

THE PHYSIQUE REVOLUTION GUIDE

CHRIS AND ERIC MARTINEZ

ALAN ARAGON



A) To build muscle, training has to be sensible & progressive. This means that over time, you have to be progressing in the amount of reps &/or weight you're moving. It's really just that simple. Books have been written on the details of training programs and such, but if I were to put it all into a nutshell, that's what I would say. If you're continually getting stronger in the 6-12 rep range, it's inevitable that muscle growth will occur progressively as well. In addition to training, you gotta make sure your nutrition is supporting muscle growth. To maximize the rate of growth, you have to be at a caloric surplus (300-600 kcals above maintenance, some may need to push the surplus higher if gains are really stubborn), and protein needs to be sufficient as well (right around a gram per pound of goal weight). It's better to overdo protein a little then underdo it at all

B) To lose fat, first and foremost, you have to sustain a net caloric deficit. Fat loss can't occur if you're eating more than you're burning. This deficit does not have to linear day-to-day, but your calories burned by the end of the week need to exceed your calories ingested. Personal preference should decide whether you to maintain a daily regular deficit, or whether you include days of maintenance or surplus (while still coming out at a net deficit by the end of the week). When dieting, it helps to keep protein high, at least a gram per pound of goal weight. When cutting, the tendency for a lot of people is to do as much cardio as they can stand. On the contrary, they should be doing as little as necessary to keep progress humming along. It can always be incrementally increased as needed to get past plateaus.

C) I don't think that supplement recommendations can be made without individual assessment of the diet. Everyone will differ in their goals and dietary habits, so it's impossible to issue a universal set of supplements for everyone. With that said, a cheap multi is likely to help most training populations and phases.

BRAD SCHOENFELD



It's difficult to single out a "biggest" nutritional myth; so many to choose from. One myth that I've recently been involved in debunking is the claim of a narrow "anabolic window of opportunity" whereby protein must be consumed within an hour post-workout; waiting any longer impairs gains. Some have even asserted that if you wait 3 hours then you basically lose out on any benefit of the resistance training session. To evaluate whether such an "anabolic window" does in fact exist, I recently collaborated with my colleagues Alan Aragon and James Krieger to carry out a meta-analysis of existing data on the topic. We included any study that compared a protein intake (minimum 6 g EAAs) given 1 hour pre- and/or post-exercise versus protein consumption at least 2 hour or more outside of the bout. A total of 23 studies encompassing over 500 subjects met inclusion criteria for muscle hypertrophy.

Results showed no significant differences regardless of the timing of protein intake. What was shown to be supremely important was the amount of protein consumed: those who consumed higher intakes ($^{\sim}1.7$ g/kg) showed significantly greater muscle growth than those who consumed lower amounts ($^{\sim}1.3$ g/kg). Here's the take home message. The timing of protein intake in and around a resistance training has at best a small impact on muscular gains. It certainly is not going to make or break your results. For those who are recreational lifters, it really shouldn't matter when you take in protein, at least within fairly wide limits. Rather, the focus should be on meeting your daily protein requirements (i.e. at least 1.6 g/kg/day). On the other hand, those who are competitive bodybuilders or strength athletes would be best advised to consume protein relatively quickly following training. In this case, it's best to err on the side of caution as even a small effect can be the difference between winning or losing a competition.

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JOHN MEADOWS



Looking at what you have covered so far with the other folks, you have covered many of the big ones.

Another myth that deserves to be looked at more closely is that consumption of dietary cholesterol is somehow hazardous to your health. This cholesterol stuff is gooey, and yucky, and then will get in your blood and muck up your blood vessels, so don't eat things like egg yolks, or so goes the story. The entire war on cholesterol is as Dr. George Mann former Vanderbilt professor of Medicine and Biochemistry puts it, "the greatest scientific deception of the century". If you do some cursory research you will find more than enough data that will cause you to at least question the damning work done by Ancel Keys (cherry picked data), and the misinterpretation of data from the famed Framingham study that really served as the backbones for the war on saturated fat and cholesterol. One should first understand what cholesterol is, and the value of it. You think it takes a lot of cholesterol to make a chicken, well imagine how much it takes to make a full-fledged humanoid

Cholesterol is needed to maintain brain synapses. These connections are largely made of cholesterol. Vit D is needed for us to be healthy, and is synthesized from cholesterol through sunlight. How about cell membranes? Even at the most basic level our cell membranes would turn to mush without the structural integrity that cholesterol gives them. We could go on, manufacture of bile, sex hormones, etc. Just know that your body needs cholesterol, so ask yourself what sense does it make to try and eliminate it from the body.

Furthermore, if you don't consume cholesterol, your liver will also make more. You eat more and the liver will make less. Yep, your body is pretty freaking smart. Nothing like a little basic down regulation to keep homeostasis.

JOHN MEADOWS



Now if you want to really get into some fun stuff. What if I told you that lower cholesterol is associated with increased death rates in 35-74 year olds. Many studies have found this such as Harris, T et al. "The low cholesterol-mortality association in a national cohort: Journal of Clinical Epideiology. 1992. It found that women whose levels fell below 158 mg/dl had a 70% increased risk of death. in comparison with women who were at 197 mg/dl. Men were at 40% increased risk with these same numbers.

There is much data to also support that those with higher cholesterol have lower death rates. Chen, Z et al. "Serum cholesterol concentration and coronary heart disease in population with low cholesterol concentrations:. British Medical Journal found just that. Over 9,000 men and women aged 35-64 were followed for 13 years. They found that those with the highest cholesterol had a 13% lower death rate than those with the lowest.

Professor James Neaton also ran a study that examined over 350,000 people aged 35-57. They found that those with a level of 200-239 mg/dl had a 12% lower death rate than those with levels below 160 mg/dl.

Believe it or not there are literally hundreds of studies like this out there.

My advice to you, eat your egg yolks!

ERIC HELMS



Some critical information should be noted before we compare of the pros and cons of high intensity interval training (HIIT) and low intensity steady state (LISS) cardio. One is that similar metabolic adaptations can come from either HIIT or LISS; the primary difference is the time course (adaptations happening faster and with less total time dedicated when using HIIT)1. Secondly there is concern that aerobic training can reduce the adaptations from resistance training (hypertrophy, strength and power)2. Thirdly, this risk seems to be avoided when HIIT is utilized3. Lastly, the higher the intensity, the greater the increase in metabolic rate in the short term period afterwards. High intensity exercise provides a short term, small, but significant increase in metabolic rate4 while LISS training by function of being low intensity does not.

The above suggests that HIIT is a home run. It gets the same adaptations in a fraction of the time, takes less time to burn the same amount of calories, helps you burn a small amount of calories acutely after performing it, and unlike lower intensity training, may not interfere with resistance training adaptations.

However, let's think critically. What is low intensity? In many of the studies this means endurance training. Exercising at 60-70% of VO2 max, which might not compare to what many people do for LISS. In fact, the mechanisms of interference seem to be related to glycogen depletion and molecular signaling that comes from endurance training5. But, rarely do exercisers do glycogen depleting cardio at these intensities when they perform LISS. Interference might also be related to the extent of the impact and the contribution of eccentric contractions to the modality of cardio, considering that cycling appears to interfere less with resistance training adaptation than incline walking6.

ERIC HELMS



So we need to be clear that endurance training is not always the same thing as LISS. However, if the LISS performed resembles endurance training, has a significant eccentric component, and/or if it has a high impact it may interfere with resistance training adaptation. So really it is a case of choosing the proper modality and intensity versus shunning LISS altogether.

But the question remains, why do LISS at all? Even if you could avoid the interference, why not burn more calories and acutely increase your metabolic rate? Well, now we have to really think about what HIIT is. HIIT by definition is high intensity, which means it provides high stress, which is why less HIIT creates the same adaptations that more low intensity training produces. But, stress has to be recovered from. You can't do HIIT in a vacuum. HIIT occurs in the same week that you have to weight train, and if you are still recovering from HIIT to the point that it affects your ability to lift weights, that can be detrimental. It becomes a question of not whether LISS or HIIT is better for maintaining muscle, but rather HIIT or lifting weights (the answer should be obvious)?

ERIC HELMS



The same issues that I just discussed regarding LISS apply to HIT If there is a significant eccentric component, or a high level of impact, HIIT can cause problems. In fact, sprinters suffer more than twice the number of hamstring injuries that long distance runners suffer on average, despite running only a fraction of the distance or time7. While a larger risk of injury (with certain modalities) and a greater need for recovery are the only risks of HIIT, they are significant risks. It's hard to make the argument that you are retaining more muscle than the guy doing the slow cardio while you are on crutches. Lastly, I want to point out that the metabolic benefits of HIIT are a function of their high intensity. Typically HIIT is performed with 10-30secs of maximal intensity effort, followed by 30-90secs of low intensity recovery. This work to rest ratio very closely resembles that of weight training. If you are lifting weights 3-6 times per week, any beneficial physiological adaptations from HIIT may already exist. This similarity is why HIIT doesn't cause interference. But, just like you wouldn't train the same body part every day of the week, it probably wouldn't be wise to do HIIT every day of the week, as it would affect your body in much the same way.

So, let's talk application. Cardio should not be the primary vehicle for fat loss, regardless of whether it's HIIT or LISS. The majority of fat loss should come from the diet. Secondly, resistance training performance is the most critical aspect to muscle maintenance. The diet supports the training as best as possible while creating fat loss and the training supports muscle retention. Don't put this paradigm at risk. Choose cardio that is easy on the joints (low impact) and easy on the muscles in subsequent days (won't make you sore). Then it comes down to balance. Cap the number of HIIT sessions at one to three per week in most cases, and only the most robust, young males who can take a big beating should do three sessions per week. For LISS, make sure to keep it from being endurance training; keeping intensity below the 60-80% of VO2 max range where most of the issues with interference occur (that is unless cardio respiratory endurance is also a goal).

ERIC HELMS



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JOSE ANTONIO



HIIT vs LISS - A Best Way to Lose Fat?

First let's get the acronyms out of the way. HIIT stands for high-intensity interval training; LISS stands for low intensity steady state cardio. HIIT is sometimes abbreviated HIT. One form of training is hard and painful (HIIT) but doesn't last as long whereas the other is not quite so painful (depending on how long you do it) but takes a longer amount of time. Is one better than the other for losing fat?

Before I give you the punch line, what's the data say? With so many HIIT fanatics out there, one would think that doing LISS is a total waste of time. First of all, let's change the definition for a second. I instead would call it SSC or steady-state cardio. Why? Just because its steady state does NOT mean it is low intensity. Try training with a collegiate distance runner on their 'easy' days. SSC in that case could be a sub-6 min per mile pace for several miles. You think that's easy? Low intensity? Bwwaaaaah....You're a fool if you think that's easy. So part of the answering the debate of SSC (LISS) vs HIIT is one of redefining SSC. SSC does not necessarily have to be easy. If it is, then you're a jolly jogger and not a runner.

What's the data say on SSC?

A long-term supervised aerobic exercise training program was administered to 41 obese children (21 boys, 20 girls) initially aged 11-years-old. The 2 year training program was performed during the daily school life. Lean body mass increased throughout the 2 year study while the total body weight decreased; the weight loss is attributed to a decrease in fat.(1)

What if we directly compared high intensity interval training (HIIT) versus continuous aerobic exercise training (CONT)? In 38 previously inactive overweight adults there was a significant reduction in android fat percentage in CONT but not HIIT. Wait. I thought HIIT was soooo much better? Guess not. The authors stated that "HIIT may be advocated as a time-efficient strategy for eliciting comparable fitness benefits to traditional continuous exercise in inactive, overweight adults. However, in this population HIIT does not confer the same benefit to body fat levels as continuous exercise training.(2)" Furthermore, aerobic exercise is an effective approach to reduce visceral fat besides in overweight male CKD patients.(3)

JOSE ANTONIO



Certainly other studies confirm the benefits of traditional aerobic (i.e. SSC) training. Two months of aerobic cycling training improves body composition in young women.(4) Also, daily moderate intensity aerobic exercise is effective at reducing abdominal fat mass, while high intensity exercise improves cardiopulmonary function.(5)

HIIT better?

First of all, let's get one thing clear. HIIT is not a new way of training. You can go back 70 years ago and find that famed distance runner, Emil Zatopek, was one of the first to utilize the interval training method. HIIT has been used by endurance athletes for decades. I find it somewhat amusing that folks in the 'fitness industry' feel like they've discovered some novel form of training. It's the greatest thing ever some exclaim! Better than sliced bread, the zipper, and penicillin combined! So what's the deal with HIIT? Does it burn fat fast?

Uh yeah.

In a recent study, HIIT was found to be more effective than SSC. The HIIT folks are saying "See, I told you so!" Geez, confirmation bias. In this study, 54 people with intellectual disabilities (not your typical sample) were trained via: sprint interval training (n = 17), continuous aerobic training (n = 15) or control (n = 14). "Compared with continuous aerobic training, sprint interval training seems to result in better outcome.(6)" Also, short-term low-volume HIT is a timeefficient strategy to improve body composition and muscle oxidative capacity in overweight/obese women.(7) In a fairly large study, 60 female university students were randomly assigned to either a HIIT group, the moderate intensity continuous training (MICT) group or a non-training control group. After 12 weeks of training, both type of training produced significant improvements in the subjects' body composition, left ventricular ejection fraction, heart rate at rest, maximal oxygen uptake and ventilatory threshold. However, the HIIT group achieved better results than those in the MICT group, as it was evaluated by the amount of the effect size.(8)

JOSE ANTONIO



Bottom line:

I think the HIIT vs SSC (or LISS) debate is somewhat misguided. If your goal is losing body fat and you don't really give a shit about anything else, then by all means, you should do both.

They BOTH work.

But honestly, changing your diet is probably as important (if not more important) then either. Doing HIIT is a great time-efficient way to train. Doing HIIT too often will likely result in some degree of overtraining. Let's face it; to do HIIT correctly requires a high pain threshold. It should hurt. It should hurt a lot in fact! SSC is good in that you can do it quite frequently without too great a risk of injury and/or overtraining.

Dr. Stephen Seiler wrote a great article on interval training and long slow distance

(SSC).http://www.sportsci.org/2009/ss.htm

Think of the 80:20 rule. Elite endurance athletes perform 80% or more of their training as SSC (i.e. intensities below the lactate threshold) with the remaining 20% being interval training (i.e. HIIT). It is intriguing in that when you look across a wide variety of endurance sports (i.e. cycling, running, rowing, cross-country skiing, etc), they all follow this distribution of training. Coaches (and athletes) have somehow figured out that if HIIT exceeds more than 20% of your training volume, it would likely have a diminishing or detrimental effect.

Thus, if we were to borrow from the lessons of elite endurance athletes, I'd suggest that you limit your HIIT to no more than twice per week. Any other cardio do beyond that should be SSC.

JOSE ANTONIO



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LAYNE NORTON



I feel the biggest myth is this idea that there are magic 'clean' foods that you can eat however much you want of and look great, but if you touch any 'bad' or 'processed' foods no matter how much you will instantly turn into a butterball.

For example, A study conducted by the Institute for Nutrition and Cancer Research (INCR) discovered that 78% of adults agreed with the statement "the kind of foods you eat is more important than the quantity of food you eat" in regards to weight management.

While it is true that certain foods can influence your thermogenic output (aka TEF thermic effect of food) this is mostly due to their protein/carb/fat and fiber composition.

For example, eating a high protein, high fiber diet is m uch more thermogenic than eating a low protein low fiber diet. But as long as you reach your protein and fiber goals, the foods you use to do it are far less important.

Now that being said, in order to eat a high protein, high fiber diet you will need to eat a lot of 'clean' foods by default. But the point is, you can still achieve great body composition by eating foods that are 'outside the box' if they fit your macronutrient and fiber goals. Simply eating the same foods day in and day out in an effort to 'eat clean' can cause people to become very disordered with their eating especially when they eat any amount of 'unclean' food which typically can trigger a binge.

Self-monitoring and cognitive restraint are the most important things in determining the effectiveness of a nutrition program, not magic foods as evidenced by data from multitudes of cohort studies of thousands of people showing that self-monitoring was the #1 factor in losing fat and keeping it off. Dismiss this idea that there is a magic list of foods that you can eat however much you want of and lose fat. This is a lie. You will need to put in the work of monitoring what you consume in terms of your macronutrient intake, but you will be rewarded with results and sanity.

CHRIS AND ERIC MARTINEZ



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