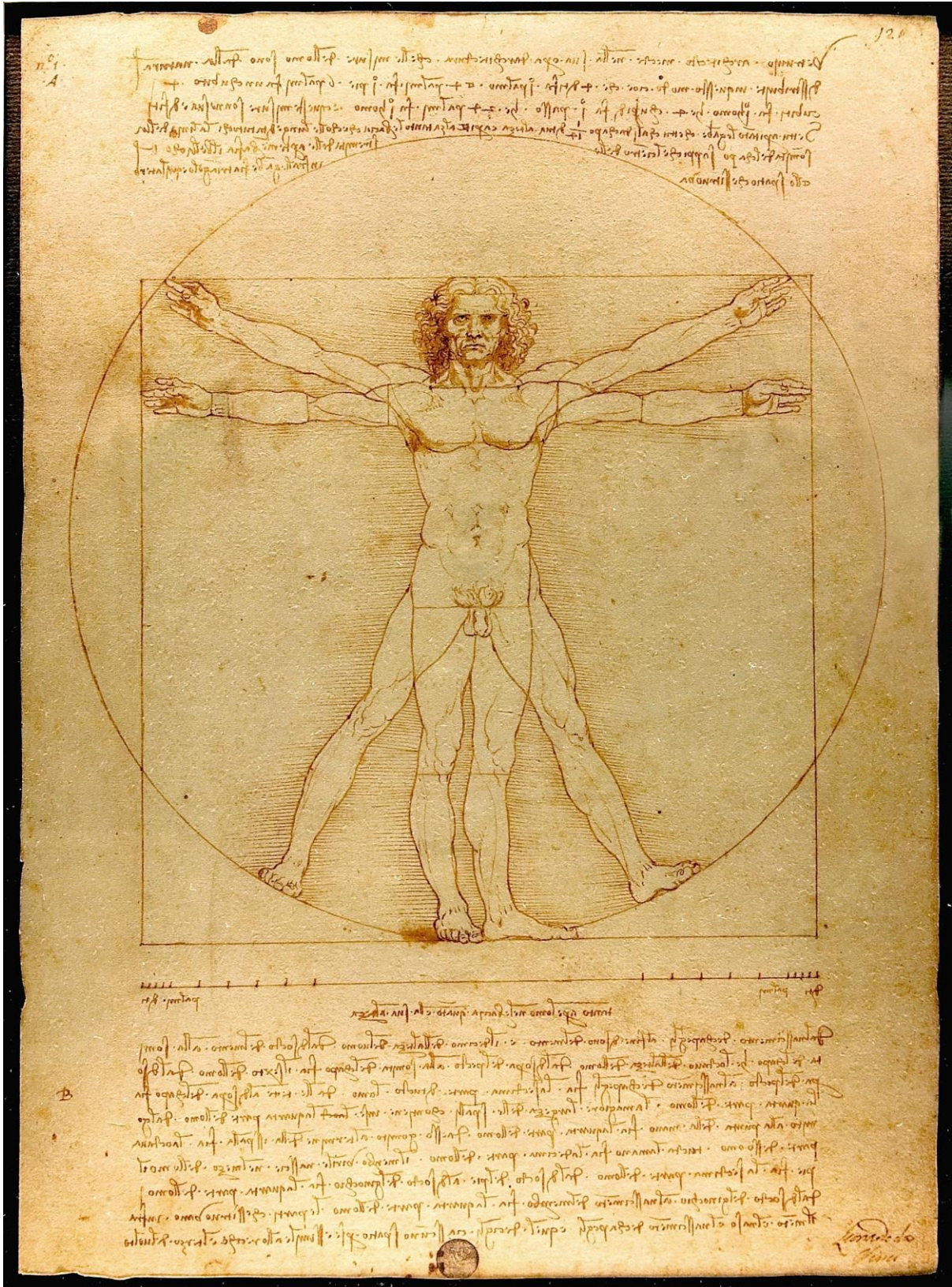


Principles of Deep Training for VTK

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Introduction

“Be assured of one thing: You are born with the machinery to transform beginners’ clumsiness into fast, fluent action. That machinery is not controlled by genes, it’s controlled by you. Each day, each practice session, is a step toward a different future. This is a hopeful idea, and the most hopeful thing about it is that it is a fact.” Daniel Coyle.

Over the years I have written a lot about teaching, the best ways to train etc. During recent research, I found out that people have been discovering something important about training, both physiology (especially regarding myelin and neural pathways) and psychology. Contrary to popular opinion, and supporting what most good VTK sifus say, real training is all about the mind – both psychologically and physiologically.

As I begin to rewrite much of what I had previous written, incorporating these new ideas, the new research and findings, I came across a book called “The Little Book of Talent” by Daniel Coyle. It managed to cover a lot of what I had taught, had been taught, and discovered myself. So, I rewrote my articles, while unashamedly cribbing much from the book and applying it to VTK learning and teaching (in accordance to the stated principles of the book, which says “unashamedly steal” what works). I would say perhaps half of this document relies heavily on that book, since it said what I wanted to say so well. Only a few points differ due to the nature of fighting and the nature of VTK, but a lot has been added from my own experiences and what I have learned from Barry and WSL and other great masters and master teachers, from all over and not just VTK.

Some findings fly directly in the face of commonly accepted modern training concepts – while others directly support traditional methods of training. And a few are vice versa. I am grateful that this has research to back it up, since, from my own experience, I have disagreed with many concepts that introduce sporting practices into martial arts. People often disagreed with me, citing sports martial arts and modern coaching psychology, especially as used in the education systems. Now, it can be seen that many of my assertions, especially in regards to criticism of public and franchised martial arts schools, and my contradiction of the ‘usual’ methods of training found in virtually all modern schools are actually true. I am sure other points will follow.

The result is this article.

These ideas are field tested, scientifically verified independently of VTK and myself. I was mostly surprised in how close they fitted my experiences. I hope they are also quite simple and concise. The important thing is to get the idea clear in your mind. Essentially, I will try to make the instructions clear and simple, as in “Do this, and do not to that” as much as possible.

First and foremost:

- So-called ‘Talent’ is not innate, but learned. It is not a gift from your genes or from anywhere else. It is earned by blood, sweat and tears. It is a combination of intense practice and of motivation changing the way our brains and nerves, and thus our bodies, function.
- There are ways to teach and to learn, to get ‘talented’. Some ways are better than others.
- These things are now largely established and scientifically verifiable, although I am sure there is more to learn and the future will bring changes.
- It has more to do with the brain than the body; it has more to do with nerves than muscles.
- Mastery is usually determined over intense long term practice, more than 10,000 hours of real deep training (not just going over the moves, but correct, precise, excellent training), over about ten years or LESS. It needs to be done EVERY DAY and spread out pretty evenly and not bunched up over the weekend or by seasons. Missing more than one day a week (I do advocate rest days) is counterproductive. Same as missing weeks or months then catching up, although this will work better than missing several days a week and trying to catch up.
- The early part of learning anything is the most important for advanced learning. How you begin is how you will end up. Not only the first weeks but the first minutes and hours are critical. This is not only a part of the traditional sayings of VTK, but also a quote from WSL, and it is a newly established scientific truth.

This principle I am going to call **Deep Training**, simply because we need a word, and this is in parallel with several other similar phrases coined for similar ideas.

Several people who have tried this method with their own students have found that within a couple of years, their new students outpace their old students, even when the

old students are training longer and working harder. Just not working smarter. I could name names, but I don't want to put out the older students, who are sincere in their VTK.

While rewriting this, (March 2013 version) I noticed one of my new students doing this. It was intense. It was the first time I have observed it closely since I started writing this article. It was profound. The depth of focus was incredible, and what he learned in a few minutes by himself I had been trying to teach for weeks. I was impressed by his attitude and offered taught him the next phase of training immediately. But he wanted to focus on the problem some more first. Brilliant.

Note that now that I am updating it in 2015, this experience has been repeated across the world. I have also expanded this article into a very large document, which will possibly be an ebook when I get around to editing it and checking the data one last time.

BEHIND THE SCIENCE OF SKILL

THE BRAIN

I have already written an article on this and sent it out to everyone, so I will simply say this. There is no muscle memory, muscles cannot remember. It is the brain. The brain needs training. See previous article for more.

MYELIN

Myelin is the 'insulation' surrounding nerves. For most of the time we have known about it, researchers thought it basically was insulation, just somehow supporting the nerves. Later, about when I was at Uni in the 80's studying things like physiology, they had found out it had an active role, something like the nerves, but they weren't as excitable, and supported the neuron in other ways as well. Now, a lot more is known, and myelin is a much more interesting substance.

(What is really interesting is that the myelin producing cells and other related cells make up 75% of the brain, with the neurons only 25%. Some scientists now think that the nerves are just the wiring, and it may be that the glial cells (which make myelin etc.) are the true 'thinking' part of the brain. They have been shown to be definitely a part of memory. I am not sure of the details, though.)

How it works, essentially, in regards to what we need to know for training, is that myelin makes the impulse move faster along nerves. However, it does more than that. With training, myelin adds layers and convolutions to the insulation around the nerves, which essentially increase the carrying speed and capacity of the nerve. Imagine it's like broadband. More bandwidth, more information and more things can be done much faster. It increases directly in proportion to the number of hours trained.

NOTE THIS: It increases very quickly in the early part of learning a new skill, so errors are learned as fast as the right way is learned.

Therefore, it is important to reduce errors as early as possible in training, and ensure that the right pathways are enhanced ASAP so intense practice can accelerate this process.

New neural pathways are like walking through virgin snow, or walking over new grass. The first tracks are the deepest and surest. Later tracks obliterate the path, especially if

they do not follow the original path. If the path is set early and followed carefully, then a good deep and accurate pathway is set quickly. If people wander all over the place, it takes much longer for the most efficient path to be visible. Too long and it is lost.

The right kind of training trains the right nerves in the right way, in the fastest way. Wrong training doesn't work so well, because the right nerves are used less often, so myelin only grows haphazardly. The nerves function faster and more accurately the more the correct kind of training is done. This kind of training is called variously "Deep" training or practice, or "deliberate" training or practice depending on the source. Scientists call it 'deliberate' while popular books call it 'deep'. I will call it 'deep' simply because it is easier to type.

So, we want "deep" training.

Some points:

1. While visualisation is very good for ensuring that practice will be deeper because you are following a plan, myelination will only occur during actual physical practice.
2. Since it is the early part of training that makes the nerve pathway, then it is better do to the early training slowly and carefully with deep focus to emphasize the correct pathway, rather than hard and fast training, which will be more haphazard.
3. Once you have the training, it will take a long, long time, over your lifetime, to degrade. Deep training results in fixing the skills, other training means they will fade fairly quickly. However, it also means bad habits are easily made, but very, very hard to break.
4. You can learn skills throughout your life, but its better the younger you are. If you learn the skill of learning skills, though, you will be able to continue throughout your life, just a little slower. Childhood is obviously the fastest, but because of brain development, it is often usually less directed, as well. Somewhere in your fifties, myelination slows a lot, unless you have learned how to learn. Learning is also a skill, and I feel that it responds to the same process. Not enough research is done in this area as yet, but with an aging population, it will soon be important.
5. Many hours of practice close together, preferably every day is the best way. Once or twice a week won't work. An hour a day will, to some extent. To be world class you need about 10,000 hours of deep training in less than 10 years, before you are 50

years old, and starting the younger the better, as long as the student is old enough to learn how to learn correctly.

6. Practice doesn't make perfect. Perfect practice – deep training – makes for efficient myelination.

A good model for understanding this is riding a bike, which is a popular saying “Like riding a bike”. This is exactly like riding a bike, for exactly the same reason – it is actually a skill of the kind we are talking about. If you are young and learn it, you will learn faster – myelination is better when you are young. If you do it every day, you learn it better, because myelination happens faster if you do it a lot. Once learned, if you take time off, the skills might degrade, but they come back rapidly. This is one way to determine if your training is good – if you go back and the skills come back quickly, then you learned it properly. If you forget and have to relearn and it goes slowly, then you didn't do it properly. The system is probably at fault.

So, what is deep training?

DEEP TRAINING

These are the rules of true training. I didn't make them up. They are a fact. And they apply to everyone.

This concept has many names, and is also called variously deliberate practice, Deep learning, deep practice, focussed learning, and so on. I call it "Deep training" just to keep us on track with VTK. Welcome to the Training Zone.

A guy named Ericsson coined the term "deliberate practice" and did the original work on it. Basically, he says that learning any skill is essentially due solely to deliberate practice, and can't be learned in any other way.

I would agree, in the sense of making it truly function. Without enough deep practice a skill is merely a trick you can do in training, but doesn't work in actual use, under pressure.

To do this, you have to train with full concentration. To quote from his original work: "Deliberate practice means working on technique, seeking constant critical feedback and focusing ruthlessly on improving weaknesses." This, in a more earthy form, is exactly how Sifu Barry Lee taught us.

You have to continually be just outside your comfort zone, always reaching for something that is just out of reach. Too far out, and you 'know' you won't get there – it is too hard too far to reach. Too close, and you don't reach, just stand. It is too easy, so you don't stretch and improve. Just right, and you continually get better until you can reach places you never thought possible.

Intensity is the key. Not mindless repetition, not sweat, not simply hard work, but intensely correcting, focussing, improving, and knowing what you are doing. You have to be totally absorbed into your training, focussed and concentrating on getting better. You need to know exactly what improvements you need to make.

You need to do it every day. Ten minutes a day is a bit more than an hour in a week, and it just barely works. However, two hours training in one day, then nothing for the next six, doesn't do it at all. The ten minutes works better. Not only does the ten minutes per

day increase myelination, it also effects mitochondria, which are the power house of the muscles. Mitochondria increase best with constant work over a whole day, even if it is low key practice, than short bursts of intense practice stretched over a week. However, mitochondria have more to do with energy use – for example sudden speed and strength, and especially fat burning – rather than skill learning, so we will ignore them for this article.

To get mastery in any complex skill takes something like 10,000 hours over a period of ten years or LESS, usually beginning with the person aged less than fifty or so, and preferably early twenties or less. After fifty it gets hard, if the person isn't already good at learning skills. This was discovered scientifically in 1895, more than a century ago. It is still true.

To maximize the efficiency, you need to train in what I call the Zone, in the sweet spot of training.

The Sweet Spot

People learn fastest in the sweet spot. This is where you are outside your comfort zone, but you can still manage to do the task. The sweet spot enables you to do days or weeks of what would be accomplished in 'normal' repetitive training in just an hour or two, enabling you to 'fix' the technique into your repertoire very quickly with little error.

- **Comfort zone** – feels easy, effortless. You are working but not struggling or reaching for something you can't do. You can succeed more than 75% of the time in your task. Success doesn't feel very satisfying because it was too easy.
- **Survival zone** – you are confused, and try desperately. You scramble, and are guessing, and succeed mostly by luck. You can succeed less than 50% of the time. While this training is useful to experience for the VTK man, since fighting is a bit like this especially when we are losing, it isn't where we should spend most of our time training. It is also somewhat disheartening to spend too much time in this zone, and you feel like you can't get there. Success comes as a surprise, rather than an expected result.
- **Sweet spot** – a bit frustrating, but you are alert for errors since they occur regularly. You have to pay full attention to everything constantly. You are trying as hard as you

can, sometimes succeeding, sometimes not. You succeed about 50% to 75% of the time. Not more often because you will not learn faster that way, and not less because it is disheartening. The sweet spot encourages you, but frustrates you, making you really focus on what you need to do. Success comes as a feeling of accomplishment and pride.

How to use it.

Just work on one small thing at a time, for example an individual technique or even just part of one e.g. the elbow position.

First you need to know exactly how what you want to improve should really be done correctly, with a very good visualization of what you are trying to do. Now, do it very carefully, paying attention. When something is wrong, even a little, immediately stop. You have less than half a second to correct the move before the nerves 'remember' the error as 'correct'. You want the nerves to remember what is right, not your mistakes. Fix it, then go through what was wrong again and again until you can do it right most of the time (moving the technique from 'survival' through the 'sweet spot' into the 'comfort' zone over time). Keep going back to the start, and do it again from the beginning each time you make a mistake, correct it, and then go back to the start again. Do this until the entire sequence or technique or drill is all correct.

- Sense the mistakes
- Immediately stop.
- Fix them until they are correct
- Go back to the start and link the corrected move to what you can already do well

This programs the brain to do the entire task. The procedure then can be used to link correct elements into larger patterns the same way, but only when the elements are correct and near perfect.

Finding the sweet spot might take some careful and creative thinking. Moving very slowly allows you to see the errors. Doing things backwards also works (e.g., in the form, wu sau is done backwards). Practicing under water will make you do it slowly and carefully, too. I used to do this with kicks, and even used to spar under water. It's an experience, being under ten feet of water while using massive amounts of air, but remember that holding your breath while really fighting is a bad idea.

Although there are many ways, there is an underlying pattern. Find out ways to stretch your skills, right on the edge of your ability. Reach out. See the problems, fix them, make it all work together.

“One must develop an instinct for what one can just barely achieve through one’s greatest efforts.” Albert Einstein.

The important part is “just barely”. What can you not quite do? What is a little beyond what you can achieve? That’s where you want to practice.

Remember, if it is a mess it is survival not sweet spot. If it is easy, then it is comfort zone.

The goal is not simply accomplishment, but perfection.

Tune ups.

No matter how long you have been training, it is important to regularly have your teacher go over your material.

When Wong Shun Leung and Barry Lee met, even after Barry had been teaching for many years, Barry would always go through the entire system with Wong Shun Leung, over a period of days, making sure it was all up to par. When I meet with Barry, he does the same to me. We spend more time going over everything than learning new things. It keeps things up to standard. This is critical. Nearly always, the checking is the same stuff you learned as a beginner, and so is the revision. Revision like this means that the neural pathways in the brain are kept on track, and running smoothly. It means that little errors that you have been unable to notice for some reason can be checked and corrected by a third party – we are always bad at self-examination.

While we all want to get on with the more exciting and new stuff, this is irrelevant if the old stuff is of low quality. The new stuff will not be worth anything anyway.

Most modern so-called sifu these days travel to some famous sifu, learn in a series of training sessions that progress up to a certain level, then they go away for a year or so and, in theory, practice. Naturally, since it costs a lot to travel to their teacher, they want to go on with new things rather than make sure that everything so far is up to par. There is no real examination or correction, and the goal is to “finish the system”. This is false accomplishment, and creates a whole second class level of ability, and therefore, the next generation will be lacking in skills. And when these guys teach – the next generation will be even worse off. They will think they know the system, but their knowledge will be superficial, and their ability less.

Before you start:

1. Identify with your model.
 - a. Carefully observe who you want to become like. Learners should spend a lot of time observing carefully, move by move, detail by detail, from the best in the field. It is important that this is OBSERVING not simply watching a video for entertainment. Observing means examining closely. This provides both information and a role model, but more importantly, inspiration. Observation means a kind of hungry stare, an unblinking absorbed intense gaze. Focus. This is what you want to become.
 - b. Studies have shown that even meeting or other brief encounter with a role model can inspire people for a lifetime. Any encounter may work, even simply having the same birthday, or starting training at the same age, or other identification at all. Same degree, or motivation, any parallels work. Other studies show that simply watching in person or being near people performing with excellence works.
 - c. Keep copies of things like YouTube videos, articles or pictures or posters, etc., or other inspirational material and watch or read it just before training or class, or before going to bed etc., and this will motivate you more.
2. Are you gifted?
 - a. Don't fall for the "gifted" Myth. We are always being told that this person or the other has a gift, the right body etc. Studies have shown that this is well and truly false, except in certain specialized areas such as ballet or gymnastics, and certainly does not apply to VTK. There are plenty of examples in every field. Darwin was considered slow, Walt Disney lacked imagination, Michael Jordon was kicked off his high school team, Einstein nearly failed his university tests, Hawking was an average student, and so on. I personally was Barry's worst student, and my brother gets furious when he is told he is gifted: He is a professional musician who used to practice every day until his fingers bled for years. These things are not a gift. They are rightly earned, through blood sweat and tears.
 - b. Effortless success in the beginning has been conclusively shown to be a very poor indicator of future success. Most top performers grow into success, rather than rapidly attain it, or achieve it early. Early praise seems to cause the student to engage in behaviour that protects their status, resulting in higher levels not being attained later. This is mostly due to a lack of 'risk taking', which slows their learning. They don't dare to be stupid, or look bad, or fail at something, so they don't take chances. They want to keep

their status. This means they eventually fall behind those that will try anything to improve. A good way to improve this attitude is to try something completely new regularly, learning something new that is difficult, so you keep used to looking like an idiot. Keep taking chances.

- c. Skills are built day by day. No one knows early in training who will be the best in the end. It will always be a surprise. The hungry student will succeed. They don't care about looking bad. Those that come to early success will bail out when it gets too hard and they have to risk being a loser. Remember the saying of VTK "It isn't who starts first is the senior, but the one who finishes first."
- d. Praise – Some praise is important. Just a little. Enough for encouragement, when really important goals are surpassed. However:-
 - i. If you are a coach, don't overly praise, especially those that seem gifted.
 - ii. If you are the one who is seemingly gifted, if what you are doing seems easy, remember you are simply being lucky so far - you haven't got to the hard bit yet. What is hard for some is easy to others, and vice versa somewhere else in the system. No one finds it all easy, if they are doing it right. Something later will be hard enough. Or maybe you are doing it wrong.
 - iii. If you find it difficult, don't quit. You are probably doing it right, and are on the right path. Even the act of doing something difficult makes you stubborn, which is invaluable in a fight.
 - iv. If you are not praised when you are doing well, remember that your teacher is probably doing this for the best reason – to keep you going for the long haul.
- e. I have also personally found that 'talented' people skip important points, rather than pay attention to detail, using their ability to gloss over important details. This means their VTK is invariably full of errors, and their foundation is often poor, resulting in poor progress later. The slow and stolid student will get there sooner. Remember, you are in this for the long haul. It is a marathon, not a sprint.
- f. Masters or other seemingly talented people are simply people too. Say to yourself: "If they can do it, so can I." Often, in martial arts, it is the ungifted, the slow, uncoordinated and un-athletic student who becomes the best. This is because no matter how good you are, you can't be good at everything in VTK. Good athletes usually lose interest when something difficult comes up, because they are not used to trying against something hard. And with such a large system, there will be plenty of difficult things somewhere along the

line. Stubborn people stick it out more than 'gifted' ones, most of the time. VTK is mostly in the mind anyway, not in the body.

3. Dare to Be Stupid. *Listen to the 'Weird Al' Yankowicz song. You need to take risks in your image to progress. It is a really good idea to try things that stretch your abilities, and take chances that you will fail or fall flat on your ass. You have to push the boundaries of what you can do to learn new things. It builds new connections in the brain, and develops new patterns and awareness in the body. The only way to extend yourself is to go past what you know you can do into the realms of what you can't do. And if you can't do it, then you are going to fall flat on your ass. Embarrassment is painful, but taking risks of failure is the only way to go past what you know. Mistakes are not really that bad; ask Edison. They are the path for eventual success. Get outside your comfort zone. This way you will be more likely to move you into the edge of your ability, where you learn the fastest and best. Do something that worries you, get out of the box.
4. Engraving the Skill on Your Brain. Spend about 15 minutes a day getting the skill you want to learn clearly defined. Just choose one, or even a single aspect of one. Get a perfect blueprint of what you want to accomplish in your mind, and observe it and visualise it over and over. Get the blueprint by asking the teacher, watching a video, reading a book, etc. Probably you already KNOW how it should go, or you wouldn't be up to it. See it very clearly. See all the details, not just the main ones, in its entirety. Imagine yourself doing them, clearly and absolutely, feeling yourself do it. Create a connection between yourself and the skill. Comprehend it completely. Do this visualisation every day for about 15 minutes. After this study, THEN do it over and over as practice, until the actuality matches what is in your mind. When you have learned that skill, move onto the next.
5. Steal (Sorry, I mean "Research") everything useful, without regret or apology. Take from every possible source. Picasso said "Good artists borrow, great artists steal." Everyone says that great people follow their natural instincts, but this is untrue. To improve we have to process new information, and apply it to reality. The best place for information is the best people at it. So, see what they have that you do not, and then steal it, or copy it. I have deliberately learned and asked about things I already know so other people will tell me more, usually either telling me what I know from another angle, or a new insight. Perhaps a new drill, or a new way to teach someone who can't "get" my usual explanations, since everyone learns differently. Or at the very least confirming that I am right. Now take this knowledge and make it your own. Add things that work for you into

your own training. See what doesn't work, and subtract that from your own training. Learn by other's mistakes, as well as by their successes. Ensure that you focus on specifics, not impressions, concrete facts and details, precise shapes and patterns. What are the important points? What are they doing differently?

The Skill Type

There are basically two kinds of skill. Hard and soft.

Note that 'hard' does not mean the same as 'difficult' or hard the same way we mean when we say "hard = strong" in VTK. Here it means something like 'inflexible' or 'definite'. Soft does not mean 'easy' nor the same way we mean "soft = relaxed" in VTK, but something like 'flexible' and 'indeterminate'.

Hard and Soft skills are very different. They use the brain differently, with different parts of the brain being involved and different pathways within the brain and nervous system. They are learned by using completely different methods and different pathways in methodology and concept in training. When in actual use, they are used in different ways, and different parts of the brain and nervous system are used in different ways.

Knowing what type of skill you are developing will influence how you train. Using the wrong method for the skill type you are working on will mean that the training is inefficient, perhaps even worthless. Therefore it is important to know which type of skill you are working on. To do this, you need to work out what kind of skill it is and which skill is which.

Hard skills are those that have to be done exactly right, as correctly as possible, and consistently as possible every time. There is usually a specific way to learn it and to do it, and usually only one "answer", and it is either "right" or "wrong". You have to do it automatically, perfectly, over and over.

Hard skills must be consistent.

This covers almost every basic technique in VTK, all the moves, strikes, blocks, steps, kicks; just about everything that is the building blocks of VTK.

Soft skills are flexible and intuitive. There are usually many ways of doing them, and there is no well-defined solution, or path to learn them. These are not about being perfect each time, but about recognizing and interpreting patterns, then solving them intuitively, with good timing, and react correctly, before the pattern is over. You have to adjust to rapidly change patterns, moving from situation to situation, guessing on a solution, and fixing the problem on the move, or sensing that a weakness is about to open up an opportunity. Many possible solutions exist, but you have to choose a good one, preferably the best solution, on the fly. The most important part is the result – blocking or hitting successfully, for example – rather than which particular result or how you got there.

Soft skills are about assessing the situation, instantly and instinctively realizing what the answer is, and responding instantly without thinking.

This is how to USE the techniques you learned, the hard skills, in a fight, or in chi sau, etc. This is 'knowing' where the man will be, when the opening will occur, how he is moving. Soft skills are about telling if someone is dangerous before an encounter, and what to do in the encounter. How to see the situation and get around the difficulties. Ultimately, winning the fight, no matter how, is a soft skill. Obviously, Chi Sau is a soft skill, as is sparring.

Before you learn and practice, you need to determine if you are practicing a hard or a soft skill.

Here are some guidelines:

- a. Does it need to be reliable 100% of the time, every single time, with great precision?
- b. Is there an exact blueprint to determine how it should be done?
- c. Does the sifu need to be deeply involved when it is first learned, ensuring that it is done correctly?

Answering "Yes" to the above means it is a hard skill.

- a. Does it require recognizing complex situations and patterns?
- b. Are there several or many possible answers, (although often only one "ideal" or optimal answer)
- c. Do you have to spend most of the learning process working out the answers for yourself, rather than learning everything from the sifu?

Answering “Yes” to these means it is a soft skill.

Developing Hard skills.

In VTK the “hard” skills are the first ones to work on. They are the building blocks and the foundation of the entire style.

To develop hard skills you need to develop the pathways in the brain, connecting in the right way. You need to start really slowly, very carefully, and really be aware of errors. You need to break down the skill into small components. You need to approach every component and ensure that it is done as perfectly as possible. Slowly, carefully. Taking time to get it perfect before you go for glory. Every fundamental component, no matter how unimportant it might seem, must be addressed, and must be treated as if it is vital to the outcome. This is because it IS vital to the outcome.

They are best learned by ensuring the student has a very clear picture of what is being accomplished, what is needed, what each component does and how it does it. The student needs an accurate blueprint, then slowly build up, exercise by exercise, the various components, repetition by repetition, until the whole is put together. Usually, each component is built of simple instructions, simple parts, that can be seen in their entirety. Think of breaking down something into simple elements, the simplest and smallest things that the skill can be broken into meaningfully (Don't OVER do it, though. Make sure you break it down just right. Break it into atoms, like chemistry, not smash the atoms into quarks. Atoms make sense, and you can see what is going on, and can see how it all fits together. Quarks don't, and you can't see the overall structure of the original.) Then work on each element until it is perfect as possible. Then put it back together.

Precision is really important in the early part of learning hard skills. Research shows that nerves learn the most important parts at the beginning of learning a skill. The brain is like untouched territory, so the first few repetitions create pathways. Later, your brain follows these pathways more easily, rather than create new ones. Something like skiing in fresh snow. You will follow the grooves cut in the brain rather than create new ones. Trying to undo that is really difficult. Our neural physiology is geared to create new pathways quickly but unfortunately it is not geared for undoing them.

That is how bad habits are easily created, and why it is hard to fix them.

So, make sure they are right, the first time. Go slowly, step by step, repeating each and correcting them instantly if they are wrong. Neural studies also show that it takes about half a second to set the pathway, so you have about half a second to correct something to get the pathway in the brain back on track. This is essential. Learning fundamentals, any sifu will tell you, is vital. But modern neurology tells us that this is the key moment in our training. Time spent working on this, correcting as we go, making it correct as possible, is the fastest and best way to ensure that the fundamentals are learned as fast as possible. Later, you will save a lot of time and a lot of angst and frustration, because you will have the foundations correct, and save enormous amounts of effort building on them rather than having to go the very much longer path of correcting them.

Developing soft skills

Soft skills are the mystery of skills. They are difficult to define, vague in their description, and are often amazing to observe. They include things like improvised jazz or lead guitar, the magic of stand-up comedy improv, or how some great sports star slams something through their opponent's defences to score. They include, for exactly the same reason, how to win a fight.

They are where the brain will work out what is needed, and make the body do it, with split second timing and precision, before you can consciously work out what should be done.

As opposed to hard skills, soft skills require exploration, challenge, and ever-changing situations. Instead of carefully building soft skills, they need more to be used in their entirety, being curious, exploring, seeking new ways and challenges. You need curiosity, and to think deeply about them.

They need to be improvised on the fly rather than mechanically followed.

You need to build your nerve system to read what is going on, to recognize what needs to be done, and to react instantly to a highly variable situation.

Chi sau is good for this. One way to make chi sau even better is to get closer to each other. Most people chi sau too far away to hit each other. Move closer and closer so that you have to react very, very fast. You have to do a lot of things wrong before you start to do them right reliably under a variety of situations. It needs to be complex, competitive, and fast to be useful in a fight.

But in order to do that, you need to be cooperative, slow, and simplify while you learn something new, such as how to respond to a situation, or a new technique or combination. It takes a long period of feeling your way through a maze of mistakes, a long period where you are not doing very well, until finally you can do it.

Soft skills often work in paradigms rather than simple progress. After a long period of no progress, there is a sudden jump in ability to another level, then another long period of no obvious gains, of long times where you seem to do nothing, then another jump. Because they are very complex, it takes time for all the components to fit together.

When working on soft skills, principally chi sau, you need to coach yourself, rather than have the sifu cover your every need. Of course he is there for advice, and correction, but he can't be there for every single move.

You need to make your repetitions highly variable, doing things many ways. Don't worry so much about making mistakes – which are anathema in hard skills – but instead explore the possibilities inherent in the skills, especially RECOVERING from mistakes. Of course, when you go back and do it quickly, after learning and exploring, you should correct them immediately, but during the exploration don't worry too much.

After each session, you need to ask yourself questions such as; 'What worked?', 'What didn't work? And why?

Work on the hard skills first.

Obviously, VTK when viewed in its entirety, is more complex, and both hard and soft skills work together. They are integrated. Nothing is simply one or the other in the long run. However, consider hard skills as the fundamental component, since these are critical, and can be stuffed up easily. Therefore, approach the hard skills first.

In training, work on the basic building blocks of your VTK daily, refreshing the neural pathways, fixing them ever harder into your brain. Break them down, fix every error. Errors keep creeping back all the time, and every time you learn something new, new errors arise. Be alert for them, especially through fundamental training. Jump on them. Don't let them get away from you.

Any master coach, any true sifu, instructor, will tell you that technique is everything. Without technique you have nothing. Technique is a hard skill. They begin and maintain with basics. Anyone who is good at their skill, whether VTK or tennis or music, will tell you, basics are the same if you are a master or a beginner. Work on the same things you did as a beginner every day. They don't think that just because they are the best in their field that they don't need it anymore, having surpassed that level. Instead, they know that to stay the best in their field they must do it every day anew, just like a beginner. More challenging things rely on these foundations, and without them the rest is a meaningless waste of time, because they will not be done well enough.

In Conclusion:

The first thing is to make sure the techniques are perfect before practicing them too much, so you don't waste your time and develop bad habits. This takes continuous checking especially in the early part of training.

Work on the hard skills first because they are the rigid foundation of everything else. Then work on the soft skills.

The End