The Complete Beginner's Guide to

High Intensity Resistance Training

A thorough introduction to the topic of High Intensity Resistance Training (HIT) for those of you, who are just discovering it, and a refresher for those, who need to get back to the basics of what simply works.

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Table of Contents

INTRODUCTION

Spreading the message of HIT

For a while I have wanted to put out a free in-depth resource to act as a thorough introduction to the topic of High Intensity Resistance Training (HIT) for those of you who are just discovering it, and as a refresher for those who need to get back to the basics of what simply works.

This is the guide I wish that I'd had access to when I first began resistance training in earnest back in 1996. It is a simplified summation of the 21 years of experience I have; training myself, training with other experts in the field and through my work teaching others as a personal trainer specializing in HIT.

This guide doesn't cover every drop of minutia that there is to know about the subject. Our **HIT courses** already serve that purpose. It will however be comprehensive in giving you the information that you need to start training HIT today with solid foundations and with the most result-producing approach that I know of.

We are giving this information away for free because I want many more people like you to learn about and understand HIT and to gain the multitude of benefits that training in this style presents.

In time, some of you may develop a passion for HIT that goes beyond training your own body, and you may want to get involved in spreading the message of HIT far and wide, perhaps ultimately becoming a personal trainer helping others to achieve their own best body through HIT.

Enjoy,

Simon Shawcross

1

SECTION ONE

What is High Intensity Resistance Training?

WHAT IS HIT?

A science-based approach to exercise

HIT stands for High Intensity Training which to be clear is high intensity *resistance* training.

It is the most effective and efficient way to:

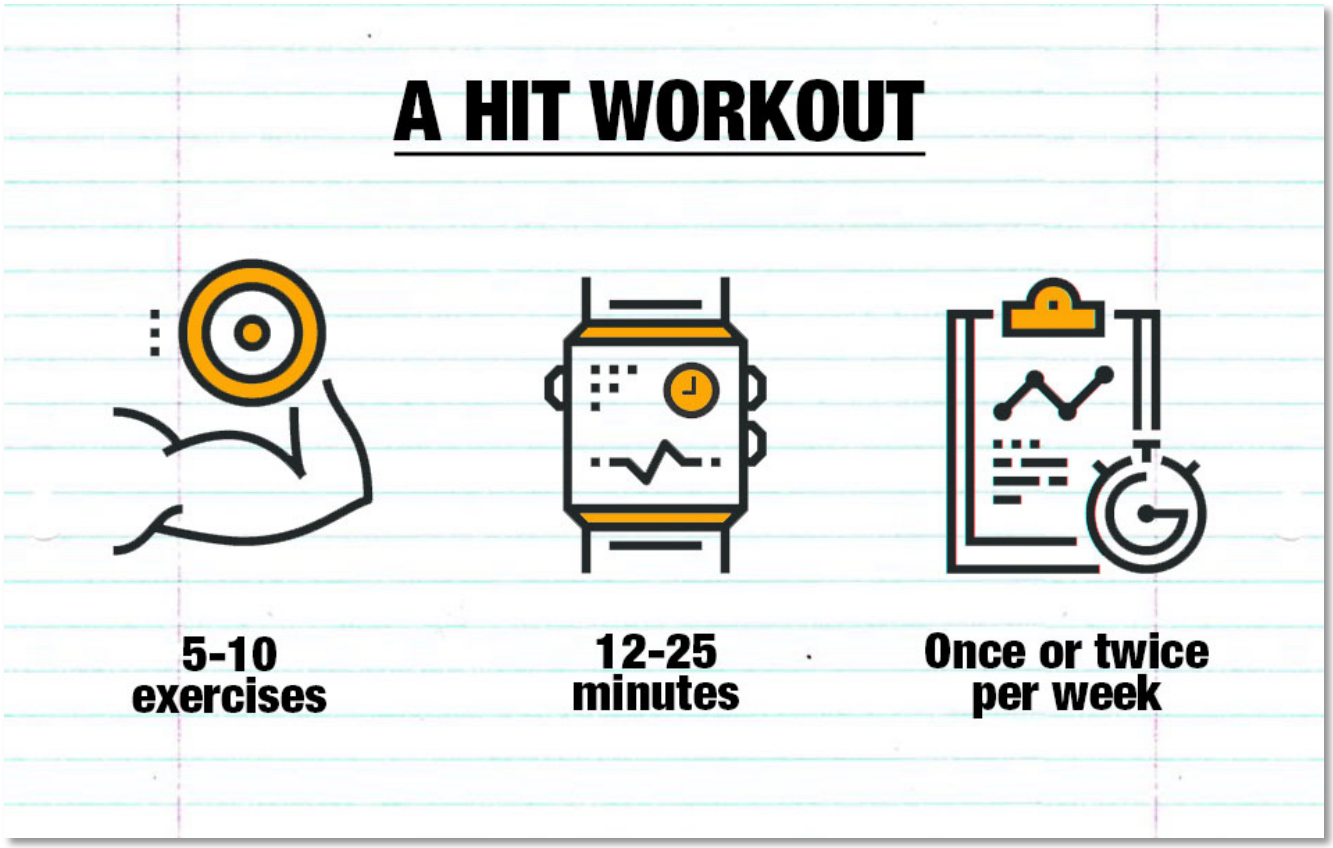
- ✓ gain muscle
- ✓ reduce body fat and “tone up”
- ✓ attain a myriad of other health benefits.

By the way it is also evidence-based, observing proven scientific principles.

Each HIT workout usually consists of somewhere between 5-10 exercises, all of which are completed within about 12-25 minutes.

Every selected exercise, whether weight-stack machine-, free weight- or bodyweight-based, will be biomechanically appropriate, tracking muscle and joint function. There will be no wasted effort, all your energy will go into proven productive muscle building movements. Proper performance of the exercises adheres to guidelines that will concurrently boost the stimulus and the safety of the exercises.

There are many approaches/interpretations to resistance training, many of which may be effective, however HIT is unique in its focus on providing the best results possible efficiently and safely.



High Intensity Resistance Training is the safest, most efficient and effective form of exercise.

> *You can exercise a lot and you can exercise hard, but you cannot do both.*
>
> **Arthur Jones, Inventor of Nautilus exercise machines**

Typical results

HIT is for everyone, with some provisos:

- ✓ Your genetic make-up is the primary determinant of the amount of muscle tissue you can ultimately carry.
- ✓ Most of your muscular gains will occur within the first year or two of serious HIT training.
- ✓ After that, the goal is usually to maintain your newly acquired muscle tissue.

Muscle gain

Let's look at what is possible for men and women who are beyond teenage muscle maturation and are now in their twenties or older and are ready to take HIT seriously.

Male

Most guys can gain 10-15lbs of muscle tissue with focused HIT training. Super hypertrophic responders may gain 20-30lbs of muscle, drug-free.

Female

Most women can gain around 5-8 lbs of lean tissue. Super hypertrophic responders may gain 12- 15lbs.

Typical results

HIT is for everyone, with some provisos:

- ✓ HIT is focused on results and suits results-driven individuals.
- ✓ If you are looking to have a social experience whilst working out, then HIT probably isn't for you.
- ✓ HIT is for people prepared to significantly challenge their muscles.

Weight loss

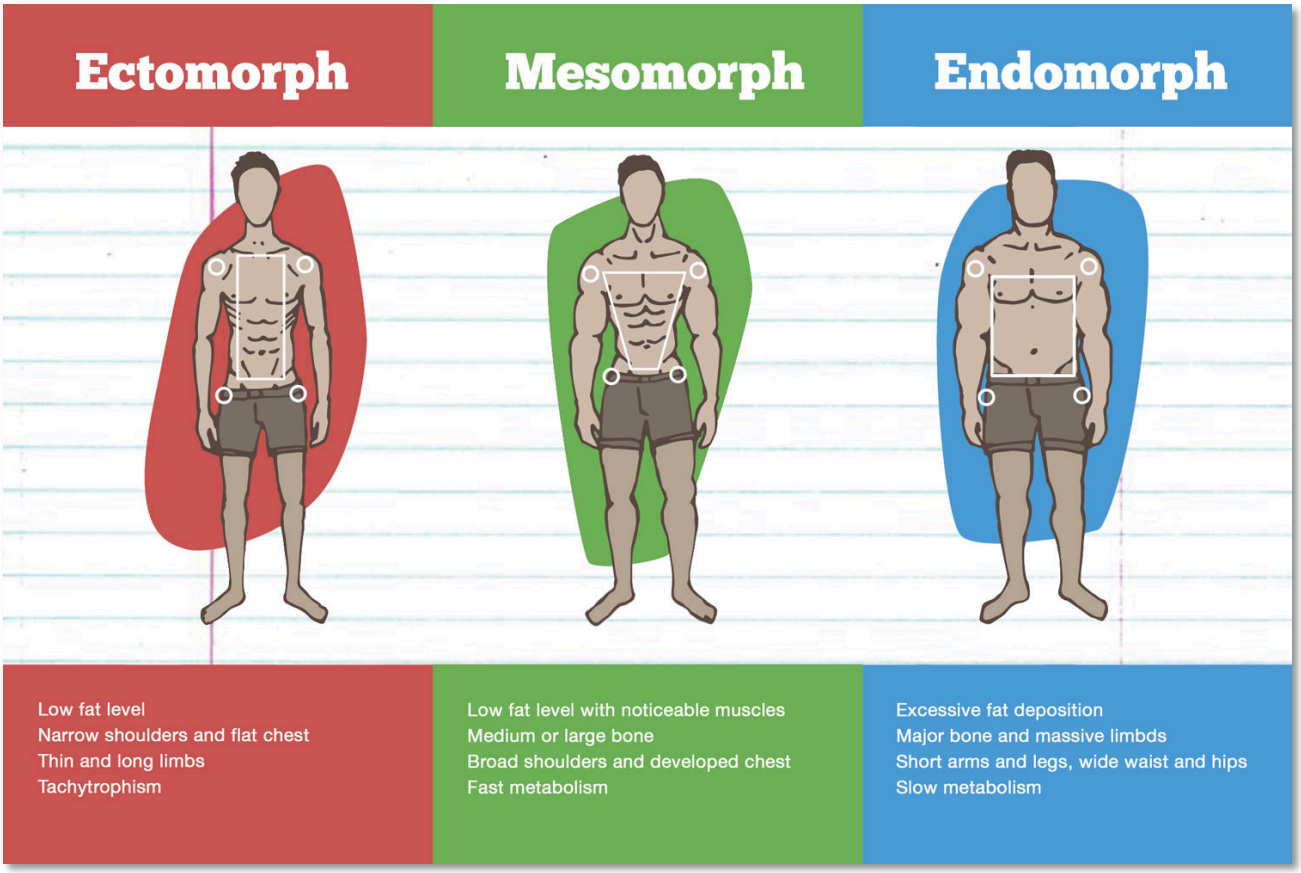
HIT plays a valuable role in fat reduction.

If you have excess fat to get rid of, applying HIT whilst eating appropriately and managing lifestyle stressors, will result in a reduction in body fat.

The utilization of stored glycogen, the release of fat burning hormones and the increase in metabolic rate (during and in some cases for days after the workout) stimulated by HIT, all support the goal of reducing body fat levels effectively.

> *How your body responds to resistance training is largely predicated by your genes and body type.*

Understanding your body type will help you set realistic exercise goals. Genes define your optimal physique.



BENEFITS OF HIT

HIT will have a systemic impact

High intensity resistance training is excellent at building muscle tissue, stoking the metabolic engine to help fat reduction goals and improving cardiovascular fitness but there are other, less obvious benefits. These include benefits to the muscular, skeletal, cardiovascular and respiratory systems, digestive, nervous and endocrine systems.

Physiological benefits of Resistance Training

- ✓ Attain a biological age equal to, or lower than your chronological age
- ✓ Increased strength
- ✓ Increased muscle mass
- ✓ Improved possibility of longevity and reducing all-cause mortality
- ✓ Decreased gastrointestinal transit time (reducing the risk of colon cancer)
- ✓ Myokine release and combatting of metabolic disorders
- ✓ Increased metabolic rate
- ✓ Increased muscle protein synthesis
- ✓ Reduction in low back pain
- ✓ Increased bone mineral density
- ✓ Reduced blood pressure
- ✓ Improved muscle quality and insulin sensitivity in persons with type-2 diabetes
- ✓ Partial reversal of mitochondrial aging

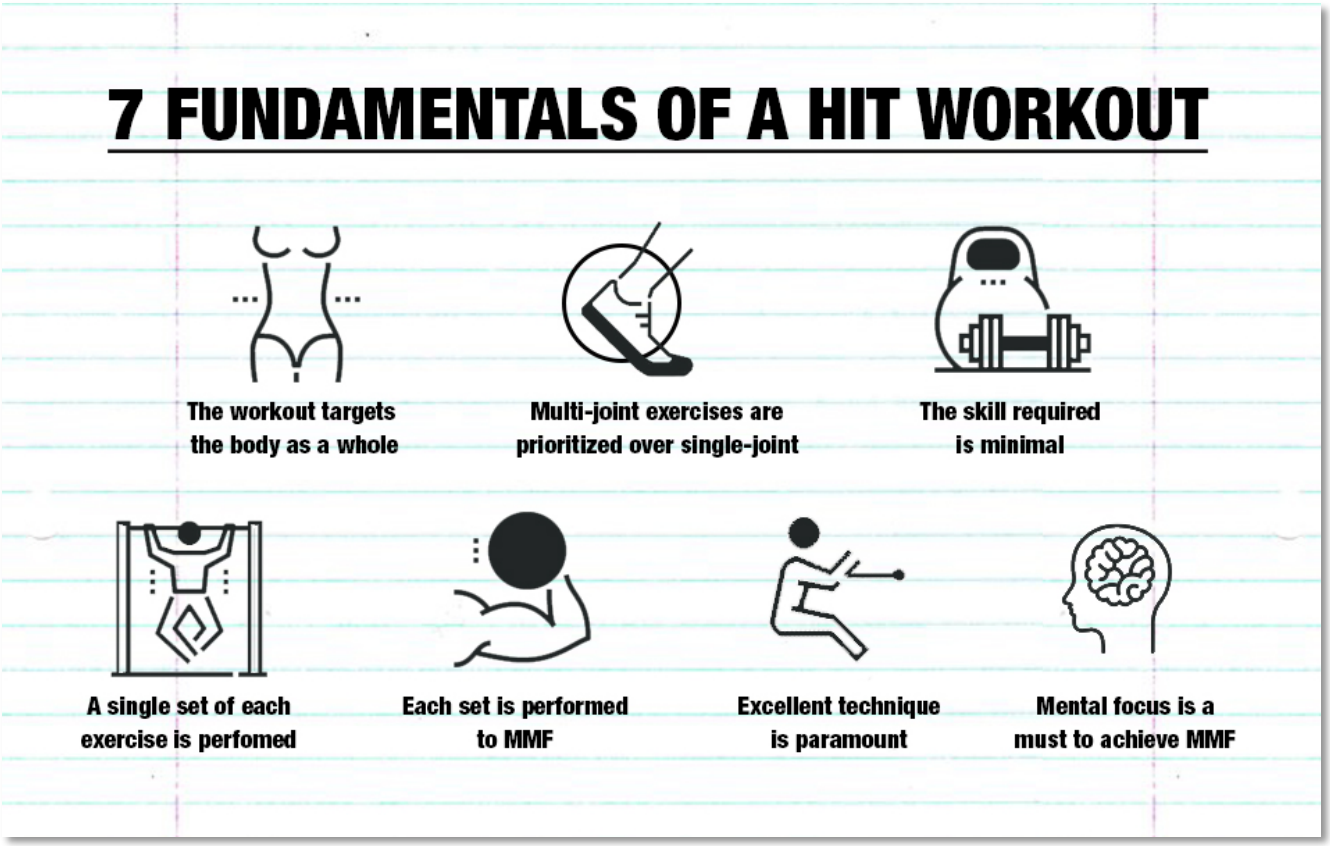
Psycho-social

- ✓ Improved cognitive functioning
- ✓ Improved sleep quality
- ✓ Reduced anxiety
- ✓ Reduced depression
- ✓ Improved self esteem

2

SECTION TWO

Seven fundamentals of a HIT workout



These seven fundamentals make HIT unique compared to other forms of exercise. Let's look at these one by one.

> *Persons should self-select a weight and perform repetitions to failure. Evidence suggests this is optimal for maximizing hypertrophy.*
>
> **James Steele, Associate Professor Sport and Exercise Science at Southampton Solent University, et. al 2013**

#1

A HIT routine will usually consist of 5 to 10 EXERCISES THAT TARGET THE BODY AS A WHOLE.

HIT workouts are often full body routines, meaning that all major muscle groups will be exercised in any given workout.

This is as opposed to split routines where the body is split into upper and lower, or even divided further with workouts for different muscle groups performed on different days.

Note that both full body and split routines can work, however beginner and intermediate trainees usually need not consider split routines.

Benefits of full body workouts

- ✓ Less total training days per week
- ✓ The whole body gets a chance to recover and adapt on non-resistance training days
- ✓ If a workout gets missed, your next session will address all muscle groups, keeping you on track
- ✓ Provides a greater metabolic stimulus

#1

A HIT routine will usually consist of 5 TO 10 EXERCISES that target the body as a whole.

For most individuals the minimum number of exercises I would suggest starting out with is five.

The Big Five

- ✓ Seated Row
- ✓ Chest Press
- ✓ Pulldown
- ✓ Overhead Press
- ✓ Leg Press

The Big Five is a routine made famous in McGuff and Little's book, Body By Science. The Big Five is a fantastic starting point for exercising with HIT, especially if you are training yourself without the assistance of a personal trainer.

A full body routine does not require more than ten exercises.

It can be both excessively challenging and unnecessary to attempt to perform more than ten exercises to momentary muscular failure (MMF) in a single workout. This is not a hard and fast rule: an individual could perform 11 or 12 exercises and of course the workout could still be considered a HIT workout. However, as a practical limit I recommend performing no more than a maximum of 10 exercises in a workout. If you perform the exercises right you won't want to do anymore than ten!

#2

The workout prioritizes MULTI-JOINT exercises over single-joint exercises.

The Big 5 routine is made up exclusively of multi-joint exercises. These are movements where significant action occurs at **more than one joint**.

A good example of a multi-joint exercise is the leg press, where movement occurs at the hip, knee and to a certain extent ankle joints. You might also see multi-joint exercises referred to as compound or linear exercises, these are just different names for the same type of exercise.

As multi-joint exercises use multiple muscles/ muscle groups to create movement, multiple muscles receive a stimulus with one exercise, this makes them efficient.

All HIT routines (where possible, rehab needs excepting) are based on a foundation of multi-joint exercises. In fact, nearly all viable full body routines will be based on the exercises found in the Big Five with additional exercises salted in.

#2

The workout prioritizes multi-joint exercises over SINGLE-JOINT exercises.

These additional exercises are known as single-joint exercises, where movement or action occurs **at one joint**.

For example, the leg extension exercise, which involves loaded movement at the knee joint is a good example. You may also see single-joint exercises referred to as isolation, rotary or simple exercises.

Single-joint exercises provide relative isolation for an individual muscle or muscle group, such as the quadriceps in our example of the leg extension.

This type of exercise is particularly useful for:

- ✓ Targeting the lumbar extensors (low back)
- ✓ Targeting the muscles of the neck
- ✓ Correcting muscular imbalances and rehabilitation use
- ✓ Enhancing mental connection with a muscle group, and/or providing psychological satisfaction of honing in on a desired/sought after muscle.

#3

With HIT, we aim to minimize the skill required to stimulate muscle tissue.

All movement requires some degree of skill.

- ✓ On a continuum, a weight-stack machine chest press requires a fairly minimal degree of skill.
- ✓ At the other end of the scale a serve in tennis requires a high degree of skill.
- ✓ A hand-clap push up would fall somewhere between the two extremes.

The tennis serve, serves (ahem) a purpose outside of “exercise”. It is a competitive game skill. The machine chest press and the hand clap push up do not. They are both exercises that may conceivably be used to stimulate muscle growth.

Out of the two, the hand clap push up involves a far greater degree of skill(s) including speed, power, balance, agility, stabilization, technique, and coordination. This makes the hand clap push up less efficient, less safe and perhaps less effective for stimulating hypertrophy, (albeit a being more impressive-looking feat to observe).

#3

With HIT, we aim to minimize the skill required to stimulate muscle tissue.

In HIT, you will use the machine chest press or the regular (non-clapping) push up. You will use exercises that require comparably less skill and address the desired musculature in a biomechanically sound manner.

In many approaches to exercise, the demonstration of an impressive looking skill or series of skills takes precedence. This perhaps speaks to a human desire to be able to demonstrate rare(-ish) mastery of an impressive feat. I am not suggesting this desire is a bad thing. Mastering complex physical skills can be very satisfying and can look awesome – think of your favorite sport/favorite athlete. It simply doesn't lead us as efficiently and safely to our goal of hypertrophy.

HIT is not just for an elite club of talented athletes who can demonstrate impressive movement skills, HIT is for everyone to safely optimize their lean mass and related fitness markers.

HIT is truly egalitarian in this respect.

#4

Only a single set, consisting of multiple reps, of each exercise is performed.

It is typical in HIT that only one set of each chosen exercise is performed. The proviso that goes along with this single set per exercise approach is that the single set is taken to momentary muscular failure (MMF).

What is a set of an exercise?

When you perform an exercise you will repeat a given movement pattern. For example, in the leg press, you'd push the resistance away from yourself and then control it back. Each time we complete the whole movement like this it is called performing a **repetition** of the exercise, or for short a "rep".

One normally performed rep is not enough of a challenge to stimulate the muscle to the extent we desire, you will need to repeat continuous reps of the exercise until you reach momentary muscular failure. This series of continuous reps is known as a **set** of the exercise.

What is momentary muscular failure?

MMF for our purpose here is the point at which concentric movement is no longer possible. You cannot cause any further shortening of the muscle against the chosen load, despite best intentions to do so, at the end of a set of an exercise. Exercising to MMF allows us to recruit and fatigue as many motor units and muscle fibers in the target muscle group as possible.

#4

Only a single set, consisting of multiple reps, of each exercise is performed.

Can I do multiple sets?

As an aside, a multiple set per exercise approach can work too so long as there is an adequate accumulation of fatigue over the course of several sets that ultimately results in a high degree of muscular effort.

This approach is less efficient than the single-set, HIT method, however there are times when even in HIT, it may be appropriate to perform more than one set. For example, when:

- ✓ you are starting out
- ✓ getting used to new exercises
- ✓ finding the right weight to use for an exercise.

In these circumstances, it can be beneficial to perform another set to both accumulate adequate time under load and to gain greater exercise learning exposure.

Remember though this is HIT and you need to get proficient with the single set approach as soon as you are capable of it.

#5

It is crucial that each exercise is performed with excellent technique.

A series of good behaviors and techniques need to be observed when taking an exercise to MMF to ensure safety.

Breathing

- ✓ Breathe throughout, continuously through each rep and the entire set, especially as you approach MMF.
- ✓ Avoid holding your breath.
- ✓ Let your breathing be spontaneous
- ✓ Avoid forcing a particular breath-pattern. As the set progresses and the demand for oxygen increases your breathing rate will speed up.
- ✓ There is no need to make any noise other than an unencumbered pant: no need to make any moaning, grunting, whistling or shushing sounds!
- ✓ Keep your face and jaw relaxed as you exercise.

Additionally, any part of the body that is not specifically involved in producing movement or needed for stabilization should be kept as relaxed as possible. Do make sure to maintain good exercise form throughout and avoid trying to cheat the load up. If it doesn't move any further with good technique… good news you are done on that exercise! Finally, if you are new to resistance training or you are performing an exercise that is new to you, focus on correct performance of the movement as your top priority.

TIPS FOR GOOD EXERCISE TECHNIQUE

Breathe continuously and avoid holding your breath

Don't moan, grunt, whistle, shush or speak

Keep your face and jaw relaxed

Keep the uninvolved musculature as relaxed as possible

Keep good exercise form and don't cheat the load up

Stay focused, calm and determined

> *(...) more people would profit from an understanding and application of proper form, than from proper intensity. Of course, in the long run, you're going to need large amounts of both."*
>
> **Ellington Darden, Ph.D.**

#6

In order to optimize physiological adaptations, each set must be taken to momentary muscular failure.

Over the course of a set taken to Momentary Muscular Failure (MMF), there will be a gradually building burning-like sensation in the targeted muscles.

As this burning sensation builds to its peak, ability to keep your lifting tempo consistent will falter and your movement will slow, ultimately to a standstill at the point of MMF.

You need to get used to this sensation, as the stimulus for muscular improvement occurs when this sensation is strongest: at the end of a set.

The moment that you de-load, after the exercise is complete, the burning sensation will dissipate quickly and you will be left with a residual feeling of fatigue in the worked muscles.

The ability to achieve MMF is a skill itself, one that will require some practice to refine.

#7

The trainee's mental focus is paramount to successfully train to failure.

To make single set to MMF training work it is very important to be fully mentally engaged during each exercise.

HIT will not work if you daydream during the moderate effort reps at the start of the set and then give up the moment that the exercise begins to feel hard.

Much of the challenge of single set training is in how you focus on the exercise and how you respond mentally to the sensations of fatigue that build up as the set progresses.

Remember that the most uncomfortable part of the set is only going to last around 20 seconds and that feeling of truly well applied muscular exertion to momentary fatigue is temporary and fleeting.

Those passing seconds of discomfort will produce significant and lasting benefits from both a physical and psychological perspective. It is worthwhile.

#7

The trainee's mental focus is paramount to successfully train to failure.

Mindset tips to get you to MMF

- ✓ Firstly, focus on correct performance of the exercise and the safety behaviors mentioned previously.
- ✓ Then focus on accumulating and yes welcoming the sensations of fatigue in the targeted musculature specifically.
- ✓ As the movement begins to slow as MMF approaches, determine to stay resolute and keep moving.
- ✓ It is normal for obstructive thoughts to arise as the set progresses – "This feels heavy today", "How much longer is this going to last?", "I don't feel as strong as last workout", and so on. Let these thoughts pass as clouds on a breezy day in an otherwise clear sky, and keep your focus on the NOW moment in the set.

3

SECTION THREE

Applying HIT for yourself

RECOMMENDED ROUTINES

The Big Five Plus Trunk and Calves

Here is the routine that I suggest that you start out your HIT journey with, the Big 5+ trunk and calves. It is a well-rounded routine that addresses all the major muscle groups with the big 5 multi-joint movements front and center and 3 important single-joint exercises added too, for a total of 8 exercises.

BODYWEIGHT ONLY	MIX OF DUMBBELL AND BODYWEIGHT	WEIGHT-STACK MACHINE
Chin up (static if required)	Chin up (static if required)	Pulldown
Push up	Bench press	Chest press
Single leg heel raise	Bent over row	Compound row
Inverted row	Overhead press	Shoulder press
Pike push up	Single leg heel raise	Low back
Squat	Squat	Toe press
Lumbar extension	Lumbar extension	Leg press
Abdominal curl	Abdominal curl	Abdominal

THE ORDER OF EXERCISES

Upper-body first, lower body next

You will notice that the order of the equivalent exercises differs depending on whether you perform the routine exclusively with bodyweight (BW) exercises, with a mix of dumbbell and bodyweight exercises (free weight- FW), or exclusively with machines.

All three versions of the routine start out with the first two exercises being equivalents: **upper-body, multi-joint, pull followed by push, exercises.**

At the third exercise things change. In the BW only routine, the third exercise is a heel raise (calf) exercise, the equivalent of which doesn't appear till later in the other two routines.

The reason for its early inclusion in the BW only routine, is that the big 4 upper body multi-joint exercises can be particularly demanding for a beginner, in terms of focus required, technique, upper-body muscular fatigue, and stabilizer muscle support demands. Inserting the heel raise after the first cycle of pull and push exercises, gives the upper-body a brief and welcome respite that will allow you to refocus and then get more out of the second push-pull cycle (inverted row and pike push up). This applies specifically to the BW routine.

Other than this heel raise division in the upper body section of the BW only routine, you will notice that all three versions follow the same pattern at the start of the workout **upper-body: pull, push, pull, push, starting with the exercise that works the greatest amount of musculature**.

The pulls and pushes are divided so similar muscle groups get a degree of rest between exercises. This is particularly important for the forearm muscles that would struggle if the pulldown, chin-up and row variants were performed back-to-back.

THE ORDER OF EXERCISES

Upper-body first, lower body next

The next difference that you will notice is the position of the exercise to target the muscles of the low back. In both the BW and the FW routines, the low back exercise (lumbar extension) comes after the squat, however in the machine routine the low back exercise comes before the leg press (squat equivalent).

This is down to the important role that the lumbar musculature plays as a stabilizer during the squat, particularly the dumbbell squat. Whereas the lumbar musculature itself is supported during the leg press so doesn't have to play the stabilizing role to anywhere near the same extent. Many low back machines will also significantly stimulate and to a degree fatigue the hip musculature, so by placing the low back exercise before the leg press it is acting as a both a warm-up and pre-exhaust which can be of benefit.

A major factor you will notice with all three versions of the routine is that in general **the upper-body is worked first and the lower body after**.

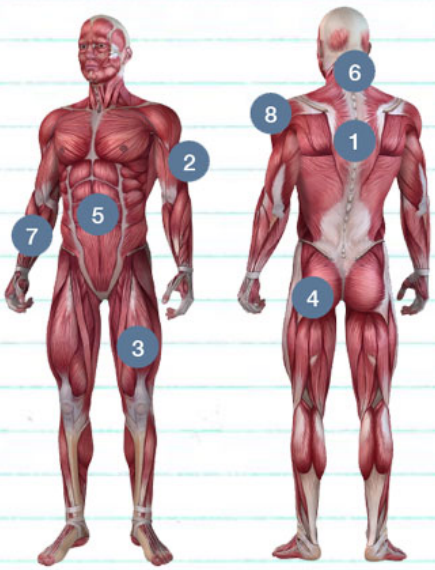
This is done as the lower body multi-joint exercise is typically the most challenging and systemically fatiguing- if you give your all to that exercise and still have multi-joint exercises that follow it, those exercises can suffer locally (in terms of the stimuli for the targeted muscles) due overall mental/physical fatigue and also potentially from being winded from the squat/leg press.

When writing or structuring an exercise routine, you always need to take into account the exercises in close proximity to one another and the effect they have on each other, and also on the workout as a whole, the big picture overview.

There are many possible ways to structure an exercise routine. Adapt the template to meet individual needs.

Here's a starting-point template for writing a routine, before considerations of exercise modality and specific individual needs are taken into account. Exercises that target torso come first, followed by arms, legs, hips and so on.

BASIC ORDER OF EXERCISES



1. Torso
2. Arms
3. Legs
4. Hips
5. Trunk
6. Neck
7. Forearms
8. Rotator cuffs

Tempo or Cadence

The tempo or cadence that facilitates a great level of control will be in the region of 3/3 to about 8/8 seconds.

- ✓ Moving slightly more slowly is viable too on equipment such as David, MedX, SuperSlow, RenEx, Arxfit and Outstrip.
- ✓ Moving more quickly than this can create peaks and troughs in muscle force.

When you perform a full repetition of an exercise, it consists of:

- ✓ the positive stroke (lifting the load)
- ✓ the top turn
- ✓ the negative stroke (lowering the load)
- ✓ and the bottom turn.

As you perform the exercise, you need to be in complete control of the load whether that be your bodyweight, a dumbbell or a weight stack. Ensure that you do not leverage momentum or reflexes to help shift the load. Your targeted muscles will then be moving the load exclusively, all the time.

The tempo or cadence that facilitates this level of control will be in the region of 3/3 to about 8/8 seconds.

That is minimally 3 seconds lifting and 3 seconds lowering the load. Make sure that you decelerate and control the top and bottom turns exceptionally well too.

Tempo or Cadence

The tempo or cadence that facilitates a great level of control will be in the region of 3/3 to about 8/8 seconds.

- ✓ The exact speed of movement is only a secondary concern to that of applying an even degree of tension throughout the entire set.
- ✓ If you are new to moving this slowly, I suggest that you start out with a tempo of 4/4 seconds.

Performance is key to getting HIT right.

You need to aim to build up force gradually from the moment you begin contracting the target muscles against the load until the moment movement is initiated at the very start of the set. This process itself before movement occurs may take 5 or so seconds when done well.

You will then aim to achieve a constant degree of force output and muscular tension from the moment movement begins until the moment it starts to inevitably taper off at MMF.

If you are new to moving this slowly during exercise, I suggest that you start out with a tempo of 4/4, and use a metronome during your first few sessions to get an accurate measure of what this tempo feels like.

Beginners have a tendency of moving more quickly than they perceive. A mental warping of time perception under load may occur initially, and metronome use in the initial sessions will help to correct this, in the absence of a personal trainer.

TEMPO & REP 4/4 EXAMPLE

4 secs for the positive stroke (lifting the load)

+ 4 secs for the negative stroke (lowering the load)

+ 1-2 seconds for turnarounds

= **10 seconds a complete repetition cycle**

+ 5 seconds to initiate movement

+ 60-90 secs time under load (TUL) timeframe goal

= **a repetition range of ~6-9 reps per set**

> *At the start of the first repetition, muscular contraction should be produced gradually, and should be slowly increased until the start of movement is produced. Once movement at a slow speed has started, the level of effort should remain just high enough to continue slow movement. Do not increase the speed as movement continues.*
>
> **Arthur Jones, Inventor of Nautilus exercise machines**

TIME UNDER LOAD (TUL)

Aim for sets that last between 60-90 seconds

Time Under Load (TUL) is the total time that the set lasts from initiation of force until you reach MMF.

I recommend that you track your TUL with a stopwatch initially. Aim for sets that last anywhere between 60-90 seconds but do not stop a set prematurely just because you have reached the upper time. Remember the goal is reaching MMF.

Under 60 seconds

In your first few workouts, whilst you are dialing in the right weight to use and learning to perform the exercises well, you may find you select a weight which means you get just short of 60 seconds. Or if using BW, you may find you are unable to get 60 seconds, e.g. on the chin-up. If this happens, you can perform a second set of the exercise to help you refine technique and accumulate an adequate overall TUL.

Over 90 seconds

If you manage to get over 90 seconds in the exercise with an appropriate tempo, excellent technique, and you felt fully in control of the resistance from the get go all the way through to MMF, then at your next workout, you can increase the load you use.

TIME UNDER LOAD (TUL)

Aim for sets that last between 60-90 seconds

Using a 4/4 tempo with controlled turns at each end of the movement will result in individual reps that last around 10 seconds in total. That means our TUL goal of 60-90 seconds gives us a rep goal of 6-9 repetitions per exercise.

Progression

- ✓ **If TUL > 90 seconds, with excellent technique**, then I recommend an increase in load at the next workout that the particular exercise is performed.
- ✓ **If TUL > 90 seconds, with lacking technique** at any point in the set, then do not increase the load for that exercise at the next session. You should achieve the upper target TUL perfectly, before load is increased.
- ✓ **If TUL < 60 seconds**, decrease the load used at the next session.

Rest period

The recommended rest period between exercises is 20-60 seconds.

- ✓ Short rest periods make the workout more time efficient.
- ✓ Use the rest period to check your equipment has been set up correctly.
- ✓ Ensure you have time to check you are correctly positioned and mentally ready to commence the next exercise.

During the first few weeks of training, when you perform your workouts, there is quite a bit to think about.

You need to make sure you set any equipment up correctly and mentally run through exactly what you intend to do with the next exercise in the routine.

It is far more important to get this right than to rush between exercises and potentially add the wrong weight or forget the purpose of a specific exercise and perform it poorly.

As a beginner, it is better initially to take up to 5 minutes between exercises to get all this stuff right rather than rushing and making mistakes.

Rest period

The recommended rest period between exercises is 20-60 seconds.

- ✓ Once you have acquired the skills required, this timeframe still allows you to remain calm and measured throughout the workout.
- ✓ Shorter rest periods provide a significant systemic and metabolic challenge.

As you begin to increase competence in knowledge and skills through the first few weeks, this set up and focus time between sets can decrease.

Therefore, the rest time between exercises will shorten. This can continue until the rest period between exercises is reduced to 20-60 seconds.

This gradual and natural reduction in time between sets happens to frame very nicely with improvements in your physical conditioning.

Shorter rest periods add to the metabolic challenge of the workout and act as an inbuilt safety measure that will minimize the risk of experiencing any adverse physical effects such as nausea or dizziness if you lack conditioning at the outset.

You will then be physically prepared and ready for the shorter rest periods to come, when they do come.

FREQUENCY OF TRAINING

Aim to perform 1 or 2 workouts per week

If you are new to intense resistance training and performing controlled movements, start out by performing 3 workouts per week for the first 2 weeks, each separated by at least 48 hours rest. For example, you could workout Monday-Wednesday-Friday.

If all goes well during those first 2 weeks and you feel you are dialing in the exercises, correct performance and loading and you are beginning to successfully get close to MMF, then in week 3 you can reduce to 2 workouts separated by 72-96 hours, perhaps Monday and Thursday, or Tuesday and Friday.

However, if you do not feel your HIT skills are there yet, stick with 3 workouts per week for 2 more weeks to hone things in, after which you can reduce to 2 workouts per week.

From this point on, I suggest that you aim to perform 2 workouts per week regularly, unless on a particular week you are very busy, excessively stressed or don't feel fully recovered. In these cases, just perform one workout that week when you are feeling at your best.

Once you have mastered taking exercises to MMF, fluctuate between 1 and 2 HIT workouts per week, based on your energy levels and personal demands. It is beneficial to be adaptable depending on your personal circumstances rather than attempting to be completely rigid trying to adhere to the calendar.

TRACKING YOUR WORKOUTS

Collect data immediately after each exercise

I encourage you to keep records of your performance especially as a beginner and intermediate. Here is the essential information to track:

- ✓ Date, time of day of workout
- ✓ Total time to complete the workout
- ✓ The weight used for each exercise in lbs or kg, e.g. 75kg
- ✓ On completion of each exercise, the time under load (TUL), e.g. 81 seconds

Noting the above data immediately after each exercise will ensure that you select the correct loads for the next workout.

Do remember that the load you use is only a means to an end.

There is no benefit to rushing to increase load if you can still get what you need to out of a lighter weight. Stick with the lighter weight until you have mastered performance of the exercise at that load and have earned/require the increase.

This is not powerlifting!

TRACKING YOUR WORKOUTS

Collect data immediately after each exercise

Add an easy to input symbol as a quick qualitative appraisal of your performance.

↓ **Lower the load in the next workout**

Lower TUL guideline not reached, or reached but exercise performance poor.

⊙ **Load remains the same in the next workout**

Within TUL guidelines or upper TUL reached, but performance/technique needs refining.

⟷ **Load remains the same in the next workout**

Well performed set, within TUL guidelines, load remains the same next workout.

↑ **Increase the load next workout**

Well performed set and upper TUL reached.

EQUIPMENT

If you can, start working out on machines

Well-designed and engineered exercise machines are often a help because they make it easier to get started with HIT or any type of resistance training for that matter.

Certain populations may especially benefit from these machines, for example: senior citizens, the frail and those with specific rehabilitation needs.

Machines are not a requirement for the achievement of results via HIT. Most individuals will be able to learn to use free weights and/or bodyweight exercises to reach their goals.

If you do have the luxury of choice, I recommend that you start out by working with machines, so long as the machines you have access to are fit for purpose. This means they are relatively low in friction, have appropriate strength curves and can be set up to feel comfortable for you.

On the other hand, if the machines you have access to don't feel comfortable for you to use, then I strongly advise against trying to persevere with poor quality machines.

Instead, invest the time in perfecting your ability to perform free weight and/or bodyweight exercises.

4

SECTION FOUR

Adapting HIT to your personal goals and circumstances

Warm up and cool down

You are only likely to need a special warm up if you are rehabilitating an injury or illness.

- ✓ The first 30 seconds of a HIT set act as the warm-up.
- ✓ Do additional warm-up for a specific part of the body if it's injured.
- ✓ To cool down, just keep on moving after the workout, e.g. walk for a few minutes.

Many physical activities, especially those in which you are exposed to high or sudden forces require a warm up.

HIT is however different, the forces that the musculoskeletal system are exposed to are relatively low and there should never be a sudden increase in force during HIT.

Never the less there is still a thorough, albeit hidden warm up for each exercise in a HIT workout: the initial reps of the actual exercise you are performing.

The first 30 or so seconds of a properly applied HIT set *is* the warm-up for the more intense, latter part of the set.

The only time you are likely to need any other warm up in HIT is if you are in the process of rehabilitating an injury, in such case, an additional warm up for the specific part of the body may be required.

The best "cool down" one can do is keep moving for two or three minutes, after completion of the workout.

Stretching

Stretch if you need increased flexibility for a specific activity or for rehabilitation.

- ✓ If you are looking to specifically increase your flexibility, do stretching immediately after your HIT workout, or on another day.
- ✓ If you are doing stretching for rehabilitation, the specific stretches need to be prescribed by an expert.

Performance of HIT alone can enhance flexibility, ensuring healthy normal levels.

Performing additional stretching typically does not provide any additional benefit for most people.

There are exceptions, such as if you require supra-normal levels of flexibility for a specific activity you engage in, such as some martial arts or ballet etc.

In these circumstances, make sure you do not stretch immediately prior to, or during your HIT workout. You can stretch immediately after your HIT workout, or leave your stretching protocol for when you would usually do it along with your activity-training.

Additional stretching may also prove to be beneficial in certain rehabilitation cases, this is best administered or prescribed by a knowledgeable personal trainer or physiotherapist.

Dealing with DOMS

Muscle soreness post-exercise is common, especially when the stimulus is new.

- ✓ Trainees may experience muscle soreness for a few days after their workouts.
- ✓ Muscle soreness is different to muscular pain or joint pain.
- ✓ The better your exercise technique gets, the less likely you are to experience DOMS.

Sometimes, especially when you are just starting out with HIT, you will experience DOMS (Delayed Onset Muscle Soreness) for a few days after your workout.

Most people find this tolerable, if a little uncomfortable, and some even get a sense of satisfaction from experiencing it.

If you find DOMS intolerable, the best thing you can do to alleviate it, is to perform an exercise that addresses the muscle group where you feel sore, but instead of working to MMF, do a controlled set or two to a 7/10 perceived effort level. This only needs to be done if you cannot ride the DOMS out till your next scheduled workout.

The good news is the better you get at performing the exercises in your routine the less likely you are to experience significant soreness.

> *DOMS is **not** linked to how effective a workout is and it's likely due to performance factors such as excessive force or lack of coordination in a specific exercise you haven't performed recently.*

One common area you may experience DOMS is the chest.

TRAINING WHEN UNWELL

Avoid HIT until fully recovered

Acute infection

If you have an acute infection with symptoms, like fever, aching joints, excessive tiredness, vomiting or diarrhea, then you should avoid any form of physical exercise.

Feeling under the weather

If you don't have any of those symptoms but feel generally under the weather, such as with a minor cold, then gentle, moderate intensity activity like walking may help speed up your recovery.

You should however still avoid HIT (and any interval training, running, sports etc.), until you are feeling fully recovered.

Jumping into an intense workout before recovery will more than likely unnecessarily prolong your illness.

TRAINING WHEN UNWELL

For chronic issues, consult a professional

Chronic illness or health issue

If you are suffering from a chronic (long-term) illness or health issue, it is important discuss the idea of beginning resistance training with your medical professional.

If you get the go ahead to begin resistance training, then:

- ✓ Start out with a once a week frequency
- ✓ Don't go to MMF in your initial workouts, instead take each exercise to perhaps a 7/10 in terms of perceived effort
- ✓ Focus on excellent exercise performance
- ✓ Observe closely how you feel immediately post workout and during the following days
- ✓ All being well you can increase your effort level and perhaps workout frequency as you progress, so long as you don't notice excessive fatigue or worsening of your symptoms.

SKIPPING WORKOUTS

You can skip an occasional workout without causing significant deconditioning.

- ✓ Metabolic and cardiovascular deconditioning doesn't appear to begin until about 10 days following your last workout.
- ✓ Muscular deconditioning begins around 2-4 weeks after your last strength training session.

The physical benefits gained from HIT are reversible if HIT is ceased altogether. Surprise, surprise!

The great news is that physical deconditioning doesn't begin the moment you skip a scheduled workout.

The metabolic and cardiovascular conditioning benefits of HIT appear to begin to reduce at some point during the second week of no training, likely from about 10 days after your last workout.

Muscle tissue however, won't atrophy (shrink) that quickly. It takes somewhere between 2-4 weeks off strength training for atrophy to begin.

Having a week or two off every now and again does no real harm and likely does some good in acting as a physiological and psychological reset.

Training for older adults

Resistance training with a high intensity of effort works a treat for older adults too.

- ✓ Not enough people over 60 years old are exercising. HIT is an ideal form of exercise for individuals in this age group.
- ✓ It is important, perhaps essential for an expert personal trainer to supervise the workouts of older adults, at least initially.

A great thing about HIT is that the intensity part of it is always appropriate for the specific individual exercising.

In many ways senior citizens stand to gain the most out of any population practicing HIT.

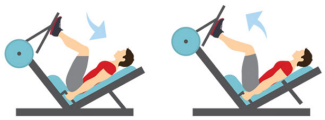
Even though, they may not be able to gain as much total lean tissue as younger exercisers, the overall fitness benefits of HIT are even more important to older exercisers.

A very exciting piece of research, published in 2017, titled “A minimal dose approach to resistance training for the older adult; the prophylactic for aging”, suggests two exercise routine templates for older adults.

The first is a minimal dose routine, consisting of the least possible amount of exercise for the greatest return on time and effort invested. The second is an expanded version with seven additional exercises.

THE ULTIMATE SCIENCE-BASED RESISTANCE TRAINING ROUTINES FOR SENIOR CITIZENS

MINIMAL



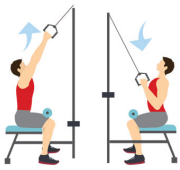
LEG PRESS

CHEST PRESS

SEATED ROW

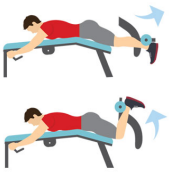
EXTENDED

OVERHEAD PRESS

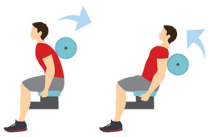


PULLDOWN

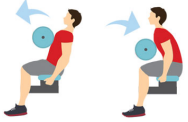
LEG EXTENSION



LEG CURL



LOW BACK EXTENSION



ABDOMINAL FLEXION

NECK EXTENSION

> *Those who think they have no time for bodily exercise will sooner or later have to find time for illness.*
>
> **Edward Stanley, British statesman**

Training for women

Train as hard as you can without being concerned about bulking up.

- ✓ The fitter and stronger a woman is the more likely she will cope well with pregnancy, both ante- and post-natal.
- ✓ A woman going through menopause is more likely to retain bone density, if she engages in HIT.

HIT is suitable for women. It is a stimulus for the human physiology and can be appropriately and successfully applied no matter if you are male or female, young or old.

As a woman training with HIT, you will become as strong as your genetics allow and yet it is highly unlikely that you will bulk up.

A fear of bulking up is natural but completely unfounded for the majority women, as it is a somewhat rare genetic trait in females.

The real benefit of HIT for women is achieving a lean, feminine and strong physique.

TRAINING AROUNG OTHER PHYSICAL ACTIVITIES

It's great to be generally physically active doing things you enjoy.

- ✓ There is however no need to perform any formal exercise for the purpose of improving health outside of HIT.
- ✓ If you want to do any cardio interval training, make sure it's at least 48 hours before or after your HIT workout.

HIT supports your ability to perform well in physical activities outside of your workouts.

Do engage in activities and sports that draw your interest.

The only activities that I suggest you avoid is any other type of resistance training routine whilst you are implementing HIT.

In addition, if you intend to do any, cardio interval training, it needs to be scheduled carefully around your HIT workouts.

Perform one, or at most two HIT workouts per week, if you are going to do intervals. Make sure that you separate any interval sessions from HIT workouts by at least 48 hours.

TRAINING FOR ATHLETES

Schedule HIT around your skill training

A huge advantage of HIT for athletes is its safety. The likelihood of getting injured whilst performing proper HIT is exceptionally low, as low as it is possible to get whilst applying a significant exercise stimulus.

The same cannot be said for most other approaches to exercise. Athletes should not be exposed to unnecessary risk of injury especially “off the field”, when performing exercise that is intended to enhance general strength. This makes HIT the obvious choice for general strength and conditioning enhancement.

There are some additional considerations that athletes need to make when applying HIT, such as appropriately scheduling your HIT workouts alongside skill training, specific conditioning training and competitive events.

Strength training needs to play a supporting role, especially during the competitive season. HIT is not the main event in these circumstances and needs to be dynamically adapted: volume and frequency can be manipulated and split routines may become necessary.

It is critical that HIT does not negatively interfere with your ability to perform well during, and recover from; skill practice, specific conditioning and competition.

WEIGHT LOSS AND MUSCLE GAIN

Exercise alone may only account for 10-20% of your weight loss success

There is no magic exercise routine that specifically addresses fat loss or muscle gain as differing goals. The exercise portion of the equation remains the same or very similar whether your primary goal is to reduce body fat or to gain muscle. Do your full-body HIT workouts 1-3x per week, plus some daily moderate physical activity such as a couple of brisk 20-30 minute walks or indeed any moderate physical activity you particularly enjoy.

Doing the above more than covers you for the exercise element muscle gain or fat reduction. Indeed when it comes to healthy weight loss exercise only accounts for about 10-20% of your success. The other 80+% is made up by the critical factors of your lifestyle choices and nutritional intake.

Body fat reduction

In terms of caloric intake consume about 250-350 less daily calories than you need to maintain your current weight.

Muscle gain

If you are happy with your current body fat level, and want specifically to increase lean muscle mass, increase your daily calories above maintenance by no more than 250-350 calories.

ADVICE FOR WEIGHT LOSS AND MUSCLE GAIN

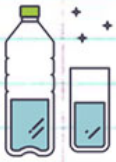
Do your full-body HIT workout 1-3x per week

Do moderate physical activity, e.g. a brisk 20-30 minute walk

Eat natural, unprocessed whole food sources

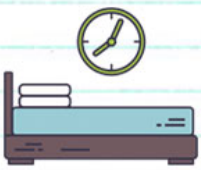
Consume 1.3-2.2g of protein for every kilogram of your lean body weight

Consume 250-350 less calories for fat reduction or 250-350 more calories for muscle gain than daily requirement



Drink 2-3 liters of water per day

Minimize negative stress



Get 7-9 hours sleep per night

Have the occasional treat

Observe your progress and adjust your nutritional intake accordingly

If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health.

Hippocrates, Father of Western Medicine

WEIGHT LOSS AND MUSCLE GAIN

Balance in nutritional intake and lifestyle factors are essential for success

Follow the tips on the previous pages for good nutrition and wellbeing, and observe what happens to your body closely.

If your main goal is to gain muscle tissue and you find you are putting body fat on as well as or even instead of muscle tissue then reduce your calories to a level where you are happy with your results and body fat.

Avoid getting caught up in a “bulking” mentality, where you mistake all weight increase as being good. Body fat gain is not the same as lean mass gain.

It may seem obvious but those desperate to gain muscle tissue have been known to mistake the mirage of indiscriminate scale weight increase for positive adaptation.

WHEN TO HIRE A TRAINER

A specialized HIT trainer can be valuable

It is a very good idea to benefit from the services of a professional personal trainer, even if only as a one-off or on an occasional basis. If you have never applied HIT before, then a HIT certified trainer is going to help you start off on the right foot, speed up your learning curve and ensure you are doing this safely from the outset.

If you haven't taken appropriate exercises, performed with excellent technique, all the way through to momentary muscular failure (MMF) before, then it can be exceptionally helpful to begin under the guidance of an expert.

Other circumstances for hiring a personal trainer

- ✓ You can financially afford ongoing personal supervision and want the many benefits a first-class service brings.
- ✓ You want to experience the top-notch equipment a personal trainer has.
- ✓ You have an injury that needs rehabilitating.
- ✓ You are unsure about the quality of your exercise form/technique.
- ✓ You are unsure about how hard you should be training and what MMF should feel like.
- ✓ You have a chronic illness and you are unsure how to adapt HIT to your circumstances.
- ✓ You are an athlete and need help adapting HIT to fit in with your sport training.

5

SECTION FIVE

How does HIT compare to other forms of exercise?

IS HIT BODYBUILDING?

Yes and... not necessarily!

HIT certainly is bodybuilding if by the term “bodybuilding” you mean exercise to optimize hypertrophy (muscle gain). However, if by bodybuilding you mean posing on stage in a pair of trunks or a bikini… well that is entirely up to you!

Exercise is only a part of the package required to be a successful “strutting-on-stage-bodybuilder”, where everything from how you pose through to application of fake tan, impacts on success. The issue of performance enhancing drugs also inevitably rears its head when we mention bodybuilding. Professional and even many amateur bodybuilders use performance-enhancing drugs to help them achieve the acquisition of supra-normal amounts of muscle tissue.

It is important to understand that genetics favorable to muscle tissue growth, combined with drugs produce the exaggerated physiques associated with professional bodybuilding. Without the right genetics and the right drugs, no form of exercise is going to turn Mr. or Ms. Average into Mr. or Ms. Olympia.

On the other hand, if you are an aspiring bodybuilder you can of course use the HIT principles in this guide to assist in achieving an award-winning physique. In the purest sense of the term, HIT is indeed body-building as you will be building your own most muscular and best body!

IS HIT BODYBUILDING?

Yes and... not necessarily!

	HIT (Resistance Training)	Typical bodybuilding
Main Focus	Hypertrophy and Total Fitness	Hypertrophy
Typical Workout	Full body routines 5-10 exercises per workout 1 set per exercise lasting 60-90 seconds 8-12 reps per exercise is typical Focus on biomechanically correct movements with compound exercises a priority Appropriate isolation exercises also included where appropriate	Body part split: • Mon: Chest • Tues: Back • Wed: Off • Thu: Shoulders • Fri: Legs • Sat: Arms • Sun: Off 7-10 different exercises per workout 3 sets per exercise + warm ups 8-12 reps per set Variety of compound and isolation exercises
Lifting tempo	3/3- 8/8	1/1-2/2
Rest period between sets	5 -60 seconds	1-2 minutes
MMF achieved/ Intensity of effort score	Yes, 10/10	Sometimes, 8-10/10
Risk level/injury potential	Very safe	Depends on the individual-moderate risk
Time Commitment	12-25 minutes per workout	45 minutes per workout
Frequency usually recommended	Once or twice per week	5 days per week
Optimal Hypertrophy	Yes	Yes, with a well-structured routine
Strength Increase	Yes, excellent	Yes, good
CV benefit	Yes, excellent	Yes, so long as MMF is reached
Modality used	Machine, FW or BW	Typically FW or machine

IS HIT STRENGTH TRAINING?

Yes, HIT is a form of strength training

By working each exercise to the point of muscular failure (MMF) you are stimulating both hypertrophy and strength gains simultaneously.

	HIT (Resistance Training)	Strength training
Main Focus	Hypertrophy and Total Fitness	Strength-skill demonstration
Typical Workout	Full body routines 5-10 exercises per workout 1 set per exercise lasting 60-90 seconds 8-12 reps per exercise is typical Focus on biomechanically correct movements with compound exercises a priority Appropriate isolation exercises also included where appropriate	Full body routines Focus on Big Five compound FW exercises: Squat, Bench Press, Barbell Rows, Overhead Press, Deadlift 3-7 sets per exercise + warm ups 3-5 reps per set
Lifting tempo	3/3- 8/8	1/1
Rest period between sets	5 -60 seconds	1.5-5 minutes
MMF achieved/ Intensity of effort score	Yes, 10/10	Typically avoided, 7-9/10
Risk level/injury potential	Very safe	Moderate risk
Time Commitment	12-25 minutes per workout	30-90 minutes per workout
Frequency usually recommended	Once or twice per week	3-4 days per week
Optimal Hypertrophy	Yes	Possible but inefficient approach
Strength Increase	Yes, excellent	Yes, excellent
CV benefit	Yes, excellent	Minimal
Modality used	Machine, FW or BW	Free weight

IS HIT POWERLIFTING OR OLYMPIC WEIGHTLIFTING?

The goal of HIT is very different

Powerlifting and Olympic weightlifting are both sports where the primary goal is to lift as much weight as possible in given movements.

In powerlifting, the movements are the squat, bench press and deadlift.

In Olympic weightlifting, the movements are the snatch and the clean and jerk.

The focus in these sports is on shifting the loaded bar from A to B by any means necessary. This is a very different goal than the HIT approach, where the primary objective is to safely fatigue muscle tissue with the purpose of stimulating hypertrophy.

If we perform a squat in a HIT workout, we do so visibly differently and with different intent to the power-lifter. Consider powerlifting and Olympic weightlifting as competitive and skilled sports which may have a side effect of stimulating hypertrophy, and consider HIT as science based exercise focused first and foremost on stimulating hypertrophy with the use of weight/ resistance.

IS HIT POWERLIFTING?

The goal of HIT is very different

	HIT (Resistance Training)	Powerlifting
Main Focus	Hypertrophy and Total Fitness	Strength-skill demonstration/ Competition
Typical Workout	Full body routines 5-10 exercises per workout 1 set per exercise lasting 60-90 seconds 8-12 reps per exercise is typical Focus on biomechanically correct movements with compound exercises a priority Appropriate isolation exercises also included where appropriate	Mostly full body routines 70% of training time spent on competition lifts: Squat, Bench Press, Deadlift 30% of training time spent on accessory movements 3-7 sets per exercise + warm ups 1-5 reps per set
Lifting tempo	3/3- 8/8	1/1
Rest period between sets	5 -60 seconds	1.5-5 minutes
MMF achieved/ Intensity of effort score	Yes, 10/10	Typically avoided, 7-9/10
Risk level/injury potential	Very safe	Moderate to high risk
Time Commitment	12-25 minutes per workout	30-90 minutes per workout
Frequency usually recommended	Once or twice per week	3-5 days per week
Optimal Hypertrophy	Yes	Possible but inefficient approach
Strength Increase	Yes, excellent	Yes, excellent
CV benefit	Yes, excellent	Minimal
Modality used	Machine, FW or BW	Free weight

IS HIT OLYMPIC LIFTING?

The goal of HIT is very different

	HIT (Resistance Training)	Olympic weightlifting
Main Focus	Hypertrophy and Total Fitness	Strength-skill demonstration/ Competition
Typical Workout	Full body routines 5-10 exercises per workout 1 set per exercise lasting 60-90 seconds 8-12 reps per exercise is typical Focus on biomechanically correct movements with compound exercises a priority Appropriate isolation exercises also included where appropriate	Full body routines Majority of time spent on competition lifts Use of lightweight complexes for movement practice Positional work and partials 3 sets per exercise 2-5 reps per set
Lifting tempo	3/3- 8/8	Explosive
Rest period between sets	5 -60 seconds	3-5 minutes
MMF achieved/ Intensity of effort score	Yes, 10/10	Typically avoided, 7-9/10
Risk level/injury potential	Very safe	High risk
Time Commitment	12-25 minutes per workout	90-120 minutes per workout
Frequency usually recommended	Once or twice per week	3-5 days per week (sometimes even 2 workouts per day)
Optimal Hypertrophy	Yes	Possible but inefficient approach
Strength Increase	Yes, excellent	Yes, excellent
CV benefit	Yes, excellent	Minimal
Modality used	Machine, FW or BW	Free weight

IS HIT AS INTENSE AS "FUNCTIONAL MOVEMENT FITNESS"

It's more intense!

Functional movement fitness describes workouts that may include a combination of Olympic lifts, powerlifting, gymnastics, bodyweight exercise, battle ropes, circuit training and cardio.

HIT performed well is more locally intense and yet less systemically draining than "functional movement fitness".

Let's break that down:

- ✓ In HIT, a muscle group or several muscle groups are specifically targeted with each chosen exercise and then exercised to momentary muscular failure, in as an efficient way as possible.

- ✓ In functional movement fitness, muscle tissue is typically not targeted with this degree of precision. This means that the stimulus tends to be dispersed somewhat more systemically across the body, and this is likely less efficient at stimulating hypertrophy.

IS HIT AS INTENSE AS "FUNCTIONAL MOVEMENT FITNESS"

It's more intense!

	HIT (Resistance Training)	Functional Fitness
Main Focus	Hypertrophy and Total Fitness	Strength-skill demonstration/Total Fitness
Typical Workout	Full body routines 5-10 exercises per workout 1 set per exercise lasting 60-90 seconds 8-12 reps per exercise is typical Focus on biomechanically correct movements with compound exercises a priority Appropriate isolation exercises also included where appropriate	Often full body A combination of Olympic lifts, powerlifting, gymnastics, bodyweight exercise, circuit training and cardio A variety of sets and reps are used
Lifting tempo	3/3- 8/8	Explosive
Rest period between sets	5 -60 seconds	Variable
MMF achieved/ Intensity of effort score	Yes, 10/10	MMF often reached, 9-10/10
Risk level/injury potential	Very safe	High risk
Time Commitment	12-25 minutes per workout	45-60 minutes per workout
Frequency usually recommended	Once or twice per week	5-6 days per week
Optimal Hypertrophy	Yes	Possible but inefficient approach
Strength Increase	Yes, excellent	Yes, excellent
CV benefit	Yes, excellent	Yes, excellent
Modality used	Machine, FW or BW	Free weight, bodyweight and cardio

IS HIT CIRCUIT TRAINING (HIIT)?

HIT may be performed in a circuit style

HIT can be performed in a circuit manner. This is where any rest period between exercises in the HIT workout is kept to a minimum and you briskly move between exercises, providing quite the metabolic challenge.

You don't however have to perform your HIT workouts like this if you do not want to, the rush factor does not increase the hypertrophy stimulus, but can provide a fun challenge from time to time.

There is also far more focus on correct exercise technique, the use of a controlled tempo and the safe attainment of momentary muscular failure (MMF) during the exercises in a HIT workout when compared with a typically performed circuit routine.

Circuit training is often referred to as High Intensity Interval Training (HIIT), which can cause confusion as well!

IS HIT CIRCUIT TRAINING (HIIT)?

HIT may be performed in a circuit style

	HIT (Resistance Training)	Circuit training (HIIT)
Main Focus	Hypertrophy and Total Fitness	Total Fitness
Typical Workout	Full body routines 5-10 exercises per workout 1 set per exercise lasting 60-90 seconds 8-12 reps per exercise is typical Focus on biomechanically correct movements with compound exercises a priority Appropriate isolation exercises also included where appropriate	Full body routines Typically a series of up to 10 bodyweight exercises (but may also include free weights, machines and cardio exercises) performed for a set number of reps or a set period of time with minimal rest periods between exercises. The complete circuit of exercises is often repeated 2-6 times in a workout.
Lifting tempo	3/3- 8/8	1/1
Rest period between sets	5 -60 seconds	20-40 seconds
MMF achieved/ Intensity of effort score	Yes, 10/10	MMF often reached 9-10/10
Risk level/injury potential	Very safe	Moderate risk
Time Commitment	12-25 minutes per workout	15-60 minutes per workout
Frequency usually recommended	Once or twice per week	2-3 days per week
Optimal Hypertrophy	Yes	Possible with well-structured routines, likely inefficient
Strength Increase	Yes, excellent	Yes, good
CV benefit	Yes, excellent	Yes, excellent
Modality used	Machine, FW or BW	Bodyweight, cardio, free weight, machine

IS HIT CARDIO (HIIT)?

They are like cousins

CV focused high intensity interval training (HIIT) is like the cousin of High Intensity Resistance Training (HIT), and is an effective form of applying traditional CV exercise, such as stationary cycling, for CV fitness benefits. Whilst sprint intervals are excellent at providing CV fitness they do lack when it comes to providing a balanced strengthening stimulus for the musculature of the whole body.

The same is not however true in reverse: although High Intensity (Resistance) Training uses workouts that consist of exercises that are traditionally considered strength training exercises, the effect of applying these exercises in a highly intense manner produces similar CV health benefits as the more traditional CV modalities (e.g. stationary cycling).

In many ways HIT (resistance training!) is the ultimate all-in-one workout protocol as it stimulates hypertrophy, strength increases and CV benefits together. When training to momentary muscular failure (as per HIT) the acute metabolic and molecular responses do not differ from traditional endurance/cardio training and myocardial function is maintained or even enhanced.

IS HIT CARDIO (HIIT)?

They are like cousins

	HIT (Resistance Training)	Cardio (HIIT)
Main Focus	Hypertrophy and Total Fitness	Cardiovascular
Typical Workout	Full body routines 5-10 exercises per workout 1 set per exercise lasting 60-90 seconds 8-12 reps per exercise is typical Focus on biomechanically correct movements with compound exercises a priority Appropriate isolation exercises also included where appropriate	Performed on a piece of cardio equipment, most often the stationary bike. A combination of sprints interspersed with moderate activity rest periods. The sprints and rest periods can be of varying different lengths. One example is 30 second sprints with 90 second recovery periods repeated 5 times.
Lifting tempo	3/3- 8/8	n/a
Rest period between sets	5 -60 seconds	20-90 seconds
MMF achieved/ Intensity of effort score	Yes, 10/10	Yes, 10/10
Risk level/injury potential	Very safe	Moderate risk
Time Commitment	12-25 minutes per workout	10-20 minutes per workout
Frequency usually recommended	Once or twice per week	2-4 days per week
Optimal Hypertrophy	Yes	No
Strength Increase	Yes, excellent	Yes possible, but not whole body
CV benefit	Yes, excellent	Yes, excellent
Modality used	Machine, FW or BW	Cardio machine e.g. stationary bike

6

SECTION SIX

Final notes

Supporting science

25 Pieces of research for further reading

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Supporting science

25 Pieces of research for further reading

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