

Neuro Strength Report

Welcome to Neuro Strength Report. My name is Dr. Kareem Samhouri. I'm a Kinesiologist, I'm a Doctor of Physical Therapy, I'm a certified Strength and Conditioning Specialist, and I'm a Health and Fitness Specialist. My area of expertise is simply this: I focus on activating the nervous system in order to enhance muscle recruitment and get more from each and every repetition that you do.

By following this simple method and looking at the different categories that we will be discussing below, you are going to begin to understand how to communicate with your nervous system in order to enhance muscular benefit and increase strength recruitment from each and every exercise you do, thereby maximizing the result of each and every repetition that you go through.

This truly is kind of like cheating. I intend to show you in this simple report a few strategies that you can implement, starting immediately, that are guaranteed to produce astronomical results when it comes to recruiting muscle, building increased soft tissue around that area, decreasing myofascial restrictions in order to increase the length of that muscle and contractile strength, and increasing pre-motor activation in order to enhance motor unit recruitment.

Simply said, this means you will be able to send stronger signals to your muscle, you will be able to get more muscle fibers involved, you will be able to lift more weight and you will be able to see strength results sooner with a decreased risk of injury. The bottom line is, this is the secret to gaining strength.

Let's talk about gaining muscle through neural strength in three basic categories. Number one, muscle activation, number two, muscle contraction and number three, muscle recovery. In the report today, you're also going to be hearing about neural gliding, coordination training, reaction time training or agility training, quick stretch, reciprocal inhibition and mobility versus flexibility and exactly how you know what to do and when to increase muscle length versus when to increase muscle strength for the best and most optimal result.

Ultimately, I know one thing is true. I know you want the greatest result possible in the least amount of time possible. I want that exact same thing. For this reason, I've worked with the Penn State Powerlifting Team. I've worked with Olympic athletes. I've worked with professional athletes. I've tested and tweaked every program over time to guarantee that you can actually get the result that you're looking for.

So, let's go ahead and start with muscle activation. You see, muscle activation all comes from two areas of your brain, and that is your pre-motor area and your motor area. Your pre-motor area actually functions to plan movement and increase contractile strength by upwards of 30% once you have the proper movement plan and scheme in mind.

Here's an easy way to think about that. If I were to just make a bicep, so I'm flexing my bicep, and just try to flex as hard as I can, that would be one thing. Now, I want you to take a step back, close your eyes for a moment. I want you to picture your biceps. I want you to picture making yourself the biggest muscle you've ever made in your entire life, and now, before you open your eyes at all, I want you to picture all of a sudden 100 pounds goes into the palm of your hand while your elbow's bent by your side. You have to resist this, because you're worried for a second that this weight is going to drop on somebody that's standing just below you. Now, make a biceps. Experience the difference of muscle activation by properly recruiting muscle through your pre-motor area first.

You know, this all goes back to a story that I learned when I was taking the sports psychology class at Penn State University. And I have to tell you, I was blown away. You see, there is a Russian Olympic diver who taught this class that decided he was not going to teach his 16 year old son, for his entire life, until he turned 16, how to dive, and he theorized as a sports psychologist that his son would make the Olympic team.

I'll have you know that within six months he was able to qualify for the Olympic team. But, his father had taken him through a mentally rehearsed, each and every dive that he was going to need to do.

This is absolutely astounding information, and it goes to show you how little control we actually have over our brains versus the amount of control our brains have over us. All the way down through movement, just through imagination.

So, imagine this. Imagine you were 15 pounds stronger. Imagine your muscle was the easiest thing to form. Imagine balance around your body because you can picture your muscles already shaped correctly and you know what they feel like when you contract. Inside of your mind's eye, how powerful are you? Because, unless you start there, it's a sure bet you're leaving 30% on the table.

Now, let's go ahead and move beyond that 30% and talk about realizing potential that exceeds upwards to 100 to 200 percent of the strength that you have in each and every movement you do. See, now it's time that we step into the territory of the motor area of your brain.

Let me explain to you, the motor area, this is like a goldmine when it comes to your strength. You see, you could just try to grunt it out every single time through your muscle, but the bottom line is, you're going to be missing most of what you came to the gym for. Instead, let's work on muscle activation, top down. Let's plan that movement, let's enhance motor unit recruitment by adding certain tricks or neuro tricks to the equation.

For example, the next time you go to do bicep curls, I want you to start with the muscle just barely shortened, meaning that your elbow's just slightly flexed, let the weight extend, not bouncing at the bottom, but just extend enough that you're coming right back up as soon as your elbow's fully extended, and watch your strength increase. This has legitimately been shown on multiple occasions to produce between 12 and 16 percent increased contractile strength simply by adding what's called a quick stretch. Going from just barely having your elbows bent to straight and then bending up.

You know, it's almost like plyometrics in this sense, because the speed and change of direction. Well, this enhances muscle unit recruitment or motor unit recruitment and ultimately muscle power. This is where it's at.

You see, power is just the amount of work done over time. So, if you can exert more work over a smaller amount of time, then ultimately you're leading to a stronger contraction. The stronger contraction, at least while you're training your type 2B fibers, which are the most important fibers when it comes to building strength, you will remain more successful with your lifting program because you've thought about it this way.

Let's back up and take a closer look at this. Let's take a closer look at another example. In bench press, rather than starting with my arms fully extended above me while I'm lying on the bench, instead I'm just going to bend my elbows slightly, allow my pecs to start to turn on, push up to the top and then come back down. Now I've used this quick stretch phenomenon to increase muscle activation. But, the coolest part about this is this is only one example. There are other ways to do this.

Some people tell me I have a really easy time developing lateral pec, meaning I really get good definition close to my shoulder. But, I have the hardest time developing cleavage. And don't feel bad, guys want cleavage, girls want cleavage, it's the same thing. We all want that kind of definition.

So, check it out. What happens if I tap on the muscle, just with my fingers. I just tap on the muscle where I want it to activate and I say, "Hey brain, this spot right here." Just by sending that signal, that's called an afferent signal. That's a signal from my muscle up to my brain. An efferent signal exits from my brain and goes back to my

muscle. I'm saying, "Hey you, over here," and I'm getting more muscle activated. What a ridiculously simple strategy to do just before you hit your set of pushups.

What happens if you think one breast is actually sitting higher or lower than the other? Wouldn't it be nice to even that out? We all crave symmetry and so does the opposite sex. So, it's not wrong, it's right. By increasing muscle activation you're going to create symmetrical balance in your body, you're going to activate more muscle, you're going to get results faster, but you know what? You're also going to look a heck of a lot better.

Muscle activation is really the key to getting what you want from your lifting program outside of the muscle itself. We all want to look better or we wouldn't go to the gym and we wouldn't work so hard. We wouldn't torture ourselves as we do. We want the adrenaline release, but we want to feel like we got everything we could out of that moment in the gym, each and every time. Today I'm going to teach you exactly how to get each and every thing out of all of your muscles on each and every workout.

By activating the pre-motor area with a quick stretch or with muscle tapping, we're increasing contractile strength and more muscle fiber's being recruited. But, what about changing joint angle or joint position from exercise to exercise? Instead of doing three sets of bench press, what happens if we go from bench to incline to decline? Again, not my favorite exercise in the world, but let's use a very simple example that everybody understands.

Now, we've changed joint angle or position. You see, muscle fibers don't run in only one direction. They run diagonally, horizontally, vertically, they run up, down, side to side. In some cases they even have a little bit of a curvature to them. So, unless we stress this muscle tissue in many directions, it's unlikely that we're going to recruit the entire muscle, thereby activating less muscle.

Well, that's great if you want a little mounded type bicep and the rest of your arm to be a turkey wing. But, it's not really going to work out if you actually want to get rid of that extra fat and build the muscle in the areas that seem to be the problem spots like love handles, or like thunder thighs or like turkey wing flaps underneath your triceps. I'm not poking fun, let's face facts. These are the areas where you lack muscle activation. And sure, there's an increased body fat percentage, but you know what gets easier? Burning fat when you build muscle. So, increasing muscle, you're going to burn fat more easily, gain definition more easily and look better.

Let's move on. Muscle contraction, you see, muscle contraction is a really important thing to consider. Well, that's where we usually are. So, we're just going to do, for example an isotonic movement. Isotonic movement is like a moving contraction

or a shortening contraction followed by a lengthening contraction. I know that sounds almost like I'm actually contradicting myself. But, the truth is, that's exactly what it is. What you're doing is you're shortening a muscle with resistance on that muscle and then you're lengthening muscle with resistance on that muscle in just any movement that you're doing in the gym.

But, we're really missing the boat. You see, there's two other foundational kinds of movement that can ultimately affect your strength. There's isokinetic, which you should not waste your time on, which is a constant speed and variable resistance. That's actually not great and the research has failed time and time and time again. So, if you ever see that as kinetic machines, I'm going to discourage you from using them.

And then, there's isometric. Isometric not in the typical sense, just holding a position and hoping that you're going to get stronger, like putting on electrodes on your abs and then saying, "I'm going to squeeze my abs as hard as I can and expect them to get jacked." But, isometrics in the sense of hitting that point where you can't get that last pull-up, where you're at that spot and instead of saying, "I can't get it," holding for ten seconds, nine, eight, seven, six, five, four, three, two, one...and then slowly, eccentrically loading that muscle on your way down.

You see, eccentric strengthening happens twice as fast as concentric. So, I ask you, with gravity weighing down against you and an opportunity to gain twice as much muscle, why would you ever go down quickly? Why would you ever put that much effort forth and then go down quickly? Gain that isometric hold and you will gain strength for ten degrees of range of motion in either direction. Which means, if you can't quite get your chin above the bar, in the example of the pull-up, but you hold just underneath of the bar and you do that for every repetition, no matter how hard and no matter how much stubborn will power it take, imagine what's going to happen in just inside of a week or two when you gain strength for ten degrees of range of motion. You're going to be above that bar.

You see, now you're exercising in a full range of motion and it's only a matter of time until you add a weight vest, until you add different speeds, until you add power training and plyometric pull-ups to your routine. By simply understanding when to use the right form of contraction you can completely change your program.

A lot of people ask me why I'm able to lift the amount of weight I am at the size I am. And the truth is, there's no real secret. It's knowing what kind of exercise to do at the right moment to build the optimal kind of strength. It comes down to a couple of principles. Number one, contractions don't only happen quickly, they happen slowly. Your body's capable of both so I need to train both in all the gray zones that lay in between. Without overcomplicating everything, I could chose one fast rep, one slow,

one medium, but that would probably get frustrating. So, instead, I have slow days, fast days and medium days.

The super slow days are ten seconds down, ten seconds up. They drive me nuts so I pick two muscle groups to do that for and I stick with that plan for two weeks straight. By changing temp, I change the outcome of my muscle. By changing angle, I change the outcome of my muscle. By changing neural recruitment technique, I change the outcome of my muscle. By knowing when to eccentrically load a muscle and use negatives to my advantage versus just using negatives for the heck of it, I change my muscle. By using isometrics within isotonic as opposed to just progressive isometrics where you never even move your muscle, or lengthen and shorten it, I change my muscle and I allow it to grow. By knowing that I can gain ten degrees of range of motion when I can't get to the bottom of a squat successfully at 225 pounds, but I can do just fine at 185 and I can't understand for the life of me why I can go almost all the way, but never get there, I haven't done isometric squat yet, and I know that I'm actually losing out on that ten degrees of range of motion and slowing down my progress for a long time to come.

You see, by activating muscle properly and then using the proper contractile strategies, you are at a serious advantage with your muscle building program, and that, my friends, is neuro strengthening. Neuro strengthening really is the secret because it's speaking to your command center first.

When it comes to increasing contractile strength there are other things that we will need to discuss such as coordination training. You see, if exercise isn't so hard to balance and make sense of, well, if you're more coordinated you're going to build more muscle because you're not going to have to try as hard and recruit as many accessory muscles just to try to stabilize the weight and hope for the best. Instead, you're going to know that you're going to reap success.

Let's talk about muscle recovery. It really doesn't matter what we do for muscle activation or contraction unless we help our muscle recover. Because, without recovery we simply cannot do the next set with the same level of success. Let's reap the most potential from every exercise and every rep and every set that we do. By properly allowing a muscle to recover, we're creating an environment for change. So, there's muscle recovery as it applied to an entire workout, but there's also muscle recovery as it applies to an individual exercise.

We'll talk a little bit later about reciprocal inhibition and how this can assist in muscle recovery by turning off neurological signal to the involved tissue and turning it on to the uninvolved, thereby actually providing a better rest than rest itself. But, let's just go for rest periods and start there.

You see, for a muscle to properly recover for a fast twitch type movement, depending on whether or not it's sprint or if it's just in the anaerobic territory and type 2B fiber territory. I'm going pretty fast. In this situation, it could take between two and five minutes for that muscle to recover before it's ready for another load. We don't want your heart rate to drop that much or you're liable to gain fat. This is sort of...well, this is a cool area to consider.

A lot of people believe that you either bulk-up and get fat, or shave down and get skinny and lose your muscle. What about the in-between zone? What about the idea of working other muscle groups while allowing my pecs to recover? What about the idea of choosing my non-emphasized muscles of the day as all my super sets to maintain increased cardiovascular demand throughout my entire exercise program and allow just 90 second rest periods instead of five minutes? That could be all the difference, couldn't it?

So, let's give a practical example. Let's say that in this example I'm going to do bent leg deadlifts and I'm going to work my tail off and I'm going to hit six repetitions and I know that my hamstrings, glutes and low back extensors simply need to recovery for a heck of a lot longer than just the next 90 seconds. But, I don't want my heart rate to fall because I don't want to get fat and strong. I want to stay lean and strong. So, instead, I'm going to switch it up and I'm going to hit a set of pushups. Then, I'm going to hit a set of pull-ups, then I'm going to do thera-band rows. Then, I'm going to do pull-up assist to burnout pull-up muscles. Then, I'm going to do pushup progression on the ball, making sure to assist my body as much as necessary, but hit that endurance zone. Then, I'm going to switch it up again and I'm going to go to smaller muscle groups and now I'm going to hit dip assist, going for high repetitions between 15 and 25 reps before I finish off with three position bicep curls.

Aha! Five minutes has passed, hasn't it? In that five minute period I'm ready to do my bent leg deadlifts all over again, and possibly take 90 seconds to recover, just to grab that drink of water or let my arms climb down so that I don't suffer from a lack of grip strength in my set to follow. But, there's a way around that, too, isn't there? You get wrist straps.

You see, by allowing yourself slight modifications to your exercise program, in order to enhance the effect of staying lean and getting stronger at the exact same time, you're actually cutting out the majority of work and the majority of repetition, ultimately leading towards increase incidents of injury, increased incidents of frustration and decreased muscle.

Let's talk about a solution that really considers the whole body instead of considering opposite poles as something that's impossible and there's no gray in

between. Instead, let's get smart, but not smart on our own, let's think about the way our command center naturally works. Let's think about signals our body wants to send and let's think about a purpose that our body wants to have. You see, your body wants to recover and it wants to be able to push that boulder the next time, just like when we were cavemen or cavewomen. Your body wants to be able to use your chest again, but it knows it can only give so much when your child's stuck underneath that car. That's that example of the woman lifting a car. Well, she couldn't have done six reps of it no matter how strong she felt. She could have only done one. But, she probably could have waited five minutes and done another. This is what it takes to recover fast twitch muscle fiber.

On the other hand, slow twitch muscle fiber, oxidative muscle fiber, in this case, recovery actually is a lack of rest. Because, the moment you start resting is the moment that you start to produce lactic acid in this capacity. That's why after a long run you can still get sore, because you do produce lactic acid, that onset takes place. So, in this case, we need to instead of cutting out your exercise, reduce the intensity from an eight out of ten to a four out of ten, but keep you there the entire time.

So, if we're training for endurance and we're training for toning and we want to recruit as much of that type 1 muscle fiber as possible, and that's the kind of stuff that most of us are born with unless you picked your parents right. In this situation, our recovery periods actually turn into a four out of ten intensity where ten is passing-out fatigue and zero is nothing at all. We hit our main sets up at an eight out of ten, but then we never ever completely rest. We just another body part moving.

By utilizing muscle recovery according to the specific kind of muscle fiber we're using, we are going to enhance muscle recovery and gain more from the following set to come. Not only this, but by switching muscle groups back and forth, as I gave an example before, and we'll get into this in greater detail with reciprocal inhibition, we're actually going to assist muscle recovery for the following session, ultimately gaining more week after week after week.

It's going to be these pounds of muscle with decreased strain on your joints, and an increased physique and just a better self-confidence that's going to drive you back to the gym over and over and over again, ultimately leading towards pushing yourself harder and getting more from each and every day's workout.

But, first and foremost, remember muscle activation. Once you've considered how to properly activate a muscle, remember the different forms of contraction. Once you've gotten through all of that, have a strategic plan to recover your muscle in the greatest way possible to prepare yourself for the following set.

We are talking about the neuro difference. We're talking about neuro strengthening. We're talking about the answer to building muscle faster than anything you've ever seen.

Let's get into neuro gliding. A lot of people really don't even know what this is about. Neuro dynamics is sort of the movement of our nervous system within your skin. So, if we consider nerves kind of deep to muscle tissue, so there's skin on top and there's muscle underneath, there's this weird stuff called fascia in between. Fascia's like this connective web of tissue that's kind of like spider webs within your body. It gives your body shape or form. And then, we go down and we hit muscle and then woven into this muscle and arteries and veins and everything else is this fascia, there's different layers. Then, we get down to these little white sort of vessels and these white vessels are nerves.

The thing is, they get bundled up in this fascia sometimes and muscles press on them and cut off blood supply, because nerves need blood supply, too. And sometimes they just become restricted. It's like, what if I just squeezed your forearm as hard as I could for the longest time? Couldn't you feel your hand go numb? Well, you could feel that through arterial blood flow, or you could also feel that if I pressed on your median nerve or anterior interosseous nerve, depending on the location.

So, now we have to consider, couldn't this be happening inside of our body when we do a lot of forearm curls? Couldn't we be tightening up that tissue and decreasing sensation and motor input from those nerves to those muscles? Of course! It just makes sense.

So, what are we going to do about it? Well, we have to use neuro dynamics and neural gliding in order to be able to assist the freeing of these nerves and increase electrical signal to each and every muscle underneath this restriction. So you remember, nerves start top down. So, neuro dynamics needs to start in the same direction. You see, I have to release my shoulder before I can release my elbow, before I can release my wrist. I have to release my hip before I can release my knee, before I can release my ankle. And all of this needs to start central to the spinal nerve root where it comes out. So, it's not like neck before low back. It's actually not that at all. It's just where that peripheral nerve comes out from your spine.

Let me explain. At each and every level of your vertebrae, or your spinal column, what happens is you have part of your spinal cord that exits out and turns into instead of a part of your central nervous system in your spinal cord, it turns into your peripheral nervous system as it comes out as a little spinal nerve root.

This is the first opportunity for a nerve to get pinched. See, vertebrae get stuck on one another after a while because we're pretty sedentary. We grow up going to grade school, we sit at desks, we end up not moving and rather than when we were children, we could bend and be roly-pollies in each and every position, we learn to rotate from four, maybe five segments of our spine as opposed to all of them.

Think about it this way, there are seven cervical segments. There are twelve thoracic, there are five lumbar and that's without even getting into your sacrum and coccyx. So, now all of sudden we're moving from four or five segments total to do all of the work for our entire spine and yet we don't expect herniated disks? Yet we don't expect a nerve to get pinched or a vertebra to be side-bent into that tissue cause one area of a muscle to get shorter in the opposite side as it's rotated to get longer? Of course it's going to pull back and that nerve's going to get pinched in the process thereby cutting off just ever so slightly the blood supply to that nerve.

So, now all of a sudden instead of just being a star up in the sky, we've got a shooting star that's shooting off bursts of this electricity. Well, these bursts of electricity end up leading to improper conduction and that improper conduction forces the inside of my biceps to contract harder than the outside of my biceps and turns my triceps off completely. In this situation, now I'm building muscular imbalance, ultimately leading to my body saying, "Hey, wait! I could tear," and scarring down, because your body's just trying to heal.

At this very moment your body starts to compress the nerve, chokes the oxygen out of the nerve that comes in the blood and now, you're in a position where you have neural restriction. This cycle is vicious. It will work its way all the way down to your fingers. In fact, many of us call this carpal tunnel. I have never in any of my years as a doctor of physical therapy ever seen carpal tunnel not originate in the neck. Time and time and time again, the way that I'm able to help people avoid surgery is by releasing the nerve in their neck first and then working my way down the entire upper extremity. Speak to any good hand therapist and they'll tell you the same thing.

The same thing is going to be true with aquiles tendonitis and the IT band in the hip. This is all happening because of too much conduction of a nerve and too much pinching and these fireworks going off or the shooting start effect as the star is about to burn out of the sky. It's the same thing taking place in your nervous system.

But, the good news is, there are simple exercises you can do to increase the mobility of your nerves. You see, your nerves are kind of like when you're lying in a bathtub where if you're lying in a bathtub and you scoot to one side, all the water scoots over to the other, and maybe if there was like something sticky against that wall, you

could stick to that wall and all the water would stay on the other side. That would be even a more true representation of your nerves.

So, what do we have to do? We just have to flush enough water by that side of your skin that's stuck to the bathtub wall and you're going to fall off and be slippery all over again and bathe back and forth. Once you do, you'll receive proper blood supply, nutrition, oxygen and you'll be able to increase contractile strength to each and every nerve so we could try with everything inside of us. We could activate all the right areas of our brain. But, if that nerve is caught, if it's being pinched, if it's being compressed, then we're choking. We're suffocating; we're trying to get a signal where it just can't go. So, we have to free that nerve. It's mobility exercises with a specific emphasis on lengthening and shortening nerves at the exact same time that creates this effect.

Let's use the sciatic nerve as an example. A lot of people know hamstring stretch, laying on your back, one knee bent and you're going to extend the other knee while bringing your toes up towards your face, possibly, at the same time. But, most people don't know why it just burns so much more when they bring their toes up towards their face, or dorsi flex, as they go through this exercise.

The reason it burns that much more is because you're actually adding a stretch to your sciatic nerve. By dorsi flexing your foot or bringing your toes up as you go through this exercise, you're actually stretching your sciatic nerve until it changes names and then it goes into your tibial nerve and then it goes into your sural nerve before it inserts into your heel. But, it's all the same freakin' tissue. It's all pulling on the same stuff and now, all of a sudden, the sciatic nerve, even though it changes names, innervates all the muscle in the back of your leg. Now you start feeling the pull behind your knee and possibly even into your calf. But, you thought you were stretching your hamstrings.

So, what if we say at the top that you release your foot and point your toes and come back down as you bend your knee? We use that as an exercise, but now we start playing angles and we go diagonally up with our knee and then we go diagonally out with our knee. So now it's knee to opposite shoulder, extend your knee, and then it's knee to same side shoulder, extend your knee. In this situation, now we're going to hit diagonals and maybe just maybe, we're going to flush enough water through that side of the nerve that's caught against the wall and allow it to bathe in that fluid once again, and flow freely.

It's in this situation that we'll start increasing muscle contraction, improve muscular balancing and overall increase the effect of our strengthening program. You see, through proper neuro dynamics we can free our nerves and we can create change that we couldn't otherwise create because the electrical signal wasn't there.

Let's use the upper extremity as an example. I don't know how many people can related to back in grade school when you used to take your fingers, take your index finger and thumb and place them almost like they're circles so your other fingers are sticking up, then flip them upside down like they're goggles and actually hold them against your face. Well, as it turns out, that's actually neuro dynamics for your ulnar nerve. Now, if this is causing irritation, I do not recommend you do this, and definitely never more than three sets of fifteen, whether it's causing irritation or not. Stretching nerves is no joke and you have to be slow and you have to be controlled. Otherwise, you're going to know tomorrow when you feel like fire. So, please be careful.

However, going through this slowly until you feel a light stretch and going back through and starting back at the position where you have index finger to thumb. And over and over again, tipping them upside down and forming those goggles is actually going to reduce the restriction in your ulnar nerve by your elbow.

You might be wondering, what's my ulnar nerve? So, let me explain. You ever hit your funny bone? Your funny bone is your ulnar nerve. That feeling that goes into your pinkie, that's because you hit a nerve, your ulnar nerve. So, by increasing mobility in this area, you could hit your funny bone over and over and over again, but you won't feel that sensation because it's not restricted. But, if you've ever hit your funny bone, it's a good bet that your body tried to scar down just a little bit, and that is going to create the restriction that's ultimately leading to poor muscular contraction on that lateral side or pinkie side of your forearm, ultimately leading towards the inside or thumb side of your forearm working harder.

If that side of your forearm's working harder and harder and harder, well, that's the area that's innervated by that median nerve that changes names as well. That leads to carpal tunnel. But, it's no wonder, right? It was all that restriction of the funny bone to begin with. And maybe all that actually started up at C7 where that nerve exits to begin with. Maybe that all happened because we sit with forward shoulders and our head's extended at a computer screen because the computer screen is at the wrong height instead of the middle of the screening being at eye level. Now, we're forced into that position where we have to look up all the time or we're trying to avoid the double chin and so we do the same thing.

You see, that leads to abnormal compression that ultimately leads to that whole funny bone becoming sensitive and all this took place little, by little, by little. Increased neuro dynamics and you'll increase strength.

Let's talk about coordination training. Well, coordination training is the gem of all strength. The reason for this is, when you can better coordinate a movement, there's no question that you can focus your efforts specifically on that movement.

Let's go back to muscle activation for a minute and remember mental imagery of that movement. You see, if I know how I'm going to move then there's no question that I'm going to be able to just execute. So, imagine like a swimmer at a dive block and the first time that you ever tried to jump off that dive block and you're like, well, where do I go? Am I going to belly-flop? I'm not quite sure. Should my arms be overhead, should I be squeezing my ears? This bathing suit's a little bit tight on me. My feet, I don't know if they should be shoulder width apart, hip width apart. I don't know if I should be toed-out, should one foot be forward or the other foot be back?

I've got all of this confused signal going on trying to say, "Am I in the right position? Am I not? Should my back be rounded?" All of this feedback's going on and my body doesn't know what to do. So, it starts firing every muscle it possibly can. But, what about the experienced swimmer? He hops on a block and never even has to think about it before their hand goes down onto that race block, pops up, dives into the water and never even questions how they're going to land. You see, that person's only focused on the right pathways, the right muscles and they're only sending the right signals through the fastest tracks possible.

You see, your nervous system is kind of like stereo wire. Your nerve tracks are sort of like stereo wire tracks in the sense that the thicker the wire the better the conductance, the louder the sound. So, in this situation, when we're able to send a very direct signal, we're using our thicker stereo wire. It's just simply put, more efficient and more effective.

By enhancing coordination, ultimately what we're going to do is send a very specific signal to a very specific set of muscles to coordinate a movement. In the case of the bench press example, this would be pec major, pec minor, triceps. Hopefully all three heads of the triceps, but if you're like most people, it's lateral head and long head, if you're lucky. But, there's a medial head that's missing all the time that could increase contractile strength to the triceps of upwards of 15 to 18 percent, just by that one head. So, now you can get that much more out of every repetition of bench press. You're going to fatigue out 15 to 18 percent later because of the fact that you've coordinated movement properly and recruited the right muscle. You've activated the muscle and now you're coordinated the movement and now it's going to get easy.

What happens if you could do things with your eyes closed and open safely? Well, now all of a sudden you're depending on sensation on the bottom of your feet. That's called your somatosensory system. There's three areas that contribute to balance: inner ear, vision and somatosensory.

So, the inner ear we can't have that great of a change on. You're kind of born with what you get, and that can change over time. Vision, you know I can't help

whether or not you wear glasses or not, but hopefully you're going to get that corrected before you workout so you don't have to struggle with that part while you're weight training. And somatosensory, where we can develop increase sensory nerve endings on the bottom of our feet and hands in order to better understand where we are in space and what that weight feels like and how it's responding in our joints.

If we enhance this by specifically targeting exercises that can do this, like for example, taking a dyna disk, flipping it upside down and doing exercises in our socks or bare feet so that we can increase sensory nerve endings on the bottom of our feet. Well then, balance isn't going to be the problem when we're squatting or lunging. When we're throwing that barbell up on our back and we're trying to do a forward lunge and bounce off real hard and hit that power rep, balance isn't going to be the issue and we're going to recruit the muscle just the way we wanted to, gaining more from each and every repetition. Enhance coordination and you will enhance strength. Not only that, but you'll stop feeling like a klutz and you'll get a better result from every workout that you do.

Let's talk about reaction time training and agility. You really can't change the time or reaction time. It's somewhat trainable, but what you can change is the moment that you actually interpret the signal of saying it's time to go and the moment that you actually execute that movement, as opposed to the moment that like the gun goes off and you hear it. That's not the part you can change. So, the moment that you actually hear it to the moment you execute the movement, well, that's agility. That's change of direction in the fastest way possible.

Tennis players are an excellent example of this. But, we need to be able to create this in our gym program as well. By working on agility and reaction time we're ultimately enhancing the ability of each and every power repetition that we can do as well as plyometric exercise.

Think about plyometric exercise like a depth jump or a box jump where you're starting up on a box, jump down and then you have to land and jump right back off the ground as fast as possible, focus on that change of direction or the speed of change of direction. Meaning that, as you land with your knees bent, you're trying to extend them up and get off the ground as fast as you possibly can. So, you're going to cradle yourself into the ground, try to switch directions.

Well, by enhancing reaction time, which is truly just enhancing agility, you're going to enhance your ability to get more from each plyometric rep that you do. But, do you remember when we said that gravity is assisting so it's increasing the contractile strength when we're talking about muscle activation? So if you can increase agility on a

plyometric exercise, ultimately what you're actually doing is getting a better effect from gravity and so, you're going to get a stronger contraction.

There's a lot of physics that actually relates to this that says, any force that you exert upon the ground, the ground will exert an equal and opposite force upon you. So, in this situation when we add the acceleration of our body towards the ground, gravity and everything else together, as we accelerate towards the ground, if we can react quickly enough, the ground will actually push back up harder at us than what we weight, and so, we can overload our muscle.

It's this overload principle that applied to all of your strength training. So, the question is, can you get enough muscle activated to overload it properly and once you do, can you move quickly enough to take advantage of everything that you've worked for?

By working on agility, change of direction, doing some exercises forward/backwards, doing some side-to-side, doing some with rotation, but also having to do some based off of a reaction like for example, waiting for the clock to hit the six. So, it hits the 30 mark and then right at that moment, starting your set. Or, working off of a whistle and every single time the whistle blows is where you start your rep or where you change directions or where you have to stop or start. That's where buddy training comes in, by working on sprint work.

Doing these kinds of things will tax your muscle in new and different ways and ultimately lead to increased power efficacy with power based exercises and plyometrics that you do as well as multi directional utility of each muscle, thereby building more muscle.

Let's talk about the quick stretch in a little bit more detail. Most people know what the quick stretch is by the patella reflex. The patella reflex is when you go to the doctor and they tap you with the reflex hammer and your leg kicks up. Lots of us know what that is, but why? That's the most primitive reflex in our body. That's called a stretch reflex or a quick stretch. And what happens is, when we rapidly lengthen a muscle and there's a stretch receptor that says, "Contract so I don't tear." And that rapid lengthening or the hammer pressing against a tendon is putting pressure on the tendon, thereby lengthening it by compressing right at that specific region. It has to lengthen somewhere else. So, your body says, "Well, shorten." And when it shortens, your leg kicks out straight because your quadriceps tendon and your patellar tendon's job with your quad is to extend your knee. So, it's forcing a contraction where you wouldn't have otherwise have gone for it.

We can use this same principle with our biceps, our triceps, our chest, our lats, our traps, our delts. We can use it with our quads, our hamstrings, our calves, our low back extensors, our glutes. By using quick stretch, by moving from an end range of position, slightly out, back to the end range and then going through the repetition, not bouncing, but moving controlled, we can actually force the same thing as that knee reflex out of every exercise. You know how freakin' strong you are with the knee reflex? I'll tell you what, as a physical therapist, you learn pretty quickly to protect what's important when you're doing that test. People can really kick hard without even knowing they're doing it.

Quick stretches can be absolutely fascinating to add to your exercise program. Let me give you an example on the squat rack. Let's say a barbell squat, where I've got the barbell up in a low squat position on my back. Instead of standing to start, I'm going to start with my knees slightly bent, stand up, squat all the way down and then stand back up. In this situation what I've done is I've incorporated the quick stretch by changing that length right near the end range of motion. So, I'm actually increasing the efferent signal or the signal exiting from my brain to the muscle after I had sent sort of a signal from my muscle to my brain saying, "Hey brain, right here."

It's through this communication strategy that I can enhance muscular recruitment and lead to more muscle activation. You see, neuro strength is all about activation. It's all about what happens as a result of that.

So, let's go ahead and move on from quick stretch to reciprocal inhibition. It's just a fancy term to really discuss how you can turn off an equal and opposite muscle by contracting the equal and opposite muscle. So, this is like an agonist/antagonist relation. A lot of people get, you're going to lift heavy on bi's on one day and tri's heavier on another day. But, why is that and what should you be doing in between?

Should you totally ignore triceps when you're lifting heavy bi's? I don't think so and this is going to compete with many schools of thought. Here's why. When I increase signal to my biceps, I decrease signal to my triceps unless I'm purposely keeping my arms stiff. Otherwise, I would be stuck, unable to move. This is just natural communication strategy for my nervous system.

So, what I can do is, if I'm lifting heavy chest, I can actually fire my lats and traps as the next exercise as endurance and rather than resting, maintain a higher heart rate, stay lean and strong, get the cardiovascular benefit and get a better rest period than sitting and doing nothing at all.

Reciprocal inhibition is absolutely fascinating, why this works so well and how it can enhance your ability to keep moving in the gym, shorten your strength training

program and get a better result than you ever imagined. If you ask me, reciprocal inhibition is really outsmarting your nervous system and providing a better muscle contraction from each and every set that you do.

I challenge you to not rest for three consecutive sets of pull-ups to dips. Back and forth and back and forth and back forth and make it work where you never change the weight or the number of reps. I know you can do it with just a little bit of practice and I've proven it time and time and time again, with zero rest at all and a full strength set on set one. So, if you just incorporate even a little bit of rest, you could push further on set two and further on set three and find power that you never thought you had. Because as we walk around in daily life, we tend to have a little bit of signal going to both muscles, but when we specifically strategize our muscle building program to quiet down the signal to the equal and opposite muscle and force us to exert as much power as we possibly can through the muscle itself, we're going to get a better effect.

This training effect is going to carryover on each and every program you do. That's where the additive effect comes in, my friends. That's where you're really going to see muscle gain like you've never ever seen before.

Finally, let's talk about mobility versus flexibility. It really doesn't matter how strong you get unless you focus on length as well. You see, it's length versus strength or that ratio that ultimately determines what your muscle is going to be capable of in the future.

So, when we're training for strength and we're building muscle, we have to know what the repercussions are of not working on flexibility at the same time. I'm using flexibility in the general sense. Let's discuss what the difference it between flexibility and mobility.

Flexibility is a passive stretch and mobility is active. So, for example, if you wanted to bend over and touch your toes, not my recommended hamstring stretch, but if you wanted to bend over and touch your toes and you held that position the whole time, you'd be doing a flexibility exercise. However, if you slowly bent over, touched your toes, slowly came up from touching your toes, not bouncing at the bottom, and repeated that for fifteen repetitions, you'd be doing a mobility exercise for your hamstrings as well. Same muscle being worked, same muscle being lengthened, we're not adding a lot of weight, lengthened and shorted in mobility versus just lengthened and held in flexibility.

Well, guess which one applied more in a muscle building program? Do you think it's the one where we have to, in a controlled way, lengthen and shorten our muscle, A, or B, do you think it's the one where we have to lengthen our muscle and hold it in this

position for as long as we can, until we have to get out of it? It's A. That's how we do every exercise we do. So, why on earth would we ever want to work on flexibility for our gym-based program? We want to work on mobility.

It's not just important how strong your muscle is and how much it can shorten, because unless it can actively lengthen under your control then your muscle is just going to keep getting shorter and shorter and shorter and there's going to be less muscle tissue to use. When there's less muscle tissue to use, it's only a matter of time until you start that suffocation effect of your nervous system tissue, the nerve tracks themselves as they're running down your upper and lower extremities, as well as the muscle tissue as well as the ligaments in the area and ultimately leading towards deprivation of exactly that which you're working for. This is just not the way to go.

By working on mobility rather than flexibility, you will get a better effect. So remember, on each exercise, whether it's the doorway pec stretch that you're doing, preferable one arm at a time, you're moving into and out of it as if you would do like a butterfly, as that relates to the bench press exercise.

When we're talking about hamstring mobility, let's say you're laying on your back and you're kicking that leg up straight, doing that sciatic nerve stretch. Well, maybe in this situation, instead of focusing on the sciatic nerve stretch and the neuro dynamics, this time you don't worry about the ankle component in terms of pointing your toes and relaxing your toes, but this time you work on turning your toes out to the side slightly, and turning your toes into the side slightly.

You see, now we're getting an increased stretch of your medial hamstring and lateral hamstring respectively because they both matter. Without that muscular balance and mobility in both, you're not going to be able to squat as heavy or deadlift as heavy or bridge as heavy or get as much from those exercises.

So, we need to make sure that we're getting active lengthening and shortening of each and every muscle fiber, and this is best done without a lot of weight on it. So, you see, the biggest mistake that I see people make is trying to work on mobility while strengthening. They're different. They're different.

You have to be in a calm environment to work on mobility to get a muscle to actively lengthen and shorten at will to any desire you want. You can't do that with a full load on your body and the adrenaline pumping and the endorphin release and you're sweating like crazy and lactic acid's starting to be produced and you're wearing out one muscle fiber after the next after the next, in all phases of that continuum, and all tempers that exist in all angles.

There's no freakin' way that your body's going to be able to handle all of that and then relax itself enough to lengthen a muscle beyond where it feels comfortable on a daily basis. But, it's only through the assignment of proper length and strength that you're yielding the optimal potential for your muscle.

Ladies and gentlemen, I'm Dr. Kareem Samhouri or Dr. K. I'm a certified Strength and Conditioning Specialist, Kinesiologist and Health and Fitness Specialist. I'm here to help you build muscle and burn fat. The bottom line is, that's what you deserve and it comes down to a strategy in getting rid of all the clutter and all the misinformation and speaking to your nervous system first. Work centrally, and then reap the benefit peripherally.

We're talking about an increased cosmetic result, feeling better and we're just talking about building muscle faster. Have a great day.