1. The full squat is best. Half squats equal half legs

The best way to develop strength and hypertrophy in the legs is to do the full squat, both front and back. The full squat is when you descend down until your hamstrings cover your calves fully, hips are below parallel and the sternum is pushed up keeping the torso upright. What you will see done in most gyms is a half squat where the lifter stops at typically, above parallel to the floor. With a full squat your hips should be low enough to tea bag Satan and there is zero doubt on if you hit depth.

In order to fully develop a muscle and gain size, you must stretch it under load and then lift the load.....again and again. By doing a full squat, you are stretching both the quadriceps and the glutes to a greater extent, this creates more micro trauma to the muscles which causes the body to adapt by repairing them to be bigger and stronger. Full depth will actually accelerate hypertrophy gains for that very reason of causing more damage to repair. Tom Platz would say, "half squats, half legs!" Meaning if you want truly impressive leg development, you need to squat through the full range of motion.

If you are chasing athletic excellence and injury prevention, full squats should be in your program. Due to the added depth, your body will become better versed at overcoming inertia and accelerating a load whether that load is a bobsled, another person during contact or yourself to sprint. Also for sport performance this added range of motion will make the athlete stronger in difficult positions to still produce power.

As will be discussed in tip 3, full squatting actually helps to reduce the risk for injury.

2. Maintain an upright posture for best results, each rep should be a carbon copy

By maintaining an upright posture, the strain on the back will be drastically reduced. What this does is shift the focus onto the quadriceps and also forces the knees to move further over the toes (actually a good safe position) the reason that there is less stress on the back is because when you maintain an upright position, the vertebrae are all stacked on top of each other. Anytime you stack joints, they are in a safer and stronger position.

The more the torso leans forward, the greater the force is placed into the low back. As well, maintaining an upright posture will demonstrate excellent ankle and hip flexibility/mobility. If you find that you always lean forward when squatting and that it's your low back taking the hit instead of your legs, it is an instant red flag you are leaning forward.

Ian King put the idea forward that EVERY rep should look the same, whether it's an empty bar or a 1RM or rep 20 of a breathing squat set, each rep should be technique wise a carbon copy.

3. Full squats are actually safer and reduce injury risk

Most poorly educated physical therapists and doctors will tell you the full squat is bad for your knees but they couldn't be more wrong. They will claim that the sheer forces in the bottom of the squat are excessive on the knees but the greatest of these actually occurs in the top third of a

squat. Meanwhile at the bottom, the various tendons and ligaments work together to create a "wrapping"effect which increases structural integrity of the knee, meaning this position is actually safer than doing a half or partial squat. By progressive overload with full squats, the connective tissue (tendons & ligaments) will also become stronger as a result, making for more durable knees long term.

The biomechanics of the legs show for the majority of trainees (people), the full squat is not only safe, but beneficial for knee and hip health when done properly.
Increasing the poundages lifted on the front squat is an excellent indicator of:

- Short term speed improvement (0-10m)
- Vertical jump
- Bounding Performance (ie triple jump)
- Lowering the risk of ACL, PCL, hamstring and adductor tears

A full squat will demand you to use less weight, this takes compressive force off the spine. However despite less load, the recruitment of the lower body muscles will actually be greater due to the added depth.

Muscle only becomes truly strong in the ranges that it is trained at. So by going thru the entire ROM, the quadriceps and glutes are forced to gain strength in their stretched position leading to more complete development. Many sport injuries are the result of chronic muscular strength imbalances and this is particularly true with the lower body. Many coaches have their athletes only squat part of the way down (time and place for this) causing weakness in the quads stretched position and in the hamstrings. So what ends up happening when running full speed is a hamstring tear or when changing direction, the knee ligaments take the load and injury occurs. Full squats are even more injury preventive in female athletes as they are at a greater risk of ACL injury because of their hip to knee angle.

4. Embrace the suck and accept it will be hard and painful work

Most trainees and even many trainers avoid doing full squats because they are hard. Also because they slap their ego down a few notches because they must lighten the weight quite dramatically. One reason many people don't develop fully on their legs is that they stop when it gets hard. You will also hear every chicken shit excuse from "I feel it better on leg extensions" to "I can't without my belt." As Arnold Schwarzenegger would say "the difference between a champion and a wannabe, is that the champion is willing to do the reps that the loser won't."

The reality is that most trainees are not willing to do the required work! So if you're serious about building legs or athletic performance, you have to cut the bullshit, stop lying to yourself and get under the bar. This is when you need to nut up, put the work boots on and get comfortable.

Yes some complaints about knee or back pain are legitimate, so what are you to do? The best and most effective thing to do is to learn how to properly squat. This alone will take much of the discomfort away. Next, check the ego at the door and use a lighter weight. Once learning to squat with proper technique and appropriate weight, many of these complaints and issues go away in short order.

5. Control the eccentric, slow down!

Take a look at the majority of squats done in any given commercial gym and you will see most are done in a cannonball and bounce style. By this I mean the lifter drops very fast and tries to take advantage of the stretch - shortening reflex to assist on the way up. The key to building strength and size lies more so in the ability to control and the duration of the eccentric. Slowing down the eccentric will also lead to strengthening the connective tissue.

An added way to accentuate the eccentric is to overload the weight on that phase of the lift. This can be done in 2 ways. The first is for a training partner to add some manual resistance on the lowering with their hands and release once at the bottom of the lift. The other way is the use of weight releases like eccentric hooks (Fat Gripz make the best ones) which will release the weight once you are at the bottom of a squat.

6. Concentrate on acceleration when lifting

When lifting the weight up (concentric portion), the goal should be to lift the weight as fast as possible. What this does is recruit more of the type 2 fast twitch fibres. It's these fibres that have the greater potential for growth. The late Dr. Fred Hatfield aka Dr. Squat, put the concept of compensatory acceleration forward. This helps to push thru the sticking point better as there will already be some speed.
There are a few ways to augment training to force better acceleration as will be discussed later in accommodating resistance but jump training and jump squats are other great options here.

7. Time under tension will determine the training outcome

Time under tension is how long a rep or set takes to complete. It's broken down into 4phases, the eccentric, pause at the bottom, concentric and finally pause at the top. A set's TUT is the sum of these 4 multiplied by the number of reps. For example a set of 8 with a tempo of 4010 has a rep length of 5s and set of 40s.

Total time under tension, is something that legs and quadriceps need quite a substantial amount of for growth. A set of 10 reps completed in 18s will have a very different training outcome than a set of 10 that takes 50s with the same weight. The longer time will lead to much more lactic production, damage and over time will stimulate more Hypertrophy and strength. You won't see a man who fits into skinny jeans being able to squat 200kg for sets of 10, that requires some serious leg mass to survive.

8. You need to train frequently for best results, especially beginners

Novice trainees will see excellent progress by training the squat 2-3x per week. The vast majority of trainees don't see much progress because they only squat once a week. This is

something that only exceptionally large (over 110kg body weight) and strong lifters can get away with because of the loads they are lifting and demand it places on their nervous system. For most mortals and bodybuilders, squatting at least twice per week will lead to much faster gains in strength and hypertrophy.

An interesting thing happens here, as your squat gets stronger, nearly every other lift will also improve and total body hypertrophy occurs. One reason for this is that the squat demands nearly total body muscular recruitment and improves neurological efficiency to get muscles recruited. Plus the metabolic demand causes a cascade of anabolic hormones to flood the body.

9. Front squat is a better measure for athletic strength and predictor for performance!

The front squat is a true measure of lower body strength for athletes. That's because you cannot cheat a front squat and full depth is easier to achieve while it helps to improve flexibility. What's meant by you can't cheat on a front squat? With a back squat you can lean forward which will cause the glutes and posterior chain to kick in to assist the lift. If you attempt this on a front squat, one of 2 things will happen. The first and most likely is you drop the bar from your shoulders. The second is you run the risk of a back injury when the back rounds forward with a front squat.

Many people avoid this variation because the set up position is very uncomfortable. I recommend a clean grip or Olympic style rack position as it's the most stable and balanced. If your arms are too large or you lack flexibility, use straps by looping them around the bar and trapping the strap and pull the elbows up. If flexibility is the issue, you should focus on improving it in the wrist flexors and external rotators of the humerus, a fast way is to see an ART practitioner. Also if the bar is choking you a bit, then YOU ARE DOING IT RIGHT!

For athletic strength and performance, increasing the front squat will improve your clean and jerk. With proper form for every 10kg front squat increase, your clean and jerk will go up nearly 9kg

10. Vary the type of squat and when/how often to vary for busting plateaus!

Variation is the spice of continual progression. One issue that arises is the reliance or falling back into a single type of squat, typically back squats. Also sometimes changing up the bar position or even the type of barbell will stimulate new strength gains

Powerlifting heavyweight Dan Green is an advocate of using the front squat to drive up back squat poundage. See tip 9 for more on the benefits of doing front squats!

Use the Powerlifting Squat (low bar, wide stance) to allow for greater loads to be lifted. This style of squat will allow for more forward lean which will bring the back more into action. The lift will be initiated by breaking at the hips and due to both the bar position and wide stance width, the depth will typically be limited to quads parallel which also increases the load lifted.

Safety squat bar squat uses a special barbell. The bar sits on the back in the same position as an Olympic style (high bar) with handles you hold in front of you while the sleeves for plates are lower set. The will cause the centre of gravity to shift lower and with your hands and elbows being up in front of you, the body position will be vertical. All of this combined will allow for heavier loads than a front squat and closer to those of the back squat while making achieving full depth easier than a back squat.

There are other barbells as well you can use like the buffalo bar, cambered bar, or tsunami bar for added variation. For the sake of this piece I'll stick to the more commonly available barbells.

As for when should you change up your squat programming, most trainees will adapt to any given program in 4-6 exposures to the same program. The most advanced, fast twitch gifted individuals will adapt in as little as 1-2 workouts! This doesn't mean you need to overhaul your entire program, but if your poundages have stalled, it may be a good time to try out a different squat style, so if you do lots of power lifter squats, give a high bar or front squat cycle a go.

11. Vary HOW you squat for continued progress

In the previous tip we went into different types of squats, now we will get into ways to vary how to squat.

Your stance width or foot position will change some recruitment patterns. A wide stance will cause a decrease in depth but increase in load (Powerlifter low bar squat). It will also bring in the adductors more. Narrowing the feet will hit the VMO and glute med more intensely.

If achieving depth is an issue due to ankle inflexibility or immobility, adding a heel wedge will drastically assist in the process. One reason weightlifters utilize weightlifting shoes, the shoe has a built in solid heel wedge. Of course you can achieve this by using a slant board or heel wedge (like made by Perform Better or Prime Fitness), but a more cost effective manner is contract a local carpenter who can make various angles for cheaper. One squat type that's extremely effective at developing the VMO in a hurry is the Cyclist squat. You set up back squat with a very high heel wedge, feet are about 6" apart and squat normally. This variation will have the knees far past your toes, forcing the vmo to stretch and be recruited powerfully.

Paused squats are another very effective plateau smashing method. Many trainees rely on "bouncing out of the hole" to get back up with heavy loads or as they fatigue. What they are doing innately is take advantage of the stretch-shortening reflect. As a muscle is stretched it builds up some elastic energy which when bouncing back up, will assist a lift. What a pause in the stretched position does is eliminate the elastic rebound. The longer the pause, the less elastic rebound there is. Various pause durations can be used, it's recommended having a spotter count them out because you will inevitably cut it short and count fast. The extended pauses force the hamstrings and VMO to get you out of the hold

An excellent way to utilize this is the Klokov squat, Dmitri's own tempo is 76X0 where he lowers for 7s, pauses at the bottom for 6s then explodes up. Another variation or complex he

likes, is to do a front squat followed by a back squat, both with a 55X0 tempo. These would be great for those needing explosive short term power like 5-10m sprint.

12. Bodybuilders and strength athletes should train differently.

Both elite level bodybuilders and weightlifters have significant hypertrophy gains in their legs. One thing that many people forget to distinguish is that it takes the weightlifter years of low rep work to reach significant levels of hypertrophy. As mentioned back in tip 7, for the legs to grow, they need significant time under tension and if you want your legs to grow faster, that means you need to do more reps and suffer under tension longer than 10s each rep. If you want to build big, impressive legs, we are talking a sweet spot of between 8 to 12 reps with excellent form and significant weight. Use a tempo that will have your TUT between 40-70s each set.
Tom Platz was known to have full squatted 500lbs for 23 reps and looking at his leg development, you can see why he could do this.

70% of a bodybuilder's training for squats should be done in this hypertrophy method zone. 15% of the time they should train with extraordinarily high reps, in excess of 20 and even as high as 50! Doing extremely high reps will fatigue all of the muscle fibre types. Tom Platz was also known for doing on occasion, continuous sets of 5-10 minutes on squats without racking the bar. So instead of number chasing a new 1RM, for bodybuilding purposes, keep track of your 8RM and 10RM. Continual progress on these is more critical for mass building purposes.

Because the focus for bodybuilders is more on tension and gaining mass, they should set up their squat with feet either medium or narrow and the bar should be Olympic high bar style on back squats. The feet should also be either flat heels or heels wedged, the more quad focus you want, the greater the heel elevation. Keeping in mind back to tip 1 as to the superiority of the full squat, you should squat to full depth, leaving a stain on the floor to illicit maximum stretch on the muscles and in turn, maximal recruitment and trauma.

Strength athletes like Power lifters and Weightlifters on the hand are focused on being as strong as humanly possible at their competition weight. So adding in unnecessary hypertrophy will only detract from performance. Their focus on maximal load means their squat training should be in the 3-5 rep range. The reason for not always performing maximal singles is that singles are extremely taxing on the nervous system and hard to recover from. Doing sets of 3-5 reps allows for developing strength without the same nervous system smashing. Also while intensity (percent of 1RM) is important for strength development, there is still a requirement for some TUT. One way to think of it is that singles are excellent for EXPRESSING strength while 3-5 reps are best to DEVELOP strength.

13. But there are points they should train similarly

There are times however where the training for both strength athletes and bodybuilding does overlap. 15% of the training for bodybuilding should actually consist of much heavier lifting in the 3-5 rep range. There are a few reasons for this:

1. The body does get bored of training for hypertrophy so a short cycle of more maximal strength will break up the monotony of it
2. Building maximal strength will allow for heavier loads to be lifted for more reps. When you return to the 8-12 rep range you should be capable of using more weight, stimulating new growth. This is even more valid if you've hit a plateau with the weight or reps you're doing with a given weight.

For bodybuilding purposes, there are instances where doing the powerlifting style (low bar) squat will accelerate progress. Due to the wider stance, more forward lean and shallower depth, more weight can be lifted which will stimulate the adductors, glutes and hamstrings more. Look at 8x Mr. Olympia Ronnie Coleman, there are videos of him squatting 800lbs and also doing high rep sets with 405lbs.

As for strength athletes, yes there are times they should actually train like a bodybuilder does on squats. Always training in the 3-5 rep range may allow for impressive loads, it does take a heavy toll on the body. Also working in the 8-12 rep range for strength athletes can be used when looking to move up in weight class or to improve work capacity. Adding some hypertrophy for strength athletes can help them remain at the "heavy" side of their weight class by ensuring their weight is indeed muscle as opposed to adipose tissue. Because of the strain on the body that 3-5 rep training does place, working at the higher rep range will stimulate and allow for the connective tissue to recover and for the spine to get a break all while still working on the same movement pattern

While weightlifters will already squat similarly technique wise with a high bar, full depth and upright torso, powerlifters can benefit from training with this technique to reduce muscular tension imbalances. For powerlifters, by adding greater depth and the strength from it, it will allow them to be stronger out of the hole in competition.

Weightlifters can benefit from the low bar squat as well. The change in position will only stimulate new strength gains for them which are always a good thing when throwing up and catching a few hundred pounds in the clean and snatch.

14. Accessory back work will improve strength in the squat.

In order to reach your potential in squats of all kinds, you will need a very strong back to anchor you. Also a strong back will make it easier to keep your position more upright especially on front squats where the mid-upper back isometrically contracts to keep your chest up. No world class squatter or weightlifter has a small weak back for this reason.
An excellent back exercise for this purpose is the chest supported T-bar row. The great thing about chest supported variation is that most trainees cheat and their legs do most of the work, so by taking the legs out of the equation, the back must do it. It's excellent for working the scapulae retractors without burning out the lower back. Adding in an isometric pause at the top of the concentric is excellent for this purpose as well, particularly when using as assistance for front squats. Atlantis makes an excellent machine for this exercise. It's recommended to do 5 sets of 5-8 reps with a 40X3 tempo or 6 sets of 4-6 with a 20X6 tempo.

Because the lower back strength and strength endurance is also a major limiting factor for squats, isolation exercises like back extensions will help Here. Best course of action is to vary the angle on back extensions. Most people will do these on a 45 degree bench or on the GHD (parallel to floor) but would be well served to do various other angles. Again adding isometric pauses at the top of the concentric will serve you well and also adding weight. This exercise you can do for higher repetitions to build up the strength endurance in the lower back erectors.

15. Accessory single leg work to strengthen weak links.

One often overlooked way to boost leg development and squat numbers is the importance of unilateral leg work. Everybody has one more dominant and stronger leg. By doing single leg work, you are able to help close the strength discrepancy between the two legs. The added bonus of doing single leg accessory exercises is the hypertrophy stimulus gained while giving the spine a break.
This covers all types of step ups, lunge variations and split squats, exercises that help to strengthen up weak links in the squat chain. All of these will help to improve hip and ankle mobility while stimulating the VMO directly, especially in the Poliquin step up variation which was designed to more isolate the VMO.

16. Achieve structural balance between the main lifts.

The big 3 lower body lifts should be kept within balance of one another, that being the Olympic Style back squat, front squat and the clean grip deadlift. Using the back squat as the “mother lift” for the lower body, your 1RM on the front squat should be about 85% of your back squat and your clean grip deadlift should be 117% of your back squat. If your numbers vary significantly from these percentages, that’s an immediate red flag of a serious imbalance which is holding your progress back while placing you at risk for injury.

17. Use accommodating resistance bands and chains

As previously mentioned, when doing the concentric portion of the lift, you want to accelerate the load. One way to force yourself into doing this is thru the use of accommodating resistance. This is where the load actually increases as you lift the load and decreases as you lower it. There are 2 primary ways of accomplishing this; using chains or using strength bands (very large elastic bands).

The purpose of this is to more accurately match the strength curve in the squat. Squats have what is referred to as an ascending strength curve, meaning you get stronger on the lift as you get closer to the top of the concentric. By using bands or chains, the load at the top of the lift is actually the greatest, where you are strongest. The catch here is that in order to maximize and successfully complete the lift, you MUST actually try to lift as fast as possible.

There is a difference between bands and chains despite being used for the same purpose. Chains add a more linear increase in load, especially when using straight chain links. Here you attach full length chains directly to the barbell. The other common way which was popularized by the

Westside Method, is to use a feeder loop or chain that's attached directly to the barbell and the added load of chains are attached lower down to this feeder loop. What this does is create a more sudden load jump in the top half of the lift.

Bands on the other hand are used in 2 ways, either as additional load or reverse band. Reverse banding makes the initial bar load lighter as the bands are helping to take some of the load. At the top of the lift, the bands should be slack so the trainee is now lifting the entire loaded barbell. This set up is usually more difficult on squats because of the bar path and is typically used more on deadlift for the lower body.

The most common use of bands is as added resistance by looping the band around the barbell while having it fixed to the squat rack (or very heavy dumbbells if using squat stands). Bands are usually found to be much more taxing on the tendons than chains. Reason being is they add more of an exponential load increase while chains are more linear. As well the load increase can be very sudden as the bands build tension.

The payoff to this gruelling work is that you will learn very quickly to accelerate the bar otherwise you will not successfully lift it. What this does for your normal squat is speeds up the concentric, improving rate of force development (RFD) and in turn the increases the amount you can lift. I don't recommend using accommodating resistance every session in a cycle, I prefer to use it every other workout for best results.

18. Strengthen and prioritize VMO development early for stronger, healthier, more stable knees.

The VMO has been a constant theme throughout these tips and for great reason. Due to its position on the medial side of the knee, it's purpose is to maintain stability of the knee and keep it tracking properly. That means when accelerating or stopping to change direction in sports or under heavy load on a squat, it's job it to prevent the knee from collapsing in.

Many knee injuries occur as a result of acceleration and change of direction forces and a medial collapse of the knee, particularly ACL injuries in women. A stronger and better developed VMO will go a long way in injuring prevention and improving the long term health of the knee joint.

19. Use strongman training as well.

Using strongman style training will help to increase strength in some weak squat links while adding a new challenging and often times, fun style of training. Due to the unorthodox nature of strongman training and the implements, the body will be stimulated in ways a traditional barbell won't cause. It will put you into different positions than normal or will have you carrying a load differently, remember that variety is the spice of progress. 2 simple yet highly effective are the farmers walk, these help with the walk out. Stan "the rhino" Efferding is a strong proponent of these. And Reverse sled drags with very heavy loads will help strengthen up the lockout while boosting lactic tolerance.

20. Strengthen the hamstrings and calves to improve your squats

Going back to the point about structural balance, our body likes to try to keep things in balance the best that it can. Since the quadriceps and glutes are the primary movers on squats, the hamstrings need to be sufficiently strong to balance out this strength. Also a stronger set of hamstrings will make getting out of the bottom of a squat easier as their secondary function is that of a hip extensor!

Improving your calves strength will pay dividends in the added stability they afford both the knee and ankle joint. Since the calf and Achilles are forced to stretch in a full squat, strengthening them will help to protect them under heavy load.