac-Nutrition  

Come to my talk tomorrow

- If you can't... I'll send you the slides anyway.



Mac-Nutrition  



 **Mac-Nutrition**
UNIVERSITY
WISDOM | CONFIDENCE | INTEGRITY

COMING SOON


www.Mac-NutritionUniversity.com



WISDOM | CONFIDENCE | INTEGRITY

SUMMARY

- So what do you need to know about hormones to get great results with yourself and clients?

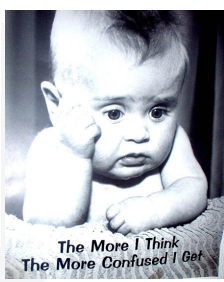
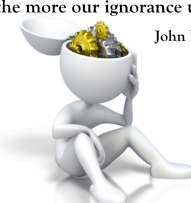
NOTHING.



Mac-Nutrition  

Questions?

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



The More I Think
The More Confused I Get

Mac-Nutrition 