



d

c

d

d

b

f

a

f

b

c

## **COPYRIGHT**

Copyright 2009 by Jack Woodrup. All rights reserved. No part of this book may be reproduced or transmitted in any form, by any means, (electronic, photocopying, recording, or otherwise) without prior written permission of the author. No liability is assumed with respect to the use of the information contained within. Although every precaution has been taken, the author assumes no liability for errors or emissions. Neither is any liability assumed for damages resulting from the use of the information contained herein.

## TABLE OF CONTENTS

1. INTRODUCTION .....	4
2. WHAT DO I NEED TO DO TO JUMP HIGH .....	6
3. MOVEMENT EFFICIENCY .....	7
HOW TO DEVELOP MOVEMENT EFFICIENCY .....	9
4. BODY COMPOSITION – SKINNY PEOPLE JUMP HIGHER.....	11
5. STRENGTH FOR JUMPING.....	17
HOW TO DEVELOP STRENGTH FOR JUMPING .....	20
6. SPEED FOR JUMPING .....	23
HOW TO IMPROVE RFD.....	23
HOW TO IMPROVE REACTIVITY.....	25
7. THE EXPLOSIVE LIFTS – BRIDGING THE GAP BETWEEN STRENGTH AND SPEED .....	30
8. TYING THEM ALL TOGETHER.....	36
9. OTHER TRAINING .....	41
CORE TRAINING – THE RULE OF 3 .....	41
UPPER BODY TRAINING – THE OPTIONAL EXTRA .....	43
FEET TRAINING.....	44
10. GENERAL TRAINING FUNDAMENTALS.....	46
WARMING UP .....	46
GENERAL WARM UP.....	47
JOINT MOBILITY .....	48
ACTIVATION DRILLS .....	48
SPECIFIC WARM UP .....	49
COOLING DOWN .....	51
11. RECOVERY .....	52
WHY RECOVERY IS IMPORTANT.....	52
HOW TO MAXIMIZE YOUR RECOVERY .....	52
REST.....	53
DIET .....	55
PROTEIN.....	57
CARBOHYDRATES .....	58
FATS.....	59
HYDRATION.....	60
EPSOM SALT BATHS .....	61
JOINT AND MUSCLE WORK .....	62
FOAM ROLLING .....	63
STRETCHING.....	65
ICING .....	67
PUTTING TOGETHER A RECOVERY PLAN .....	68
12. HOW MUCH WILL I GAIN.....	72
13. CONCLUSION.....	74
14. ABOUT THE AUTHOR .....	77
15. REFERENCES .....	82

# 1. INTRODUCTION

This is a brief introduction into the essentials of vertical jump training and is intended to help educate athletes on the variety of factors that contribute to developing their vertical jump. It is also intended as a companion piece to the [Vertical Mastery](#) Jump Program Building software. What it isn't intended to be is overly complicated. The purpose of this report is to explain in easy to understand and practical ways what you can do to jump higher.

Covered in detail will be the following topics:

- The athletic and physical attributes required to jump high.
- The training methods that can be employed to enhance those attributes.
- How much training volume to use for each of the methods described (frequency of workouts, sets, reps, rest etc)
- How to design an effective warm up and cool down to ensure you maximize the effectiveness of your workouts
- Recovery. How to maximize the results of your workouts, how to reduce your chances of injury, and how to do it all in minimum time.

Although that list may seem short there is actually quite a lot to cover. Before we begin however I want to quickly touch on a few things to do with individuality and how it may impact your vertical jump.

There are many factors that contribute to how high you can jump. Some of these are beyond your control, some are not. For those things that are out of your control such as your genetic make up, muscle fiber type, CNS efficiency, lack of equipment etc, you

should not look upon them as restrictions and road blocks, as to do so is to start making excuses before you have even begun.

Instead it is better to view what you have as a more of a starting point. Whilst I cannot do anything about your genetics I can provide you with plenty of ideas on how to train your vertical jump regardless of what equipment is available to you, how old you are, and just about any of the other things you might think are holding you back..

If you are reading this report then in all likelihood you have probably found VerticalJumping.com. If you haven't then I highly recommend that once you finish this book you go and visit the site as there are plenty of free vertical jump related training articles for you to enjoy and read. Most of the training ideas found on the site are tried and tested methods, whilst others are more directed at advanced athletes looking for some fresh ideas to take their development to the next level.

And as for those genetics, I say screw em! I firmly believe that with smart programming, commitment to recovery and nutrition, and good old fashion hard work you can achieve far more than you think. At the end of this report is a brief summary of my own background. In it I will share with you how I defied age, woeful genetics, and the unique challenges of life to throw down my first dunk.

As I am not here to waste your time with fluff, let's get straight to it.

## 2. WHAT DO I NEED TO DO TO JUMP HIGH

I am trying to keep this report heavy on the practical and light on the theoretical but a quick explanation of the terms will help those new to vertical jump training to better understand of some of the ideas and concepts a bit later on.

A jumping movement in its most simplistic form is basically a dip downwards followed by an explosive upwards movement. The dip where you load up the muscles for the jump is known as the eccentric phase. The actual upwards explosive movement is called the concentric phase. In between these two is a split second pause known as the amortization phase.

When you look at it as just a dip, pause and explosion you wouldn't think training to jump high would be that complicated. And you know what, it isn't! It is only dodgy marketing people who are trying to sell you secret training methods that make it seem complicated.

The much simpler reality is that in order to jump high you only need to focus on improving the following four things:

1. Movement Efficiency
2. Body Composition
3. Strength
4. Speed

If an athlete is well developed in these 4 areas then it is a sure bet that they will have an outstanding jumping ability. Often you will find that even if the athlete is only well developed in one or two of those areas, they will still be able to jump really high. So why are those attributes important and how do you go about improving them? Read on!

### **3. MOVEMENT EFFICIENCY**

Movement efficiency is just a fancy way of saying that an athlete is well co-ordinated. Efficient athletes have developed the ability to fire their muscles in the right sequence and with appropriate levels of force. Good movement efficiency is demonstrated pretty obviously by a smooth jumping motion.

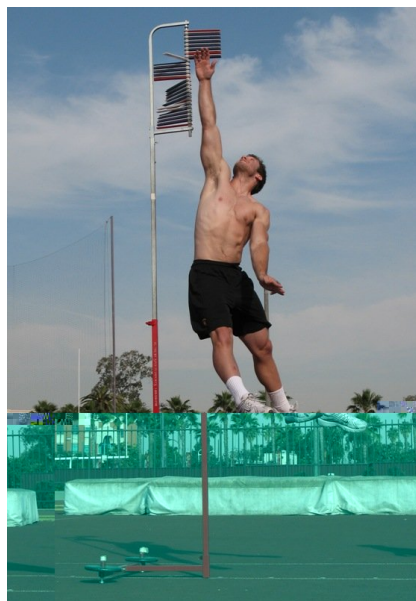
I am sure we have all seen people trying to jump and touch a high object who have terrible movement efficiency. For example watch a small child try and run and jump and you will get the idea. They look unbalanced, their steps are awkward, and the jumping motion itself looks like it is out of time with what they are trying to do. As a result most small children have a terrible vertical jump.

Compare that to say an Olympic high jumper who has great movement efficiency. They fire their muscles in the right order, they move their limbs synergistically, and they make every stride as well as their take off look easy, and as a result, they jump really high (and they make it look easy). In short good vertical jump movement efficiency allows an athlete to generate the most amount of power with the least amount of effort.

Different types of jumps also require different levels of movement efficiency. For example a running jump as used by basketball players going for a dunk requires the athlete to run at speed and then convert that forward momentum into maximum vertical jump height.



This is a much more complex action than a standing vertical jump as is commonly used in athletic tests.



Suffice to say how much effort you put into developing optimal jumping motion will depend on what the ultimate goal is for your jump training. Volleyball players and athletes training just to do well in the standing jump test won't need to spend as much time working on movement efficiency as athletes wanting to perform a 360 degree slam dunk or compete in track and field events.

## **HOW TO DEVELOP MOVEMENT EFFICIENCY**

Of the 4 main jumping attributes movement efficiency is by far the least complicated to develop. However just because it isn't complicated doesn't mean it is always easy either! If you have not done a whole lot of jumping before it might seem difficult at first, but it will provide you with tremendous gains.

To cut a long story short, all you really need to do to improve your jumping movement efficiency is to go and practice jumping in the manner in which you use it for your sport.

For example if you want to improve your jumping efficiency for volleyball then you must spend some additional training time actually practicing to jump for maximal height in the manner used in volleyball such as going up for blocks and spikes. If you are jumping to dunk a basketball, go and practice running and jumping in the same way you would to slam dunk.

If you take nothing else away from this report please remember this:

Regardless of whether or not you have access to weights, a good program, a good coach, great facilities, whatever, the absolute . . . . . is to go out and practice jumping high.

Aside from improving movement efficiency, practicing jumping also develops jump specific speed and strength as good if not better than basically any drill or exercise you can think of. Many people overlook this key principle because it just seems too simple.

There is no doubting that weight training and plyometric/jumping drills help develop strength and speed for improving your vertical, and yes, jumping itself can only take you so far, but if you are not doing enough of it in the first place then you are missing out on the easiest gains you can get.

So why if jumping practice improves movement efficiency and jump related speed and strength better than anything else do you even bother with other drills and exercises? This is the obvious question to ask and it boils down to the fact that after a while your gains stagnate and you need to find other ways to increase your ability to generate jumping power. Also, max effort jumping is very hard on the joints and CNS so you just can't go and do it all the time as you will end up hurting yourself.

If you have access to a basketball ring that you can adjust the height of, use it. In my own quest to dunk I bought a Spalding Gold Series adjustable ring that I practiced on starting at 9ft, then moving to 9.5ft, and eventually I was able to dunk on the full 10ft ring.

An adjustable ring serves a number of purposes for prospective dunkers. First, starting off on lower rims helps develop the correct jumping technique you will need to dunk. There are lots of people who can jump really high but can't dunk as it is one thing to just run and jump, but it is another thing entirely to try and do it holding a basketball or timing a lob. Practice makes perfect.

The second thing practicing on the lower ring does is provides more manageable milestones. A 10ft basketball ring can seem a long way up, particularly when you are just starting out. Starting off on lower rims allows you to take smaller steps to achieving your goal which can seem far less overwhelming.

## 4. BODY COMPOSITION – SKINNY PEOPLE JUMP HIGHER

This is the easiest one to explain to people who have never trained to improve their vertical jump before. Basically the leaner you are (low in body fat) and the less unnecessary muscle mass you have, the higher you should be able to jump.

This is simple physics really. Want to make a car go faster – reduce its unnecessary weight. Want to run faster and jump higher – reduce unnecessary weight. Less weight means you don't need to produce as much power to jump the same height. It also often means you will move more freely.



If you look at the great athletes in practically every explosive running and jumping sport they are all very lean. Body fat in no way at all helps you jump higher, it just weighs you down. If you have excessive body fat not only will you have difficulty jumping high, but each time you do, your excess weight means that when you land there is high impact on your joints which can quickly lead to injury.

Excess body fat is universally agreed upon as being not useful for jumping athletes. What isn't so widely agreed upon is the role excess muscle plays in your jumping ability. The reason for this is that a good portion of how much force you can produce is determined by the size of the muscle. Bigger muscles can generate more force and therefore in theory, be trained to generate more power.

Now there are some coaches that think that because bigger muscles can potentially generate more power they are not necessarily a bad thing for power athletes such as jumpers and sprinters. I tend to agree with this but with one caveat – the muscle gain is not excessive. Yes more muscle should equal more power, there also comes a point where all that extra muscle mass becomes counterproductive.



Too much muscle can make you cumbersome when you are trying to move and it also increases those landing forces I just mentioned. The key word here is ‘excessive’ muscular size – think bodybuilding. The problem of too much muscle size is also the reason you should focus on building relative maximum strength, not just maximum strength.

For most people too much muscle will not really be a problem. You actually have to eat a lot of food and train specifically for it for a long time before you start to look like a

bodybuilder. So don't stress out if you do happen to put on a bit of weight from hitting the weights as it won't hurt your jumping too much. Just don't spend a lot of time doing bench press and bicep curls either.

So acknowledging the need to reduce excessive body mass the next question is how do you do it? For both excess body fat and excess muscle it can be removed in two ways – it can be dieted off, or it can be burned off.

In terms of dieting it off, well, call me Captain Obvious, but if you need to cut back on your size you will need to cut back on your food. Fat storage mostly comes about due to excess calories. There are other variables like stress and genetic predisposition but they are beyond the scope of this guide.



If you are eating 3000 calories a day and your body only uses 2500 you have a daily surplus of 500 calories per day. If you want to lose weight you will need to cut out at least 501 calories somewhere (or exercise more to burn more calories). One of the easiest ways to do this is cut back on the crappy processed and refined foods in your diet (see the Recovery section for more details).

Muscle growth on the other hand is caused by a combination of calorie surplus and training stimulus. If you want huge muscles train and eat like a bodybuilder. As you would imagine bodybuilders use a variety of methods to increase time under tension and calorie surplus to promote muscle growth. More time and more tension and more food = more growth.

Explosive athletes on the other hand try to minimize time under tension (whilst maximizing force produced) and as such so should you. You do this by keeping your reps low in number and fast in speed. For strength related gains with minimal muscle growth keep the majority of your working sets to between 1-6 reps. Low rep numbers per set also help ensure that you maintain a higher intensity which is better for power development.

I should also point out that even when using low reps it will stimulate some muscle growth. You see form follows function and if you tell your body often enough that it needs to get stronger, it will do what it needs to in order to achieve that. The body has two processes for getting stronger - neural improvements and increased muscle size.

The first to kick in is usually the neural improvements. This is where your mind gets better at telling your muscles how to both work individually and with each other. These improvements in intra-muscular and inter-muscular efficiency are the same basis for improving your jumping technique and movement efficiency.

The second way that your body gets stronger is by sending out the hormonal signals to make your muscles grow bigger to accommodate that need. This takes a bit longer, but provided you get enough food and rest to allow the process to work, your muscles will grow.

To reiterate the main point here, incidental muscle growth as a result of a healthy balanced diet and short burst-high intensity training is fine and will help you perform better and jump higher. Deliberately targeting muscle growth with excessive amounts of

high time under tension strategies and eating lots of calories is not fine and will hinder your jumping gains.

Another thing to consider with regards to what is an appropriate amount of muscle mass is the type of jumping you will be training for. The more standing or one step type jumping you do, the more muscle mass can afford to carry. The reason this is so is due to the longer ground contact times associated with this type of jumping.

Compare this to running jumpers such as a basketball player wanting to dunk, who are trying to move swiftly from a running motion into the jumping motion. This type of jump involves much shorter contact times and requires a lot more reactive strength. Reactive strength is more impacted by body weight, including excess muscle mass, which is why many of the best single leg dunkers are all very skinny.



So how does this affect you? Actually not much! Whilst standing jumps are more dependant on concentric power, and running jumps require greater reactive strength, from

a practical point of view your training regime will be pretty similar. In both cases you should be doing a combination of bilateral and unilateral jumps and lifts. The main difference lies in how you spend your time practicing.

Also, in case you are interested generally your preferred jumping style will come down to a couple of key factors including body structure and sporting need. By body structure I am referring to the athlete's natural build. If for example your body type is ectomorphic (long thin build, low body fat) you will be more suitably built to be a single leg jumper than an endomorph (large bones, wide waist, increased fat storage) and the chances are you will naturally prefer to jump off one foot.

When I refer to sporting need I am of course referring to the type of jumping you do in your chosen sport. For example volleyball players perform nearly all of their jumping off two feet and as a consequence anyone who has played the sport for an extended period of time will almost certainly have grown accustomed to it and will prefer jumping off two feet.

Of course there will be exceptions to these, and with practice you can actually become quite adept at jumping off either one or two feet, but the descriptions above do apply a lot of the time.

## 5. STRENGTH FOR JUMPING

Strength in terms of jumping is essentially how much force you can apply to the ground. If you can apply more force to the ground in the same (or less) amount of time, then all other things being equal, you will be able to jump higher.

The correlation between strength and jump height is well known and is clearly and regularly demonstrated by elite athletes. It is no coincidence that at elite levels, the competitors of sports that have high average vertical jumps such as track and field, Olympic lifting and American football, routinely squat at least 2.5x times their own body weight.

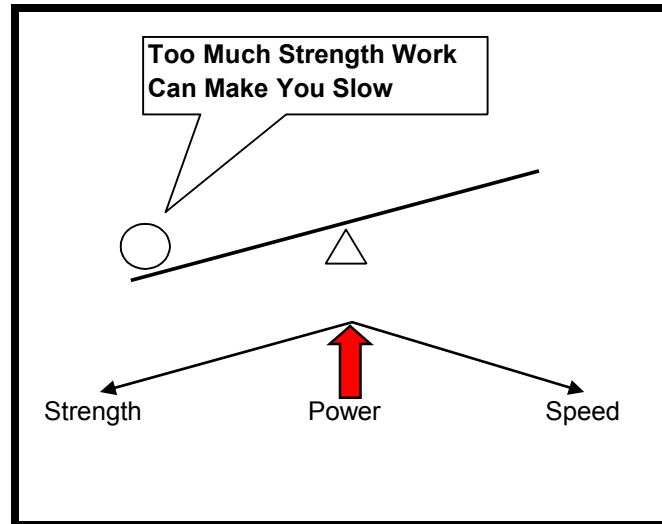
What does a 2.5x times body weight squat (often written as 2.5x BW) mean? Simply put if you weigh 180 pounds, then you can perform a single repetition of a back squat with at least 450 pounds ( $180 \times 2.5 = 450$  for those who have difficulty with maths). An ability to squat of 2.5x your body weight is a lot of potential force to have at your disposal to apply to the ground.

This is all well and good for elite level athletes but what does this mean for you? Simply put you should be looking to get as strong per pound of body weight as you can. But there is catch. A common mistake for jumping athletes is to get too carried away with a lot of strength training and to lose sight of the ultimate goal of jumping high. Great strength is an advantage, but it can come at a price - speed.

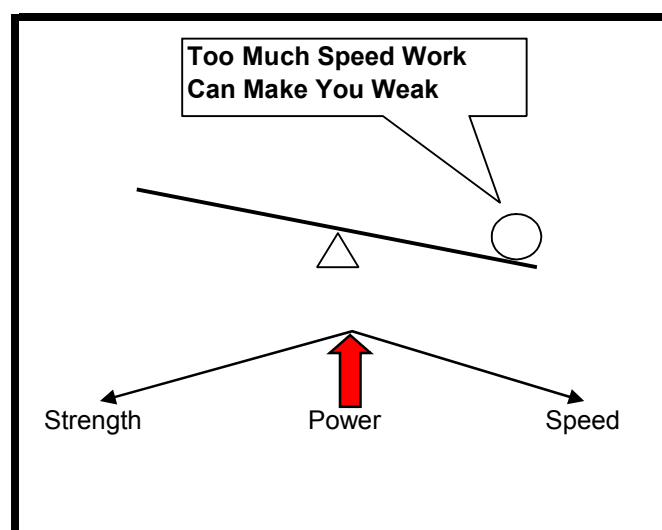
For example, the athletes who have the biggest squats per pound of bodyweight are powerlifters. Very good powerlifters can often squat greater than 3.5x BW so have potentially huge amounts of force at their disposal to apply to the ground. But despite their great strength not many powerlifters have huge vertical jumps. Why not?

The sport of powerlifting basically involves getting really strong for just three lifts: the bench press, the deadlift and the squat. None of these lifts have a time limit to complete

and when using maximal weights they are not performed with great speed. So whilst powerlifters get extremely strong, they don't necessarily get explosive.



This is where the importance of speed comes into play. If you can't access your strength quickly then you won't be able to jump high. Looking again at the example of the powerlifter, they squat massively heavy weights, but it takes them anywhere between 2-5 seconds to complete the lift. A jumping motion takes place in a time frame of well under 1 second.



It is due to this difference in the time it takes to complete two different movements (a squat versus a jump) that a powerlifter, despite their great relative strength, often can't jump very high. They simply do not have the ability to apply their strength quickly enough.

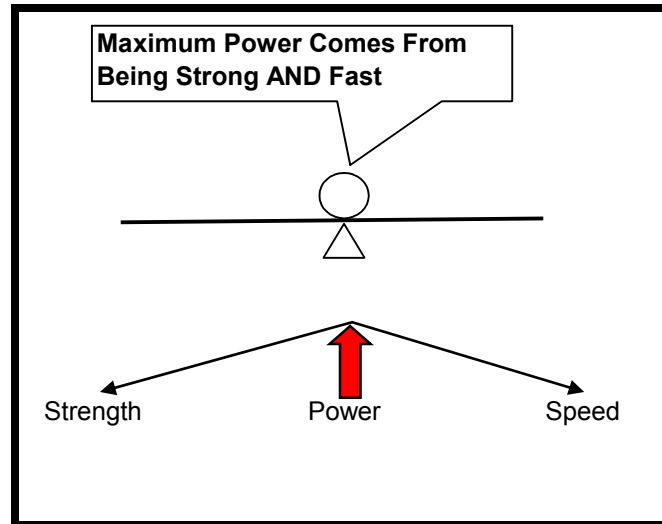


Compare these guys to the more explosive athletes who also are very strong, but can also jump high and run fast. These athletes not only have the strength at their disposal, but they also have ability to access it quickly.

The speed of strength application is often broadly referred to as rate of force development (RFD) and is obviously an important attribute for jumping athletes to have. More about RFD later.

So what is it that the sprinters, football players etc are doing that allows them to not only develop great strength, but also speed and explosiveness? Easy, the faster athletes

supplement their strength work with plenty of jumping, sprinting, and explosive lifting. And if you want to jump high, then so should you.



## HOW TO DEVELOP STRENGTH FOR JUMPING

Strength as you may have gathered is basically developed in the weight room. You can certainly develop strength to a certain degree without using weights, but the quickest, easiest and most effective way to get strong is by getting into the gym and lifting some heavy iron.

When using weights a very important consideration is to NOT train like a bodybuilder. As already discussed, \_\_\_\_\_ muscle mass such as that developed using bodybuilding methods is not always useful for jumping high. The main differences between bodybuilding and strength training are outlined in the table below:

Training Emphasis	Size and Strength	Strength
Rep Ranges P/Set	6 - 25	1 - 6
Time Per Set	15 - 60 Seconds	1 - 20 seconds

Total Reps P/Workout	70 - 150	15 - 50
Rest between Sets	30 – 120 seconds	60 – 600 seconds
% of 1RM Used	50 – 85%	75 - 100%
Types of Exercises Used	Compound & Isolation	Compound

From the table above you can see strength training for an athlete involves the use of lower reps, heavier weights, and longer rest periods. Another key difference is the emphasis on compound lifts in strength training. What is a compound lift? A compound lift is an exercise that involves more than one joint movement.

For example a hamstring curl just involves the flexion of the knee. This places the emphasis of the lift primarily on the hamstrings. Compare that to a compound lift such as a squat. The squat works not just the hamstrings, but also the glutes, calves, quads, and lower back. In short the compound lifts give you a much bigger bang for your exercise buck. They recruit more muscle fibres and better aid in the development of intra and inter muscular co-ordination.

This isn't to say that the occasional use of isolation exercises or lower weight/higher rep work in strength training can't be beneficial, it just means that the main emphasis of your training should not be on those methods. Some of the better compound exercise choices are:

- Squat Variations – Back squat, front squat, box squat, safety bar squat
- Deadlift Variations – Barbell deadlift, sumo deadlift, trap bar deadlift, deadlift off boxes
- Single Leg (Unilateral) Variations – Lunges, step ups, split squats

A nice and simple workout template for building a well balanced lower body strength program would be to select

- a compound lift (squat or deadlift variation),
- a unilateral exercise,
- a glute/hamstring exercise,
- some core work.

Do 3 sets of 3 for the compound lift with a heavy weight, 3 sets of 6 on the unilateral lift with a moderate to heavy weight, 3 sets of 6 on the glute/hamstring exercise with a moderate weight, and finish up with 5 sets of 5-10 with a moderate to heavy weight for core work.

For example:

Squats – 3 x 3 @ 85- 90% of your 1RM (3 x 5 @ 80 – 85% for beginners)

Bulgarian Split Squat – 3 x 6 @ 80% of your 1RM

Glute Ham Raise – 3 x 6 (often bodyweight will be more than enough for this exercise)

Weighted Crunches – 5 x 5-10

With regular progressions in the weight lifted a lot of athletes using this simple type of setup will see good gains for a surprisingly long period of time.

For more information about these exercises there are videos and tips at [VerticalJumping.com](http://VerticalJumping.com)

## **6. SPEED FOR JUMPING**

Jumping speed is a combination of your rate of force development (RFD) and your reactivity. What is RFD and reactivity? RFD is how quickly you can access your strength to produce your jumping power and reactive strength (or reactivity as it is often called) is how quickly you can execute your full up and down jumping motion without loss of performance.

Reactivity is demonstrated by how quickly you can rebound from the dipping motion back up into the jumping motion. The quicker you can descend, catch yourself, and then ascend, the higher you will be able to jump. The freakish dunkers you see on YouTube are usually very reactive.

Below I will outline a couple of methods that target those athletic characteristics specifically, but it is important to note that both RFD and reactivity are actually well developed just by improving your movement efficiency.

Remember what I said earlier about the importance of actually going out and practicing jumping! Practice really does make perfect. Actually if you ask Kadour Ziani what his training program looks like he says “Jump, jump, jump!”, That aside there are some things you can do which are described below.

### **HOW TO IMPROVE RFD**

The first variable of jumping speed I mentioned is Rate of Force Development (RFD). RFD is the speed at which force can be applied. It is very important in jumping (and most sports movements for that matter) because the actual movement happens so quickly that athletes with a slow RFD you will not be able to tap into their strength reserves quick enough to jump very high.

I like to look at RFD as the athletic equivalent of acceleration on a drag racing car. The drag race, much like a vertical jump, takes place over a short distance and a short amount of time. The car that usually wins in these short races is the one that accelerates the quickest. The one that accelerates the quickest is the one that can access its power the quickest.

Given this analogy it should then come as no surprise to learn that one of the best ways to develop RFD is by using various methods of acceleration training. Two of the best accelerative training methods include lifting and jumping from dead stop or relaxed positions, and through the use of bands.

In the weight room the obvious exercise choices for improving RFD include all the deadlift varieties and the Olympic lifts as these movements start with an explosive concentric contraction to move a weight which is resting in a dead position on the floor.

Two other good choices are box squats and bottom up squats. Box squats are great due to the pause at the bottom which forces you to overcome the weight from a static position, and concentric (bottom up squats) which require a power rack or similar. These work in the same way as a regular squat but instead of lowering the weight first you start with it in the bottom position resting on the safety pins.

Good types of jumping drills that have a high accelerative component are those performed from either a seated position or a pause at the bottom of the jump. In both the weighted exercises and the jumps mentioned you have to overcome inertia which requires you to apply strength quickly.

The other training option I mentioned that was good for the development of RFD (and reactivity for that matter) is through the use of bands. Training with bands is a great way to add an accelerative component to your workouts via accommodating resistance. What is accommodating resistance? Imagine stretching a rubber band. The further you stretch it, the more resistance it has. This is accommodating resistance.

This can be applied in the weight room on exercises such as squats by attaching some jump stretch bands to the bottom of a power rack and as you get closer to the top of lift, the bands stretch and the tension increases. This forces you to apply more and more force in a progressively more explosive manner in order to keep the bar moving upwards.

In terms of adding accommodating resistance to your plyometrics and jumping drills the easiest way is to use a Lifeline Power Jumper. I will tell you more about this handy little device a bit later on.

## **HOW TO IMPROVE REACTIVITY**

Before working out how to improve reactive strength, you first need to know what the underlying mechanisms are that allow one person to rebound quicker than another. There are actually a number of competing theories about this. Here I will outline the two main ones.

Theory one is that it comes down to how effectively you can exploit and use the Stretch Shorten Cycle (SSC). The SSC is a protective reflexive response that occurs when you do something like move an arm really fast. If you flick your arm out in a throwing motion as fast as you can (i.e. stretch it out) your body initiates the SSC which stops and reverses the movement.

According to the theory if you execute the eccentric portion of the jump with enough speed the SSC will kick in and help you minimize the time spent in the amortization phase (the brief pause in the middle) and reverse the descent to get into the concentric (upwards) direction of the jump more quickly. The quicker you can perform the full jumping movement cycle of the down and up, the higher you will be able to jump.

Theory two states that the SSC has little impact on how quickly you can reverse the downward motion and instead attributes this ability to an athlete's eccentric strength and

tendon stiffness. Eccentric strength broadly refers to how well you can lower something. In a jumping sense what you are lowering is your body.

If you have excellent eccentric strength you can generate a lot of lowering force (i.e. you can apply a lot of down force into the ground). You can also control and stabilize that downward movement quickly so that you can convert that force back into useful vertical jumping power.

So which one is right? Actually it doesn't matter that much because in both cases the main training method for improving reactivity are the same – plyometrics. Also just in case you are interested, I believe theory two is the more correct one but the SSC aspect of reactivity does have some validity too, just not as much as people have made out.

Most (but not all) types of jumps have a plyometric element to them which means that most (but not all) jumping drills can be described as plyometrics. In terms of choosing the right plyometric exercises to use and the volume of jumps it is best to look at the intensity.

Intensity of a jumping drill basically refers to the level of impact that exercise has on your body. So at the low end of the impact spectrum you have something like jumping rope. At the higher end of the intensity spectrum you have depth jumps and altitude landings (often referred to as 'true plyometrics' or 'shock methods').

The level of impact will depend on a number of factors including training surface, jump height, resistance used (if any), and whether or not is a single or double leg jump. In order of lowest to highest intensity type jumps you could group them along these lines:

Low	Jumping Rope	Very High	Low
Low/Medium	Box Jumps	Medium/High	Medium/Low
Medium	Broad jumps	Medium	Medium
Medium/High	Power Skipping	Medium/low	Medium/High
High	Depth Jumps	Low	High

One thing you will notice about the low intensity jumps compared to the high intensity jumps is that you can do a greater volume of the low intensity ones. For example you can pick up a skipping rope and in 10 minutes perform about 1000 jumps. Try doing 1000 depth jumps and you will probably end up seriously injured well before you get anywhere near that figure.

Some other things that you need to remember is that the higher the intensity the longer you will need to rest between reps and sets in order to maintain your training performance. Again using the skipping example, you can pretty much do hundreds of skips at a similar height with little rest.

If you compared this to max effort depth jumps, even doing as little as 10 in a row with minimum rest between reps, you would find jump heights start to noticeably drop off by the end.

The last important item to know about is that the higher the intensity, the better the result. But there is a catch. And it is a big catch so don't ignore this. In weight training if you want to get strong then the best way to do it is to lift really heavy weights. However you

cannot just lift at near maximum levels all the time. Your joints, muscles and CNS just can't cope with that constant level of stress.

The same applies to jump training. You cannot just go out and perform depth jumps constantly from a high box onto a hard surface. Eventually you will injure yourself. So what do you do? You mix it up. You have to perform a variety of lower intensity jumps in order to gradually build up your capacity to absorb the pounding from the more intense training methods.

It is because of the variety of intensities and their respective differences that prescribing an appropriate range of set and rep numbers for jumping workouts is very difficult without further information. For example you can do a lot more jumps onto a box than you can off of a box.

Needless to say a good program would be customized to the individual athlete and have a variety of high and low intensity exercises with appropriate volumes and rest periods. Is there such a program? [Vertical Mastery](#) of course!

## **SOME NOTES ABOUT DEPTH JUMPS**

Whilst it is to be acknowledged that depth jumps are one of, if not the highest intensity jumping exercise you can do, you can actually decrease the intensity simply by lowering the height of the drop. There are some studies that suggest there is not a huge difference in results from using a lower box compared to a higher box, so it is better to be conservative for this.

If you get too excited and do use high boxes you can cause yourself 3 major problems. The first is obviously the increased impact increasing the risk of injury. The second is that the extra impact changes your landing mechanics which aside from also increasing your risk of injury also decreases the potential power you can put into your jump. The third big problem of using too high a box is that it can also excessively increase ground

contact time (GCT). Ideally for depth jumps to be maximally effective you would want GCT to be as close to that of your chosen sport as possible.

So with that in mind it then brings up the question of how to determine optimal box height? Actually it is a pretty straight forward process. What you do is perform a depth jump from a 6 inch box and record the height touched. Then increase the height of the box in 6 inch increments, recording the height touched each time until you find the box that results in the highest touch.

For example:

Test 1 - Height Touched Off 6 inch box: 290cm

Test 2 - Height Touched Off 12 inch box: 296cm

Test 3 - Height Touched Off 18 inch box: 293cm

Test 4 - Height Touched Off 24 inch box: 292cm

Optimal drop height in this case is 12 inches.

What about drop height for single leg depth jumps? The logical answer that comes to mind is to use a box half the height of your two foot depth jump. However, it isn't quite so simple. Landing and jumping with two feet is much easier as two legs make it much easier to balance and minimize the amortization phase.

When you land on a single leg it is much harder for your joints and muscles to absorb the eccentric forces. For single leg depth jumps I would use exactly the same method I just outlined but I would start with a 6 inch box and move up from there in 3 inch increments instead. You will be surprised how dramatically your performance drops off when using the single leg version.

## **7. THE EXPLOSIVE LIFTS – BRIDGING THE GAP BETWEEN STRENGTH AND SPEED**

There is another class of lift that you might want to include in your training arsenal to help build RFD and reactive strength and that is the explosive lifts. This class of lift includes the Olympic lifts, kettlebell swings, and loaded or resisted jumps. These types of lifts are performed using lighter weights than your regular compound exercises as the emphasis isn't so much about the weight lifted as much as it is about the speed of the movement.

The appropriate weight to use for kettlebell swings and Olympic lifts will depend on what you can lift using good form. These lifts have to be performed quickly or they can't be performed correctly. If your form is bad because you are using too much weight then go lighter. Performed correctly these types of lifts are great for developing muscular power and explosive extension of the hips.

The Olympic lifts as great as they are have several drawbacks when compared to kettlebells in that 1) they are difficult to learn, even with a good coach, 2) good coaches are hard to find, and 3) you also need more specialized equipment. On the plus side they do give you an incredible bang for your training buck once you know how to do them.

Kettlebells on the other hand won't necessarily train as many muscle groups per lift but an exercise such as the kettlebell swing does provide a number of advantages. The KB swing is highly accessible, easy to learn, dynamically loads the posterior chain, provides a terrific reactive stimulus, and develops powerful hip extension – all very useful for vertical jumping.



The third kind of explosive lift mentioned was loaded, or resisted jumps. This type of training can be extremely beneficial for improving your vertical jump due to its high specificity. Unfortunately many athletes try to use too much weight and end up with bad results, or worse, injuries. So what is an appropriate weight for loaded jumping? The answer to this question will depend on the type of jumping done.

The most common loaded jumping exercise is the jump squat. For this exercise coaches often suggest a load based on a % of bodyweight however this is not appropriate due to the individual differences between strength levels people who weigh the same have. A more useful approach is to base the load on the individual athlete's strength – usually determined by their maximum squat.

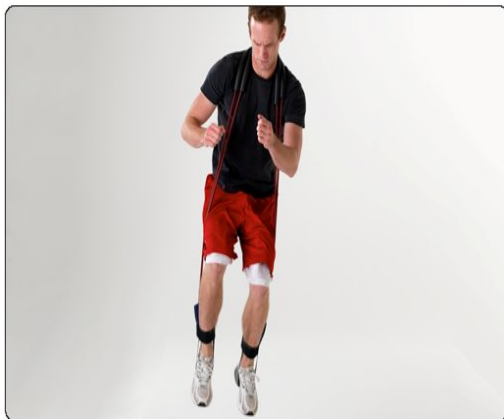
A good starting estimate is to use 10% of your maximum squat and gradually work up from there to maximum loads of about 25%. If this feels too light don't get over zealous in adding weight. The emphasis of loaded jumping is on SPEED of movement, not weight used. You do not need to use a heavy weight to elicit the response you are after.

For example, I can perform a loaded barbell jump squat with 50% my maximum squat on the bar. However to call it a ‘jump’ squat is probably a stretch (actually to call it anything other than an incredibly dumb thing to do is a stretch).

Technically I jump off the ground, but the reality of using this kind of load is that my ‘jump’ won’t be very high, fast, or effective, and to top it all off, it sure wouldn’t be very nice on my spine! A lighter load of about 10% of your maximum squat provides just enough resistance to be challenging, but not so much as to slow down the speed and explosiveness of the movement.

Given that resisted jumping is an effective method for improving your vertical leap the next thing to look at is the various ways to add this load or resistance. The more commonly used ones methods are through barbells, dumbbells, sandbags, and weight vests.

However my personal favourite method for adding resistance is less commonly used, but I believe superior. It is using a simple device called the Lifeline Power Jumper.



I am the first to admit that at first glance the Power Jumper looks completely like a gimmick (there are after all plenty of very useless gimmicky products on the market). But here is the thing – it actually works. Of all the different jump specific training aids I have

tested over the years, this simple device is the one that consistently delivers the best results.

The benefits of using the Power Jumper are many. For a start, unlike nearly all other methods of performing resisted jumps the Power Jumper does not inhibit your movement in any way. This not only allows the athlete to complete any kind of drill you can think of including skipping, bounding, lateral movements, as well as straight up and down jumps, but it also helps reinforce good movement patterns.

This freedom of movement makes it particularly useful for not just single leg jumpers, but most athletes in general as they can run and jump just as they would in a game. Nearly all other methods for adding load restricts movement in some form or another.

Another point of note about something like the Power Jumper is that it is constructed from rubber cords. This has 3 very big benefits for athletes wanting to improve their vertical jump. The first is that the bands accentuate the negative portion of the jump. What this means is that as you descend into the dipping motion at the start of a jump the bands are contracting at a faster rate than gravity which in effect throws you down quickly into the eccentric motion.

This accelerated eccentric portion forces your body to stabilize itself more quickly before it can ascend back up for the actual jump itself. Regular training with this can significantly help improve your reactivity and eccentric jumping strength.

The second benefit that bands and accommodating resistance offers is that as mentioned, it also forces you to accelerate all the way through the concentric phase of the jump. As you extend your body into a more upright position near the point of leaving the ground, the tension of the bands continues to increase. In order to get very high when moving against the band you are forced to actively put in full effort for every inch of every jump.

The third and possibly the best benefit of using something like the Power Jumper for your loaded jumping is that it weighs practically nothing. This not only makes them easy to transport to wherever you are training (it could be folded and fitted easily into a gym bag), but the impact on your joints, spine, and musculature when you land is no greater than an unloaded jump.

Zero extra impact means much less recovery time and allows you to perform more resisted jumping work than you might otherwise be able to. In short you get the benefits of loaded jumping without the number one drawback of increased impact. Remember earlier what I said about increased intensity providing increased gains. This device increases intensity but without the same degree of stress.

I realize this sounds a bit like a Lifeline Power Jumper infomercial but this is only because I am a fan of this product. If you go to the Lifeline website you will see that there is a testimonial from me. The quote used is taken from my review of the Power Jumper on [VerticalJumping.com](http://VerticalJumping.com).

For the record I was not paid anything for the testimonial nor am I on the payroll of Lifeline. But I don't mind my quote being used because those words are true.

By now you have probably heard enough about the Power Jumper so it is time to move on and look at some of the other ways mentioned to add load/resistance to jumping exercises:

- **Weight vests**. Weight vests, unlike some of the other methods here, allow your arms to swing freely just as they would in a regular jump. Box jumps wearing a weight vest provide the benefit of resisted jumping but with a reduced impact on landing. Something like the X-Vest which is also used by many professional sporting teams is a great choice.
- **Sandbags**. Sandbags are handy because of the way they conform to your upper back which provides a greater surface area to carry the load. The sand inside also

provides some give to further absorb the impact on your neck and spine on landing. The downside to Sandbags is that you have to carry them to wherever you are training and finding one with an appropriate weight isn't always easy.

- **Dumbbells**. These are a good choice because it is relatively easy to find a pair with a suitable weight. Trap bars are also very similar to dumbbells in that there is no loading on the spine. The downside to using dumbbells is that it is inconvenient to carry them to a training track.
- **Barbells**. Barbells are not a bad option for resisted jumping so long as you are using a Manta Ray. Like dumbbells, barbells are easy to set up with an appropriate load. If you have to do jump squats and you have no other load besides a barbell but don't have a Manta Ray then I would suggest skipping this exercise entirely. The crashing on your neck, even with a fairly light weight gets a bit annoying.

Please note that as much as I am a big fan of the Lifeline Power jumper, sand bags, and weighted vests, I am not suggesting that you need to run out and buy any of these things. It is quite possible to develop your vertical jump without using any resisted jumping methods. Yes resisted jumping is an effective training method, but it is still only one of many things you can do.

## 8. TYING THEM ALL TOGETHER

It is important to note that whilst RFD and reactive (eccentric) strength training for those who need it certainly enhances the speed and power of your jump, more often than not, what is holding young athletes back from really getting up high is good old fashioned muscular strength. Strength is not only the foundation upon which power is built, but it is also the most trainable of these three athletic qualities.

What this means is that it has the biggest potential for improvement. Depending on where you are at the start it is not unrealistic to make improvements in the vicinity of 100 - 200% (even greater if you are really weak when you start).

As an example a 16 year old just starting out with strength training might not be able to squat even the equivalent of 1.0x BW. After a few years working at it they would realistically be able double that to work up to loads that are more than 2.0x BW. This example isn't unrealistic by the way; most people can, with a bit of hard work, double their relative strength.

Compare this to RFD and reactive strength where improvements are often maxed out at as little as 10% of the starting speed. Now just because you can make greater improvements in relative strength this doesn't mean you should ignore the other two as they are ALL important.

Another point about strength levels and high intensity plyometrics is that it is often cited that you should be at least squatting 1.5x your bodyweight before you start doing them. This is not a bad rule of thumb to follow for a number of reasons.

The first is that if you have spent a decent amount of time lifting weights you are more likely to be capable of meeting and recovering from the demands of the intensity of plyometric training. Without sufficient strength work behind an athlete they are more susceptible to injury.

The second reason it is a good idea to have a base level of strength is slightly more complicated but important to understand none the less. You see, even though strength training in itself is not as effective for the development of jump specific reactivity and RFD as actual jumping, studies show that generally the stronger you are to begin with the better your results when you start doing plyometrics.

What does this mean in practical real world terms? Simply put, all else being equal someone who can squat 2.0x their bodyweight will generally get better gains in their vertical jump when they implement plyometrics than someone who only squats 1.0x BW. Why does this happen? Let me introduce to you the concept of the Explosive Strength Deficit (ESD)!

The ESD is the difference between the maximum force your muscles can produce in an unlimited time and the maximum amount of force they can produce when little time is available. This is important in jumping because in order to jump high you don't have all day, you need to jump quickly. Remember the powerlifters. They can't jump high despite their strength because they cannot access it quick enough to be explosive. In other words they have a high ESD.

So why do strong athletes respond better to plyometrics than weaker athletes? Well, generally speaking stronger athletes have greater ESD's than weaker athletes because they have spent more time lifting heavy weights slowly. As soon as they add in explosive work their body starts to adapt to this need for speed and thus starts tapping into the strength reserves more rapidly. The high strength levels they had to begin with means they don't need to be able to use as high a % of their strength to see noticeable gains.

Compare this to the weaker athlete who hasn't done as much heavy lifting and is already accessing a higher percentage of their available strength. As the weaker athlete's available strength is rubbish to begin with they just won't have as much improvement from plyometrics as the stronger guy.

A real life example of this is basketball and volleyball players. These types of athletes tend to spend plenty of time actually playing their sport and not a whole lot of time in the weight room which means they do plenty of jumping but are usually quite weak. Given these low strength levels and the fact their sport already involves plenty of jumping you will find that many of these types of athletes have low ESD's.

Want some numbers, try this as an example:

Athlete A and B are the same height, age and weight.

Athlete A can squat 400 pounds (which for the sake of the example we will assume to mean that he can generate at least 400 pounds of force) and can apply 60% of that (240 units of force) in 0.2 seconds (estimated vertical jump time).

He has an ESD of  $40\% = (1 - (240/400))$

Athlete B can squat 250 pounds (i.e. produce 250 pounds of force) but can apply 96% of that in 0.2 seconds.

He has a much lower ESD of  $4\% = (1 - (240/250))$

In both cases the two athletes are producing the same amount of power so therefore, all other things being equal, should be able to jump the same height. So now assume both athletes start training with plyometrics in order to jump higher.

Athlete A has lots of room for improvement in his ESD so let's say he improves 10%. He is now using 70% of his available force in the 0.2 seconds meaning his new force output for jumping is 280 units.

Compare that to Athlete B who is at near maximum of his strength capabilities. Let's say for the sake of the example he improves his ESD to 0. In other words he can use 100% of his strength (this would likely never happen in real life by the way). His new force levels being applied to his jumping is 250 units.

As you can see Athlete A with his higher levels of base strength is going to see much greater improvements in his vertical jump from the plyometric training. This illustration makes a critical point about why you are better off using a customized training program such as those created by the [Vertical Mastery](#) software.

Athlete A with the higher strength levels needed more plyometric work to improve his jump. Athlete B needed a program with a greater emphasis on building strength. If they were using a cookie-cutter jump program with the same exercises, sets and reps for both do you think they would both make decent improvements? Unlikely! These two athletes need completely different programs.

Here are some more examples:

- What happens if your program prescribes a bunch of plyometrics but you need strength? You don't gain inches on your vertical jump.
- What happens if your program tells you to lift weights but you need plyometrics? You don't gain inches on your vertical jump.
- What happens if your program claims to be comprehensive because it includes a workout involving weights AND plyometrics? Well this is a start, and yes you might gain some inches, but the reality is that this type of approach is really just guess work.

You know the saying; "throw enough darts at a wall, eventually some of them will stick,, this statement applies to cookie cutter programs claiming to be comprehensive programs. They are in reality just guessing and hoping to cover the areas that you need. Sure they

might give you some inches in the beginning, but they certainly won't maximize your potential in the long run.

This is also the reason successful athletes work one on one with their coaches. The customized advice helps them achieve their goals. This is also why the [Vertical Mastery](#) software program is such a huge step forward for athletes.

Personalized coaching does not come cheap. An average trainer charges more than \$50 an hour and even then they might not be experts in power development and vertical jump improvement. Good trainers who do know what they are doing charge significantly more than that. For much less than the cost of even a few hours of personal training you can have a software program that will create customized jump programs for you.

Unlike cookie cutter a program you will never outgrow it. It constantly adapts its programming to suit your individual needs. If you get stronger but your ESD increases it designs a plyometric program for you to help bridge that gap. If your reactive strength is high but you lack relative strength it will get you into the weight room. If you are somewhere in the middle it prepares a more balanced approach.

No weight training equipment, no problem, it also designs a bodyweight program to best cater for your needs. Are you currently competing in season for your chosen sport? This is catered for in the programming of the software too. As you develop, it adjusts. No hype, just results.

The very fundamentals of ALL training no matter what the sport or activity are based on this principle of customization. [Vertical Mastery](#) takes the guess work out of your jump programming.

## 9. OTHER TRAINING

The bulk of your training for vertical jump improvement should focus on jumping activities and lower body focused strength exercises, however to ensure you maximize your gains there are a couple of other areas that you should also pay a certain amount of attention to. These areas are your core, certain areas of your upper body, and your feet.

### CORE TRAINING – THE RULE OF 3

A strong core is essential for jumping high as it helps improve movement efficiency, balance, body control, power output, and reduces the chances of injury.

Core training needn't take a great deal of time but IT MUST BE DONE. Core work is not complicated as most people know plenty of excellent exercises to train this region. However I would like to provide the following guidelines that you should follow in order to maximize the benefits from your training time.

Always include some form of plank exercise to assist in developing stability. These include the obvious planks and side planks.



Whenever possible use weighted exercises. 100's of crunches will do little for your core strength and won't transfer as well to your vertical jump. A

good rule of thumb for core strength training is if you can perform more than 8-12 reps then you need to add greater resistance.



For planks if you can hold the position for more than 30-45 seconds you need to start looking to add resistance. Bands, weight vests, or even weight plates placed on the upper back are some simple methods for making these types of exercises much harder.

Wherever possible perform your core training in an upright position. This is more of a sports specific method of core training. This might include exercises such as standing weighted crunches using a cables or bands, hanging leg raises, and medicine ball slams.



Using these 3 rules your core training needn't be too complex. Simply pick 3 exercises, and perform 3 sets each making sure you keep trying to add resistance when you meet the time or rep goals to ensure you are getting stronger.

### **UPPER BODY TRAINING – THE OPTIONAL EXTRA**

From a pure vertical jump improvement point of view you do not need to go overboard with the upper body training. The upper body only contributes a small percentage to your jump height and it already gets a lot of indirect stimulus from your regular jump training.

Doing a whole lot of extra work on it provides very limited gains and really just eats into your training time, your ability to effectively recover, and ultimately your motivation to work hard. None the less a little bit of work can go a long way.

The key areas to focus on are the back and shoulders. The following vertical jump centric upper body session can be included into your training once a week as follows:

Chin Ups – 3 x 6 reps

Inverted Rows – 3 x 6 reps

Standing DB Push Press – 3 x 6 reps

Front DB Deltoid Raises – 3 x 6 reps

\*DB stands for Dumbbell

For all exercises rest 90 seconds between sets. Once you can complete 6 reps for all 3 sets then start adding extra resistance via a weight belt or vest, or heavier dumbbells.

This upper body workout has been deliberately designed to be simple and time effective. It specifically focuses only on the key upper body muscle groups that directly relate to jumping. If your sport requires a greater degree of upper body strength you will obviously want to engage in a more comprehensive upper body routine than what has been outlined here.

## **FEET TRAINING**

This may seem like an odd thing to include here but if you have spent your whole life playing and training in shoes that have a lot of padding there is a pretty good chance that your feet are not functioning properly and you will be losing quite a lot of inches on your jump height because of it.

The solution is to train barefoot. What this does is that it makes you more aware of a shift in your centre which gets your glutes, core and the smaller muscles in your feet and legs activated. Regular barefoot work also helps improve postural alignment, balance, and bio-mechanics.



If your gym does allow you to train barefoot, go for it. Deadlift, squats, and kettlebell swings are all great barefoot exercises. Other ways to incorporate barefoot work is to simply walk around without shoes on more often. If you live in a cold climate this is going to be a touch chilly, but otherwise the more you can get about without shoes the better.

The last way of getting your barefoot work in is to do all your warm ups and cool downs in bare feet. All your mobility drills, glute activation work, and even light cardio such as skipping can be done without shoes if you have a sufficiently soft surface. Actually skipping is a great one to do bare feet because it really teaches you how to be light on your feet.

## **10. GENERAL TRAINING FUNDAMENTALS**

Now that you know what the key training areas are for developing your vertical jump, it is time to discuss some of the other areas of training related principles and how to maximize them to significantly improve the effectiveness of your workouts.

### **WARMING UP**

Taking the 10-15 minutes to warm up properly before your workouts is one of the most overlooked, yet highly beneficial things you can do. By priming yourself with a decent warm up you are preparing your body and mind for the more strenuous activity which not only helps prevent injuries, but also helps improve performance - significantly.

A well planned warm up has the effect of increasing both your heart rate and your respiratory rate. This increases blood flow, which in turn increases the delivery of oxygen and nutrients to the working muscles. All this helps to prepare the muscles, tendons and joints for the high intensity work it is about to do.

A good warm up should follow this progression:

1. General Warm Up – Medium intensity cardio vascular training
2. Joint Mobility Work – Specific work to increase range of motion and loosen the joints
3. Activation Work – Primarily focused on getting the glutes to start firing, but can be applied to other muscle groups where required
4. Activity Specific Warm Up – Gradual build up of intensity of activity specific to the training mode (weights or jumping).

Vertical jump training consists of workouts in both the gym and out on the track. The principles of a good warm up are the same for both but the execution is slightly different. Below is some more detail about what these four sections should include as well as a sample warm up for both types of workouts.

## GENERAL WARM UP

The general warm up consists of light to medium intensity physical activity, usually lasting around 5-8 minutes. Both the intensity and duration of the general warm up should be governed by the fitness level of the participating athlete. You should build up pace gradually and by the last minute you should have a light sweat up (obviously this is easier on hot days).



My preferred exercise of choice for the general warm up is the skipping rope. Jumping rope not only gets the heart going, but it also works a whole bunch of muscles in a low impact environment. Better still, it also helps to develop reactive strength in the lower limbs, which creates a good foundation for jumping and plyometric drills.

Another favorite warm up option when out on the track is light jogging progressing into some short duration medium to high intensity sprints. Start slowly until you are loose and then throw in some short bursts of speed with a gradual build up of intensity.

## **JOINT MOBILITY**

The goal of the joint and mobility work is to increase the range of motion you can safely achieve and to help loosen up the muscles around the joints. After performing some simple dynamic stretches perform the following drills:

Hip mobility – step overs and unders

High Marching step ups

Deep bodyweight squats

Perform a quick circuit of these doing 2 sets of 10 reps each.

## **ACTIVATION DRILLS**

One of the curses of modern day living as far as athletic performance goes is all the sitting that we do. This creates two problems, the first is that it tends to shorten peoples hip flexors which can ultimately lead to all sorts of movement issues, and the second is that it tends to make our glute muscles lazy. This basically means that when you want to run and jump they won't fire properly which costs you seconds on your sprints and inches on your jumps.

To help fix that you need to do a few glute activation drills. The two I recommend are glute bridges and kettlebell swings, for both these drills you should emphasize squeezing your glutes at the top of the motion.



Single and double leg glute bridges– 2 x 6 reps (holding for 1-3 seconds each rep)

Light kettlebell swings - 2 x 10 reps

If you do not have access to a kettlebell you can use a dumbbell or a weight plate with handles.

### **SPECIFIC WARM UP**

Once you have completed the first three steps the last phase of your warm up is the specific warm up. In this section you are trying to start priming both your CNS and the muscles used for the specific high intensity work you are about to perform.

Start with some box jumps, or frog jumps to get the CNS fired up. A few quick sets of an explosive movement like this sends the message that there is work to be done and can really help you get in the right frame of mind to train.

For weight training you would then include 3-4 sets of progressively heavier weights and lower reps until you are ready to move the loads of your working weight. For jumping and plyometric sessions the same principle applies except you would perform lower

intensity jumps, building up to higher intensity until you were physically and mentally ready to go all out in your working sets.

Order	Exercise	Duration
1	Skipping	5 Minutes
2	Dynamic Stretching	2-3 minutes
3	Over and Unders	2 x 5 each side
4	High Knee Marches	2 x 10
5	Deep Bodyweight Squats	2 x 10
6	Fit Ball Glute Bridges	2 x 10
7	Light Kettlebell Swings	2 x 10
8	Box Jump	2 x 5
9	Box Squat	1 x 10, 1x 7, 1 x 4, 1 x 2

Order	Exercise	Duration
1	Jogging → Sprinting	5 Minutes
2	Dynamic Stretching	2-3 minutes
3	Walking Lunges	2 x 5 each side
4	High Marches	2 x 10
5	Deep Bodyweight squats	2 x 10
6	Glute Bridges	2 x 10
7	Rocket Jumps	2 x 10
8	Power Skipping	3 x 6 progressing intensity

## **COOLING DOWN**

The cool down process helps keep the blood circulating and thus helps to prevent blood pooling. This assists in removing part of the waste products we find in our muscles, as well as in bringing in oxygen and nutrients, which are needed by the muscles, ligaments and tendons to properly recover after a good training session.

A good cool down routine should include light cardio, some gentle foam rolling, stretching, and replenishing fluids. All these elements are equally important and they should not be neglected.

The light cardio should be performed for about 5-10 minutes and it really is just a case of rolling the legs over. You can do this on an exercise bike or through some very light jogging. Once you have done that you should then spend another 10 minutes performing some foam rolling and static stretching to help lengthen and relax your muscles. During this whole time you should also be drinking some fluids in the form of either a recovery drink (carbohydrates and protein), or water.

## **11. RECOVERY**

Recovery is something every athlete should take very seriously yet it is often one of the most neglected parts of an athletes program. Any athlete who isn't thinking about how to improve their rate of recovery isn't serious about their training results.

In this section, I will discuss why recovery is important, what sorts of things can be done to enhance recovery, and finally, I will detail a simple and practical plan for you to follow in order to maximize the results you can achieve from all your hard work.

### **WHY RECOVERY IS IMPORTANT**

I hate to be stating the obvious but the reason why you should be doing your utmost to maximize your ability to recover from your training is that it has . . . . . Inadequate recovery leads to decreases in performance, slower (if any) gains, and in increased likelihood of injury.

Good recovery on the other hand helps contribute to faster and greater improvements, an increase in performance, and a reduced incidence of injury. Basically good recovery is just as important as sound program design. In fact you should not separate the two. Good recovery is PART of any good program design.

### **HOW TO MAXIMIZE YOUR RECOVERY**

If you have heard of Pareto's Rule you will know about the 80/20 ratio. Pareto's Rule basically states that 80% of your results come from 20% of the things you are doing. The strategies I will outline here are like the Pareto's Rule of recovery except they probably account for more like 95% of the results.

Now before I start I want to point out that there are all sorts of pseudo-science type things you can try (magnetic bed sheets anyone!) but a lot (most) of these types of recovery techniques have minimal, if any benefit. I state this because what I am about to suggest is in comparison to some other recovery plans you might have seen, very simple. Please do not mistake simplicity with ineffectiveness. The [Vertical Mastery](#) way of doing things is all about No Hype, Just Results! This very much applies here.

Recovery maximization really boils down to the following six actions:

1. Rest - both in terms of sleep and time between training sessions
2. Diet – getting the right nutrients to grow, refuel, and rebuild
3. Hydration – not enough water can slow things down terribly
4. Joint and Muscle work – foam rolling, stretching
5. Icing – helps to reduce inflammation of the joints
6. Epsom Salt Baths – helps relax and release tension from the muscles

By consistently getting enough sleep, eating a healthy diet, staying hydrated, and taking the time to foam roll, stretch and ice you will significantly decrease your recovery time and increase your performance levels.

## **REST**

Good old fashioned rest is THE MOST IMPORTANT aspect of recovery – in particular getting a good night's sleep. I have seen athletes improve whilst never doing a single stretch, I have seen athletes make gains living on junk food, but I have never seen an athlete do very well if they aren't getting enough sleep.

Even going a single night without a solid night's sleep can have a negative effect on your training and performance. So why is sleep so vital? Well for a start there are many well known health and lifestyle benefits such as:

- a healthier heart
- reduced stress (an important factor in recovery in its own right)

- potential reduction of cancer through melatonin production
- improved memory
- improved mood
- help you lose weight
- makes you more alert

More importantly for jumping athletes is that whilst you are sleeping you reduce inflammation, repair your muscles and restore CNS function. If you aren't getting enough sleep you are not giving yourself sufficient opportunity for your body to produce the necessary hormones to instigate the repairs to the damage you have done through your training and playing.



In short, the more hours of quality sleep you get the more chance you have to fully recuperate. The more recuperated you are the fresher you will feel next time you train and the better your performance will be. In other words **GO TO BED EARLIER!**

In this day and age so many people don't get anywhere near enough sleep as they stay up late playing video games, surfing the internet or watching TV. If you want to increase

your vertical jump and maximize your gains from your training you really do need to get your 8 hours of shut eye a night. If you can swing it I also recommend you grab a nap at some stage too.

Aside from sleeping, maximum vertical jumping ability comes from not overdoing it with your other activities. It is no good putting in 2-3 high intensity vertical jump focused training sessions a week and then on the other days playing 3 hours of basketball with your friends, or going for long runs.

When you are not training you are recovering. It is as simple as that. If you are actively involved in doing a whole bunch of other stuff on top of your vertical jump training you are going to be eating into your recovery time.

## **DIET**

I could write several books on the topic of diet and probably still not cover everything. However you don't need to read several books on the topic because quite frankly the essentials of a good diet are very well known. What I am about to tell you is common, but mostly ignored knowledge.

So here it is - the most amazing mind blowing dietary secret to great health and improved athletic performance:

Alright so maybe it isn't amazing or mind blowing, but it is the truth.

When it is put like that it sounds easy doesn't it. But in real life often it isn't so easy to eat a healthy diet. If it was, everybody would be doing it and we wouldn't have the health and obesity problems we have as a society now.

Good food choices include lots of fresh fruit and vegetables, lean meats, chicken, fish, nuts, plenty of water and herbal teas. It doesn't include refined sugar laden or high fat foods such as soft drinks, chocolate, cakes, or deep fried anything.

Eating a diet consisting mostly of the good things mentioned above will do several things for you to help increase your vertical jump. The first thing this will do is greatly assist in getting and keeping you lean. I doubt there are many fat people who got that way from eating a diet of unprocessed and natural foods.

The reason you get lean is that these unprocessed foods aren't very calorie dense which means you can eat a lot of them and not get fat. Compare this to a chocolate bar which is laden with fat and sugar may be a quick and easy snack but it doesn't really fill you up. So when you eat one you still feel like eating more. Try eating a big bowl of green vegetables and compare how full that makes you feel and then compared to that chocolate bar. And guess which one has fewer calories.

If you guessed the big bowl of vegetables you would be right. Being lean helps your vertical jump and its recovery for several reasons. The first is that the less fat you have the higher you can jump. Fat is excess weight that contributes nothing to your jumping ability.



The second reason being lean helps recovery is that you inflict less damage on yourself in the first place. If you drop 5kg of excess fat then each and every time you jump your body doesn't have to absorb the landing forces generated by that fat. Over time this really makes a big difference to the health of your joints.

The other thing that eating unprocessed foods does is to help avoid inflammation. For example processed and red meats, have been known to actually trigger inflammation. Now I love a good bit of steak as much as the next person, but if you want to jump high and you want to have healthy joints you have to minimize the amount of these types of meats you eat. Instead eat more oily fish or white meats such as chicken and turkey.

Below is a bit more detail about the three macro nutrients and how they fit into a diet congruent with jumping high. By following these dietary guidelines you will not only be healthier and have more energy for your workouts, you will also recover more quickly resulting in better gains to your jumping ability.

## **PROTEIN**

Your body needs protein to build body tissues such as muscle. Good protein sources include lean poultry, fish and seafood, nuts, eggs, legumes and seeds. I also don't mind if you use a protein powder to supplement your protein intake. You do not need to go overboard with these though. The amount of protein you need is actually less than what you probably think, particularly if you are not training to be a bodybuilder.



If you do decide to use a protein supplement I would try to limit their use to after your workouts or before bed. It is far better to get you protein from natural food sources and assuming you are doing so, a post workout, or pre-bed supplement will be more than enough.

## **CARBOHYDRATES**

Most of your carbohydrates should come from vegetables and fruits. You should try and minimize the amount of bread and pasta you eat (it gets too easy to have really massive servings). By reducing bread and pasta you will be surprised at how much it helps getting you lean and assists in jumping high.

Obviously in most western diets not eating bread or pasta is very difficult so if you have to eat it, try and go for whole grain varieties as they are excellent sources of fiber, and a high fiber diet will reduce your inflammation. Also if you are having bread, pasta, or pizza just try and remember to have smaller servings. Try and load up on the veggies instead.

When choosing vegetables a good rule to follow is go for the green leafy and the brightly colored ones. This includes broccoli, spinach, capsicum (peppers), tomatoes, etc. You should eat at least five and preferably more servings of fruits and vegetables each day. Green vegetables and whole fruits are also important as sources of dietary fiber.

Another great food choice (often cited as a super food) is berries, especially blueberries and strawberries, whose brightly colored pigments are packed with anti-inflammatory phytochemicals and anti-oxidants.

## **FATS**

The right types of fats in your diet can drastically reduce inflammation. Omega-3 fatty acids for example are very powerful anti-inflammatory agents. They are found in cold water oily fish (salmon, trout), walnuts, flax seeds, canola oil and pumpkin seeds.

Olive oil is another type of oil that will reduce inflammation. Olive oil has also been shown to reduce the risk of cardiovascular disease, and will help to reduce pain. Other healthy oils include rice bran oil, grape seed oil, and walnut oil.



Adding omega-3 fatty acid supplements from flax oil or fish oil may also help reduce inflammation, but if you are taking them in large amounts you should consult a doctor or nutritionist to ensure it is ok.

Aside from helping to reduce inflammation fats in your diet also provide an energy source, help control physiological processes such as hormone production – particularly testosterone, and act as a vehicle to help you absorb certain vitamins. In short, don't be afraid of getting some fat in your diet.

One final note about good diet for athletic development and that is very few people are 100% disciplined 100% of the time. It is ok to occasionally eat foods that are considered junk. Sometimes it is even beneficial. The odd cheat meal here and there won't kill your progress as long as those 1 or 2 cheat meals per week don't start turning into 10 to 15 cheat meals a week.

If you do happen to decide one night you want pizza for dinner then by all means do it. Just try not to eat the whole lot. And certainly don't top it off with a big serve of ice cream and a liter of sugary soft drink. Basically what I am saying is if you do have the odd cheat meal, don't feel guilty about it and pack in your good eating habits all together. Instead recognize it for what it was, and then get back to eating healthy.

## **HYDRATION**

Your body needs water in the form of foods and beverages every day. The simplest and best form of water is fresh drinking water. The problem most people have with drinking water though is that after a while it can taste pretty bland. A simple and practical solution is to add a small amount of sugar free flavoring (cordial). I have found by doing this it is pretty easy to get through 2-3 liters a day.



Ensuring you get enough water can help prevent daytime fatigue, ease joint pain, decreases the risk of various cancers, and helps to flush toxins out of your body. Who wouldn't want that all those things? Other good fluid sources include 100% herbal teas, vegetable juices and low fat milk. In short staying hydrated will definitely improve your recovery.

### **EPSOM SALT BATHS**

Epsom salt baths have been used by athletes for years to help speed up recovery. The Epsom salts contain magnesium sulfate which penetrates the skin having an anti-inflammatory effect. The increase in the body's magnesium levels also increases serotonin production.



Serotonin is a mood-regulating neurotransmitter that increases feelings of relaxation and well being which aside from aiding CNS recovery, is also a great pre-cursor to light stretching at the end of the day.

The guidelines for having Epsom salt baths is that you need to use 1-2 cups, the water needs to be as hot as you can handle, and you need to soak for around 10-15 minutes. The heat can get a bit overwhelming at first so it is a good idea to have a cold bottle of water handy.

Epsom salts are readily available from most supermarkets and pharmacists and are inexpensive to buy. In terms of bang for your buck they provide a great boost to your ability to recover.

## **JOINT AND MUSCLE WORK**

The importance of performing regular stretching and soft tissue work cannot be overstated. In the short term it is harder to see the benefits, but failure to lengthen and relax your muscles and fascia can have some very profound long term implications to your results.

Jumping and weight training is hard on your body. When you workout hard your muscles and fascia can tighten up which starts to restrict movement. When this happens this is

where you start to see problems, particularly in the knees which seem to bear the brunt of tightness related issues.

The reason this occurs is that as a muscle group gets tight your movement patterns change to compensate. When this happens other muscle groups have to do more of the work. Pretty soon they become over worked too and they can no longer support the joints (particularly the knee) in the way that they are designed to. Before you know it you will be walking around with achy knees, sore ankles, and a variety of muscle strains.

Fortunately there is a lot you can do to prevent this type of thing happening. The two biggest actions you can take are to start foam rolling (also known as self myofascial release) and stretching.

Foam rolling and stretching out those tight areas is not just about injury prevention though. Regular work in this area allows the muscles to work freely and in unison to contract with maximal force resulting in better jumps.

## **FOAM ROLLING**

If you are unfamiliar with a foam roller it is a cylindrical shaped piece of hard foam. It is an amazing little invention and very simple to use. You just lie on top of it and roll back and forth focusing on a couple of key areas.



The key areas are the IT band along the side of your upper thigh, your quads, hamstrings, and calves. You should also do some work on your glutes but I prefer to use a tennis ball or hard rubber ball to target these areas.

What foam rolling does is it finds and releases trigger points, or knots of tightness in the muscle and fascia. By applying pressure via the roller it helps work those areas loose. This all sounds simple but it can be very painful at first. Regularly performing 10-15 minutes of foam rolling work can however reap massive rewards for you in terms of performance improvement and injury prevention.

A foam roller is very cheap to buy and very simple to use. Here are some simple and practical tips to get the most out of it:

- Concentrate more on sore and tight areas
- Roll the full length of the muscle
- Roll on each muscle a few times; you will feel it loosening straight away.
- Go slowly, it will hurt more, but you will get more benefit
- Stop on the sore points (trigger points) and hold until the pain fades. Once the pain has faded then continue to run along the full length of the muscle

- If you decide to foam roll pre workout (which isn't a bad idea to help loosen you up) focus on getting through the full length of the muscle but spend less time on each of your trigger points
- For post workout, focus more on the trigger points and spend a lot more time on each muscle
- Foam roll often. More often if you are sore. This is one of the few things you can do in your training and recovery where more is nearly always better.

For some more information about foam rolling and myofascial release as well as some pictures showing the key areas to focus on you can visit [VerticalJumping.com](http://VerticalJumping.com).

## **STRETCHING**

The other aspect of soft tissue work that needs to be addressed is stretching. Stretching can help do many things including increasing flexibility, eliminate back pain, improve circulation, and it can help you feel good as it is quite relaxing (which makes it ideal before bed).

There are a number of different kinds of stretching that you can perform. The key ones as far as your vertical jump training goes are

- **Static stretching** - Static stretching is the most common type of stretching. You gently assume a stretch position and hold it for 30 to 60 seconds. There is no bouncing or rapid movement. You should feel a mild pulling sensation, but no pain. You should feel the stretch in the belly of the muscle, not in the joints. This is best performed after a workout and again usually at night before bed (it helps you relax).
- **Dynamic stretching** - Dynamic stretching consists of controlled leg and arm swings that gently take you to the limits of your range of motion. Examples of dynamic stretching would be controlled leg swings, hip circles, arm swings, or torso twists.

These types of dynamic stretches are performed prior to your workouts as part of your warm up.

In order to get the most out of your stretching you should be trying to spend at least 80-100 total minutes per week (divided into smaller amounts across the different days). Ideally you would spend more – if you have the discipline you should be aiming to stretch for at least 15-20 minutes every single day. At the very least you should stretch immediately after your workouts and again in the evening on those days.

Here are a couple of quick bonus pointers about stretching. Firstly you are not trying to stretch so much that you could take advanced yoga classes. You are just trying to relax and reduce tension in the muscles. Too much stretching can actually be detrimental to your performance as it decreases joint stability (the muscles around the joints have too much flexibility to hold anything securely where it should be).

Secondly, only stretch when your muscles are warm. So after a workout is fine, but if you are stretching in the evening it is a good idea to do your stretching after a hot Epsom salt bath (see below), or after some light activity. Something as simple as 4 or 5 sets of 10 bodyweight squats will be fine.

When you are actually performing your stretches the key areas are the hip flexors, hamstrings, quadriceps, calves, and glutes. Particular attention should be paid to the hip flexors as these are really prone to shortening in today's society due to all the sitting we do.

Think about it, we go to work or school and sit at a desk all day, we sit in a car whenever we go anywhere, we sit in front of the television watching movies and playing video games. We sit a hell of a lot of the time. As a result we have chronically shortened hip flexors. I would start AND finish every stretching session with some form of gentle stretch in this area.



Finally, if you are foam rolling (and you definitely should be), then do that before you stretch. The foam rolling will loosen up the fascia which surrounds the muscle body which will then make the stretching easier and more effective.

There are some useful pictures of good stretches at [VerticalJumping.com](http://VerticalJumping.com).

## **ICING**

Even if you don't feel particularly sore in your joints, if you have been doing a lot of jumping and weight training, not to mention playing your sport at a high intensity, the chances are you will have some inflammation. If you allow your joints to stay this way and just keep training and playing then you can start to run into problems such as jumper's knee and other joint related concerns.

To avoid this you should at a minimum ice your knees and ankles after each session (after your cool down and stretching), and each night you train. Better still get into a routine of icing daily. One of the best things about icing is that the very next day you will clearly notice the difference in how your joints feel.

The best way to ice is by using specially made wraps. My favorites are those made by ColdOne. These are made from neoprene so you do not get freezer burn. They are wrapped around the joint and secured via Velcro straps allowing for extra compression. They cost about \$50 each for the knee wraps and about \$45 for the ankle but are well worth the investment. Have a look around online for the best deal as they are readily available.



For the more budget conscious you can also use purchase special sports ice packs that do not freeze solid, and for the even more budget conscious you can use frozen vegetables, or ice cubes in a tea towel. This option is obviously much cheaper, but also much messier and not very convenient. They also don't provide 360 degree cooling, particularly around the ankles and Achilles.

## **PUTTING TOGETHER A RECOVERY PLAN**

So now you know the key components of what makes a good recovery program, now it is time to put all the pieces together to form a plan.

... This one is easy. Set a time that you are going to go to bed and stick to it. Usually this time is about 8.25 hours before you need to get up again. It really is that simple. If you are going to get up at 6.45Am then go to bed at 10.30. When 10.30 rolls around, got to bed.

If your life affords you the luxury of a nap then take the nap. It will increase your energy for your training, and it gives your body and mind a little boost of healing time.

... This takes a little bit more discipline but can be achieved none the less. The simplest tip I can give in this area is to write down the foods you want before you go anywhere. So if you go to the grocery store only write healthy options on a list and then stick to the list. If you are going out to buy lunch write down a healthy option on a piece of paper before you leave and look at it as you order. It only takes about 10 seconds and it helps strengthen your resolve thus dramatically decreasing the chances of you ending up with a burger, fries and a coke.

A lot of people also like to talk about post workout nutrition. Personally I feel pre-workout nutrition is just as, if not more important. If I was training to build muscle then this would be different. For performance training it is better to get some fruit in 1-1.5 hours before you workout. I actually find that this is a good way to get 2-3 pieces in.

Post workout I like to blend a protein smoothie with berries, pineapple, ice, some spices such as cinnamon, and some good fats. Even if you do not have some form of recovery drink to replenish glycogen stores you should still make sure you drink plenty of water (see below).

... Always, always, always keep water bottles handy. I have 4 x 750ml bottles of water I fill up at the start of my day and I work my way through them by the end. Filling up the bottles is one of the first things I do. My earlier tip of adding a touch of sugar free flavoring is worth repeating. Water can be very bland after a while.

Avoid caffeinated drinks. They have a diuretic effect and can de-hydrate you. Don't get me wrong on this, I absolutely LOVE coffee but I only have one caffeinated cup per day, the rest of the day I drink decaf. Same goes for tea. I drink a lot of decaf green tea. It is packed with anti-oxidants which can have a powerful anti-inflammatory effect.

..... I have combined these things together because I like to group them into one big recovery session at the end of my day. It took me a long time to develop this routine as a daily habit but once I did my performance and recovery improved dramatically. In fact I would go so far as to say getting disciplined about your nightly recovery sessions will be the major difference between seeing only ok results and seeing really amazing results.

Firstly you will need to clear about an hour before you go to bed. Then you spend 15 minutes in the bath, 15 minutes foam rolling, 15 minutes stretching, 15 minutes icing, and then you go to bed. By setting aside that hour to do these four very beneficial recovery items on a daily basis you not only get the great benefits from those activities, but it also makes it easier to do THE MOST BENEFICIAL thing which is go to bed at a reasonable time.

.....

Here is a practical and fun tip for you that can help make sure you develop good habits and do the recovery process regularly. The tip is to buy TV series box sets and watch them whilst you foam roll, stretch, and ice. This may seem like a stupid tip but the reality is that this works wonders in helping build an effective daily routine. Let's face it, if you just had to bath, roll, stretch and ice each day it would quite frankly bore you stupid and you probably wouldn't do it.

To counter this boredom I have worked diligently on recovery through every episode of The Shield (perhaps my favorite TV show of all time), Scrubs, South Park, Entourage, Boston Legal, the Wire, plus many more – all in the name of being able to jump high.



The short version of this story is that lots of people love watching TV, but also waste a lot of time doing so. By combining the TV with the recovery you have a solution that provides a win-win situation. It is well worth giving it a try.

## 12. HOW MUCH WILL I GAIN

How much can someone realistically expect to improve on their vertical jump? This depends on so many factors that you cannot give a definitive answer. To try and guarantee a certain amount of inches in a certain amount of time is quite frankly impossible. But, what I can do is give you guidelines as to what those factors are and how they affect the results you might see.

**Age** – When you are between the ages of 15 – 30 you will generally see much better gains than someone who is older. As you get older your ability to recover decreases and so your gains will not come as quickly or to the same degree.

**Starting Vertical Jump** – If you already have a 40 inch vertical jump you must expect that your gains will not come as easy as someone with a 10 inch vertical. The higher your starting vertical is, the harder it will be to keep making gains.

**Genetics** – Some people are just naturally built to be more explosive. They have a more excitable CNS, they have a higher % of FT fibers, and their muscles and tendons are just developed in slightly better ways that provide better leverages

**Overall Workload** – If you are currently playing and training for 25 hours per week there isn't much room left in your schedule for additional vertical jump specific workouts, nor is there much capacity to recover from all that work. Too much work generally means not enough recovery which also means slower gains.

**Work Ethic** – Some people approach their training with a ferocious intensity. These people generally see better results than those who just go through the motions. Having a good training environment or partner can make a big difference here (as can a good coach).

**Stress** – If you are currently under a lot of stress your results will generally suffer. Stress increases cortisol levels which can have all sorts of negative effects on your results.

Commitment to Recovery – A lot of people who are in training are great at following the program when they are in the gym or out on the track, but they then spectacularly fail to follow through with the recovery guidelines such as those outlined in this book. This can cost you A LOT of inches.

Good Programming – Obviously if you are doing an unsuitable program for your needs you will not gain as many inches as you otherwise might and you will waste a lot of time and effort in the process. Good programming is where it all starts from. You can ensure you have good programming for your needs by using the [Vertical Mastery](#) software.

There are other factors that will have an impact on how much you can possibly gain but these are the main ones. The important thing is to be realistic. Don't look at testimonials on websites of people getting ridiculous gains and get freaked out if you don't seem to be matching them. Most of these advertised gains are total and utter BS. They are not indicative of the types of results most real people will expect to see and they serve no real purpose other than to try and con you into buying a dodgy program.

## 13. CONCLUSION

So there you have it – everything you need to know about vertical jump training. Hopefully I have provided you with enough information in this free book so that you know what to look for in a good training program.

The key points are:

- You need to be very strong relative to your body weight
- This means you also need to have a low level of body fat
- You need to be able to apply that strength fast otherwise you won't be able to jump high
- Training is only half the story. In order to get the best results from your workouts you need to spend time ensuring you take the necessary steps to repair and prepare your body for continued development.

The last point to take away from this book, and this is actually the most important thing of all, is that the absolute quickest way to improve your jumping ability is to improve what you are not good at.

This is where the benefits of having a custom program come in. If you are doing a cookie cutter program there is every chance you are wasting your time and getting less than maximum results. This is why every smart athlete, whether they be professional NBA superstars, or weekend warriors just looking to get an edge on their friends, when they hire a trainer or coach, the very first thing that happens is they do an assessment.

From this assessment a program is built that focuses on developing the things they are weak at. What doesn't happen is the trainer just gives them a pre-made list of exercises and sets and says "go do that,,".

Can you imagine what would happen if Dwayne Wade went to see Tim Grover who has worked with the likes of Michael Jordan, Scottie Pippen, and many more, and Tim just gave Dwayne a copy of his book Jump Attack and said "go do that,,". Dwayne Wade

would turn around and walk straight out the door laughing his head off. Pretty soon Tim Grover would also have no clients.

But Tim Grover doesn't do that because he knows, as all good coaches and trainers do, that whether or not you are a professional athlete, or a recreational one, the best type of training program for you is one designed to meet your needs.



Unfortunately the reality is not everyone can afford personal coaching. It is very expensive. Between the prohibitive cost and the need to get athletes easier access to better programming, you can see why I developed the [Vertical Mastery](#) software.

For the cost of less than a single session of personal training you can have a very clever piece of software that will run you through the exact same assessment I would use if you were one of my personal clients. Once you have entered your pre-test results it will build you a custom made program based on those assessments.

Is this as good as actually hiring a knowledgeable trainer? No. A hands-on professional (assuming they know about power training and vertical jump development) can provide a myriad of intangible benefits that you just can't replace. However, the software will certainly be a huge step up from anything you have been currently using and it won't cost you an arm and a leg.

The programming logic in [Vertical Mastery](#) is based around sound training principles that power athletes all over the world use. There are no gimmicky methods, or claims of super secret exercises and techniques that “the pros don’t want you to know about,,”. It is just very good, very sound, customized program design.

## 14. ABOUT THE AUTHOR

Having read through this book some of you might be wondering who I am and why I am gladly giving away all of this vertical jump training information for free.

My name is Jack Woodrup and I live and work in Melbourne, Australia. I am married to a beautiful woman named Deborah and have two small children, one of whom was the inspiration for me to work on my vertical jump. More importantly I also have over 12 years experience training people.

I have played basketball my whole life but was never particularly quick, nor could I ever jump very high. This may have due to the wonderful genetic gifts I got from my dad. I come from a sporting family, but unfortunately when I say sporting, I am not referring to explosive power based sports. You see my dad was an endurance athlete, and not just any sort of endurance athlete, but an ultra-endurance athlete.

In fact he was in the Guinness Book of World Records for riding his bike from Perth to Sydney, which is a distance of 4,380km (2,738 miles). It took him about 10 days and 18 hours to do. With this sort of heritage it is stating the obvious to say that I was definitely NOT genetically predisposed to jumping high.

So not having a great deal of genetic potential as a basketball player (and being only 5'9 tall), I decided to turn my hand to just getting as big and muscular as I could. I topped out at 90kg (198 pounds) and was by and large pretty happy to be a big meathead – until my son was born.

Cameron was 11 pounds at birth. This is big for a baby. Some of my friends thought this was hilarious and knowing my love of basketball suggested that he would be the first member of my family to dunk. I took this as a challenge and at the ripe old age of 31 and a half years old I decided to train to dunk.

Whilst I had been training people including myself for a long time with good results I had never trained specifically for an activity such as vertical jump. So instead of doing the smart thing and researching properly I did the same thing you probably did and purchased

a few programs and started working my way through them. After a few months with minimal gains I decided it was either time to get serious, or give up. I decided to get serious.

In short I became obsessed and set about educating myself and finding out everything there was to know about jump training. As my knowledge grew it pretty quickly became obvious that a lot of these so called ‘vertical jump guru’s’ were actually better at marketing products than they were at training people.

None of the programs I had bought were based on sound training principles. They were all marketing and hype. Both frustrated by the lies, and delighted with my own results now that I had started training properly, I decided to do something about it which resulted in the creation of Verticaljumping.com.

The idea behind the website was to expose a lot of the blatant lies about ‘vertical jump training’ that are sold on the internet and replace it with actual, real training advice for free. This so far has been pretty good. Traffic has steadily increased, my search engine rankings have gone up despite me not doing any marketing or promotion of any kind, and the feedback from people has been truly amazing.

However the one problem that you can’t address with free information is providing sound training advice on an individual basis. As I have mentioned throughout this book, every athlete is different, and as such has different needs.

After spending hours and hours working with people who emailed me trying to establish what their training history was like, what their weekly schedule entailed, how strong they were, what sport were they training for and so on, and then following that up by preparing custom programs to ensure maximum gains, I just started running out of time to live my life.

By this stage I had a library of books, and DVD’s, I had spoken to many sports coaches and trainers in a variety of fields, I was training athletes first hand to increase

explosiveness and power, and I was jumping higher than I ever thought possible. In short I had a huge breadth of knowledge and experience, but not a lot of time.

In order to free up my time and be able to help more people out I started formulating a flow chart based on what I knew hoping to systemize the process. When I wrote it all down it was looking a bit more complicated than I had hoped for (this was almost certainly more due to the way I wrote it down than the actual information in the flow chart – vertical jump improvement isn't actually that complicated).

I could also see right away that even if I put it out there as a series of steps people could work though they would still have difficulty designing themselves appropriate programs with suitable loads and volumes and with workable progression.

I was discussing this with a friend of mine who works as a computer modeller and he suggested we could wrap it all up into some computer software that would take the guess work out of creating individual programs. This is what is known as an A-ha moment. I knew he was onto something. The really big problem with cookie cutter programs is they might not be suited to your needs and even if they are, you will soon outgrow them.

With a software based solution I could give all my knowledge to people and whenever they needed a new training program they could simply run their test results through the software and they would instantly have a setup that was customized to their current situation. They would never outgrow it. They would never again be stuck on a program that was unsuitable for their needs. And so [Vertical Mastery](#) was created.

So with all of that, how did my vertical jump training end up for me? Well my son certainly isn't going to be the first member of my family to dunk. About a year and a half after I started I went from squatting 100kg (220 pounds) at 90kg (198 pounds) bodyweight and having a standing vertical jump of about 20 inches, to having a maximum squat of 160kg (352 pounds) at 75kg (165 pounds) bodyweight, and a running vertical jump that was enough for me to be able to regularly throw down some nice dunks.

I honestly don't know what my vertical jump got up to. I would estimate somewhere in the mid thirties. I only really cared about dunking so that was my measuring yard stick. I am also the first to admit that I was definitely not what you would call a freak show dunker. My dunks were very much the garden variety catch a lob, throw it down kind.

And you know what, I couldn't have cared less. At a height of only 5'9, having just turned 33 years old, getting less than ideal sleep, and with the genetics of a turtle, I was just completely over the moon about the fact that I could even dunk.

In my whole life I could barely ever even touch the ring. Now here I was at 33 with a jumping ability that not many people will ever have in their entire life, let alone at my age. The feeling I got every time I not only dunked a basketball, but blocked a shot, or out rebounded guys much taller than me was nothing short of unbridled elation.

My personal favourite however was lining up for a jump ball against opposing centres at the start of games. More than a few of them underestimated my jumping ability and were left looking a little bit silly when I won the tip off.

My biggest regret is that I didn't start training much sooner. In high school I weighed only 67kg (135 pounds), I got a lot more sleep, and being much younger I would have recovered way faster than I did when I was training in my 30's.

Being able to improve my vertical the way I did taught me a few important things. One, don't waste your time doing programs that are not designed for you. I spent four months barely gaining anything before I got wise. If you have the means then you should hire a trainer who can work with you and design you a program based on your needs. If this is out of your price range you should get yourself a copy of the [Vertical Mastery](#) software.

The other important lesson is that when you train hard with smart programming, and you focus some energy, effort, and discipline into maximizing your recovery, you can achieve a lot more than you think.

Just because you are not a genetic freak like Kadour Ziani or Taurian “Air Up There,, Fontenette, doesn’t mean you can’t develop a great vertical. After all if a bad genetic having 33 year old, 5’9 white guy can do it, so can you!



## 15. REFERENCES

Anderson, Corey E; Sforzo, Gary A; Sigg, John A The Effects Of Combining Elastic And Free Weight Resistance On Strength And Power In Athletes. *Journal Of Strength & Conditioning Research*. 22(2):567-574, March 2008.

Bompa, Tudor O; Carrera, Michael C; *Periodization Training For Sports*; 2005

Boyle, Michael; *Functional Training For Sports*; Sept 2003

Burkett, Lee N. 1; Phillips, Wayne T. 1; Ziuraitis, Joana 2 The Best Warm-Up For The Vertical Jump In College-Age Athletic Men. *Journal Of Strength & Conditioning Research*. 19(3):673-676, August 2005.

Canavan, Paul K.; Garrett, Gladys E.; Armstrong, Lawrence E. Kinematic And Kinetic Relationships Between An Olympic-Style Lift And The Vertical Jump. *Journal Of Strength & Conditioning Research*. 10(2):127-130, May 1996.

Chu, Donald A, *Explosive Power and Strength*, Mar 1996

Chu, Donald A; *Jumping Into Plyometrics* 2<sup>nd</sup> Ed; 1998

Cook, Gray; *Athletic Body in Balance*; 2003

Cressey, Eric; *Maximum Strength*; 2008

Cronin, John B. 1; McNair, Peter J. 2; Marshall, Robert N. 3 Force-Velocity Analysis Of Strength-Training Techniques And Load: Implications For Training Strategy And Research. *Journal Of Strength & Conditioning Research*. 17(1):148-155, February 2003.

Davies, Claire; Davies, Amber; *The Trigger Point Therapy Workbook* 2d Ed; 2004

De Villarreal, Eduardo Saez Saez 1; Gonzalez-Badillo, Juan Jose 1; Izquierdo, Mikel 2 Low And Moderate Plyometric Training Frequency Produces Greater Jumping And Sprinting Gains Compared With High Frequency. *Journal Of Strength & Conditioning Research*. 22(3):715-725, May 2008.

Dugan EL, Doyle TL, Humphries B, Hasson CJ, Newton RU. Determining The Optimal Load For Jump Squats: A Review Of Methods And Calculations. *J Strength Cond Res*. 2004 Aug;18(3):668-74

Duthie, Grant M. 1,2; Young, Warren B. 1; Aitken, David A. 2 The Acute Effects Of Heavy Loads On Jump Squat Performance: An Evaluation Of The Complex And

Contrast Methods Of Power Development. *Journal Of Strength & Conditioning Research*. 16(4):530-538, November 2002.

Grover, Tim S, *Jump Attack*, 2002

Gruber, Markus 1; Gruber, Stefanie B.H. 1; Taube, Wolfgang 1; Schubert, Martin 2; Beck, Sandra C. 2; Gollhofer, Albert 1 Differential Effects Of Ballistic Versus Sensorimotor Training On Rate Of Force Development And Neural Activation In Humans. *Journal Of Strength & Conditioning Research*. 21(1):274-282, February 2007.

Hanson, Erik D. 1; Leigh, Steve 2; Mynark, Richard G. 1 Acute Effects Of Heavy- And Light-Load Squat Exercise On The Kinetic Measures Of Vertical Jumping. *Journal Of Strength & Conditioning Research*. 21(4):1012-1017, November 2007.

Hoffman, Jay R.; Ratamess, Nicholas A.; Cooper, Joshua J.; Kang, Jie; Chilakos, Art; Faigenbaum, Avery D. Comparison Of Loaded And Unloaded Jump Squat Training On Strength/Power Performance In College Football Players. *Journal Of Strength & Conditioning Research*. 19(4):810-815, November 2005.

Holcomb, William R. 1; Lander, Jeffrey E. 2; Rutland, Rodney M. 3; Wilson, G. Dennis 3, The Effectiveness Of A Modified Plyometric Program On Power And The Vertical Jump., *Journal Of Strength & Conditioning Research*. 10(2):89-92, May 1996.

Kawamori, Naoki; Haff, G. Gregory The Optimal Training Load For The Development Of Muscular Power. *Journal Of Strength & Conditioning Research*. 18(3):675-684, August 2004.

Kraemer, William J; Fleck, Stephen J; *Optimizing Strength Training*, 2007

Kraemer, William J; Fleck, Stephen J; *Strength Training For Young Athletes*, Oct 2004

Luebbers, Paul E. 1; Potteiger, Jeffrey A. 1; Hulver, Mathew W. 2; Thyfault, John P. 2; Carper, Michael J. 3; Lockwood, Robert H. 3 Effects Of Plyometric Training And Recovery On Vertical Jump Performance And Anaerobic Power. *Journal Of Strength & Conditioning Research*. 17(4):704-709, November 2003.

Mangus, Brent C. 1; Takahashi, Masai 2; Mercer, John A. 1; Holcomb, William R. 1; Mcwhorter, J. Wesley 3; Sanchez, Roxanne 1 Investigation Of Vertical Jump Performance After Completing Heavy Squat Exercises. *Journal Of Strength & Conditioning Research*. 20(3):597-600, August 2006.

Markovic, Goran 1; Dizdar, Drazen 1; Jukic, Igor 1; Cardinale, Marco 2 Reliability And Factorial Validity Of Squat And Countermovement Jump Tests. *Journal Of Strength & Conditioning Research*. 18(3):551-555, August 2004.

Mcbride, Jeffrey M.; Triplett-Mcbride, Travis; Davie, Allan; Newton, Robert U. The Effect Of Heavy- Vs. Light-Load Jump Squats On The Development Of Strength, Power, And Speed. *Journal Of Strength & Conditioning Research*. 16(1):75-82, February 2002.

Mcbride, Jeffrey M; Mccauley, Grant O; Cormie, Prue Influence Of Preactivity And Eccentric Muscle Activity On Concentric Performance During Vertical Jumping. *Journal Of Strength & Conditioning Research*. 22(3):750-757, May 2008.

Mcmillian, Danny J. 1; Moore, Josef H. 2; Hatler, Brian S. 3; Taylor, Dean C. 3 Dynamic Vs. Static-Stretching Warm Up: The Effect On Power And Agility Performance. *Journal Of Strength & Conditioning Research*. 20(3):492-499, August 2006.

Mihalik, Jason P 1,2; Libby, Jeremiah J 1; Battaglini, Claudio L 1; McMurray, Robert G 1,2 Comparing Short-Term Complex And Compound Training Programs On Vertical Jump Height And Power Output. *Journal Of Strength & Conditioning Research*. 22(1):47-53, January 2008.

Newton, Harvey; *Explosive Lifting For Sports*; 2002

Nuzzo, James L; Mcbride, Jeffrey M; Cormie, Prue; Mccauley, Grant O Relationship Between Countermovement Jump Performance And Multijoint Isometric And Dynamic Tests Of Strength. *Journal Of Strength & Conditioning Research*. 22(3):699-707, May 2008.

Peterson, Mark D. 1; Alvar, Brent A. 1; Rhea, Matthew R, The Contribution Of Maximal Force Production To Explosive Movement Among Young Collegiate Athletes, *Journal Of Strength & Conditioning Research*. 20(4):867-873, November 2006

Peterson, Mark D. 1; Alvar, Brent A. 1; Rhea, Matthew R. 2 The Contribution Of Maximal Force Production To Explosive Movement Among Young Collegiate Athletes. *Journal Of Strength & Conditioning Research*. 20(4):867-873, November 2006.

Radcliffe, James C; Farentinos, Robert C; *High Powered Plyometrics*; 1999

Rippetoe, Mark; Kilgore, Lon *Practical Programming for Strength Training*, 2006

Rippetoe, Mark; Kilgore, Lon *Starting Strength 2<sup>nd</sup> Ed*, 2007

Sheppard, Jeremy M 1,2; Cronin, John B 2,3; Gabbett, Tim J 4; Mcguigan, Michael R 2; Etxebarria, Naroa 1; Newton, Robert U 2 Relative Importance Of Strength, Power, And Anthropometric Measures To Jump Performance Of Elite Volleyball Players. *Journal Of Strength & Conditioning Research*. 22(3):758-765, May 2008.

Siff, Mel C; *Supertraining*; 2004

Smilios, Ilias; Pilianidis, Theophilos; Sotiropoulos, Konstantinos; Antonakis, Manolis; Tokmakidis, Savvas P. Short-Term Effects Of Selected Exercise And Load In Contrast Training On Vertical Jump Performance. *Journal Of Strength & Conditioning Research*. 19(1):135-139, February 2005.

Stone, Michael H. 1; O'bryant, Harold S. 2; Mccoy, Lora 2; Coglianesi, Robert 2; Lehmkuhl, Mark 2; Schilling, Brian 3 Power And Maximum Strength Relationships During Performance Of Dynamic And Static Weighted Jumps. *Journal Of Strength & Conditioning Research*. 17(1):140-147, February 2003.

Starzynski, Tadeusz; Sozanski, Henryk Explosive Power and Jumping Ability for all Sports, 1999

Thibaudeau, Christian; Theory and Application of Modern Strength and Power Methods; 2006

Tricoli, Valmor 1; Lamas, Leonardo 1,2; Carnevale, Roberto 2; Ugrinowitsch, Carlos 1 Short-Term Effects On Lower-Body Functional Power Development: Weightlifting Vs. Vertical Jump Training Programs. *Journal Of Strength & Conditioning Research*. 19(2):433-437, May 2005.

Tsatsoulina, Pavel, Enter The Kettlebell,

Ugarkovic, Dusan 1; Matavulj, Dragan 1; Kukolj, Milos 1; Jaric, Slobodan 2 Standard Anthropometric, Body Composition, And Strength Variables As Predictors Of Jumping Performance In Elite Junior Athletes. *Journal Of Strength & Conditioning Research*. 16(2):227-230, May 2002.

Ugrinowitsch, Carlos 1; Tricoli, Valmor 1; Rodacki, Andre L.F. 2; Batista, Mauro 1,3; Ricard, Mark D. 4 Influence Of Training Background On Jumping Height. *Journal Of Strength & Conditioning Research*. 21(3):848-852, August 2007.

Unick, Jessica; Kieffer, H. Scott; Cheesman, Wendy; Feeney, Anna The Acute Effects Of Static And Ballistic Stretching On Vertical Jump Performance In Trained Women. *Journal Of Strength & Conditioning Research*. 19(1):206-212, February 2005.

Vetter, Rheba E. Effects Of Six Warm-Up Protocols On Sprint And Jump Performance. *Journal Of Strength & Conditioning Research*. 21(3):819-823, August 2007.

Wallace, Brian J. 1; Winchester, Jason B. 2; Mcguigan, Michael R. 3 Effects Of Elastic Bands On Force And Power Characteristics During The Back Squat Exercise. *Journal Of Strength & Conditioning Research*. 20(2):268-272, May 2006.

Walsh, Mark 1; Arampatzis, Adamantios 2; Schade, Falk 2; Bruggemann, Gert-Peter 2 The Effect Of Drop Jump Starting Height And Contact Time On Power, Work Performed,

And Moment Of Force. Journal Of Strength & Conditioning Research. 18(3):561-566, August 2004.

Weiss, Lawrence W. 1; Fry, Andrew C. 1; Relyea, George E. 2 , Explosive Strength Deficit As A Predictor Of Vertical Jumping Performance. Journal Of Strength & Conditioning Research. 16(1):83-86, February 2002.

Willardson, Jeffrey M. A Brief Review: Factors Affecting The Length Of The Rest Interval Between Resistance Exercise Sets. Journal Of Strength & Conditioning Research. 20(4):978-984, November 2006.

Wilson, Jacob M 1; Flanagan, Eamonn P 2 The Role Of Elastic Energy In Activities With High Force And Power Requirements: A Brief Review. Journal Of Strength & Conditioning Research. 22(5):1705-1715, September 2008.

Woolstenhulme, Mandy T. 1; Griffiths, Christine M. 2; Woolstenhulme, Emily M. 1; Parcell, Allen C. 1 Ballistic Stretching Increases Flexibility And Acute Vertical Jump Height When Combined With Basketball Activity. Journal Of Strength & Conditioning Research. 20(4):799-803, November 2006.

Zatsiorsky, Vladimir M; Kraemer, William J Science and Practice of Strength Training 2nd Ed, May 2006