



The Six Factors of Functional Ability with Tim Ryan - The High Intensity Training Fundamentals Series - Part 8

Lawrence: Lawrence Neal here. Welcome back to [High Intensity Business](#), the podcast where we discuss high intensity strength training and provide you with the tools, tactics, and strategies to help you grow your strength training business. To download and read the transcript for this episode please go to [highintensitybusiness.com](#), search for episode 368 to find the transcript download button on the post.

Today's topic is, Tim Ryan and I are going to be addressing the factors of "functional training" or functional ability. This is Part 8 of the **High Intensity Training Fundamental Series**. Today's guest is obviously [Tim Ryan](#).

Tim is Master Super Slow instructor and owner of [Strong Life Personal Training](#) in Barrington, Illinois. You can contact Tim to learn about his services to studio owners and personal trainers where he helps you with your personal training operation through workshops, mentoring, and seminars. You can find out more about that on his website by going to [stronglifetraining.com](#) or just emailing Tim directly to [info@stronglifepersonaltraining.com](#).

Tim, welcome back. Great to see you again.

Tim: Thank you, Lawrence. Good to see you today.

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Lawrence: Cool. Let's get into this. Where do you want to start when it comes to functional ability?

Tim: Well, this whole concept is a real pet peeve of mine because the fitness industry at large, the mainstream fitness industry, is all caught in this idea of functional training and doing your exercises in a way that mimics what you might be doing in everyday life. Or if you are an athlete of some sort doing your exercise in a way that's going to mimic what you are doing in your sport. The idea is that by performing your exercises in a certain way it is going to better prepare you or better transfer those abilities over to your sport or over to your everyday life. This can really get into a lot of nonsense that you see going on up there. You've got things where on one hand you hear people say that machines, exercise machines, weight machines, [Nautilus](#), etc., those machines are not functional. We don't live our life sitting in an exercise machine. When we do our exercise on a machine like that we're not going to be able to... what we develop on that machine is not really going to transfer well to everyday life. You are not going to build balance and stability. Or you're not going to train the supporting muscles or the stabilizing muscles because the machines do everything for you. You hear this kind of stuff.

You get people that are doing things in the gym where you are trying to do exercises on a [BOSU ball](#) - the big ball and the stabilizing platform. You stand

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on this platform and this wobbly board and you are trying to do exercises on that. I've even seen videos and pictures of people standing on the big giant [Swiss ball](#) and trying to do squats on top of the [Swiss ball](#).

Lawrence: With an actual barbell.

Tim: Right, right. There's pictures and videos on the internet of somebody standing on a giant overgrown beach ball type of thing and to top this with a barbell on their back and trying to squat and balance themselves. You can find all kinds of crazy things of what people are doing and trying to make the environment that they are in very unstable and wobbly so that they have to balance themselves while they are doing the exercise, and that sort of thing. You get all these craziness.

There was even a trend of different equipment manufacturers building machines that are either cable or pulling machines that allowed you to move in all kinds of crazy directions and didn't define your path of movement in any way. The idea was that by doing exercises with this type of device that is going to allow you to use your stabilizer muscles and build that stability and balance and not be forced into some pathway that's unnatural for your body. Even [Cybex](#) built some machines. I don't think they any longer produce them. But I think it was their VR3 line where the movement arms on the machines... It wasn't like a cable machine but it was a traditional machine.

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But the movement arms on the machines could just move in all kinds of different directions. When you push out on the chest press it would go in all these different directions almost like you are using a dumbbell or something like that.

Lawrence: The problem with that is you can't then tailor the strength curve appropriately. For one downside. Not to mention probably moving biomechanically incongruent as well potentially causing injury risk and obviously just makes you doing redundant movement.

Tim: I remember reading all sorts of reports of people getting hurt on these machines in doing things like tearing a pec muscle or something on the chest press. Because you'd be pushing this thing out and the movement arm would be wild, unwieldy, and hard to control. Just all sorts of strains or muscle tears or different crazy things. Who knows that maybe why they stopped manufacturing the machines is they got into some liability issue.

Anyway, this fascination and fixation of the fitness industry on this idea of functional training has really led to all sorts of craziness. I think we really have to step back and analyze this in such a way to be able to see if any of this stuff makes any sense at all. I think as we proceed through this you're going to see, the listener will see if they don't already understand this, you will see that this whole idea of functional training is complete nonsense.

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None of what these people have claimed to be doing or the benefits that they tout of this type of training, none of these things are actually attainable in the way that they are going after them.

We are going to take this and dissect this from the base and see what factors control the acquisition of functional ability. You would mention these six factors of functional ability. There's actually six general factors of functional ability. I should say at the outset that the scientific discipline that studies and researchers apply to this type of concept is the field of motor learning. Years ago it was a much more popular field for people to get into but you don't hear a lot about it today. But motor learning refers to, the name comes from the concept that the type of nerves that control our muscles are called motor nerves. So motor learning is really the science and application of the acquisition of skills, the acquisition of the ability to control our bodies, move our bodies, control our muscles, and perform various movements and skills.

Really this discipline of motor learning studies how we acquire skills and abilities and how best is that developed, and how we become better at those things, and what sort of things we can do to better acquire those skills. This applies to different sports and athletic events and sports and athletic skills and abilities. But the same thing applies to anything in life. Anything that we do with our bodies, anything that we do with our muscles, falls under this

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discipline of motor learning. When we study the facts of motor learning this is where we're going to realize that this fitness industry's fascination with functional training is entirely unsupported.

Let's address some of these things. We've been referring to these factors of functional ability. What we have here is six general factors that will dictate and control or have influence over how well we're able to perform any specific task. And then obviously there will be some other things that come into play with some of this as we apply it to exercise or sports and athletic events. Basically what we have here are three factors that can be developed through exercise or improved upon through exercise. We have a couple of genetic factors. And we have a primary factor that's only been developed through skill practice, specific practices, in rehearsal and refinement of that.

Let's address the exercise related factors first. The first thing we have is muscular strength. Muscular strength is going to be a primary factor in the overall development, fitness, and strength of our muscles. This is going to apply in a lot of different areas not only the development of force but also endurance, the ability to sustain the work, and things like that. In a nutshell, the stronger and better conditioned your muscles are, the better you are going to be able to perform and apply force and sustain the work associated with any type of activity. This would apply if you are doing manual labor. This would apply if you are out in your yard doing yard work, mowing your lawn,

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doing lawn and gardening work, and things like that. It would apply to carrying things, lifting objects, and things like that. But it would also obviously apply to things that we do on a daily basis like climbing a flight of stairs. Your muscles are producing the force and contracting and lifting your body up each step that you take, stepping off a curb, doing all these different types of things, and of course getting into different sports and athletic events. When your muscles are stronger and better conditioned, they are going to be better and able to perform their job. So anything that your muscles do you're going to be better at.

Now, that doesn't mean that there aren't other factors that can help if you want to get specifically good at something. There are other things that are going to come into play. But just in this general nature it starts... I refer to this as your raw materials. The condition of the muscles is going to dictate at the base of it the raw materials or the ability that you have to do anything that the muscles are responsible for.

I often talk about muscles as the engine of the body because all the power, all the force, all the productive abilities originate with the muscles. Just like in a car you have an engine and the engine is the only thing that's producing the power and performing the work to propel your car forward. There's other things that are necessary to transfer that work that the engine is performing and transfer it to a usable output. But at the heart of it...

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Lawrence: Sorry. It is like the wheels, the chassis, the seats are window dressing relative to the engine's importance in that analogy, right?

Tim: Yeah, exactly. You need the drive train, you need the wheels, you need fuel being pumped to the engine, and things like that. You need other things to transfer that work from the engine to move the car forward. But at the heart of it, that engine is producing all the power.

Lawrence: Window dressing is the wrong word, but you know what I mean.

Tim: Yeah, right. I got your point.

Lawrence: Can't get very far that worse.

Tim: If you produce a better engine, if that engine has more horsepower, if that engine develops and produces more torque to turn the wheels, you're going to have a better performing car. In the same way your muscles are sort of the engine of the body, and as those muscles become stronger, you have more endurance. They have an overall improved ability to perform their work. That is going to be transferable to anything that we do. Obviously that's the number one key factor that can be developed through exercise.

Lawrence: Can I just summarize and ask question number one?

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Tim: Sure.

Lawrence: I really appreciate that. It's really valuable for me to revisit this. Just to touch on physiology for a minute. The way I understand it is when you are strengthening that muscle you are producing stronger and more quantity of that muscle fibers across that spectrum and genetics will determine how and what occurs there. But then you are also developing more connective tissue strength, better joint strength, better bone density, and then better capacity overall through more blood transportation so more veins and capillaries and things like that. And all of these systems and factors are going to work together to allow one to be able to produce more force which is then going to transfer to all of these other daily activities that you've talked about.

Tim: Right. You're going to have a situation where... The way I like to explain it is that as that muscle is enhanced, everything associated with that muscle is going to improve with it. The body is logical and basically understands that as that muscle becomes stronger, first off it needs, as it enhances and its ability is improved it needs that supporting structure so the connective tissues increase in strength, your tendons, the joint connective tissues, ligaments, and things like that. The bones get stronger. But then those other things that serve the muscles, the nervous system is enhanced. The control of the nerves to activate those muscles and to control those muscles are

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improved. The circulatory system, the blood vessels, the mitochondria, the muscles cells, and the energy producing things. It is like that entire system becomes enhanced.

That's why I try to get across to people that when you're strength training, it is not about just simply strengthening your muscles. Yes, you are enhancing that muscle tissue, you are developing those muscle fibers, you are hypertrophying the muscle fibers and so forth, but you are improving everything about that muscle and the supporting structure and those things that serve the muscles. Your entire skeletal system, connective tissues, and nervous system are all being enhanced and upgraded to better serve those muscles and apply those new enhanced abilities. You've got all that stuff going on. All of that stuff is transferable to anything you do with those muscles. Because that muscle produces all of our movement, and provides all the stability and so forth of our body, and our ability to perform work as that entire system and network is improved, all of that is transferable and applicable to anything we do involving movement, work, exercise, and athletics and stuff. You are just building all of those raw materials. Again, it is like you are taking and enhancing that engine and making it have more horsepower, and produce more torque, and just more ability to perform work. All of that is being improved.

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Lawrence: Really well said. This is I guess why some people in our space would call what we do as great general conditioning. Overall conditioning, right?

Tim: Yeah.

Lawrence: We've talked about this on a previous podcast. But obviously the way we understand the muscles to really communicate to the rest of the body is through myokines and through all these chemical messages that regulate every other tissue and organ in the body which is so exciting and so profound when you realize that strength training is having this global effect. That's then further supported by the fact that movement is our most preserved function. Everything in the body is programmed to serve that function.

That's great. I think that was good to get into physiology. I think it will be useful to be able to talk about that with clients to a level depending on their interest and what is useful for them. But, no, that was great. Shall we move on to number two?

Tim: Yeah. The next thing would be this concept of what we call cardiovascular efficiency. Here, number one, I don't want to get too far off in the weeds talking about cardiovascular training or whatnot because that's a topic that we are going to get into in the future session here. But what I'm referring to

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in this sense is a cardiovascular efficiency is just that the efficiency of the cardiovascular system is enhanced. This ties into what we just started talking to about the muscles and that all of the things that support the muscles are enhanced.

Sticking with our analogy with an engine and a car and things like that, the cardiovascular system is the fuel delivery system to the muscles. For the muscles to perform their work obviously the muscles require oxygen, energy delivery, and removal of waste products and this type of thing. The cardiovascular efficiency just simply refers to the body's ability to do that, to deliver those things to the muscles and carry away the waste products and process that whole fuel system so that the muscles can perform their work so that the whole system that's serving those muscles is enhanced. Cardiovascular efficiency, again just a brief touch upon this, is that much of the benefit in enhancement that we are talking about here doesn't necessarily apply to the heart itself but to the vascular system and the delivery of that to the muscles. Or more specifically the muscle's ability to extract energy and oxygen and whatnot from the blood to their work.

There is a lot of information that the heart itself is not necessarily improving and enhancing but the muscle's ability to extract and utilize oxygen improves. A lot of the benefits actually occur within the muscles. Increased mitochondria for example, increased capillarization of the blood vessels and

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so forth, and just the ability of the muscles to take the oxygen that's being delivered to it and extract it and utilize it. You've got this whole process of how the muscles are being supplied with energy and oxygen, how those waste products are being removed and processed and so forth. That system becomes more efficient and sort of the fuel delivery system and management of all this stuff becomes enhanced through exercise. This allows the muscles to do their work more efficiently and to sustain the work longer, have greater endurance, stamina, and so forth. Again, these two things are just working hand in hand and being enhanced through this process. When we are exercising, again, not just improving the muscles themselves but all the things connected to serving the muscles are becoming enhanced. And the whole process and those abilities are being improved with everything that's supporting those muscles.

Lawrence: Alright, perfect.

Tim: The last thing related to exercise that we can improve on would be what we would call flexibility. The ability of the muscles and joints to go through a certain range of motion. When we think of flexibility and the ability to go through a range of motion this is not something that is a positive thing that is producing anything. This is something that is merely allowing something to occur. What flexibility does is it doesn't perform any functional thing. It doesn't produce any power. It doesn't produce energy. It is not doing

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anything productive. It is merely allowing something to be done. It allows the muscles to have an enhanced ability to go through a range of motion.

With this what happens is through the process of exercise and doing a range of motion within an exercise you are taking and enhancing the muscle and structure and everything throughout that range of motion. Most of the exercises we do you are going to have a fair amount of stretching. On one end of the range of motion the muscles are being stretched or elongated. And then, you go through the contraction phase and you shorten the muscle and you contract the muscle. Probably at any given exercise you are not necessarily stretching to your full limit or even contracting to your full limit because so many muscles cross more than one joint. You would have to perform an exercise that would not be possible all in one movement.

Something like for your bicep exercise to be stretched your arms has to be down; more down at your side. But to be contracted it has to be lifted up over your head to get a full contraction. Because it crosses not only the elbow joint and the shoulder joint. Think of the standard whether you are doing a standing barbell curl or something like that or you're doing a bicep curl type of machine where your arms are down and at your side. When the arm is down it is more on a stretched position and you can completely flex the elbow. So you are contracting the muscle but it is not fully contracted because the part that interacts with the shoulder, to contract that part you

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have to bring your arm up and lift it up over your head to get more contraction. Think of the old [Nautilus Compound Position Bicep](#). The [Compound Position Bicep](#) machine that is going to enhance that contracted position of the bicep but then you're not going through the full stretched position. Theoretically, to go through the entire range of motion of the bicep you'd have to do a movement that started with your arm at your side, at the bottom hanging at your side, contract through the range of motion and then simultaneously lift your arm over your head and continue to contract. In any one exercise a standing barbell curl does a very thorough range of motion and takes from the stretch to a pretty thorough contraction. But then doing it lifted over your head sort of in the [Compound Position Bicep](#) machine, it contracts it even further at the shoulder joint.

Again, not to get off in the weeds in that. But just to say that in any one exercise you are not necessarily taking your muscle through a complete stretch and through a complete contraction. But what we do obviously want to do when we talk about full range of motion is that at a given exercise you are performing the full range of motion of that exercise that is safe. Obviously, [Bill DeSimone](#) would have some things to say about this with his [Moment Arm Exercise](#) and his... I forget what the name of his new book is. Maybe you know that.

Lawrence: Yeah, I've got it right in front of me. It is [Joint-Friendly Fitness](#). Great read.

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Tim: Right. Sometimes, and again, this isn't the topic of today's discussion. Sometimes we are in a situation where... Yeah, [Joint-Friendly Fitness](#). There may be a situation where stretching the muscle is counterproductive in terms of your joint health. Probably a better way to say this is going through a certain range of motion is counterproductive to your joint health. This isn't about just getting extreme stretching and all of this type of thing. But being able to work within the range of motion that is safe for your joints.

At any rate, sometimes flexibility can be an extreme practice. Because trying to get into contortions and movements in extreme ranges of motion, that may increase the stretch on a muscle, maybe placing your joint and your connective tissues at a disadvantage position, and placing stress in certain areas that is not good for the health of those structures and so forth.

Simply when we are talking about flexibility, it is just the ability to go through the range of motion of a movement and have our muscles be allowed to do that. When we talk about this functional ability, the flexibility is merely allowing your muscles to go through that range of motion. I would say that general strength training, particularly on good quality equipment, machines, and whatnot, allow you to go through a very adequate, thorough, range of motion. That enhances that ability within the muscles and enhances that flexibility to move through that range of motion. And certainly it maintains that flexibility as we age and fights back that old age stiffness that often

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comes on from lack of use and atrophy and so forth. But we have a situation where in certain cases extreme ranges of flexibility or range of motion are necessary for certain athletic events.

Lawrence: Like martial arts, gymnastics, and things like that. There is huge...

Tim: Yeah exactly, martial arts, gymnastics. I've got a niece who is a ballerina. She's got to be able to do all sorts of movements and lift her leg up over her head and do these different things. To develop that kind of flexibility, it may be necessary. So whether we are talking about gymnastics, martial arts, ballet, or something, having that extreme range of flexibility may be necessary to do the movements and do the things that are required by those sports or that activity. But that doesn't necessarily mean that it is healthy for us because you may have to compromise your joint structure in order to achieve that kind of flexibility. And it is not healthy for the joints. You may have issues where later in life you have caused trauma to your joints that are going to show up later in life. Or even in the short term you are increasing the elasticity of your joints, you are making your joints less stable. You are stretching out those connective tissues, those ligaments that are allowing your limbs to move through these extreme ranges of motion. Well, it may be required for whatever activity you're pursuing, it may not be healthy for you and in the long run may not be a good situation for you.

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I think the concept to takeaway here is just that there is a certain amount of flexibility depending on different sports and activities that your body needs to be allowed to move through to be able to best perform those things. Different specific activities may require different levels of flexibility. In terms of just general health and fitness and whatnot, simply moving through the normal natural full range of motion of the exercises we perform with some consideration to what is safe for the joint will develop, enhance, and maintain a level of flexibility that is completely acceptable for everyday life and for normal activities.

These three things of muscular strength, cardiovascular efficiency, flexibility, these are the things that we are enhancing through exercise. We are developing these attributes, these raw materials, and things that are being enhanced through exercise. Those three things are transferable to anything that we do with our bodies and with our muscles.

Next we get into a couple of things that are genetically determined. One of these would be bodily proportions. There are just certain bodily proportions that lend themselves well to certain types of athletic events or skills and abilities. Obviously our body proportions talking about our height, the length of our limbs, the point of attachment of muscles, and the distance of our muscle attachments from the joint, and all these different types of things influence the physics or the biomechanics of movement. These body

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proportions, you can have somebody that has natural bodily proportions that make them very well suited for certain things but not very well suited for other things.

Even with weightlifting, say somebody that's bench pressing. Somebody that has wider, broader shoulder structure with shorter limbs is going to be able to bench press and has an advantage in the bench press versus somebody that has these very long limbs. You think of these powerlifters, most of them are very wide, and broad, and have shorter limbs because those are the bodily proportions that give them an advantage in bench pressing, or squatting, or things like that. When you take a guy like [Shaquille O'Neal](#), the former basketball player that is like 7'4" has these extremely long limbs. He has disadvantage trying to squat and bench press because he's got a much longer distance that he has to press the weight through than somebody with shorter limbs and a broader structure.

Lawrence: I bet he could still bench a fair amount though, that man.

Tim: Yeah. It doesn't mean he is not strong.

Lawrence: I understand. Just the levers.

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Tim: Yeah, it is the lever thing. You've got a situation where he is inefficient. He may have great strength but inefficient in applying that strength through a range of motion because of those disadvantage leverage factors and things like that. When you take the sport American football or whatever, you've got all these different positions and certain physical attributes are good at one position. Say if you are a lineman, offensive lineman or something, that makes you good at that. But you wouldn't be a good wide receiver. Or you may be a good running back or something like that but you wouldn't be a good lineman or a linebacker or something. A lot of what makes people good at their positions is they have the physical structure and physical attributes that are more applicable for being easier to perform in having an advantage to perform the different movements, skills, and whatnot that they have to do with that position. You are not going to take a wide receiver and turn them into a linebacker. They just don't have the body type for that or vice versa.

This is what I'm talking about with bodily proportions is that certain body types or certain structures are going to be well suited for certain types of things that may not be well suited for other things. These attributes are going to be something that influence how well somebody can perform at a given skill or athletic event or activity.

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Lawrence: This goes back to... I don't know if a lot of listeners will be familiar with this. [Doug McGuff](#)'s point in [Body by Science](#) where he says, "It is the body that selects the activity, the activity does not produce the body." That's one of those myths, right? These prevailing myths and cultures are where people think if they do a certain sport or certain exercise modality that they will look a certain way or look like a certain individual which isn't how it works.

Just one quick note. We've got 50 minutes. Let's try and get all six because I've got a hard stop on the hour. Just bear that in mind, Tim.

Tim: Okay. This actually brings up a good point. I'm glad you brought this up. We get all sorts of nonsense where you'll hear things like pilates supposedly builds a dancer's body - build a long lean dancer's body. Pilates doesn't develop a long lean dancer's body. It's that if you have a long lean dancer's body you will be better at pilates. What you have is people that have those body types are naturally attracted to things that they are good at with those body types. So dancing, ballet, pilates, whatnot, they are going to like you just pointed out with [Dr. McGuff](#) is that body type selects the activity because people recognize that they are good at that. People that are short, stocky, broad, short-limbed people with good muscle structure are going to be good at weightlifting so they are going to be drawn to that. People that are 7 feet tall with long limbs are going to be drawn to basketball or something like we talked about with football players in various positions.

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If you have those body types you're going to discover in life that you are good at certain activities and then you are drawn to those activities because you are good at them. It is positive reinforcement and you get recognition for that and you get more enjoyment and so forth out of doing that because you're good at it. It is not those activities that develop those body types or those attributes. It is those attributes and body types that find those activities that they are good at.

Lawrence: Don't confuse correlation for causation, right?

Tim: Right. [Arthur Jones](#) used to tell a story where he said that if you were from another planet and you came down to earth and you happen to observe a basketball game, a professional game, you may observe and notice that all the people on the court are very tall with very long limbs and all of this sort of stuff. You might deduce that playing this game makes you very tall with long limbs. It's confusing the cause and effect. It is not that that sport gives you that body type. It's that that body type is good at that sport so those are the type of people that are going to be at the top of the sport and be doing those types of things.

But the fitness industry wants you to believe that doing different types of exercise or different methods of exercise are going to selectively develop certain attributes that turn your body into something that it's not. Again, the

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pilates or dance or something is going to develop that long lean body. And that if you do weights it's going to make you bulky and all this kind of stuff. It is just confusing this cause and effect of body types and the genetic influence of how our bodies are and how they develop. Obviously, this is purely a genetic thing.

The other issue would be what we call neurological efficiency.

Lawrence: We're on #5 now, right? Neurological efficiency?

Tim: Yeah, this will be #5 - neurological efficiency. Now you've got something where, again, this is primarily a genetically acquired factor where the ability to recruit a high percentage of your muscle fibers and sustain the contraction and produce force and things like this. Back in the mid-80s right before [Arthur](#) sold [Nautilus](#), he was doing a lot of research with that. The precursors to the [MedX](#) medical machines, and he was doing a lot of testing and developing. He was testing machines and doing these things. He discovered some factors that fall into this neurological efficiency where certain people could contract their muscles at a very high percentage, sort of voluntarily recruit a very high percentage of their muscle fibers and they had much greater strength but then they had lesser endurance.

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What he has done is they have done things where they've given people 80% of their max strength. A load that represented 80% of their max strength. And then they would have them perform a set to failure. Some people might only be able to do... and I'm just plugging in numbers here and giving a representative example. But somebody working with 80% might only be able to perform 8 reps with that 80%. But then another subject might be able to perform 20 reps with their 80%. Both people work with 80% of their max load but their neurological efficiency was much different. One recruiting a very high level of muscle fibers into action. But then of course, once those fatigued you got no more in reserve to keep going. Where another subject can't recruit as many muscle fibers into action all at once but they can sustain that over time and have greater endurance. There are things like that.

Basically, neurological efficiency is part of the nervous system's ability to tap in, to stimulate, to recruit muscle fibers and so forth. Some people are great at a very high level of activation and can produce a lot of power and strength from that. Again, that's going to make them good at certain types of activities that require that. Maybe a sprinter, in track and field, or football player at various positions to be able to just explode off the offensive line and so forth and develop these things. Other people are going to be better at things that don't require as much high level strength but require more sustained activity and things like that.

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Lawrence: Is it always one or the other basically for the most part?

Tim: Yeah. I mean, obviously some people can have a mixture kind of an average.

Lawrence: Just somewhere in between. It is a spectrum, right?

Tim: Right. Again, if we graph this out we might have a bell curve where a lot of the people are in the middle, the average abilities of some of each. But then you've got the extremes on either end where somebody that's great is capable of greater, explosive power or something. Or somebody that's capable of very long feats of endurance or something. Yeah, those different things.

Since we're limited on time. Moving on to the sixth factor would be skill. Skill is simply our acquired ability to become proficient at performing some tasks or some athletic event or whatnot or some movement. Skill can be enhanced. It is not enhanced through exercise other than your skill at performing that specific exercise could be enhanced. Skills by their very nature are very specific. The development of skill is very specific to the skill in question or the action you are attempting to perform.

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This is where motor learning, science, and that discipline comes in. The development of skill is highly specific and is best acquired by practicing the activity that you desire to improve upon. It is practicing that activity in the exact same way that is required by what you're trying to learn and be good at. If you are trying to become a good football quarterback and be good, and very precise, and controlled at throwing a football, you need to practice throwing a football. You need to practice very specifically at developing and repeating that exact action over and over again so that you develop the coordination, the control of your muscles, and that mind to muscle connection and all of that just being very specifically honed towards that action. Same thing would be shooting a basketball or performing a gymnastics move. That repetitive highly specific practice over and over again is going to develop that overall control and those abilities to be enhanced.

When it comes to skill, the very important part here is the development of skills and the practice that you do to develop those skills. The tendency for that practice to transfer over to the enhancement of that skill, there's three different types of transfer. We have positive transfers. What this means is that the practice you are performing is positively transferring over or enhancing that end goal skill that you are trying.

Lawrence: It is like perfect practice basically in other words, right?

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Tim: Yeah.

Lawrence: Got it.

Tim: Right, perfect practice. That means that everything you are doing in practice is transferring over and making you better at that goal skill. That's a positive transfer.

Then we have negative transfers. What that means is that the way that you are practicing is not positively transferring over and enhancing your skill. It is actually negatively hurting your skill. What that means is that you are practicing in such a way that it is not helping you, it is hurting you. This is done where if you had something where you were practicing for basketball and you were shooting at a hoop that was slightly at the wrong height. In basketball, the hoop is at 10 feet. Let's say you set the hoop at 9'10" or something instead of 10 feet, and you practice at 9'10", you get very good at 9'10". But then in the game you are using a 10-foot hoop. You develop all your skills for 9'10" and now that 2-inch difference you are going to be off.

Lawrence: I've actually had this exact experience. I've had it where I played, I remember playing at a court and the hoop was higher. I was aware of the stuff. Maybe you are just aware of it intuitively because you shoot the ball on an 11 or 12-foot hoop. And then you go to a 10-foot hoop and you can see how you are

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overshooting and you have to adjust. It used to really bug me. I refused to play on it with friends I wanted to play with. The only reason I am playing on a smaller hoop is because I just want to do some dunking but don't shoot on it.

Tim: Yeah. It's a little fun that way. That would be a negative transfer. And then we have the third thing called indifferent transfer. Meaning that the way you are practicing is not helping you but it is not hurting you either. It is just not having any effect.

But what motor learning tells us is that the development of skills needs to be highly specific. That the only things that positively transfer are that highly specific practice that develops those skills. When we apply this to this idea of functional training in exercise, going into the gym and doing an exercise that mimics what you want to do in real life but doing it with added resistance; that is not going to be a positive transfer situation. Because as soon as you have resistance to a skill you are changing the skill to something different and you are causing the recruitment of muscle recruitment patterns to be different than what they would with the thing. With this, if a football quarterback tries to use a heavier football to try to develop his throwing strength, throwing that heavier football is a different skill than throwing the regulation weight football. Throwing that heavier football is going to develop a different skill than throwing the regular football. It is not going to enhance his throwing ability. It is not going to be

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a very good way to develop his throwing muscles. Same would apply if you went into the gym and you used a pulley and cable machine and tried to pretend he was throwing a football with the pulley and cable machine thinking he is going to develop his throwing strength or something. Again, he is developing a different skill that is not transferable to the actual skill that he is wanting to get good at.

This goes on down the line with all of this different balancing and stability trying to do squats on a [BOSU ball](#). You can get better and improve your skill at performing squats on a [BOSU ball](#) but that doesn't mean it is going to transfer into real life doing, walking, and climbing a flight of stairs, or stepping off a curb, or doing some athletic events. You are not going to have better stability and balance in that other event because all you did is develop a skill of standing on a [BOSU ball](#) doing squats. You have a situation where these things don't transfer. All of these functional ability things that people think they are doing are really just performing various what I sometimes refer to as circus tricks. Where they are able to develop their skill set, those little tricks of balancing on a ball or a [BOSU board](#) or doing these funky different exercises. They are improving those skills but they are not doing anything that is transferable to real life.

By the same token, performing exercises on a machine is not going to hurt you at developing skills in real life. All we are doing in the gym with exercise

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is trying to develop those raw materials – that strength, that cardiovascular efficiency, the flexibility and whatnot; building all that structure, enhancing that engine so that anything we do with our muscles are going to be applicable. Because what transfers is muscular strength transfers to anything you use that muscle to. These physical attributes that we are developing with the muscles, and the cardiovascular efficiency, and flexibility, those are physical attributes that anything we use our bodies for we are going to be better at because we've got that better engine and better raw materials to produce those things. But we have to specifically practice the things that we want to be good at. While those physical attributes and raw materials will help us with anything in life. To become best at any certain activity or any certain skill, we have to specifically test that skill.

The takeaway for athletes is that when you are in the gym you should train in a way according to muscle and joint function. You should train in a way according to the principles of proper exercise and you should develop your body and your strength and your muscle and everything to its fullest. And then separately from that you should go out and practice the skills you wish to become good at. But you need to practice those skills utterly specifically without changing it, without adding resistance to those skills or anything like that, and practice the exact skills over and over again. Exercise and skill development are two totally different things.



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Lawrence: Got it. Tim, that was awesome. I need to wrap it up there. I know we've got a little bit of connection issue there towards the end. You did an amazing job covering those six factors and I've learned so much during this podcast. It's been really great.

Just quickly if you are interested in Tim's services to help with your business in terms of being better at personal training basically and serving your clients, Tim does provide workshops, mentoring, and seminars. You can go to his website stronglifetraining.com or email Tim to info@stronglifetraining.com.

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