

Introducing HIIT, A Tool to Crank Up Your Fat Burning Potential!

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Turn on the Afterburners, Summer is Coming!

Forget about fad diets where carbohydrates are taboo, super supplements that yield miraculous results, or hours of mind-numbing cardio. They have become obsolete! I am going to share with you a dirty little secret that top strength and conditioning coaches have been using to get their athletes very lean and improve their performance markedly.

Even if the closest you get to athletics is rooting for the Red Sox on a Saturday afternoon, you can still use this powerful fitness tool to crank up your body's fat burning furnace and get the best results from your workout programs. How do dramatically better results in less time sound to you? I know, I know, it sounds too good to be true but there is plenty of science and real-world results to support this phenomenal protocol.

The Dirty Little Secret of Top Trainers!

Allow me to introduce you to HIIT. HIIT is an acronym that stands for High Intensity Interval Training. Sounds fun already doesn't it?

What is HIIT you ask? Well, it is a form of cardiovascular exercise that has the potential to take your physical conditioning to new levels.

Most of us are fully aware that cardiovascular exercise is definitely a piece of the puzzle in the quest for improved health and body composition. The problem is that most people are confused on how it should be performed for optimal results.

The Current State of Cardiovascular Training

I can't count how many times I see people barely moving the pedals on a stationary bike reading the newspaper! So little effort is displayed on their behalf that it simply amazes me. Some of these people barely even break a sweat and the reality is that they actually get a better workout walking from their car to the front door of the gym!

The people that are actually performing cardiovascular exercise with a moderate effort seem to do way too much of it! Most people I see in gyms are still doing huge volumes of aerobic exercise with little change occurring in their bodies. Like a fly against a window pane they persist in their efforts because that is what everyone else is doing and that is what they have always been told to do.

One thing that I think would be very helpful for people to realize is that there is a dose-response relationship to cardiovascular exercise. When you perform cardio on a regular basis your body will eventually adapt to it over time. If you continue to perform the same amount of cardio at the same intensity you won't see any changes in your body. Think about this quote for a second, "If you never change anything, nothing will ever change!" When you have reached one of these "plateaus" in training you must do something differently in order for you to achieve continued progress.

Lots of Aerobic exercise = Fat Loss right? Not necessarily. Let's take a closer look at some fitness history and some research.

Most of the major exercise organizations recommend 5-7 days per week of moderate intensity cardiovascular exercise (between 60-80% of Max Heart Rate) for cardiovascular benefits and of course for the fat loss benefits. If you look at most cardiovascular machine you will see fancy programs for fat loss, hill, interval, you name it. These pre-programmed routines try to maintain a "target heart-range" and adjust the intensity up or down so that you stay in the coveted "fat-burning zone." While this is time-proven standard for health it has not been overly effective for making devote exercisers very lean.

These recommendations date back in part to a famous study done on Dock Workers that looked at the primary fuel source utilized after 20-30 minutes of continuous exercise. The researchers determined that the contribution of fats to muscle energy metabolism increased the longer the exercise lasted. After 20-30 minutes of cardiovascular exercise the body started using less glucose (blood sugar) and fat became the preferred energy source during this prolonged exercise.

The researchers then postulated that if you want to lose fat, you should exercise at a moderate intensity for more than 20-30 minutes. Makes sense right? This has been the approach for many years and countless people have slaved away performing huge volumes of slow aerobic exercise in their collective quests to get lean. I spend a lot of times in gyms and I know plenty of people who have tried this approach with little to no luck. I even used to be one of them!

Newer research and anecdotal evidence brings these people hope and it has forced many of us to rethink our approach as to the optimal way to lose fat via cardiovascular exercise. Get ready to change your paradigm and crank up fat loss to new levels!

What the Research Has To Say!

Some ground-breaking research studies have given us some great insights into the power of more intense physical exercise.

One important research study performed by Dr. Izumi Tabata compared moderate intensity exercise to a High Intensity Interval Training (HIIT) protocol that has been used

by major members of the Japanese Speed Skating team for several years. The protocols used by Tabata's moderate intensity group and the high intensity interval-training group (HIIT) were very different.

After both groups warmed up, the moderate intensity group performed **ONE HOUR** of cardiovascular exercise while the HIIT group performed only about **4 MINUTES** per workout. You read that right, only FOUR minutes!

Here are the details of the study: In the moderate intensity group (the old way of doing things!), seven active young men exercised on a stationary bicycles 5 days per week for 6 weeks at 70% of VO2 Max (a pretty good pace), 60 minutes each session. (By the way, VO2 Max is the amount of oxygen your body is able to take in, transport, and utilize during exercise and is a very reliable way to judge someone's aerobic fitness). VO2 Max was measured before and after training and every week during the 6-week period. As each subject's VO2 Max improved, exercise intensity was increased to keep them pedaling at 70% of their actual VO2 Max.

The second group (the HIIT group) followed a high intensity interval protocol. Seven students, also young and physically active, exercised five days per week using a short, intense training protocol. Our boys in the second group first performed a 10 minute warm-up and then performed seven to eight sets of 20 seconds at 170% of VO2 Max (really intense!), with a 10 Second rest between each bout (basically they pedaled 20 seconds really fast, alternated with 10 seconds slow).

The guys in our HIIT group were instructed to pedal at a speed of 90-RPM (revolutions per minute) and the sets were stopped when RPMs dropped below 85-RPMs. When these guys were able to complete more than 9 sets, exercise intensity was increased by 11 Watts. The training protocol was altered one day per week and on that day the students exercised 30 minutes at 70% of VO2 Max before doing 4 sets of 20 Second intervals at 170% of VO2 Max. This last session of the week was not performed to exhaustion where as the four prior to that during the week were performed to complete exhaustion (tiring eh?).

What were the results you ask? The moderate intensity group produced a significant increase in VO2 Max (10%), but had no effect on anaerobic capacity. The HIIT group improved VO2 Max by about 14% and anaerobic capacity increased by a remarkable 28%! These results are important not only for athletes who want the most benefit for their time investment in training but there also some important implications for those of us who would like to shed a few stubborn pounds of fat. Check out the amazing fat-loss results revealed in this next study.

In a similar study performed by Angelo Tremblay and his colleagues compared the effects of a moderate intensity aerobic exercise and a HIIT protocol on fat loss. The results showed that the total energy cost of the endurance training exercise burned twice as many calories as the HIIT group did. Skin fold measurements (a method used to determine body fat levels), however, showed that the HIIT group lost more subcutaneous

fat than the endurance-training group. The results showed that the HIIT group got **NINE TIMES MORE FAT LOSS** benefit for every calorie burned during exercise! Dr Tremblay concluded, “The metabolic adaptations from HIIT may lead to a better lipid (fat) utilization in the post exercise state and thus contribute to a greater energy and lipid deficit.” In other words the HIIT group caused more calories and fat to be burned **AFTER** the workout. This means that after you finish your workout, hit the showers, and are on your way back to your home your body is burning fat stores right off of your body!

In some other interesting research, the National Institutes of Health shows that high intensity exercise such as sprint intervals can be more beneficial than traditional cardio especially for middle-age and older adults. Their research showed tremendous increases in growth hormone which is suspected to be a strong factor in fat loss. I could go on and on citing all kinds of research showing that HIIT is more effective than moderate intensity cardio but lets take a look at the real-world evidence shall we?

Don't Trust The Scientists? Check Out The Real World Evidence!

Let's look at some real world examples now. Think about sprinters and gymnasts for a moment and form a picture of these athletes in your mind. Have you ever seen a fat sprinter? Nope, I didn't think so!

Some might argue that these athletes are blessed with perfect genetics and while this may be true to a certain extent you still have to take a look at their training programs and realize that what they are doing helps to optimize their results.

These are very lean athletes with some of the lowest body fat percentages around. They rarely perform any long-term endurance training, as this is counterproductive to their respective sports.

In fact, Al Vermeil, Strength Coach for the Chicago Bulls, was once quoted as saying “If you train slow, you will be slow.” Profound stuff I know, but I can't count how many times I have seen athletes trying to improve their speed by running at a slow pace for long distances.

Top level strength coaches also know that endurance training can actually make their athletes slower and weaker due to the catabolic (muscle wasting) effects of large volumes of endurance exercise. Despite the fact that they do not perform prolonged moderate intensity exercise they still maintain a very low body fat percentage and have tremendous cardiorespiratory capacities. If you examine their training routines you will see a close similarity to the HIIT protocols mentioned above, short burst of intense exercise followed by periods of rest. Pretty interesting, eh?

HIIT for Athletes

Speaking of athletes, HIIT is tremendous for improving physical conditioning for your given sport no matter if you are an endurance athlete or a strength/speed sport athlete.

One study done with endurance athletes that incorporated HIIT into their typical endurance routines were able to improve muscle recruitment and work output with a considerably lower training volume. Less time, better results. Sounds great to me!

For you coaches out there you can implement HIIT into your athletes' training sessions by having them perform game simulations for short bursts of high intensity. For example, one researcher looked at using 3 on 3, 2 on 2, and 1 on 1 mini-soccer games on a smaller area of a soccer field in order to implement High Intensity Intervals into their practice sessions. This technique could easily be adapted to your particular sport so have fun and experiment.

Adding HIIT to Your Training Program

OK, you're impressed with what I have shown you so far but you may be curious how you should apply this wonderful knowledge? Great question but let me start off with a word of caution. Although the following protocol is very time efficient, it is very taxing and it **SHOULD NOT** be attempted by beginners.

Understand that everything in life has a benefit and a cost. The benefit of HIIT is that it burns a lot of energy in a short time, it improves your VO2 max, it cranks up metabolism for up to 24 hours post-workout, and it might preferentially improve fat burning and make you very lean.

The cost of HIIT is that it is very intense and not for everyone. Be warned. If you have cardiac and/or vascular problems this type of training might exacerbate them.

Remember, the human body is an amazing adapting machine but if there is a big disparity of what it is currently capable of and what you are asking it to do (i.e. a HIIT protocol), you run the risk of injury or even worse so **PLEASE** use your brain!

A universal rule is to consult your Doctor, get permission, start slowly and gradually progress in an intelligent manner. I would recommend starting with a moderate intensity program for 10-12 weeks if you are beginner and then gradually adding in some higher intensity workouts. Check out this sample progression:

Beginner: 10-12 weeks of moderate intensity training for 20-40 minutes/session 3-5 days per week.

Beginner/Intermediate: 4 weeks of this protocol: 2 min moderate/high intensity alternated with 4 minutes of low/moderate intensity cardio 3-4 days per week.

Intermediate/Advanced: 3-4 weeks of this protocol: 1 min fast alternated with 1 min slow 3-4 days per week.

Intermediate/Advanced: HIIT Protocol given below! 3-4 days per week

Makes sense right? It is amazing to me how many people start off too hard and fail to listen to their bodies. A skilled carpenter can perform some amazing things with a given tool. That same tool, in the hands of someone who uses it improperly, can cause great damage. HIIT can be a valuable tool in the quest for fat loss if used properly. With that said, let's get on to some recommendations.

High Intensity Interval Training (HIIT) Guidelines:

- 1. If performing weight training and cardio on same day, perform HIIT after weight training.**
- 2. Perform a 10-minute warm-up period. Start at a slow to moderate speed pace and gradually increase RPMs and/or Intensity over 10 minute period. Use the warm-up to 'feel out' your status for the day. If you feel slow and lethargic, perform less intensely during the HIIT portion of the workout. If you feel great, go ahead and crank up the intensity. Just be sure to listen to your body and select an intensity level appropriate for you on that day.**
- 3. Perform 7-15 sets of 20-30 seconds bouts of intense exercise with the eventual goal of "exercising to the point of exhaustion." (Which can be a very relative term). Every workout perform the first two or three intervals at a lower intensity level and work your way into the higher intensity levels if it feels good.**
- 4. For your first few HIIT workouts I recommend starting at a lower intensity level with the least amount of sets and intensity while working your way up at a controlled level to allow your body to adapt to this routine. You really want to ease your way into this type of training.**
- 5. Rest 10-20 seconds between each 20-30 second bout (10 seconds rest for a 20 second interval, 20 second rest for a 30 second interval).**
- 6. If using the stationary bike, the Revolutions Per Minute (RPM) are to be maintained around 85-90+ RPM during the fast portions of the interval. RPMs can drop significantly for the slow portions of the intervals to 60 or 70 RPM. Note: This protocol can be performed with almost any kind of exercise (i.e. sprinting, rowing, stair climbing, elliptical training, and even bodyweight exercises such as Jumping Jacks, Squat Jumps, Jump Rope and Mountain Climbers. Be creative and feel free to mix it up! See the Side Bar for more ideas on different ways to perform HIIT).**
- 7. Maintain high intensity during the 20-30 second bouts to ensure that fatigue is achieved.**
- 8. Stop exercising and seek medical assistance if any problems arise!**
- 9. Always perform a cool-down for 5-10 minutes and perform some static stretching if time allows (if not, be sure to stretch later in the day).**

Whew! That was tough! If you did this correctly, you should feel pretty tired but rest assured you did a lot of work in a very short amount of time! I have implanted HIIT-style protocols into many of my personal training clients and athletes' training programs and I have seen it produce tremendous results.

Train with purpose,

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Side Bar 1

Benefits of HIIT:

- Intense exercise increases the energy cost of exercise (you'll burn more calories in a shorter period of time!)**
- HIIT increases post-exercise energy expenditure (you'll burn more calories even after the workout is over! The after-burn effect!)**
- Increases potential of muscles to utilize stored fats to replenish energy stores post-workout (you'll burn more of the stored fats after the workout is finished!)**
- Decreases post-workout hunger (enough said!)**
- HIIT training does not over train the Type II muscle fibers like endurance training does (you won't lose quickness or explosive ability which is important for many athletes)**
- May induce capillary growth and proliferation of endothelial cells around Type I and Type II muscle fibers (improves blood flow to muscles)**
- You'll improve your aerobic and anaerobic capacity (you will be a better conditioned athlete!)**
- You will produce dramatically more Growth Hormone (in some cases, over 500% normal levels!) which is a factor in Fat Loss!**

Side Bar 2

Different ways to perform HIIT:

(In the Gym):

- Elliptical Climber
- Stationary Bike
- Upright Bike
- Rowing Ergometer
- Bodyweight Exercises (i.e. Jumping Jacks, Squat Jumps, Mountain Climbers)
- Treadmill (I find it difficult to use the treadmill but some people use it for HIIT)
- Jump Rope

(Out of the Gym):

- Speed Walk/Walk
- Sprint/Jogging
- Uphill Running/Walk down the hill
- Squat Jumps/Bodyweight Squats
- Jumping Jacks/Walking
- Mountain Climbers/Walking
- Mountain Biking
- Jump Rope
- Sports Specific Movements (i.e. play intense 1 on 1 soccer for 20 seconds then jog for 10)
- Be Creative and use any intense exercise for 20 seconds and light recovery for 10 seconds