

# ***The Vert Specific Conditioning Guide...***

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The topic of conditioning is one that's kinda like a giant elephant in the room when it comes to the vertical jump. It's something you'd rather not have to deal with, but sometimes you can't ignore it. By *conditioning* I'm referring to any activity that gets you in shape and builds your fitness - stuff like jogging, running interval sprints, and other various forms of endurance work.

From strictly a vertical jump perspective, endurance conditioning is relatively unimportant. Unless you have a lot of weight to lose, you're not going to increase your vertical jump by going out and running 3 miles 3 days per week or partaking in any other common form of endurance training. You might decrease it, but chances are you won't increase it. You're also unlikely to increase your vertical jump partaking in various other forms of high intensity conditioning - boot camp conditioning, kettle bell conditioning, sprint interval workouts, sprint type running workouts - you name it. Athletes that relatively jump the highest pound per pound often share one common theme and that is they *don't* do much in the way of endurance work. These include athletes like high jumpers, throwers, bobsledders & olympic weight lifters (especially the latter 3). These people lift and do explosive exercises but RARELY participate in anything that gets the heart rate up for extended periods. The problem is MOST people interested in increasing their vertical jump need SOME level of conditioning to optimally participate in their sport. You might be able to jump out of the gym but if you're a basketball player a big vertical jump isn't gonna help you if you can't run up and down the court twice without coughing up a lung! So, although conditioning isn't really necessary for a vertical jump, it is often necessary if you want to be a good athlete in your sport.

## ***How Hard Can You Go and For How long?..***

Conditioning could be defined as a combination of how hard you can go and for how long. Basketball is a repeated sprint sport where you alternate bouts of rapid movement and power with bouts of lower intensity recovery. You sprint down the court, chase after a ball, stand around for a few seconds, then maybe hang out for a minute or so before chasing down an opponent and trying to block a shot, then you sprint back to the other end and maybe hang out a while during a free throw. You need power to produce high-intensity movement immediately and for the necessary duration before shifting back into recovery mode. The problem is, the harder you're capable of going typically the shorter you can go - the longer you can go, typically the weaker. A champion shot-putter can create damn near as much fatigue in his muscles (lactic acid and various waste products responsible for the "burn") in a short 2

second wind-up and throw as an intermediate distance track athlete can in a 400 meter sprint. Fast twitch fiber, which you want a lot of to jump high, inherently creates a lot of metabolic waste when maximally activated, kinda like dumping gasoline on a pile of wood and activating it - you get a BIG burst of immediate flame (power) but also a lot of smoke, followed by a quick fizzle - it's great at going hard but not so great at going long. Slow twitch fiber (which you don't want) is great at going long but not great at going hard.

Conditioning can further be broken down into aerobic vs muscular endurance, or how efficiently you can avoid getting out of breath under heightened states of action (aerobic) and how well you can reproduce repeated maximal efforts (tolerate the burn). The first is built by performing longer duration cardio work as well as various aerobic power intervals such as the following:

### **Aerobic power intervals**

2 minutes at a pace that has you sucking wind pretty hard at the end of 2 minutes

1 minute recovery period

5-10 reps per session

1-2 times per week for 5 weeks

These methods increase the capacity of your cardiovascular system - primarily your heart. The latter (alactic muscular endurance) is built by performing shorter more intense intervals such as the following:

### **Alactic Intervals**

7-10 seconds per rep (example: 60 yard sprint)

Heart rate-based active recovery to 120 beats per minute

5-6 reps per set

1-2 sets per session

One to three times per week frequency

You'll notice later how many of the examples I give later fit those parameters. Before getting further into my recommendations let's first go over some advantages and disadvantages of conditioning work.

## **Advantages of conditioning work:**

1. **Keeps you in shape:** Many people have to be in shape to play their sport. This one is easy and obvious. You're not gonna get much playing time if you can't run up and down the court more than a handful of times without coughing up a lung or losing your lunch.
2. **Helps burn fat and helps keep you lean:** It's hard to jump to the best of your ability if you're carrying a spare tire around your waist or your butt and implementing some extra conditioning work can definitely help in this area. People that have sub-optimal body composition can really benefit from extra conditioning, because it helps keep their weight and body-fat down.
3. **Allows your workouts to be more efficient:** When you're in shape your vertical jump workouts can be more effective and easier because you don't have to recover as long between sets. It's hard to get much enjoyment out of a typical squat or plyometric workout when you have to sit on the bench for 10 minutes in between sets of squats coughing up a lung.
4. **Is good for your health:** Having a well developed cardiac system is good for your health. It increases cardiac power, lowers resting heart rate, and strengthens your heart.

## **Now for the Disadvantages:**

1. **Creates a chronic state of fatigue in the legs:** Much like what occurs with high volume weight training, conditioning work, especially conditioning work involving your legs like running, can, (and usually does) create a low grade state of fatigue in your muscles and nervous system. This makes it difficult to fully display your full explosiveness. Think about the amount of volume thrown on your legs during something like a leisurely jog. You might take 120 strides per minute and run for 30 minutes. That's well over 3000 low level plyometric ground contacts. Is it any wonder running can create fatigued legs?
2. **Can negatively impact strength and explosiveness:** This is the **BIG** negative when it comes to conditioning work. Virtually every research study ever done that implemented concurrent strength/explosive training in conjunction with conditioning work has found that conditioning work makes people weaker and less explosive. It may not necessarily make people weaker and slower at baseline, but if you take one group of people and have them perform weight training and explosive exercises, and take another group and have them perform weight training and explosive exercises **IN CONJUNCTION** with extra conditioning work, the people in the 2nd group will gain less strength and make less explosive gains than the other group. When you think about it, performing lots of conditioning work in conjunction with strength or explosive work is basically sending 2 different signals to your muscles: On one hand you're asking them to be

strong and explosive, but on the other hand you're asking them to be slow and enduring. Heavy weight training and explosive exercises primarily focus on the fast twitch muscle fibers. Conditioning work recruits the fast twitch fibers but asks them to behave in an enduring manner. This causes the fast twitch fibers to begin to "behave" more like slow twitch fibers. Add to that the fact that you're throwing a lot of extra volume at them and it can make things difficult.

Think of the difference between a marathon and a 50 yard sprint. They both involve running but that's where the similarities end. As far as energy systems go, they're at 2 entirely ends of the spectrum. One requires your body to make use of the aerobic (oxygen) system to supply 90% of the energy. One is pure anaerobic (without oxygen).\*\*

*\*\* It should be noted the vertical jump is very similar to the 50 yard sprint as far as energy systems go.*

The adaptations that make you extremely aerobically efficient are in nearly complete opposition to those required that make you extremely anaerobically efficient, and vice versa. This means the adaptations that allow you to run marathons as efficiently as possible inhibit the adaptations that allow you to jump as high as possible. The adaptations that allow you to jump as high as possible inhibit the adaptations that allow you to run marathons - which is primarily why sprinters and marathon runners look and perform nothing alike whatsoever. Not exactly scientific, but true nonetheless. One is muscular, strong, powerful, and fast over very short distances. The other is weak, lacks power, and is usually quite slow, but can run slow for a very long time. \*\*\*

*\*\*\* A typical marathon runner often has a vertical jump no higher than 12 inches!*

## The Energy System Spectrum

Think of 2 ends of a spectrum. One represents speed, strength, and power. The other represents endurance:

speed, strength, power <-----> endurance

A sprinter, high jumper, powerlifter, Olympic lifter, thrower, gymnast, and football player operate at one end of the spectrum - that being the strength/speed/power end. The distance runner, cross-country skier, rower, and swimmer function at the other end of the spectrum - that being the endurance end. The 800 meter runner, basketball player, boxer, soccer player, etc. reside somewhere in the middle.

Those on the speed, strength, and power end are typically characterized by being very explosive, very fast, very strong, and very powerful. Those on the endurance end are characterized by being like an energizer bunny - they ain't gonna turn any heads with their

explosiveness, but they'll keep going and going and going. Those in the middle are a mix of both - they don't have the power, speed, or strength of the sprinters, throwers, gymnasts, or football players – and they don't have the endurance of the marathon runner, cyclist, or cross country skiers – but they have a decent mix of both.

## Conditioning and No Man's Land

The point of all this is if you expose your body to too much endurance oriented training you end up in what I call *No Man's Land*, which means you end up in the land of the boxer, 800 meter runner, or soccer player, whose speed, strength, and power are limited by the amount of conditioning work they must endure. There's a mentality in this world that more is always better and you're a lazy bum unless you have the endurance of a tri-athlete. But if you try to train for an iron man triathlon and the vertical jump at the same time you're sending a message that says, "Ok muscles – you need LOADS of endurance." That's all well and good if that's your goal, but as noted, the same adaptations that lead to great endurance (increased mitochondrial density) also severely limit adaptations towards power. Try to train for both simultaneously and your body will develop the endurance you need but you'll limit your gains in explosiveness. This is particularly true when you're trying to make gains in strength and power. *Maintaining* strength and power while building endurance is one thing, but *improving* strength and power while dramatically improving endurance is another thing altogether.

When most people think of high flying athletes with great vertical jumps they probably think of basketball players, yet realize this: The average professional basketball player is doing pretty good to Jump 32 inches from a standstill while many NFL football players (excluding offensive lineman) regularly approach 40 inch verticals. Why is this? Well, for one thing basketball play itself is fairly aerobic. Basketball players have to engage in a lot of running and conditioning just playing their sport. The average football play lasts 4-6 seconds and is followed by a 30 second pause. Basketball guys are essentially running intervals for 30-48 minutes. This has a somewhat negative effect on maximal strength and power production.

We also have to consider how a typical basketball player would train. The popular approach is for basketball players to spend their entire off-season playing 2 hours of street-ball 3-5 days per week and 1 or 2 AAU games for almost the entire summer. It's basketball and more basketball – playing and conditioning but no real training.

Basketball players and coaches also don't tend to appreciate strength training as much as football players. The average football player has no problem getting in the weight room and getting after it but the average basketball player often thinks weights are gonna make them slow or muscle-bound. As a result if the basketball player does any extraneous training at all it's more likely to be a ton of plyometric work, which is the last thing he needs. The result is the

average basketball player spins his wheels in the off-season while football players tend to come back faster and stronger year-after-year simply because, if nothing else, they're continually boosting up their core motor abilities like strength. Football players don't play in the off-season; they hit the weights.

Now, what happens when we do run across the rare basketball player who actually does value the weight room and decides to take a no-holds barred attitude towards getting his strength up in the off-season? Well, chances are good he's also gonna wanna play about 12 hours of basketball per week. What do you think is gonna happen? Well, he might make some gains in his strength and explosiveness, but chances are they're gonna be limited due to the volume of his on-court work and all the running he inherently does there. Optimally, a much better way to approach the off-season for the basketball player would be to reduce on-court time by a significant margin (2 sessions per week of full court ball instead of 10), maintain his skill work, and focus more on foundational qualities such as maximal strength.

## **My Own Experience With Conditioning and “No Man’s Land”**

I'll give you my personal experience with no man's land: When I hit my best vertical jumps in my mid and late 20's I did absolutely no conditioning work whatsoever other than 20-30 minutes of half court basketball a couple of times per week. No running on the treadmill. No sprint intervals. None of that. I've personally done large volumes of every type of conditioning you can imagine though at various times. When I was 30 yrs old I decided I wanted to compete in boxing, yet at the time my extraneous training more closely resembled that of a sprinter. For the most part I trained according to the principles outlined in the VJ manual. Even though I had some minor injuries I had a vertical jump of 35 inches or better at the time and could knock off a 4.4 second 40 yard dash any day of the week. My endurance left a lot to be desired though. If you'd asked me to run repeat 40-yard dashes with 1 minutes rest I'd probably only be able to run 5 or 6 below 5 seconds before I'd just gas out. My best mile run was probably well above 7 minutes and that's being generous. I was lean and powerful and looked "in-shape". I'd get in the boxing ring and was quicker and stronger than most of my opponents but I'd be on the floor sucking wind inside of 2 rounds. My fitness state mighta been pretty good compared to the average person, but left a lot to be desired when it came to the conditioning needed to box at a high level.

Obviously, my training had to change. That meant instead of lots of strength and explosive training I had to start engaging in lots of endurance oriented training. That meant tons of long intervals, 3 mile runs, and plenty of general boxing training including: Jump rope, heavy bag work, and lots of sparring. After 2 months of that torture I'd definitely built up a significant amount of endurance. I could go out and easily run ten 100 yard sprints under 15

seconds with about 45 seconds rest. I could go six 3 minute rounds in the ring with 30 seconds rest with no problem. However, in order to build that endurance I had to trade some of my explosiveness. My best vertical jump declined to around 32 inches and my best 40 was around 4.65. Oh, my power endurance was very good - I could run repeat 4.9 second 40's with 45 seconds rest all day long and I could probably hit a 30 inch vertical jump for 100 consecutive jumps without declining. But in order to build that kind've power endurance I had to trade off some of my top end.

If you're a basketball player that's kinda an extreme example because boxing requires an EXTREME amount of conditioning. Also keep in mind I've also never been the type that tolerates conditioning work very well but I had to get in shape very quickly and went a little overboard into the overtraining zone. If I could redo everything at an optimal level I probably wouldn't have lost much power. But the point of all this is that you gotta remember you're training for very brief bouts of power in an activity that takes less than .2 seconds to complete (A vertical jump), you're NOT training for marathons! You don't wanna put yourself in NO MAN'S LAND where you sacrifice power for power endurance at an inappropriate time. Providing you approach it properly you can build all the endurance you need without having to trade off anything, as I will describe later.

### ***More on Power vs Power Endurance***

Regardless of what measure of performance you're talking about (running, jumping, throwing a fastball etc.), you have to develop the level of your freshest peak effort before you optimally develop the ability to extend that effort, otherwise, you won't be preparing for maximal performance, you'll just be conditioning yourself for prolonged sub-maximal performance. Here's an example to illustrate my point:

Let's say you have 2 basketball players and both of them play guard. Player A takes his off-season and really works on becoming faster and more explosive overall. He reduces his on-court time and really devotes himself to strength and power training. The result is he comes out of the off-season running a 2.5 second 20-yard dash with a 40-inch vertical jump. However, player B really takes a hardcore no-holds barred approach to conditioning for his entire off-season and, in addition to playing several full-court games per week, also devotes himself to getting up at 5am and running 5 miles per day, running up long hills in the mountains, and all kinds of other hardcore metabolic conditioning stuff so that he can be the "go-to" guy and be just as fresh in the 4th quarter as he was in the first quarter. He (Player B) ends up running a 3.0 second 20-yard dash and he has a 30-inch vertical jump. Just based on this information we know that Player A will be able to get up and down the court faster than player B and jump quite a bit better too. However, let's assume player B's efforts paid off so his endurance is

twice as good. In other words, throughout a game his initial starting performance only declines half as much as player A. Player A drops off at 5% per quarter while player B only drops off at 2.5% per quarter.

So, if we measured the performance of these 2 athletes in the 20-yard sprint and vertical jump from quarter to quarter it might look something like this:

<b>Quarter</b>	<b>Player A</b>	<b>Player B</b>
	<b><i>20 yard dash - Vertical Jump</i></b>	<b><i>20 yard dash-Vertical Jump</i></b>
1	2.5 seconds 40 inches	3.0 seconds 30 inches
2	2.62 seconds 38 inches	3.07 seconds 29 inches
3	2.75 seconds 36.1 inches	3.14 seconds 27.5 inches
4	2.88seconds 34.2 inches	3.22 seconds 26.8 inches
OT	3.00 seconds 32.4 inches	3.30 seconds 26.1 inches

Even though player A's starting sprint times and vertical jump declined more than 25% over the course of the game, he was still faster and more explosive at the END of the game as player B was at the very beginning! Now, just imagine what would happen if you took Player A and *appropriately* conditioned him with the right stuff at the right time of the year so that he could sustain his performance at a level close to player B? He'd be running circles around everyone and jumping over everyone throughout all 4 quarters.

Anyone can build endurance and it responds quickly, yet building the foundational qualities necessary for a great vertical jump takes time and is more difficult. Put it this way: I can go to any major American city and probably find at least 1000 people on any given day that are capable of running a marathon. Conversely, in those same cities, if I'm lucky I might be able to find 10 people that can vertical jump 40 inches....if that many.

## **Don't Go Overboard.....**

Now, all this doesn't mean you should sit on your butt and turn into a fat out of shape slob during the off-season because you're totally paranoid about any conditioning work interfering with your gains. Truth be told the typical basketball player can develop and/or maintain all the conditioning work he needs simply playing full court basketball a couple of days per week - which most basketball players don't struggle doing. I rarely have to tell basketball players to do MORE conditioning work - my biggest problem is getting them to cut back. \*\*

\*\* My general recommendation for basketball players striving for maximal vertical jump development is limiting full court basketball to 2 or 3 sessions per week for less than 2 hours.

For the non-basketball player, or rare basketball player that doesn't play much full court ball in the offseason, a modicum of conditioning should be maintained year around and you can

develop a level of conditioning that'll make you like an energizer bunny in your sport, you just have to approach it the right way. You have to build the power first and add the intensive conditioning at the right time. There's a big difference between *maintaining* a decent level of conditioning while improving power and strength, versus trying to vastly *improve* conditioning while also trying to simultaneously improve power and strength. In the first case your gains will be good. In the second case they'll likely be non-existent.

If you're primarily interested in VJ development the correct approach to improving your game conditioning is to focus on acquiring your baseline strength, power, and speed first while you maintain a minimal level of conditioning. Then work on maintaining strength, power, and speed while taking a brief period where you focus on bringing up your conditioning.

Now, going back to the original question, can we have our cake and eat it too? Can you reap the positive benefits of conditioning work while working around the negatives? Well, fortunately YES YOU CAN, but you have to be smart about it.

### ***How To Implement Conditioning WITHOUT Interfering With Explosiveness, Strength and Power....***

When your focus is on maximal explosiveness and power (VJ) it's ok to add in some extra conditioning work, you just have to make sure you don't go overboard to the point where it interferes with your gains. If implemented correctly the addition of some lower intensity work can actually serve to maintain your conditioning, keep you lean, and even improve recovery. So, how do we get the benefits of extra conditioning work without stimulating negative endurance adaptations? Well, we should do the following things:

**A: Recovery:** We have to make sure we give our fast twitch muscles and our nervous system time to recover between bouts of intense exercise. High intensity training can be considered any activity where you're performing at 80% or more of maximum effort or speed. Other intense forms of training include weight training, moderate to high intensity plyometric work, and intense agility training. Putting out this level of effort is not only demanding on muscular system, but more importantly, it is very demanding on the central nervous system. The central nervous system requires about 48 hours for recovery after high intensity activity! Therefore, if you try to train at high intensity for 2 days in a row you'll be apt to run into problems with recovery. For this reason anytime we add in much extra conditioning work to our routine we should also adjust our schedule and allow more recovery work between weight training and plyometrics. If you don't want to adjust your schedule TOO MUCH you should make sure the extra conditioning work you do is performed at a lower level of effort - otherwise it WILL interfere with your recovery.

**B: Targeted Recruitment:** The primary stress that causes fast explosive oriented muscle fibers to transfer into slower endurance oriented muscle fibers is frequently engaging in activities that produce tons of lactic acid for fairly prolonged periods. This occurs with intensive intervals like traditional suicides and other intense aerobic work where the level of effort is high and the level of muscular recruitment is fairly high. This type of work not only recruits a lot of fast twitch muscle fiber but also stimulates a lot of lactic acid accumulation. Lactic acid is what gives you the “burn” whenever you run intense intervals. *Intensive* means the workout gets progressively harder because of pace and/or volume and you leave the workout feeling dead tired. Therefore, when our focus is on increasing neuromuscular qualities like strength, power, speed, and explosiveness, we want to limit this type of intensive conditioning work. Instead of performing intensive conditioning work we can engage in lower intensity *extensive* conditioning work, which doesn’t recruit the fast twitch fibers to the same degree and doesn’t create the same lactic acid accumulation. Our fast twitch muscle fibers get recruited plenty from our power and strength training work. Recruiting them even more through conditioning work just tells them, “Ok boys you need to trade some of your explosiveness for some endurance.” IF your primary goal is increasing your vertical jump as much as possible that's NOT what you want.

**C: Targeted timing:** To avoid unnecessary negative adaptations, you’ll want to emphasize intensive (a.k.a. – puke inducing) type conditioning only at certain times of the year such as the late offseason and preseason, the rest of the time you’ll want to emphasize extensive conditioning work.

***Extensive conditioning work***, also called *tempo* work, is any fairly low to moderate effort work that stimulates recovery, work capacity development, and elevates or maintains your fitness state without detracting from your specific training goals. Extensive tempo can be viewed in many different ways and achieved in many different ways. The two ways I view it:

- 1) A way to increase cardiovascular fitness and work capacity
- 2) A regeneration tool from harder work

*Extensive* means the workout can be finished and you can leave feeling refreshed. How you feel after a workout is a very crude marker but also effective - if you choose to engage in extensive conditioning work in the offseason it should be performed at an intensity and volume low enough that you feel better afterwards and don’t wear yourself out to the point that you leave the workout not being able to perform as good as you did at the beginning of the workout.

Ideally, we want to stimulate the cardiovascular system, improve blood flow to the muscles, and stay active - but we want to do so in a manner that is power specific without being

too demanding on either the muscular or the central nervous system. This type of work also has other benefits as well. It can serve as a form of active recovery, enhancing blood flow and increasing capillary density in the musculature. It stimulates the metabolism, and promotes a lean body composition.

## ***Extensive Conditioning Options***

You have several options at your disposal. One of them is to simply engage in your sport at a lower level of effort. A basketball player might go out and play half court ball, work on his ball handling the length of the court, or engage in some shooting or skill work variations that require plenty of movement. Not exactly hardcore, but better than nothing. Another obvious option is running. You can run over fairly short distances (100-400 yards/meters) at a lower level of effort (60-70% of max speed) with fairly short rest intervals between runs (30-45 seconds).

### **Sprint Intervals**

#### **Option 1:**

3 sets of 5x110 yard runs at 60-70% max speed rest :30 seconds between each sprint. After each set of 5 sprints walk 110 yards

#### **Option 2:**

8 sets of 220-yard runs at 60-70% with :45 seconds rest between runs

#### **Option 3:**

+ denotes 50 yard walk

set #1 100+100+100

set #2 100+200+100

set #3 200+100+200

set#4 100+200+100

set#5 100+100+100

rest 1:30 between each set.

**Option 4:** 150-yard shuttle runs at 70% max effort: (change directions every 25 yards) Use 4-8 total sets with 1:00 rests between each one.

The speed at which you perform these runs is important. If you perform them too fast (over 80% of max speed), you recruit a lot of fast twitch muscle fibers, and that will hamper your ability to recover from your main training session. Regular interval training methods do exactly this. The speed is too fast and too demanding to fully allow recovery to take place, but too slow to improve speed. If you run at 65-75% of maximum speed, the speed is fast enough to stay sprint specific, and slow enough as to not be too draining on the muscular or nervous system. The pace should be done so that you're running smoothly and effortlessly - going faster than a jog but not an all out sprint. The last run should be just as easy as the first. If not, you're probably creating excessive fatigue and need to cut down on speed. Because we want to emphasize recovery and not speed it's also a good idea to do this training on a soft surface such as grass or sand, so that you can avoid excessive wear and tear on the feet.

### ***Guidelines For Rest Intervals***

With extensive tempo work you can stimulate the cardiovascular system by using fairly short rest intervals. The rest intervals should be set up so that they are short enough that you place some strain on your cardiovascular system, but long enough so that your muscular system stays relatively fresh. If you're generating a lot of lactic acid in your legs, or getting a burn, you need to rest longer between runs. You should be breathing fairly hard yet your muscles should not be trashed.

### ***Guidelines For Volume***

The volume should be set so that you stay power specific and get a workout in without generating a lot of excessive fatigue. Total volumes generally run 1000-3000 meters total over a session, you can go with more volume as you become better conditioned. The main focus during tempo runs is on running but we can also get creative and throw in various other activities such as calisthenics or any type of activity that is stimulating yet not too demanding. Here are some ideas:

#### **Long, boring, cardio option:**

Extensive conditioning workouts can consist of activities such as jogging, walking on an inclined treadmill (one of my personal favorites), cycling, elliptical machine, or stairclimber for 20-30 minutes. The key thing is you want to keep your heart rate down around 120 so the work isn't all that difficult. This allows you to develop fitness, but it keeps your fast twitch muscle fibers out of it. Any cardiovascular activity that you do at 75% or less of your maximum heart rate and DOESN'T put a lot of pounding on your feet or create a lot of lactic acid (burn) is OK. Walking on the treadmill, stairclimbing etc. are all fine to use as "tempo" variations for 20-30

minutes. What you want to avoid is this type of long duration cardio performed at a rapid pace. If you have a heart rate monitor try to keep your heart rate somewhere between 110 and 140.

**Treadmill Intervals** : You can also do interval sprints on the treadmill. Sprint 20-30 seconds at 10 mph followed by a 1-minute walk. Go for 20-30 minutes total

**Rowing** - Hey try the rowing machine at your gym every once in a while. You might enjoy it.

**Heavy Bag Work** - Not only is this fun but it will also give you a great workout and is a heckuva lot funner than moving along aimlessly on a treadmill. Work on your jabs, right crosses, and hooks. When you become proficient at these you can start adding in other combinations. Go anywhere from 1-3 minutes with about 1 minute rest intervals each round. Go for about 20-30 minutes total

**Sledgehammer Work** - Get a sledgehammer and beat the heck out of an old tire with it. You can either go for time or number of strikes. I recommend either an 8-12 lb sledgehammer to start off with. Focus on 2 different strikes - a diagonal strike and vertical strike. Swing left handed and right handed. The form is natural for most people and is basically like swinging an axe. I like to use rounds of 1-3 minutes just like with the heavy bag work. A good pace is about 30-40 strikes per minute. Rest for 1 minute in between sets and repeat for 3-6 total sets.

**Swimming** - Use the stroke of your choice and either go for time or for intervals. The more proficient at your stroke you are, the longer you can go. I recommend beginners start off with intervals. Swim a couple of laps, rest a minute, and repeat. Gradually build up your capacity. If you're quite proficient you can also vary your strokes every couple of laps.

**Sandbag Lifting** - This is definitely an old school way of getting a conditioning workout in. You'll need a bag and a table. A Fifty to 70 pound sandbag oughta be about right for most people. Remember we're not trying to set any records here and we don't want to get injured, we just want to get a decent workout in. So don't try to use a bag so heavy that it's gonna fry your lower back. The tailgate of a truck works fine as a table. Simply take a sandbag off the ground, pick it up and set it on a table, then pick it back up and set it down. Start off with about 30-50 repetitions per set and increase as your capacity grows.

**Medicine Ball Complexes** - If you have a wall or a partner and a 5 to 15 pound medicine ball you can put together a great workout. Here's an example:

Perform 10 reps of each exercise. Perform the entire circuit non-stop or with very short rest intervals (10-30 seconds) between exercises. After completion of the circuit, rest 1 minute and repeat for 3-5 circuits.

Med ball chest pass feet stationary

Chest pass stepping left leg forward

Chest pass stepping right leg forward

Overhead pass stationary

Overhead pass stepping left leg forward

Overhead pass stepping right leg forward

Scoop toss - (throw straight up in the air and catch)

Twisting toss left

Twisting toss right

Slam toss (slam into the ground)

You can also mix medicine ball complexes with light running. For example, a great tempo workout for a team is to perform a med ball exercise, jog 55 yards across the field, perform another med. ball exercise, and continue in that fashion for 10 or so circuits.

### **Calisthenic or mobility circuits**

Put together a series of calisthenic or mobility movements in combination and perform them one right after another. I recommend you go for 3-4 minutes total per set with 30 seconds to 1 minute per movement. After each round, take a 1-minute break and repeat. Some possible exercises you can throw together include:

Jumping jacks, bodyweight squats, alternate lunges, straight leg front kicks, burpees, run in place, run in place with high knees, mountain climbers, situps, slalom jump, shuffle splits, roundhouse kick, good morning, skip in place, pushup, v-up, twisting lunge, duck back and forth under imaginary hurdle, slalom jumps.

**Jump rope-** This is a great activity but due to the impact forces this is an activity that big guys might want to reconsider. I recommend you build towards doing 3-minute rounds with 1-minute breaks in between rounds. Repeat for 6 rounds total.

With all these variations you should have plenty of options to choose from and shouldn't ever get bored. In addition to the options already mentioned you also have plenty of other options available such as: Slideboards, kettlebell swings, stationary bike, various barbell circuits, and a ton more options I haven't listed. Don't be afraid to get creative and throw things together. Often what I like to have people do is take a few of the above variations, put them together in stations, and go from station to station with 1-minute rest intervals.

Here is an example of that using what I call a “**Smorgasboard approach**” :

This is one of my favorite conditioning workouts and the great thing about it is it can be customized to meet any goal. Simply put together a series of "stations" or circuits and rotate thru them with 1 minutes rest. Here is an example:

**Station 1:** jump rope x 1-3 minutes

rest 1 minute

**Station 2:** sledgehammer tire strike x 1-3 minutes

rest 1 minute

**Station 3:** bodyweight calisthenic circuit or heavy bag boxing x 1-3 minutes

rest 1 minute

**Station 4:** medicine ball circuit x 1-3 minutes

rest 1 minute

**Station 5:** agility ladder drills or sled pushing variant x 1-3 minutes

rest 1 minute

**Station 6:** Kettlebell/dumbbell circuit x 1-3 minutes (see below for an example of a kettlebell circuit)

With this type of workout you can customize the work to rest ratios based on your fitness state and your goals. Personally when me and my athletes do these workouts we'll usually go for 3 minutes during the "work" portion and take a 1 minute break during the "rest" portion.

## **Guidelines for Frequency of Extensive “Tempo” Workouts**

These workouts are optional and when your main focus is on *building* your power and vertical jump they should be done depending upon how motivated you are to train. If you are tired and don't feel like training then don't!! However, if you're on an off day and feel like doing something a low intensity session is a good way to get some training in without running yourself into the ground and interfering with your next major speed or strength workout. The maximum frequency I recommend for these extra workouts is 3 times per week. I generally feel more comfortable prescribing them once or twice per week, usually on days you're not performing your normal power and strength workouts. Also, don't feel like you have to be a

robot and follow only the exact workouts I've written up – feel free to get creative. The combinations are endless but the guidelines should stay the same. Remember the goal is to get some blood flowing without getting overly intensive.

One last note: Cardiac development is important for many reasons; cardiac power, good parasympathetic tone, and lower resting HR, to name a few. For instance, the muscle fibers in the left ventricle stretch to increase stroke volume. This is done through low intensity work with a heart rate between 100-120. When you are looking to strengthen the walls of ventricle it is done through HR of 130-140. The faster heart rate promotes development of the walls around the ventricle. With extensive conditioning work we're either performing long duration activity (such as walking/jogging) at heart rates at 140 or below, or we're performing interval work where our heart rate gets significantly higher than that but we're allowing recovery between sets so that our muscles stay relatively fresh and our heart rate drops down around or below 100 in between sets. Thus, if you have a heart rate monitor and want to use it keep that in mind. Also, keep in mind the greater the volume and frequency of your conditioning work the *lower the intensity* should be. In other words, if you only perform 1 or 2 conditioning sessions per week you can work at relatively higher intensities. If you perform conditioning often or play a lot of sports on a regular basis you probably want to take it a bit easier with your extra conditioning work.

### ***Intensive Conditioning – Getting in Game Shape***

So, you know you should focus on building your power and strength during the off-season while you maintain some basic fitness with extensive conditioning work. But what about getting in shape for your season? Well, a couple of months prior to your season you'd begin introducing some specific conditioning work. This is the intensive type of conditioning I was referring to earlier specifically designed to get you in **game shape**. The focus on intensive conditioning is getting you ready to play. This is where you'd introduce more traditional high effort, puke inducing, conditioning methods such as suicides and gassers.

In an ideal situation you'd have spent the bulk of your off-season dramatically improving your strength, speed, power, and explosiveness. Thus, entering your preseason you'd have those qualities in place and would only need to maintain them. Depending on the sport, I'd begin focusing more on intensive conditioning a couple of months prior to preseason workouts. The more aerobic the sport and the more out of shape you are, the sooner you'd need to start specific conditioning. For a basketball player who DIDN'T play much basketball in the offseason and needed to report to preseason in awesome game shape I'd introduce them 6-8 weeks prior to camp. Quite honestly though most basketball players can simply play more full court basketball and do just fine playing themselves into shape.

So, how do we go about introducing intensive conditioning? Does that mean we'd break out the boot camp mentality and engage in lots of intense 3-mile runs and the like? Well, depending upon how out of shape you are you can do some longer duration cardio to help for your aerobic base.

If you're REALLY out of shape it wouldn't be a bad idea to go out and engage in 20-30 minutes of an activity like jogging or cycling a few days per week. It's still rather popular for people to bash longer slow aerobic work as worthless, but the truth is that it's the most effective way to increase the size of the heart (specifically the left ventricle) and increase the ability of the body to deliver blood to the working muscles. But if you're already in decent shape you might add in one day per week of intensive anaerobic conditioning like interval sprints or agility drills performed with short rest intervals a couple of months before your season starts. During this time, we'd still be training to improve our general explosiveness and strength. Thus, the *focus* of our workout would stay the same. About a month out from your preseason we'd increase the volume of weekly intensive conditioning to 2-3 sessions and we'd then look to *maintain* our strength, speed, and power via reductions in volume, while our focus would shift towards improving game type conditioning. What follows is an example of a weekly set-up for a basketball player during the last month of off-season:

(Focus: Improve conditioning – Maintain strength, speed, and explosiveness)

**Mon:** Upper body lifting, anaerobic conditioning using sprint intervals

**Tues:** Lower body lifting

**Wed:** Anaerobic conditioning using agility drills

**Thurs:** Upper Body lifting

**Friday:** Off

**Sat:** Aerobic conditioning - 30 minute jog or similar activity

Examples of higher intensity anaerobic conditioning methods include:

**Suicide Runs:** Start at the full court line, sprint to the free throw line and back, half court and back, opposite free throw line and back, full court line and back. Repeat for 6-10 reps. Rest intervals start at 1 minute and subtract 5 seconds per week until you're down to 30 seconds. Or you can use a heart rate monitor and do a rep each time your heart rate drops below about 120.

**Tabata workouts:** This is a quick and easy way to get a fairly effective workout in. You can perform this on a treadmill, bike, stairclimber, elliptical machine or you can get creative and use

various barbell exercises such as front squats. You'll start with a 4 minute lower intensity warmup followed by 8 sets of 20 seconds high effort and 10 seconds rest, (4 minutes total), followed by a 4 minute cool-down.

**Agility drills:** Perform maximum effort agility drills with short rest intervals. An example might be a simple 40-yard shuttle drill where you sprint 10 yards, shuffle 10 yards, backpedal 10 yards, and sprint forward 10. Perform 6-10 sets per workout. Start off with 40-second rest intervals and progress down to 15-20 second rest intervals, or use a heart rate monitor and do a rep each time your heart rate drops under 120. It should be noted any type of agility drill can easily be used as a conditioning method.

**Kettlebell circuits:**

Here is an example of a kettlebell/dumbbell circuit:

2 hand swing x 20

clean left x 5

clean right x 5

overhead press left x 5

overhead press right x 5

snatch left x 5

snatch right x 5

one hand swing x 10 left

one hand swing x 10 right

Perform 3-6 sets. Start off with one minutes rest and subtract 5 seconds per workout until you're down to 30 seconds.

**Bodyweight GPP circuits:**

jumping jack x 30 seconds

burpees x 30 seconds

shuffle in place x 30 seconds

squat jump x 30 seconds

Perform 4-8 circuits with no rest between exercises or movements.

### **Sprints:**

Option A: Run 40-yard repeats at max (or near max) speed with short rest intervals of 30 seconds. Stop when you drop more than .5 seconds off your best time. Rest 3 minutes and repeat.

Option B: Use the same type of sprint workout I gave for extensive intervals but increase the speed and reduce the rest interval:

Example: + denotes 25 yard walk

set #1 100+100+100

set #2 100+200+100

set #3 200+100+200

set #4 100+200+100

set #5 100+100+100

Run each sprint at a fairly high effort. Rest 1:30 between each set subtracting 15 seconds per workout until you're down to 45 seconds.

You can also perform any of the EXTENSIVE workouts I listed, simply decrease the rest intervals and increase the effort you put into the activity.

### ***Using a Heart Rate Monitor***

Also, keep in mind a heart rate monitor can be a valuable tool to use with any sorta conditioning. When your focus is on extensive conditioning/general endurance let your heart rate get under 100 between sets. When your focus is on intensive conditioning/gameshape you want to keep your heart rate a bit higher - above 120.

Follow these conditioning guidelines and not only should you be as powerful as your god given talent will allow but you'll also have an endurance level rivaling the energizer bunny.

### ***Conditioning, Body Composition, and Scheduling Considerations***

One last thing I want to mention is when you focus on conditioning it also gives you a great opportunity to address your body composition. Since having a low body-fat level is a positive thing for vertical jump development you can simultaneously address your body

composition (shed fat) while you're getting in shape. The extra activity will definitely help with fat loss. One thing you want to remember to do when you increase your conditioning work is cut back on the frequency and volume of your weight training. You'll need extra recovery to accommodate the increased volume you're throwing at yourself. When athletes are performing lots of conditioning work I like to have them reduce their weight training and plyometric volume down to similar levels as if they were in-season. Here is an example of how I'd set up a workout for someone performing 3 days of conditioning per week:

### ***Sample In-season Training Template***

Hang power clean or jump squat: 3-4 sets x 3-5 reps

complexed with:

Plyometric variation (tuck jump, barrier jump, depth jump - or your choice of exercise)

Squat, front squat or bulgarian split squat: 3 x 5

Reverse hyper, glute ham, or romanian deadlift: 3 x 6-10

That's the basic idea. You might add a few other auxillary exercises if time allows but the basic tenet is keep things short and sweet. Perform each exercise with good form and don't go overboard seeking to push the weights. You don't want to injure yourself or burn yourself out - your goal should be to stay close to 10% of your offseason bests over a given rep range. If you can do that you'll be in great shape. That means if your best set of squats is 300 x 5 you should seek to hit 270 x 5. Anything better is just gravy. Do this (or a similar) workout once every 4-7 days as your schedule and energy allows. The key point is don't feel you have to set the world on fire when your focus is on conditioning work!

Good luck with it!

-Kelly