Simple Steps to a Leaner, Stronger, Healthier Body

By Christian Finn

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http://www.thefactsaboutfitness.com/
Foreword

A MYTH is like a virus -- it spreads. Very quickly. You might have come across some of these myths. After all, there are plenty of them... high carbohydrate diets are the best way to lose weight... weight training won't help me burn fat... exercising in the fat burning "zone" is the best way to train.

According to the Oxford English Dictionary, a myth is a "widely held but false notion" or a "fictitious person, thing, or idea". Why are there so many myths and misconceptions about exercise, nutrition and health? Probably for the same reason we have misconceptions about a lot of things. Somebody says something, somebody repeats it, then we repeat it. Suddenly it's established as fact. Yet nobody took the time to actually think about what they were saying. "Authors often copy each others mistaken 'facts', points out Udo Erasmus, best selling author of Fats that Heal Fats that Kill, "because they have not invested the time and effort required to extract truths from the research literature."

No matter what your goals, the first step to success is simple -- you must stop doing the things that aren't working. If your approach hasn't worked in the last four weeks, four months -- or even four years, then it won't suddenly start working next week. To change your approach, you need to know what to change and how to change it.

This book will give you the map, but it's not your driver. Take what you find and apply it. Keep the things that work for you. Get rid of the things that don't.

Keep learning.

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What to do with this book

Here's how you can use this book to stop the spread of lies, myths and misconceptions

1. Read it
2. Print out one copy of this book and give it to a friend
2. Attach this file to an e-mail, and send it to a friend
Introduction

ARE you confused by the mass of information about the “right” way to lose fat, build muscle or boost your aerobic fitness?

You’re not the only one.

Think about it. You and I have access to more information about exercise, nutrition and health than at any other time in history. Yet studies show that more and more people are out of shape than ever before. Clearly, simply knowing more is not enough.

You see, instead of actually using the information that’s out there, we’re simply drowning in it. We’re bombarded with so many conflicting ideas about exercise and nutrition that our brains feel like they’re going to burst. Most people become so overwhelmed by this sea of information that they end up doing nothing. Like a rabbit caught in the headlights of an oncoming juggernaut, they know they should “do something”, but they’re not quite sure what it is. In short, they’re suffering from paralysis by analysis.

Has this ever happened to you?

I know it’s happened to me. I would jump from program to program on an endless quest for the best combination of diet and exercise. Sure, I made some progress. But my results really started to improve when I realised that success wasn’t simply about knowing more. I had to apply what I knew. Knowing something is one thing. Actually using what you know is another story.

Before I go on, I’d like to ask you a rather strange question.

If you had to catch a monkey, how would you do it?
Here's how they do it in Africa. A native cuts off the end of a coconut and makes a small hole just large enough to allow a monkey's fist to enter. A long cord is attached to the other end of the coconut. The native places a few peanuts inside the coconut, and puts the coconut in the middle of a clearing. Then he waits. Before long, the smell of the peanuts attracts a monkey. The monkey reaches inside the coconut shell and grabs the peanuts. But with the peanuts inside, his fist is too large to escape the coconut. The native yanks on the cord and hauls the monkey to captivity -- all because the monkey won’t let go of the peanuts.

Have you ever been caught holding on to the peanuts? Have you ever been so convinced about something that you refused to acknowledge even the slightest possibility that there might be a better way? Myths and misconceptions are very much like peanuts. It’s difficult to let go -- especially if you’ve been holding on for some time.

The ideas you read about in the coming pages may be new to you. Some may seem like plain old common sense. Some might challenge the way you currently do things.

If they encourage you to think about what you’re doing, this book will have served its purpose.

Be sure to let go of the peanuts.
Attention all soccer players - creatine CAN improve your performance

A RECENT study found that just one week of creatine supplementation can boost performance in elite soccer players. Creatine resulted in faster sprinting times, and also led to improved jumping performance when compared to players who took a dummy supplement.

Previous research has shown that creatine can delay muscular fatigue and improve performance during high-intensity exercise. This is of special importance to soccer players, who can spend up to 20% of a game engaged in high-intensity running.

In this particular study, Spanish researchers examined a group of 19 national level players from Athletic Club de Bilbao, one of Europe's leading soccer teams. The players were divided into two groups. Group one supplemented with 20 grams of creatine per day for six days. Group two received a dummy supplement that had no effect.

Following the supplementation period, the players completed a series of tests designed to closely match the activity of a competitive soccer game. These included a number of sprinting and jumping tests. Players supplementing with creatine demonstrated a consistently faster performance time during both 5 and 15 metre sprints. Although these performance improvements were only small, they translated into significant improvements on the field of play.

"More than enough", according to the scientists, "to outrun an opponent and attain possession of the ball." The research team concluded that, "these improvements could have a great impact on a player's performance during actual competitive soccer match-play."

Reference:
Now, discover how to build muscle, gain strength AND cut your training time in half

SCIENTISTS from the University Of Florida have revealed that 25 minutes of weight training is just as effective as workouts lasting twice as long.

The researchers compared two groups of subjects over a 13-week period. The first group completed one set of nine exercises. Group two performed the same exercises, but completed three sets of each exercise.

Although the subjects weren't competitive bodybuilders, they had been training for an average of six years. They completed a number of strength tests before and after the programme. In addition, the scientists used skinfold callipers to determine changes in body fat and lean muscle during the 13-weeks.

The results showed no significant differences between the subjects using one set and those using three sets. Changes in muscular strength, muscular endurance, body fat and muscle mass were similar in both groups. This was despite the fact that the group performing three sets spent over twice as long in the gym.

It also appears that the longer the workout, the more likely it is that participants will give up. Almost 25% of the subjects in the multiple set group dropped out of the study before it had finished.

This is not the only research to suggest that single and multiple sets result in similar gains in muscle size and strength. A number of studies have shown that longer workouts are not necessarily more effective.

It's highly likely that exercise scientists will debate the issue for years to come. However, for the majority of regular exercisers, it appears that short, intense workouts are equally as effective as longer ones.
“This is important”, conclude the Florida researchers, “for individuals who desire the health and fitness benefits associated with a well-rounded physical fitness programme but may not have the time to devote to multiple set resistance training programmes”.

Reference:
Stretching before exercise: A way to prevent injury or a waste of your time?

According to Australian scientists, stretching before exercise does not significantly reduce your risk of injury.

The researchers tested over 1500 male army recruits during a 12-week training programme. Half of the recruits completed five minutes of stretching (consisting of one 20-second stretch for the muscles in the leg) as part of a warm up. The rest performed no pre-exercise stretching.

Analysing the results, the authors concluded that stretching had no effect on injury prevention. A recruit was defined as injured when he was unable to return to normal duties within three days.

Although there was a reduced incidence of injury in the group that stretched (see table below), the difference wasn’t big enough to matter.

<table>
<thead>
<tr>
<th>Group</th>
<th>Recruits</th>
<th>Number of injuries</th>
<th>Injury rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stretch</td>
<td>803</td>
<td>175</td>
<td>22%</td>
</tr>
<tr>
<td>No Stretch</td>
<td>735</td>
<td>158</td>
<td>21%</td>
</tr>
</tbody>
</table>

However, further investigation into the study reveals some interesting facts.

Firstly, injuries such as stress fractures were included in the analysis. However, it is debatable whether stretching would have any effect on bone injuries. Secondly, injuries such as muscle strains and ligament sprains (the type of injury you would expect stretching to affect) were actually increased by 40% in the group that did not stretch.

The researchers claim that, “pre-exercise muscle stretching does not produce a clinically worthwhile reduction in the risk of lower-limb injury”. However, it’s important to define what is
meant by the term “injury”. Stretching may not reduce the incidence of stress fractures. In contrast, it does appear to have a beneficial effect on muscle strains and ligament sprains.

Stretching before exercise requires very little time or effort. Even if it offers only a small protection against injury, a pre-exercise stretch would appear to be a wise investment of your time.

Reference:

Does a high fat diet really make you fat?

Scientists have revealed that a high fat diet does not always lead to an increase in body fat. The research team, working from New Zealand's Otago University, managed to persuade a group of 32 endurance trained cyclists to alter their diets for 12 weeks. One half of the group consumed a high fat diet (47% of total calories came from fat). The rest consumed a high carbohydrate, low fat diet (69% of total calories came from carbohydrate). Although the composition of the diets were very different, the total amount of calories were almost identical. In other words, the energy provided by both the high carbohydrate and high fat diets were the same.

For the duration of the study, the cyclists maintained their normal training programme. This consisted of between 6-25 hours of cycling each week. The researchers found that levels of body fat did not change over the three-month period. This was simply because the energy intake of the cyclists was matched by their energy expenditure. With the confusing mass of dieting information currently available, many people tend to overlook this one fundamental point:

If the amount of energy your body consumes (in the form of food) is less than it expends (in the form of physical activity), then your body weight will drop.

It really is that simple. The athletes in this study were able to maintain their body weight despite an increase in dietary fat because energy input was matched by energy output. "It seems reasonable to suggest" according to the research team, "that athletes might choose to increase dietary fat intake...without the risk of weight gain..."

Reference:
The stitch: What is it and how can you prevent it?

Researchers from New Zealand have provided an insight into what causes the stitch and how you can prevent it. Despite what you might have been told, scientists aren't really sure what causes the stitch. During exercise, blood is shunted away from the diaphragm (one of the muscles involved in breathing) to your legs and arms. According to conventional wisdom, the stitch is caused by a reduction in blood supply to the diaphragm.

However, two researchers from the University of Otago had a different idea. Brian Plunkett and Will Hopkins tested a theory first put forward in the early 1940's. They proposed that the stitch is actually caused by the gut “tugging” on the ligaments connecting it to the diaphragm. Plunkett and Hopkins gave their subjects a number of different fluids that digested at different speeds. According to the ligament theory, the pain of the stitch should remain high with fluids that digest slowly. Fluids digesting quickly should reduce the weight of the gut -- easing the pain of the stitch. The results tended to support the theory. Fluids digesting slowly led to an increase in stitch intensity that was more than double that of the fast digesting drinks. Plunkett and Hopkins also found three strategies most effective at relieving the stitch:

- Wait 2-3 hours before exercising after a large (one litre or more) drink or meal.
- When you get a stitch, bend forward and tighten your abdominal muscles, while breathing out through pursed lips. The lower position of the diaphragm and increased contraction of the abdominals are designed to reduce tension on the ligaments.
- Try wearing a light wide belt around your waist. This is designed to move your abdominal contents upward and inward -- reducing tension on ligaments between the gut and diaphragm.

Reference:
How to make your abdominal workouts twice as effective

Use a swiss ball! Swiss balls (often known as gym balls or stability balls) are vinyl air-filled balls often used during rehabilitation programmes. Over the past few years, they have become increasingly popular in gyms and health clubs around the world. A recent study has shown that abdominal exercise on a swiss ball may be far more effective than conventional floor based techniques. A research team from the University of Waterloo compared curl-ups on three different surfaces:

- A flat surface
- A swiss ball (feet placed on the floor or supported on a bench)
- A wobble board

Muscular activity in the abdominals was almost doubled when subjects used the swiss ball. The table below shows how hard each muscle was working (as a % of its maximum) during the curl-up.

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Upper abdominals</th>
<th>Lower abdominals</th>
<th>External obliques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat surface</td>
<td>22%</td>
<td>21%</td>
<td>5%</td>
</tr>
<tr>
<td>Swiss ball</td>
<td>47%</td>
<td>55%</td>
<td>21%</td>
</tr>
</tbody>
</table>

The researchers speculated that the increase in muscle activity (particularly in the external obliques -- the muscles running down either side of your trunk) was needed to maintain stability on the ball. You can order your own swiss ball from Bodytrends (http://www.bodytrends.com/) or the Physique Management Company (http://www.physique.uk.com/). The balls come in several different sizes -- the taller you are, the bigger the ball needs to be.

Reference:

An easy way to make your creatine supplements 26% more effective

Taking creatine with a mixture of carbohydrate and protein is equally as effective as using a high carbohydrate solution. That's according to a research team from Queen's Medical Centre, Nottingham.

There is a wealth of research showing that creatine supplementation can:

- Increase lean muscle mass
- Improve muscle power
- Improve performance during short-term, high-intensity exercise

Creatine alone doesn't work for everyone -- around 20-30% of individuals don't respond to supplementation. However, a number of studies show that a combination of creatine and carbohydrate can significantly increase creatine uptake. Carbohydrates will boost insulin production, which helps to escort creatine into muscle cells. The more creatine that enters cells, the greater the effects of supplementation.

High levels of carbohydrate (around 96 grams) appear to be more effective than lower dosages (such as 50 grams) at promoting creatine uptake. However, such high amounts are close to the limit of palatability. This prompted researchers to compare a high carbohydrate (94 grams) solution with a mixture of protein (50 grams) and carbohydrate (47 grams).

Would the protein/carbohydrate blend be as effective as the high carbohydrate solution at promoting creatine uptake?

They results are shown below:
<table>
<thead>
<tr>
<th>Method</th>
<th>Creatine uptake *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placebo</td>
<td>38%</td>
</tr>
<tr>
<td>Low carbohydrate (50 grams)</td>
<td>44%</td>
</tr>
<tr>
<td>High carbohydrate (94 grams)</td>
<td>48%</td>
</tr>
<tr>
<td>Protein (50 grams) &amp; carbohydrate (47 grams)</td>
<td>48%</td>
</tr>
</tbody>
</table>

* Creatine uptake refers to the difference between intake and excretion. The higher the figure, the more creatine the muscles absorb.

The subjects in this study ingested 20 grams of creatine, and were able to retain up to 48% of it. The rest was lost in the urine.

A combination of carbohydrate and protein appears equally as effective as a high carbohydrate solution at promoting creatine uptake, and is also far more palatable.

Reference:
A simple technique to accelerate fat loss

A TEAM of Swedish experts have shown that an increase in protein intake can accelerate fat loss.

They compared two diets over six days, both containing an equal number of calories. The composition of the diets is shown in the table below:

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>High protein</th>
<th>Normal protein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>21%</td>
<td>8%</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>46%</td>
<td>53%</td>
</tr>
<tr>
<td>Fat</td>
<td>34%</td>
<td>39%</td>
</tr>
</tbody>
</table>

At rest, the high protein group burned twice as much fat as those on the normal protein diet. After exercise, fat burning was also 18% higher in the high protein group.

Changes in diet can have a big impact on your hormone levels. Previous research has shown that the more carbohydrate you eat, the more insulin you produce. Insulin is known to reduce the amount of fat the body uses.

The research team concluded that, "a high protein intake induced more negative fat and more positive carbohydrate balances compared with a normal protein intake". In other words, you'll burn more fat if you eat a little more protein and a little less carbohydrate.

Reference:
New research links carbohydrate with heart disease

A NEW study has linked certain types of carbohydrate with an increased risk of heart disease.

Starting in 1984, a team of researchers from Harvard Medical School tracked 75,521 women over ten years. Publishing their findings in the American Journal of Clinical Nutrition, they report that carbohydrate based foods with a high glycemic index* increase the risk of coronary heart disease.

The term glycemic index refers to the speed at which carbohydrate is digested and absorbed. High glycemic index foods are digested rapidly, leading to a large increase in blood glucose. Foods with a low glycemic index digest more slowly, and produce only a gradual rise in blood glucose. Previous studies have shown that a high carbohydrate diet can increase levels of low-density lipoproteins (LDL, or the "bad" cholesterol) and reduce high-density lipoprotein (HDL, or the "good" cholesterol). This adverse lipid profile has been linked with an increase in the risk of coronary heart disease.

In this particular study, the two foods contributing most to the high glycemic load were baked potatoes and cold breakfast cereals. These foods were previously classed as complex (as opposed to simple) carbohydrates, and play a central role in the US dietary guidelines. However, glycemic index was a stronger predictor of heart disease than the traditional classification of simple and complex.

It's also worth mentioning that the increased risk of coronary heart disease associated with high GI foods was seen mostly in women with an average or above average weight. There was little link between glycemic index and coronary heart disease in women with low body weight. This explains why certain populations with a low prevalence of obesity (rural China for example) are at less risk for coronary heart disease despite their consumption of a high carbohydrate diet.
"These data add concern", say the researchers, "that the current low-fat, high-carbohydrate diet recommended in the United States may not be optimal for the prevention of coronary heart disease".

* Visit http://www.mendosa.com/gilists.htm for a complete listing of the glycemic index of several hundred common foods

Reference:
Will ENDUROX™ help you burn more fat?

IN short -- no.

Researchers from Florida State University tested the effects of ENDUROX™ on ten male subjects. They monitored heart rate, oxygen consumption, heart rate and respiratory exchange ratio (the respiratory exchange ratio estimates how much fat the body is using for fuel).

Subjects were assigned to either a placebo or ENDUROX™ group for seven days. To eliminate bias, neither the subjects nor the researchers knew who was taking what supplement. Following the seven-day supplementation period, subjects were tested on a stationary cycle for 40 minutes.

According to its manufacturers (Pacific Health Laboratories, Inc.), ENDUROX™ can increase fat burning by 43%, increase oxygen consumption by 13%, reduce lactate accumulation by 32% and accelerate heart rate recovery by 22% following exercise.

Sounds quite impressive, doesn't it? And it would be -- if the stuff actually worked.

The research group, led by Samuel Cheuvront (who also has some unkind things to say about The Zone Diet), found no evidence to support the claims made by Pacific Health Laboratories, Inc.

The table below gives you a brief summary of the results:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Placebo</th>
<th>ENDUROX™</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat burning (grams per minute)</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Lactate (mmol per litre)</td>
<td>3.3</td>
<td>3.8</td>
</tr>
<tr>
<td>Oxygen consumption (litres per minute)</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Heart rate 50 minutes after exercise</td>
<td>103</td>
<td>105</td>
</tr>
</tbody>
</table>
As you can see, there was no real difference between ENDUROX™ and the placebo. That is, apart from ENDUROX™ leaving your wallet around US$16 (£11) lighter.

The “active” ingredient in ENDUROX™ is known as ciwujia, which is taken from a plant in the same family as Panax Ginseng. Although numerous studies have been performed using Panax Ginseng, results have been inconsistent -- possibly due to the wide variety in supplement quality. In fact, a report published in the Lancet found some ginseng products actually contained no ginseng at all.

If you want to try ENDUROX™ for yourself, visit the Endurox Web site (http://www.endurox.com/) for more information. However, the few independent studies performed on ENDUROX™ to date have failed to demonstrate that supplementation offers any real benefit.

Reference:
Sixteen hours AFTER they finished training, these people were still burning 62% more fat!

A RECENT study has shown that 100 minutes of weight training increases the number of fat calories you burn for at least 16 hours -- but it has to be the right type of weight training.

Researchers at Colorado State University found that resistance training had a powerful effect on metabolism several hours after the workout had finished. Not only had fat burning risen by 62%, resting metabolic rate was also 4% higher. In other words, subjects in the study were burning more calories AND more fat.

The paper, published by Kristin Osterberg and Christopher Melby, supports previous research showing that intense exercise causes an energy “ripple” that continues for many hours after the exercise has finished. Low-intensity exercise just won’t have the same effect -- despite it’s wide popularity as the “best” way to lose weight.

The programme followed by the subjects (seven females aged between 23 and 32) is shown below. The routine used supersets -- which involve performing one exercise immediately after the other (usually for opposing muscle groups).

- Bench Press/Bent Over Row
- Leg Extension/Leg Curl
- Military Press/Sit-Up
- Bicep Curl/Tricep Extension
- Lunge/Lateral Raise

The exercises were grouped in four minutes periods. Each subject began with the bench press, then (without resting) proceeded to the bent over row. In other words, subjects spent 1-2 minutes performing each group of exercises, while the remainder of the time was spent resting. The total training time was 100 minutes.
Typical exercise programmes designed for fat loss usually emphasise high repetitions (15-25) with a moderate weight. However, this programme used 10-15 repetitions. Subjects also trained fairly hard -- the last two sets of each exercise were taken to the point of muscular failure.

Interestingly, previous studies from the same laboratory show that shorter rest times produce even more dramatic results. When men cut the rest time between sets from four to three minutes, their metabolic rate 16 hours after exercise almost doubled.

This study adds to the growing body of evidence showing that resistance training is a powerful tool to accelerate fat loss. Granted, the programme used in this study is quite extreme -- weight training sessions lasting 100 minutes will push you into an overtrained state quickly.

However, it does offer several clues as to the most effective way to train with weights if you want to lose fat:

- Keep your rest time between sets short (60 seconds or less)
- Use compound exercises that work several muscles at once (such as the bench press or bent over row)
- Use a moderate (10-15) rather than high (15-25) repetition range

Reference:
How three amino acids can strengthen your immune system by 34%

According to Brazilian researchers, a blend of amino acids can strengthen the immune system of elite triathletes. Thirty days of supplementation with branched chain amino acids (BCAA) was enough to reduce symptoms of infection by an impressive 34%.

The group were given either six grams of BCAA or a “dummy” supplement thirty days before taking part in an Olympic triathlon (consisting of a 1.5km swim, 40km cycle and a 10km run). Endurance events typically require a high volume of training, and often involve multiple daily workouts -- which can weaken your immune system. As such, any supplement offering protection against the ravages of training is something most athletes would find invaluable.

The main finding of the study was that the reduced incidence of infection was linked to higher levels of glutamine in the triathletes supplementing with the BCAA. For those of you who are interested, here’s how the link between BCAA, glutamine and your immune system actually works:

In a series of chemical reactions (involving enzymes with some very long names), BCAA eventually produce glutamine. Your immune cells “feed” off glutamine -- which is one reason why low levels of glutamine can weaken your immune system. These immune cells then produce interleukins (pronounced in-ter-loo-kins), which play a critical role in fighting infection. In simple terms, glutamine fuels your immune “engine”.

The table below shows the drop in plasma glutamine before and after the triathlon:

<table>
<thead>
<tr>
<th>Supplement</th>
<th>% drop in glutamine</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCAA</td>
<td>1%</td>
</tr>
<tr>
<td>Placebo</td>
<td>23%</td>
</tr>
</tbody>
</table>
As you can see, glutamine levels dropped significantly in subjects who didn't use the BCAA. Based on these findings, it appears that BCAA supplements (three grams taken twice daily) can strengthen your immune system during periods of intense training.

Reference:
Why low calorie diets slow your metabolic rate -- and the easy way to stop it happening

D I E T S containing more protein can reduce the drop in metabolic rate common with low calorie diets.

Researchers from Boston compared two diets over nine days, both providing an average of 1,492 calories. However, the diet deriving one-third of its energy from protein led to a 5% reduction in metabolic rate -- which was half that seen in the high carbohydrate group. The composition of each diet, together with the drop in metabolic rate, is shown in the table below:

<table>
<thead>
<tr>
<th>Diet</th>
<th>Metabolic drop</th>
<th>Protein</th>
<th>Carbohydrate</th>
<th>Fat</th>
</tr>
</thead>
<tbody>
<tr>
<td>High carbohydrate</td>
<td>-11%</td>
<td>15%</td>
<td>67%</td>
<td>18%</td>
</tr>
<tr>
<td>High protein</td>
<td>-5%</td>
<td>27%</td>
<td>43%</td>
<td>30%</td>
</tr>
</tbody>
</table>

To lose fat, you need to cut down on caloric intake -- to consume less energy than you expend. But here's the problem. Your body responds to this drop in food intake by slowing your metabolic rate, which makes fat loss increasingly difficult.

This metabolic response has been passed on to you and I from our ancestors. They had to deal with large variations in the availability of food. Individuals surviving these fluctuations were the ones who could cope with reductions in food intake. In other words, those who stored fat easily lived to pass on their genetics, while those who stored little or no fat would simply have died.

The result?

Your body wants to hold on to its precious stores of energy -- after all, its main concern is survival. Your body has “learned” to preserve fat by lowering your metabolic rate whenever food intake drops. However, this study clearly showed that diets higher in protein can reduce this metabolic “slowdown”.

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Not only did the high protein diet minimise the drop in metabolic rate, it also led to greater feelings of fullness. When the two groups were allowed to eat ad libitum (a Latin term meaning “according to pleasure” -- in other words, subjects were allowed to eat what they wanted), food intake in the high carbohydrate group was 25% higher.

"Metabolic responses to energy restriction", says lead researcher Michael Agus "can be affected by dietary composition".

Reference:
Why fructose could slow fat burning by 38%

Meals high in fructose can reduce fat burning when eaten after exercise.

Researchers from Indiana’s Purdue University tested 14 overweight individuals following a 40-minute workout. Subjects were split into two groups, and assigned to follow either a normal or low calorie diet. After six days on each diet, they were then given a meal containing either 50 grams of glucose, or a similar quantity of fructose.

The table below shows how much fat was burned in the three hours after exercise:

<table>
<thead>
<tr>
<th>Diet</th>
<th>Fat burning after fructose</th>
<th>Fat burning after glucose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal calorie</td>
<td>18 grams</td>
<td>29 grams</td>
</tr>
<tr>
<td>Low calorie</td>
<td>28 grams</td>
<td>29 grams</td>
</tr>
</tbody>
</table>

As you can see, there was no real difference in oxidation rates during the low calorie diet. However, when subjects were tested following the normal diet, fat oxidation was 38% lower after the high fructose meal.

Fructose is found in fruits and honey. When fructose and glucose are bonded together, they form sucrose -- commonly known as table sugar. Billed as a “natural” sweetener, fructose is often recommended as a replacement for other sugars in the diet -- often being included in weight loss drinks. Since the mid-1970s, high fructose corn syrup has served as a substitute sweetener for sucrose, leading to an increase in fructose consumption in the U.S. diet.

“Fructose might be ‘natural’ but large quantities are not”, cautions Dr Eric Newsholme, a Reader in Cellular Nutrition at the University of Oxford. “Too much fructose”, he continues “is probably best avoided”. Previous studies have also shown that fructose is up to eight times more lipogenic* than glucose.
Although this isn’t meant to put you off fruit, this study does show that high levels of fructose offers no real benefit (compared to glucose) during a low calorie diet.

* lipos is a Greek term meaning “fat”, while -genic refers to “the production of”

Reference:
Tittelbach, T.J., Mattes, R.D., & Gretebeck, R.J. (2000). Post-exercise substrate utilisation after a high glucose vs. high fructose meal during negative energy balance in the obese. Obesity Research, 8, 496-505
Now, learn the truth about ANDRO-6 and muscle growth

ANDRO-6, a nutritional supplement designed to elevate the muscle building hormone testosterone, has no effect on muscle size or strength.

The supplement, which contains the pro-hormones androstenedione and DHEA, was heralded by manufacturers EAS as a legal alternative to steroids. In fact, according to Brett Hall, R.D. (Research Director for EAS) ANDRO-6 was destined to, "send shock waves throughout the athletic community and have black-market steroid dealers biting their nails..."

Unfortunately, the research tells a rather different story.

Researchers from Iowa State University took a group of 20 men and split them into two groups. The first group used ANDRO-6 in combination with a resistance training programme. Group two followed an identical exercise programme, but used a fake supplement. Neither the researchers nor the subjects knew which was which.

Here's what happened:


<table>
<thead>
<tr>
<th>Supplement</th>
<th>Lean muscle gains</th>
<th>Strength (upper body)</th>
<th>Strength (lower body)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fake</td>
<td>+ 3kg (6lb)</td>
<td>+ 24%</td>
<td>+ 43%</td>
</tr>
<tr>
<td>ANDRO-6</td>
<td>+ 2kg (4lb)</td>
<td>+ 18%</td>
<td>+ 33%</td>
</tr>
</tbody>
</table>

There was a trend toward a slight increase in testosterone in the ANDRO-6 group. The researchers also report a large rise in estrogen levels. Elevated estrogen levels in men have been linked to heart disease, cancer of the pancreas and enlargement of the prostate gland. The increase in estrogen levels occurred despite the addition of various ingredients designed to block the conversion of testosterone to estrogen. Moreover, there was also a drop in HDL (the "good" cholesterol) -- representing a 10-15% increase in the risk of heart disease.
Not surprisingly, EAS have removed the product from sale. However, some supplement companies are still marketing similar formulas. Here's a breakdown of the “active” ingredients:

- Androstenedione -- 300mg
- DHEA -- 150mg
- Tribulus Terrestris -- 750mg
- Chrysin -- 625mg
- Indole-3-Carbinol -- 300mg
- Saw Palmetto -- 540mg

“The addition of these herbal extracts”, say the researchers “does not result in increased serum testosterone concentrations, reduce the estrogenic effect of androstenedione, and does not augment the adaptations to resistance training”.

It looks like those black-market steroid dealers are safe after all.

Reference:
The one food you must avoid if you want to burn fat during your next workout

WANT to burn more fat during your next workout? Make sure to avoid carbohydrates before you train. A research team from the University of Texas report that 60 grams of carbohydrate taken in the hour before exercise reduces the amount of fat used for fuel. Subjects participating in the study exercised for 60 minutes after either:

- Consuming nothing
- Consuming 60 grams of fructose
- Consuming 60 grams of glucose

After consumption of the glucose and fructose, fat burning dropped by 49% and 31% respectively. In fact, when they trained on an empty stomach, subjects burned almost twice as much fat as they did after consuming glucose. It’s all to do with the availability of fuel. Give the body carbohydrate, and it simply uses more carbohydrate. Deprive it of carbohydrate, and it relies to a greater extent on fat as a fuel. Jeffrey F. Horowitz, the scientist leading the study, agrees. “To maintain high rates of fat oxidation at rest and during subsequent exercise”, Horowitz points out, “people should not eat even small amounts of carbohydrate before exercise”.

This doesn’t necessarily apply for everyone. After all, there’s plenty of research showing that people training for muscle size and strength would actually benefit from a carbohydrate drink before or during a workout. But if your main goal is fat loss then the message is clear -- avoid carbohydrate for at least four hours before you train.

Reference:
Warning! Too much stretching can actually make you weaker

PROLONGED stretching before exercise can actually reduce your muscle strength. Researchers from the Department of Kinesiology at Canada's McMaster University measured muscle strength in the soleus (pronounced so-lee-us -- you'll find it at the back of your lower leg) following 30 minutes of stretching. The table below shows you how muscle strength changed following the stretching procedure:

<table>
<thead>
<tr>
<th>Minutes after stretching</th>
<th>Drop in muscle strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate</td>
<td>- 28%</td>
</tr>
<tr>
<td>5 minutes</td>
<td>- 21%</td>
</tr>
<tr>
<td>15 minutes</td>
<td>- 13%</td>
</tr>
<tr>
<td>30 minutes</td>
<td>- 12%</td>
</tr>
<tr>
<td>45 minutes</td>
<td>- 10%</td>
</tr>
<tr>
<td>60 minutes</td>
<td>- 9%</td>
</tr>
</tbody>
</table>

As you can see, muscle strength dropped by almost 30% immediately following the stretch. Even one hour later, soleus had still not returned to full strength. So does this mean you should avoid the pre-exercise stretch altogether? Not exactly.

Think about it from an evolutionary standpoint. If your stone-age ancestors needed to stretch before killing their next meal, they probably wouldn't have survived very long. That isn't to say you shouldn't bother warming up before you train. But make your warm up specific. If you're about to train with weights, then warm up by lifting lighter weights. And a small amount of stretching won't damage your performance -- after all, subjects in this study were stretching virtually non-stop for 30 minutes. But if you're planning to do a lot of stretching, make sure to do it AFTER you train.

Reference:
How to lose an extra 12 pounds without eating less or spending longer in the gym

HIGH-INTENSITY interval training could help you lose an extra 12 pounds of fat each year.

Researchers from the University of Alabama compared the effects of two exercise sessions on 24-hour energy expenditure. Subjects in the first group completed 60 minutes of cycling at a moderate intensity. Group two used an interval training approach, cycling for two minutes at a high intensity followed by two minutes of recovery.

Over the course of the day, the high-intensity group burned 160 calories more than their low intensity counterparts -- without spending longer in the gym. Why? It's fairly well established that exercise has an “afterburn” effect. In other words, you continue to burn calories AFTER you finish exercising. It's a little like dropping a stone into water -- the heavier the stone, the greater the ripple. Likewise, the more intense the exercise, the greater the afterburn. Of course, you could also use the interval approach to get more done in less time. Here's how it works:

<table>
<thead>
<tr>
<th>Workout</th>
<th>Calories per minute</th>
<th>Time taken to burn 250 calories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low intensity</td>
<td>4 calories per minute</td>
<td>63 minutes</td>
</tr>
<tr>
<td>High intensity</td>
<td>5 calories per minute</td>
<td>50 minutes</td>
</tr>
</tbody>
</table>

The high-intensity interval training would cut your training time by over 20% without slowing your results. If you were to use interval rather than continuous training for five days each week, you would burn an extra 800 calories -- the equivalent of an extra 12lbs of weight loss over the course of a year.

Reference:

www.thefactsaboutfitness.com
How much stretching do you really need?

LESS than you might think. A recent study showed that one 30-second stretch was just as effective as three stretches lasting 60 seconds.

To establish the optimum stretching time needed to improve flexibility, researchers from the University of Arkansas examined the effects of four different stretching routines. Previous studies show that 30 seconds of stretching improves flexibility to a greater extent than a 15-second stretch. However, it's unclear whether a 60-second stretch is any better than a 30-second stretch.

Subjects stretched their hamstrings five days per week for six weeks. They were asked to place their heel on an elevated surface, and bend forward from the waist until they felt a “gentle stretch” in the back of the thigh. This position was held for 30-60 seconds. Each stretching session was supervised, and subjects missing more than four sessions were dropped from the study.

Here's what happened to hamstring flexibility in the four groups:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Duration</th>
<th>Flexibility improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 times a day</td>
<td>60 seconds</td>
<td>24%</td>
</tr>
<tr>
<td>3 times a day</td>
<td>30 seconds</td>
<td>24%</td>
</tr>
<tr>
<td>1 time a day</td>
<td>60 seconds</td>
<td>24%</td>
</tr>
<tr>
<td>1 time a day</td>
<td>30 seconds</td>
<td>27%</td>
</tr>
</tbody>
</table>

As you can see, there was no real difference between multiple 60-second stretches and a single 30-second stretch. That doesn't mean you can't stretch for longer than 30 seconds -- just that you don't have to.

Reference:
How to cut your training time in half and still get the same results

YOU can increase muscle size and strength with a weekly exercise routine of just three sets per muscle group.

A team of researchers from Australia’s Southern Cross University examined the effects of three different training programmes, involving 3, 6, or 12 sets per muscle group per week.

Twenty-seven men with up to four years of weight training experience followed the training programme for 10 weeks. They exercised with weights four days each week, training each muscle group once every seven days. Each set was taken to the point of muscular failure.

The programme also involved variations in the number of repetitions performed during each set:

- Weeks 1 to 4 - 12 repetitions per set
- Weeks 5 to 7 - 7 repetitions per set
- Weeks 8 to 10 - 9 repetitions per set

Here’s what happened to muscle size and strength in the three groups:

<table>
<thead>
<tr>
<th>Variable</th>
<th>3 sets per week</th>
<th>6 sets per week</th>
<th>12 sets per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper body strength</td>
<td>+5%</td>
<td>+5%</td>
<td>+2%</td>
</tr>
<tr>
<td>Lower body strength</td>
<td>+7%</td>
<td>+5%</td>
<td>+12%</td>
</tr>
<tr>
<td>Body weight</td>
<td>+2%</td>
<td>+3%</td>
<td>+2%</td>
</tr>
<tr>
<td>Muscle size - triceps</td>
<td>+2%</td>
<td>+5%</td>
<td>+5%</td>
</tr>
<tr>
<td>Muscle size - thigh</td>
<td>+7%</td>
<td>+5%</td>
<td>+13%</td>
</tr>
</tbody>
</table>

The results show only small differences between the 3, 6 and 12 set groups. Gains in lower body strength (measured using the squat) were greatest in the 12 set group (a 12% increase, compared to 7% in the low volume group). Gains in muscle size were also greatest in the 12 set group.
group. However, the research group were unable to determine any statistically significant differences between the groups.

This isn't the only study demonstrating that a reduction in training volume produces similar improvements in muscle strength and size. Scientists from the University of Florida have recently established that 25 minutes of weight training is just as effective as workouts lasting twice as long.

"A low training volume", concludes lead researcher Karl J. Ostrowski, "of 3 sets per muscle group per week is as effective as 6 or 12 sets for increasing hypertrophy [muscle growth], strength, and upper body power".

**Reference:**
Announcing an easy way to make a winning first impression

IF you want people to think more highly of you, tell them you exercise!

A recent study published in the Journal of Sport & Exercise Psychology found that regular exercisers were consistently rated as more confident, hard working and more intelligent than their sedentary counterparts.

According to lead researcher Kathleen Martin, the benefits don't stop there. Martin points out that exercisers were also, "considered to have more friends, and be braver, smarter, neater, happier, more sociable and friendlier."

The same appears to hold true for ratings of physical appearance. Exercisers were considered as more sexually attractive, good looking and healthy.

Now, it's easy to understand that exercisers were perceived as fitter and healthier than non-exercisers. After all, most people are aware of the physical benefits of exercise. What's not so clear is why the exercisers were considered neater, kinder AND more intelligent.

"Perhaps these results are indicative of a halo effect", says Martin. In other words, once someone has a positive impression about you, they tend to perceive you in a way that supports their initial belief.

Next time you meet someone for the first time, make sure to show them your gym membership card!

Reference:
What NOT to eat after exercise if you want to lose fat

IF you really want to accelerate fat loss, make sure to ignore the popular recommendation to fill up with carbohydrates after you exercise.

A team of researchers from Canada report that a high carbohydrate meal immediately after a workout will depress the effect that exercise normally has on your metabolic rate. After you finish training, your body continues to burn more fat calories -- sometimes for up to 48 hours. However, a high carbohydrate meal immediately following a workout appears to “dampen” this natural rise in fat burning.

A group of eight men exercised on a treadmill for 60 minutes. Immediately after the workout, they consumed a milk shake that replaced the calories they burned during exercise. The men spent the next three days in a respiratory chamber, which allowed scientists to measure their metabolic rate (the things some people will do for money).

The tests showed very little difference between the exercise and no-exercise groups, both in terms of daily caloric expenditure and the total number of fat grams burned.

Remember, the main factor that determines your rate of fat loss is energy balance -- the number of calories you take in must be less than the number of calories you expend. However, according to lead researcher Isabelle Dionne, "the avoidance of energy and substrate compensation after exercise is of major importance to maintaining a negative energy balance".

In other words, if you want to speed up fat loss, avoid a big carbohydrate meal straight after you finish training.

Reference:
A little known secret about abdominal training most fitness experts won't tell you

A RECENT study from Stockholm's Karolinska Institute has questioned the popular practice of bending the knees during abdominal training.

Bending the knees during abdominal exercises (such as the trunk curl) is supposed to reduce the amount of work performed by your hip flexors, leading to greater isolation of the abdominal muscles. However, researchers found that moving the legs from straight to bent during the trunk curl actually increased hip flexor activity by 111%.

"There is a misconception that the involvement of the hip flexors will decrease by flexing the legs in sit-ups", says lead author Eva Andersson. "We found the opposite pattern, i.e. the hip flexor muscles were always engaged to a higher degree with bent than with straight legs".

Andersson and her team compared several abdominal training exercises, using a combination of bent and straight legs. All of the exercises were performed with the hands crossed over the chest.

Here's what happened -- the higher the percentage, the harder the muscles were working:

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Abdominals</th>
<th>Hip flexors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trunk curl</td>
<td>48%</td>
<td>9%</td>
</tr>
<tr>
<td>Lying leg raise</td>
<td>62%</td>
<td>72%</td>
</tr>
<tr>
<td>Sit-up</td>
<td>80%</td>
<td>39%</td>
</tr>
</tbody>
</table>

Here's what else the research group found:

- Lying leg raises worked the abdominals 29% harder than trunk curls
- The exercise working the abdominals the hardest was the sit-up with straight, unsupported legs (unsupported means that subjects' ankles weren't hooked or supported)
- Trunk curls resulted in the lowest hip flexor activity
• Hip flexors worked the hardest during the lying leg raise
• Single leg raises were the least effective abdominal exercise

So how can you apply these findings in the real world?

• There is no single best movement for the abdominals. To fully develop your stomach muscles takes a combination of different exercises
• Exercises such as the sit-up and lying leg raise (considered ineffective by many exercise professionals) can work the abdominal muscles (and hip flexors) harder than the trunk curl
• Moving the knees from straight to bent during sit-ups or trunk curls does not lead to greater isolation of the abdominals

Reference:
Dieting: Does it really lower your metabolic rate?

YES -- but not as much as you might think.

It's a popular belief that prolonged dieting permanently lowers your metabolic rate, thus reducing the number of calories your body burns every day. To test the theory, a research group from Denmark reviewed a number of clinical trials comparing subjects who had lost weight to people who had never been overweight.

Assuming the “slow” metabolism theory holds true, formerly-obese individuals should have a lower metabolic rate than their never-obese counterparts.

Here are the combined results of 15 studies comparing the two groups:

<table>
<thead>
<tr>
<th>Group</th>
<th>Daily metabolic rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never-obese</td>
<td>1494 calories</td>
</tr>
<tr>
<td>Formerly-obese</td>
<td>1451 calories</td>
</tr>
<tr>
<td>Difference</td>
<td>- 43 calories</td>
</tr>
</tbody>
</table>

Although the formerly-obese group did have a slower metabolism, it was reduced by less than 50 calories per day. Which, if you're wondering, is the equivalent to just one quarter of a Snickers™ bar.

Not a lot, is it?

That's not to say that your metabolic rate isn't lower while you're ON a diet -- because it is. The controversy centres around what happens AFTER you finish dieting. After all, it's a widely held belief that long-term dieting permanently slows your metabolism.

However, the research group were able to find just four studies showing a slowed metabolism in formerly-obese subjects -- 13 papers reported no significant difference between formerly-obese and never-obese individuals.
So what was responsible for the slightly lower metabolic rate?

Scientists haven't decided yet. They're not sure if it's down to “faulty” genetics or some other (as yet unexplained) adaptation to weight loss. But the bottom line is that long-term dieting has only a minor effect on your metabolic rate.

Reference:
Here's how to slash 27 minutes off your next workout and still burn just as much fat

Researchers from Colorado State University report that shorter, more intense workouts are just as effective as longer training sessions.

Their findings cast doubt on the popular idea that low-intensity exercise performed in the so-called fat-burning “zone” is the best way to lose weight.

The number of calories burned was similar during both workouts. However, the increase in caloric expenditure after exercise was almost doubled in the high-intensity group -- despite the fact their workout time was reduced by more than one third.

Three hours after the workout, the high-intensity group were still burning 24% more fat than their low-intensity counterparts. Previous studies show that this “afterburn” effect -- the tendency for your body to burn more fat calories following high-intensity exercise -- persists for at least 12 hours.

Considering that many people give up on their exercise programs because they don't have the time to spend hours in the gym, the message is clear -- shorter, harder workouts get the job done just as well.

Reference:
**Body Pump: Is it really the fastest way in the universe to get in shape?**

RECENT findings published in the *Journal of Strength & Conditioning Research* cast doubt on claims that Body Pump is "the fastest way in the universe to get in shape". Body Pump* is a group-exercise based weight training class. It uses barbells with adjustable weights to work every major muscle in the body. A typical Body Pump workout involves roughly 100 repetitions for each muscle group.

Tests show that a 50-minute Body Pump workout burns an average of just 265 calories. Not much, especially when you consider that a similar amount of time spent cycling can burn over 400 calories. This study aside, there is no published research on Body Pump, which makes it difficult to make any firm conclusions regarding the long-term effectiveness of the program.

A typical Body Pump class comes with several restrictions that limit the effectiveness of the workout. "Subjects were limited to using only an amount of weight that they could lift for every movement", points out lead author Dixie Stanforth, "even though they might, for example, have been able to deadlift significantly more weight than they could press overhead."

In short, suggesting that a Body Pump workout will lead to a significant increase in strength is a little like saying you can extinguish a blazing fire with a cup of water -- it simply won't work. The research team also point out that the demands of a Body Pump class are "less than that needed to elicit an aerobic-training effect". Needless to say, performing 100 repetitions for each muscle is an effective way to improve your muscular endurance. A Body Pump workout can also help to accelerate weight loss when combined with a low calorie diet. But the fastest way in the universe to get in the shape? I don't think so.

*Visit [http://www.bodypump.com/](http://www.bodypump.com/) to learn more about Body Pump workouts

**Reference:**

www.thefactsaboutfitness.com
The truth about swimming and weight loss

According to Professor Grant Gwinup, swimming is not an effective way to promote fat loss.

Research published in the *American Journal of Sports Medicine* compared three exercise programs over three months. Each program began with up to 10 minutes of daily exercise, and increased by five minutes every week.

Here's what happened to the three groups:

<table>
<thead>
<tr>
<th>Group</th>
<th>Weight loss</th>
<th>% drop in skinfold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walkers</td>
<td>-17 lb (8kg)</td>
<td>-41%</td>
</tr>
<tr>
<td>Cyclists</td>
<td>-19 lb (9kg)</td>
<td>-43%</td>
</tr>
<tr>
<td>Swimmers</td>
<td>+5 lb (2kg)</td>
<td>0%</td>
</tr>
</tbody>
</table>

As you can see, there was little difference in weight loss between the walkers and cyclists. The swimmers, however, lost no weight.

Unfortunately, Professor Gwinup offers little explanation for the lack of weight loss in the swimmers. Assuming that all three groups burned a similar number of calories, the swimmers must have compensated by eating more.

Previous studies show that ethnic groups spending a lot of time in water have the most body fat. The same holds true for Japanese female pearl divers, who are very fit but also very fat -- despite swimming for several hours daily.

“Presumably”, speculates Professor Gwinup, “swimming in cold water stimulates the appetite to increase caloric consumption.” It’s also worth pointing out that the runners and cyclists didn’t lose much weight until they exercised for at least 30 minutes every day.
Of course, this study isn't meant to put you off swimming. Any form of exercise -- provided you do it long enough -- will promote fat loss. But if you swim a lot, make sure to guard against the tendency to eat more.

Reference: