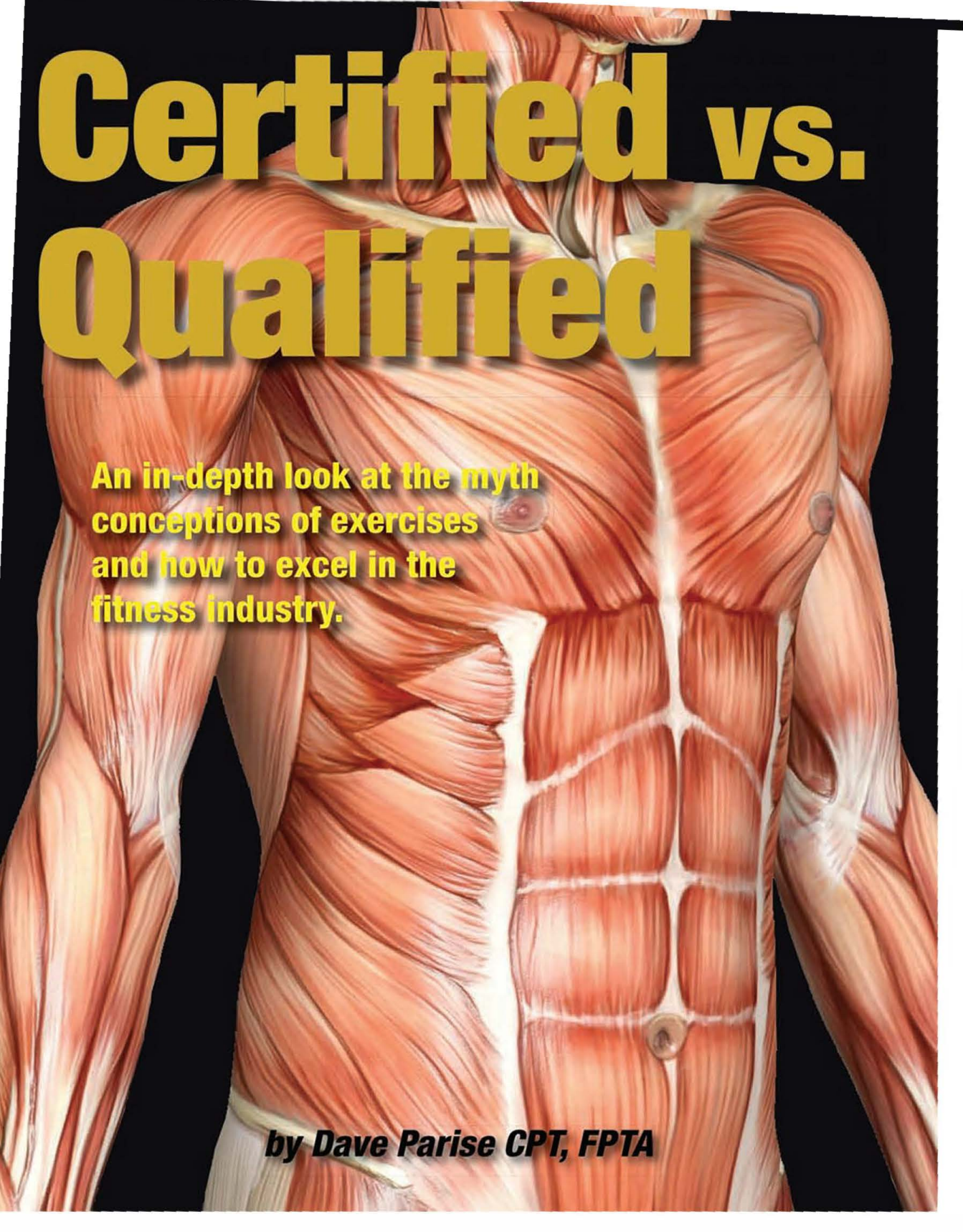


An anatomical illustration of a male torso, showing the muscles of the chest, abdomen, and arms. The muscles are rendered in a realistic, reddish-pink color with detailed fiber structure. The illustration is set against a black background.

Certified vs. Qualified

**An in-depth look at the myth
conceptions of exercises
and how to excel in the
fitness industry.**

by Dave Parise CPT, FPTA

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This book was written, and published in 2010. Anatomy does not change, we change anatomy based on our own opinion, and how it feels! Try not to do that! lol

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Why Become a Qualified Fitness Professional?

A Fit-Pro is 25% certification and 75% qualified to train. Or... one part text book...and three parts application.

A Fit-Pro helps you feel better today than you did yesterday by strengthening your body.

A Fit-Pro works with you one-on-one in qualitative workout sessions.

A Fit-Pro helps your self-esteem grow as your confidence increases.

A Fit-Pro is the key that unlocks the door to opportunity and success developed through physical, emotional and mental fitness.

A Fit-Pro prepares and leads you through a safe and optimal workout, which not only makes you feel better, but also helps you commit to an active living plan.

A Fit-Pro is not a luxury, but a necessity. A commitment to your health and fitness future.

A Fit-Pro helps you triumph over procrastination and laziness.

A Fit-Pro follows up the day after the workout to ask, "How are you feeling?"

A Fit-Pro continues his education by researching the latest information in our industry and attending seminars on customer service.

A Fit-Pro never performs a movement pattern with a client that he just learned at a weekend seminar. He will always break down the components, micro-progress, and determine the risk-benefit ratio specific to the present physical condition of the client.

A Fit-Pro always answers questions to the best of his current education. If you are unsure, tell the client that you will research the answer and have it for them on their next visit. Respect and professionalism will win over a wild guess.

A Fit-Pro is not a rent-a-buddy or someone who looks at their biceps in the mirror while a client is performing the last two reps. Fit-Pros do not carry cell phones (except the clients' that you

are holding). There are no silent reps. There is an excessive amount of “GREAT JOB!” and “I am proud of you!” verbally thrown all around the room.

In conclusion, you will learn firsthand how to create a win-win situation, which will increase client adherence, compliance, renewals and earning power. It all comes down to writing your own financial ticket.

I hope you're exited! I promise #ParisePromise to guide and support you all the way!

Why a Certification is only a fraction of a start?

Knowing what is in a textbook is far from being a great trainer. This program is all about a commitment to the process of learning. Exercising and having “BIG GUNS” is cool, but not going to create the revenue stream you desire. Taking clients from machine to machine in a one-size-fits-all environment is far from ‘PERSONALIZED-TRAINING’. Now don’t get mad at me! I am sure you have the potential to be dynamic, and motivating. I want you to be educated, and analytical outright intelligent, and intuitive! Got it? Good!

Exercising or passing a test does not make you a personal trainer any more than getting your driver’s license makes you a great driver!

A “workout” means something different to each of us. Some feel that they don’t “get a good workout” unless their heart rate hits a specific range. Others measure a successful workout by sweat, a pump, and the sensation of a stretch, a burn, or following a workout routine from Muscle and Fitness, Shape, or Men’s Health magazine. So right from the start, we don’t all think or speak the same language.

Another issue that makes it difficult in this industry is that so many trainers think they already know all that they need to know about exercise. Personal trainers may feel they have more experience after getting that almighty certification. Another reason is they justify their experience with the amount of years they have been “working out”. Some feel because of his/her body, physical achievement they are an expert. It also can be an advanced degree from

a major university, an expertise in one aspect of exercise, or an alignment with an industry “guru” that one has chosen to follow. Most people simply sell exercise short, thinking that there’s just not that much to it, and subscribe to a “just do it” philosophy. In fact, all of the nationally accredited certifying bodies (ACE, ACSM, NSCA, NASM, etc.) and the vast majority of the “exercise experts” who have achieved “guru” status continue to flood the industry with amazing knowledge, and text books. They educate you in a group setting at seminars. However do we learn about risk and benefit ratios in a given environment? No. Do we learn hands on that’s it’s not about the exercises but the engineering of the body? No! We spend hundreds if not thousands of hard working dollars to visits the trade shows, attend a talk on an array of exercises modalities. But all too often, they dismiss this science completely, and in the process, they show, teach exercises based on a myth and misinformation. We as professionals should present our recommendations to you the student with the disclaimer that “other considerations not mentioned here may alter this exercise performance.”

The above statements are based upon continual research via objective evidence. We should be able to point out the objective truth, accept it, remedy it with the realization that it is not that other teaching professionals are wrong; it’s just maybe they are basing everything on the way an exercise feels. They also could be recommending exercises that worked for them. It’s about learning and understanding our shortcomings and solving them for the good of our clients. And unfortunately, many “certified personal trainers” have a tendency to think that those they follow are exempt and free of fault.

We should never degrade any specific exercises or philosophies.

We analyze them all objectively... show and tell you the facts based on the way the body works... and then you decide!

Professionalism: Thinking, decision making, or one size fits all?

On day one, most of us learned exercises by memorizing a start position and a finish position. Progression of the exercise simply meant adding more weight. “Knowledge” was simply progressed by adding more exercises to one’s workout- memorizing more starts and finish positions. We even added little “overhead twists and turns” (Arnold press) that were believed

to generate magical results. (Sensation / perception) But memorizing exercises in a one-size-fits-all protocol is not progression or professional at all. It is simply repeating the same mindless exercises over and over with no real ability to objectively analyze what each exercise really is or what it is doing beyond the mythological gym-science that plagues the industry. It's like "painting by numbers" and that's hardly professional.

JUST DO IT? I Dave Parise say's "DO IT RIGHT!"

Do it!" so comical! This mantra is extremely positive and creates a buzz of self-motivation in an attempt to "Just Get Moving". We like the fact it gives you the incentive to 'start moving' however at what risk? Even today the media recommends "everyone needs an hour of exercise."

Let's not worry about "how often," "how many reps," or "how much," we must LEARN HOW—how each exercise should be constructed.

We as fitness professionals must assess our client's active ability to move and how the force should be applied! That's exercise mechanics! How long should I walk on the treadmill? Who cares, until you are walking correctly! How much weight should I use? It doesn't matter if it's not a structurally sound motion via specific finite function of the joint. With the appropriate application of force we can make the exercise more optimal, and safe!

Today there are so many so-called experts, especially on social media. No one is an expert. I am not, nor are you, nor is the greatest bodybuilder in the world. Miss fitness not even close!

"Monkey see monkey do" -that is why this personal training industry is getting a bad rap.

When you hear, read, see, feel, a new exercise or piece of equipment we must ask ourselves is it science or marketing? Does it have application with regard to the way the body functions?

Can the exercise do harm over time? This is your platform by which your knowledge and becoming a requested trainer is developed!

Textbook exercises can't be memorized. Exercises demonstrated by a coach, or some famous body builder are not defined as 'specific and finite.' Miss fitness age 23 and her genetically gifted body (Thanks Mom and Dad) worked hard, but did she work smart? Exercises have to be created, much in the same way an artist takes a few basic colors and creates a master piece on canvas. This is the way to be a requested professional. We all must understand a few basic principles about joint and muscle function. This application will allow you to create millions of sound exercises. But all exercises are not created equal. Creating an appropriate exercise is a matter for careful assessment and judgment. The "general gym members" go through life seeing only superficial various shapes of skin that move while holding a weight. But there is a hidden reality unseen by most people and some exercise "experts." Exercise reality is below the skin where bones and tissue tolerate and generate invisible forces. These forces are really what encompass an exercise. This is what we must learn to understand in order to understand exercise and how to create and manipulate it.

The primary concern of every trainer, must be "safety first".

Proper progression is a tough sell these days. Everybody has a wish to be able to order 5 lbs of muscle at a drive through window. As an industry, we must understand that the level of activity one does today should be entirely based upon what he/she is accustomed to doing. Progression should be implemented in the smallest possible increments, and this applies to all regions of the musculoskeletal system.

We must allow for improvement in both tissue integrity and motor pattern performance. Keep in mind the different rates of adaptation for connective tissue and contractile tissue! That simply means do not over load a client. And above all, your active range should never exceed your resisted range. Just because you can rotate does not mean you load that rotation. Personally I dislike resisted rotations.

If control is still a challenge, adding more weight or resistance is inappropriate!

Watching your client do more than 1 rep incorrectly is deemed dysfunctional and unprofessional!

The brain needs a platform from which to exert knowledge, but first and foremost, we need to free the brain from all the myth-conceptions!

The Exercise Experience and the Functional

Continuum™

“Lunges are functional and lying leg curls are non-functional.” The biggest trend in exercise is functional exercise. Gym and fitness center trainers have been set up and sides have been chosen. The division between functional exercise and nonfunctional exercise in fact does not exist.

In reality there is no barrier dividing one type of exercise from another. There is no such thing as a “wrong” exercise...just a risk and benefit ratio. The truth is that there is a spectrum or a continuum between user-controlled and machine guided. Knowing how to create everything in between and when to use each is a perspective and skill that most benefits our clients.

In the end, all the facts in the world can't help if you don't learn how to apply them.

- *Facts: Some trainers appear incredibly intelligent because they can quote an impressive array of facts and figures, but that doesn't remotely help the client.*
- *The key to application is thinking, reasoning, understanding the harmful effects that improper exercises can create. We must apply a series of actions that allows our clients to generate appropriate scenario-specific force applications, motions, positions, equipment decisions, and strategic variations. This is the skill of the thought Process.*
- *“Everybody's different...” In truth, you can't change the body and the way it functions. This fact will affect your decision-making process.*
- *It's entirely up to you. Do you want to train based on science?, a feeling?, or what your buddies doing?*

Ultimately, it's not about certification... it's about application!™ You are going to be a requested trainer! I believe in you...

Let's Get Started

Evolution

During the 1950s and '60s, the goal for gym-goers was massive explosive power, like Olympic lifters. By the '70s, fitness started to become more socially acceptable. More people flocked to gyms and started to realize the importance of strength and health as they relate to each other. In the early 1980s, Body by Jake or "Body by Whomever" started the evolution of the personal trainer. Basically, a personal trainer was for the rich and famous. In the mid to late '80s, "gym instructors" (clipboard transporters) and coaches (pro want-a-be) were now taking the title of personal trainers. The wealth of technology exploded with laborsaving devices, personal computers, cell phones—all this to ease the workload at the job site. In 1990, the international obesity task force called the prevalence of obesity in America an epidemic. We became chair-borne and sedentary. Today 43 percent or almost half of all Americans are—or soon will be—obese. People are working longer hours, moving less, and no longer spending their free time in activity.

We all know... inactivity will lead to joint injuries, degenerative conditions, altered postures, muscular imbalances, faulty movement patterns, and more. However, a Ft-Pro professional can promote positive changes.

My Guru Can Beat Up Your Guru!

Muscle heads and fitness gurus were on every street corner trying to capture a piece of the opportunity to make four to five times the minimum wage. Celebrities were flocking to personal trainers for the undivided nurturing attention. The big boom came in the early to mid '90s, and certification programs were developed to assure industry standards. From ACE to RTS, nationally accredited programs were for the true professionals, providing seminars for

continuing education, liability insurance and the almighty piece of paper that ensures the client that they are the best.

What happened from there? Trainers flocked to seminars to learn new cool moves to add as tools in their toolbox. They listened to keynote speakers and top educators, attempting to soak up the knowledge that would make them stand out from the rest. But did they educate you on how to have a successful personal training business? Did they show you “hands-on” what the client truly wants? Most seminars today are directed toward the competitive athlete. (That’s where their functional equipment sales increase.) Is this the norm, the majority of your client base?

After a seminar, I see trainers come home all pumped up and ready to rumble! The first client in the door gets a toolbox full of NEW COOL MOVES. The moves are correct, but there is a vital component missing: Did “Super-Trainer Dan” assess his client’s active range of motion before wrenching her spine? Did he notice she was exceeding her active range and is now so far into the joint that it is becoming an excessive and risky range? I think not. Moreover, we see top professionals fail in regard to application. The professionals or “Fit-Pros” know—and we want you to know—where your financial future can be. You have a choice to venture in any direction you choose. After 25-plus years, we have held our ground, excelled and exceeded the million-dollar revenue mark, but most important, we have built a solid reputation for “service intensity.” This is not a way for us to shine, but to teach all our apprentices/pre-Fit-Pros the most efficient and successful way to feel confident in their own abilities. We want you to write your own financial ticket. Let’s face it: it all comes down to the cost of living, enjoying your professional training environment, and living a great life!

Dave Parise’s Personal Statement

At one point in time, we all tried to perform exercises with weights or some fancy machine. Fitness instructors at the local gym taught these exercises. Today there are many so-called experts giving their versions of a particular exercise. They all have one major thing in common: they are based on opinion and favored by perception, sensation and a feeling of a movement. With all these exercises and so-called experts, picking or learning an effective training program

can be as difficult as gaining 5 pounds of pure muscle per month. The negativity that trickled into the fitness industry stemmed from the so-called experts in the gyms. These experts had the genetics and physical ability to learn a movement based only on the goal of muscle building (maximum hypertrophy). This form of training had no application for the three-dimensional, multi-plane world in which we all live. Moreover, it had no application or carryover to our “real” daily life. Today there are hundreds of companies promoting products for the personal training industry; most are just making a quick buck. (“Vibrate this... shake that...” while you apply a “high-risk” movement pattern based only on someone’s invention or idea.)

Remember these sound bites:

“Just because you can, does not mean you should.”

“Your structure dictates your function. ™”

“Stability before Mobility”

“Exercises should be chosen based on a risk to benefit ratio”

“There is no such thing as a “wrong” exercise, only inappropriate application”

FYI- Legal and Risk Management Concerns for Personal Fitness Trainers

I give credit to David L. Herbert, J.D. and William G. Herbert, Ph.D., FACSM

I want you to understand the legality of the trade! I am a licenced T.A.S.A. expert witness. Expertwitnessfitness.com That simply means I am called to testify for the plaintiff, as well as the defendant. The following factual information is something I will be asking you about. Please have a basic understanding of what can and will happen if you are negligent. Have a sharp vigilant eye, focus on nothing but your client!

Recent surveys of selected health/fitness facilities conducted by a number of industry professionals, (HINT) have demonstrated that many health clubs and fitness facilities and the professionals working within them have not routinely provided pre-activity participant screening. Clearly the applicable industry standards and guidelines mandate that such screening take place prior to the individualized “prescription” or recommendations for beginning activity to participants, especially if the expected aerobic and/or strength exercises include those of moderate or higher intensity. While these same recent survey results also indicated that many industry professionals were unaware of at least some of these standards, it is essential to understand that the lack of familiarity with these statements is not a defense for failing to adhere to such standards. In fact, a failure to screen or even perform screening in a manner consistent with these standards which proximately results in client injury may actually increase the likelihood of legal claims and suits based upon negligence. This unfortunate situation may be even more likely for personal fitness trainers (PFT) who can probably be expected to be held to a higher standard of care than most other fitness professionals. While personal trainers may not yet be classified as health care professionals and therefore subject legally only to negligence actions (not medical malpractice type lawsuits), legal claims and lawsuits against such professionals are likely to require expert opinion testimony to be successfully asserted against them. Opinion testimony is generally provided in litigation by experts within a given field who provide opinions as to negligence, information about industry standards, and whether deviation or adherence to such standards occurred in the delivery of service by the defendant. Such testimony then is used by fact finders such as juries to determine whether or not the defendant committed negligence through the delivery of substandard care which proximately caused harm to the person who brought the claim and suit – the plaintiff. The process of providing individualized exercise parameters for a client (mode, intensity, duration, and

progression) and the supervision provided by personal fitness trainers have been the subject of at several reported legal cases. Such suits have been filed predicated on claims of “negligent training, monitoring, instruction, supervision and advice,” those related to the alleged development of unsuitable activity for clients and those related to other alleged deficiencies occurring over the course of ongoing personal trainer activity. Client injuries based upon claims that clients were told to use too much weight, too much resistance or engage in too many exercise repetitions have been put forth with some regularity. While such claims of negligence result in personal consequences to those directly involved in the litigation, these events collectively often result in industry actions and in some instances legislative proposals for licensure and other forms of proposed public regulation for personal trainers.

Dave Parise CPT FPTA MES

Great sound bites, and the 3-Keys

Here’s a statement that we all need to live by as Fitness Professionals

“A law in science (Anatomy) is different than a judicial law. A judicial law can be argumentative, that’s why we go to court. So in physics/ bio-mechanics we have a different law. “We cannot change anatomy and the way it functions”. We changed anatomy based on the way it feels!” When we do we screw up the system. Remember that fact!

The following educational information is the foundation of what you will become. You are on your way to be qualified. You will have an in depth knowledge base to assist you in your passion to be great! You are about to embark on the truth...a pill that everyone wants, however afraid to swallow! Keep going read on...and be open, this is science, not your friend at the gym, not Bro science, nor gym talk, based on personal preference.

Awareness, Control and Challenge 3-KEY STEPS

Remember every position, movement, and rep, is your visual assessment tool.

1-The client should have “Awareness”— explain the region of the targeted muscles and the benefit involved. The client needs to “feel” where his body is in space from head to toe.

2-The client should be in “Control”— provide esthetic awareness of what the joint/body is doing and how to stay there (challenge should never take place if control is not mastered).

3-Once the client has awareness and control, now we can “Challenge”— a load that creates unaccustomed stimulus and reinforce the need to stabilize, as well as interacts with the client’s awareness and control.

These are the main ingredients for a perfect workout—one that will be unlike any other. It’s all about your tones, cues, adjustments, breath :), body hygiene, and your ability to see dysfunction and imbalances and correct them without wasting your client’s time. The rest of the session is continuous motivation, staying focused, and a huge injection of service intensity.

We need to analyze how sedentary our clients are. This is the meet and greet! Get to understand your client! Human nature dictates what the person is prepared for...what they can do currently. Are they fit? What determines fit? Lets keep going...these are just things to think about... How about documenting the answers to the below questions.

Q: How many hours are spent on average driving per day to work?

A: 30 minutes each way

Q: How many hours are in a given workday? How long do we sit?

A: 8 to 5pm & 4-5 hours.

Q: How long would we sit at lunch?

A: 20 minutes

Q: When we arrive home to unwind we sit how long for dinner?

A: 30 minutes. When we dine out the average is 2-3 hours.

Q: What’s the average time in front of the TV?

A: 4.9 a tad under 5 hours.

Total is between 15-18 hours per day

So we can say that most of our lives are spent sitting on our spines. We can say being fixed in a chair most of our lives is creating a host of muscular imbalances.

Preview of coming attractions...

“You’ve passed the test! Congratulations you are now “Certified”! However, passing the test and becoming certified does not guarantee that you are a great trainer. You’re now faced with memory... and application!” Yes, we all tend to forget all the knowledge we needed to pass some test. A certification on the wall... great! We know many certified trainers who have no application or common sense. Fit-Pros will take your brain back to the foundation so we can build a permanent structure of knowledge. Remember, knowledge is only power when application is present. Ha! You will be requested, and the best on the training floor!

Sections of the skeletal system, and the importance.

Please do not get overwhelmed. I promise this will all make sense. Just read, take notes, write things down, word associate to remember...it will all integrate in your head, just remove the blinders and past thoughts.

Trainers need to know the differences between the following:

AXIAL SKELETAL SYSTEM

- **SKULL**
- **VERTEBRAE**
- **STERNUM**
- **RIBS**

APPENDICULAR (THINK OF APPENDAGES)

- **CLAVICLE**
- **SHOULDER BLADES**

- **ARMS**

- **PELVIS**

- **LEGS**

WE CAN ASSESS A PERFECT STANDARD/ BODY ALIGNMENT DURING OUR WORKOUTS BY UNDERSTANDING THE DIFFERENCES BETWEEN THE TWO SKELETAL SYSTEMS.

Examples: While performing a horizontal pull (ROW), you're working with the appendicular system. If you drop your sternum, (AXIAL) you have deviated from the goal.

While performing a vertical pull, (Lat pull) you are working the appendicular system. If you drop the rib cage as you pull, (chest drops) you have deviated from the goal. Why? because you depressed your sternum, and left that neutral posture.

Always maintain proper spinal alignment to create the most regional emphasis in a particular anatomical area. Remember, the body is not made up of segments—it is integrated. We cannot isolate a muscle. There is no exercise to train “the upper chest” or “lower chest.” That’s geography, not anatomy! We can train elbow flexion concentrically to put stimulus in the biceps however, many muscles are called upon. Remember, muscles are like servants, called upon based on need- the need is to mobilize or stabilize in a given environment. Your future depends on understanding the difference between “fitness center science” and REAL science.

Your internal girdle...is it sleepy or active?

Try this if you can please...

Lay on your back, do not move a muscle... knees flexed 90 degrees. Your partner will place his fingers (palm down) under the lumbar space of your back. Draw in as if you were to press against his fingers. Do not move a bone or joint in the body. This mechanism does not move joints, only stabilizes them inter-segmentally.

- Act as if you are drawing in your belly away from the waistline of your pants.

- Now Inhale... and as you exhale, draw (DON'T suck) your lower abdomen in and upward toward your spine.

- Imagine that your crushing my fingers under the small of your back, but nothing else moves. This is the start of the how to activate / wake up the TVA transverse abdominis.

Here is another form of "Activation Core" Four point stance: Find your neutral position. Your arms straight hands under shoulder joint, knees under hips...Inhale and exhale, and draw in your abdomen without moving your hips. Hold your breath for 10 seconds. Now try it again however this time without swaying, or rocking lift your right hand, left knee, as if I want to slide a piece of paper under it. Hold 2,3,4,5, What are we doing? Challenging the stabilizing mechanisms in and around the hip area (LPHC) lumbo pelvic hip complex to maintain stability internally right? Make sense? We challenge to increase control, so now we can handle forces a little better. Now switch to the other side...hold 2,3,4,5, did you find it more difficult on the other side? I bet you did. Most people will start with their dominant or strong side. What does this tell you, what are you going to do? Practice!!! We only become great in a said environment by practice. Now stay in that same 4- point, hands and knees position. Now extend your left leg straight back parallel to the ground, as you extend right arm out parallel to the ground...HOLD 2,3,4,5. This is another challenge to the system, more difficult right? Moment or lever arms will raise the bar of difficulty.

Remember, nothing moves when you properly draw in the deep abdominal stabilizing mechanism.

So basically we need to water this down for the client to understand. If we were to talk tech, our clients would be bored. To explain this to your clients why a basic move like this is so important as part of the assessment program I would say this:

Pretend your holding a piece of paper.... Demonstrate when you **flick** the paper (load) buckles the paper. This represents any external force originating in to our musculo-skeletal system. However if we create a cylinder with the paper (roll it up) with a strong core, or proper draw-in, we create an internal corset/weight-belt we have now activated the deep stabilizing mechanism (transverse abdominis) it now acts as a link and support system. Another way is to

think of the body as an algebraic equation. Both sides must equal each other to solve the problem. Unfortunately, our bodies are not as balanced as a mathematical equation. When the human body is out of balance and we cannot stabilize, our function is compromised. However, creating awareness and learning how to train the deep abdominal musculature will produce equal strength gains as well as coordinated motor control.

For example: cars driven with its wheels out of alignment will have worn tires, lose speed, have decreased fuel efficiency and compromised handling. We need to focus our attention on developing inter-segmental strength and stability, not superficial strength. (Real strength will come.)

FACTOID-

WHEN WE MIGRATE AWAY FROM PROPER SPINAL ALIGNMENT WE LOSE MUSCULAR AND NEUROLOGICAL CONNECTIONS. THESE CONNECTIONS ARE RESPONSIBLE FOR GIVING US A STRONGER FOUNDATION TO EXERT FORCE. WE THEN IN TURN DE-EMPHASIZE THE GOAL. WE MUST TEACH OUR CLIENTS PROPER AWARENESS OF THE DRAW-IN MANEUVER!

Global vs. Local ...as it relates to the musculoskeletal system... this is of extreme importance! Professional trainers need to know the difference between both.

Global refers to all the muscles that expand over a certain number of joints ie: chest, lats, biceps, rectus abdominis to name a few. They are responsible for pulling power, force, more on a superficial level. The global muscles expand and move joints as they pull on their attachments. Local muscles are close to the spinal structures, and joints. Local muscles connect block to block rather than expand over a certain number of joints. When considering machine-based movements, your body is fixed /anchored to a platform. This platform is the body's external source of stability. The body is now glued in place; the joints (depending on the manufacturer) are being dictated through one plane and path of motion. All the inter-segmental intrinsic muscles (local) responsible for balance and core stability are shut off. The machine is now holding you in place.

Question: Is there a place for this type of environment for the musculoskeletal system?

Answer: Yes, if the goal is major muscular hypertrophy! However, what we at Fit-Pros advanced application school are trying to relay is “This is not where the money is” ... “This is not your market.” This type of workout is not the norm; it is more for the gym or fitness center with no supervision. We call it “the assembly line, where one size fits all.”

That being said, free motion training is far more important than fixed machine based movements.

Remember this: If your body adapts to fixed environment overtime your ability to maintain inter-segmental support diminishes. When you’re in a position / environment that demands balance and stabilization you start bringing in more muscles, because you have more joints moving. When you have more joints moving, you start to de-emphasize the goal. What’s moving the joints? Muscles... What are muscles? Internal forces—and this is really important, because your body’s job is to make life easy. When the body experiences a load/resistance it tries to dissipate the load as best it can. Remember, your body can’t see forces; you can draw them with arrows do in your textbook. You can quantify those using numbers. Just because we do not feel “the pain” doesn’t mean we are not dealing with accumulative stress. Your back is not going to blow a disk if you hyperextend while doing a bicep curl. It is the accumulative stress over time that will eventually lead to pain and dysfunction. Using this vital information, we can avoid poor exercise techniques and unnecessary injury.

If you understand your client’s active control, you will understand the range of motion in which he/she should move. Your resisted/loaded range should never exceed your active range (non-loaded). We must assess a client’s ability to move.

This leads to posture and the definition of ideal skeletal alignment...

It’s where the skeletal system functions most efficiently. In fact, it’s where the entire body functions most efficiently. Poor posture will cause tension, an increased volume in the abdominal area, and it even messes up your digestion. With correct posture, the nervous system works better because it can receive and transmit messages more quickly and smoothly.

1.THE EFFECTS OF POOR POSTURE CAN BE EXEMPLIFIED BY PERFORMING THIS EXERCISE....PLEASE STAND UP.

2.I WANT YOU TO GO BEYOND WHAT YOU WOULD TYPICALLY SEE IN A GRAVITY-INDUCED POSTURE.

3.LET'S ALL CREATE FORWARD HEAD POSTURE. (ACTIVELY PRESS YOUR HEAD FORWARD.)

4.ROUND YOUR SHOULDERS...DROP YOUR RIB CAGE...YOU WILL HAVE A DEPRESSED STERNUM.

5.PUT YOURSELF INTO AN ANTERIOR PELVIC TILT, WHICH WILL CAUSE THE KNEES TO GO BACK.

Remember, your body's job is to maintain balance in this gravitational field, so when one joint is off, that disproportionate load starts to trickle through the whole body.

STAY LIKE THAT FOR A WHILE... WHAT DO YOU FEEL?

TENSION IN THE BACK OF YOUR SKULL, LOW BACK PAIN... YOU WILL FEEL DISCOMFORT IN YOUR KNEES.

The closer you get to your neutral position, the less stress and strain. The further you get from a neutral position, which is being exemplified right now, the more stress and strain on the entire system.

- For some of you, breathing is more difficult now than if you were standing in perfect alignment.

- Blood flow and transmission decreases because this position is so abnormal.

We need to be able to identify poor posture, so we can teach and train the clients more efficiently. This will be carried over to their daily lives.

HOW TO EXPLAIN THIS TO THE CLIENT:

"Ideal skeletal alignment is like a race car in perfect alignment. The better the alignment, the better the performance and the less energy wasted. Therefore, you will have more energy to do what you are trying to accomplish. Most of your clients will be tired because they sit in a gravity induced posture/position. This position is not the strongest neurologically.

FACTOID: We live in a chair-borne society. Because of labor-saving devices and technology, life is getting easier. In just 10 years, America has gone from 21% obesity to 39% clinically obese. We move less, expend less, and indulge more. We get up in our box beds, get into our box cars, sit in front of box desks, eat our box lunch, and head right back to our box lifestyles.

Dave Parise CPT FPTA MES

FITNESS PROFESSIONAL NEED TO THINK OUT OF THE BOX!

Why would we start our clients program with a chest press movement, or a crunch? Why do some trainers start with a forward flexed position? Why would anyone take a client to any machine at all after a day at the office? These postures create elongated and tight muscles, which creates muscular imbalances. The body automatically responds by compensating for these imbalances. This is not the optimum position for the body. Over time, the body adapts to this new posture dictated by its environmental factors. Now the body migrates toward an efficient position. This position is far from correct, but it can be corrected.

Question: If a client has protracted shoulder girdle with slight upper cross syndrome, (LOOK THAT UP) how would we demonstrate a corrective functional training program for this finding? Volunteer? Show a few moves to correct this posture.

Answer: What happens in upper cross syndrome is that several muscle groups have become shorter and tighter. They can decrease strength, flexibility, range of motion and lead to further degenerative processes (wearing down of the body—arthritis, etc.). Upper cross syndrome refers to the upper part of the body, namely the neck/upper back/chest/shoulder area. Other muscle groups have become weakened as a result of the tight muscles.

Then these problem areas start a bad cycle of more tight muscles and increased weak muscles. Unless the problem areas are corrected, there will start to be a change in the composition and integrity of the surrounding joints, muscles, cartilage, nervous structures and other tissues. This means osteoarthritis (aging or regenerative arthritis) can rear its ugly head. Postural changes of the body will also occur with these syndromes. Upper cross syndrome consists of various tightened and weak muscles. The tight muscles are as follows: upper trapezius, the

sternocleidomastoid (a large muscle in the front of the neck), the pectorals major/minor, and levator scapulae (a muscle at the back of the neck). The weakened muscles are as follows: rhomboid major/minor, deep neck flexors, middle and lower trapezius, and the serratus anterior (a muscle starting at the side of the rib cage and going back to the shoulder blade). How do you know if you have upper cross syndrome? You will see your head going forward, increased cervical curve, protracted shoulders and increased thoracic (mid-back) kyphosis (curve). This is the beginning of upper cross syndrome.

This leads to the next statement: What is an ENGRAM?

The specific dynamic action, and stability of the muscular system is based on prior motor learning and your ability to stay neutral. WE HAVE ACTUALLY BUILT A POSTURAL ENGRAM.

An ENGRAM is a series of complex commands tied in with a thought to produce a movement pattern. An ENGRAM is the permanent trace left by a stimulus in nerve tissue. It is a neurophysiologic process that accounts for persistence of memory.

For example: You don't have to think about how to tie your shoe, you just do it! Why? Because of the neurological connection you have made with practice. This is an example of an ENGRAM.

A) FORWARD FLEX AND PICK UP A DUMBBELL. CLINICAL STUDIES HAVE SHOWN THE BELLY TO FALL AND THE LOWER BACK TO GO INTO EXCESSIVE LORDOSIS BECAUSE OF NO CONNECTION, NO ENGRAM!

B) When you have properly trained the local deep muscles of the transverse region, IT PULLS YOUR BELLY BUTTON UP TOWARD YOUR SPINE FOR INTERSEGMENTAL STABILITY, AND YOU CREATE A POSTURAL ENGRAM THAT SUPPORTS ON A SEGMENTAL LEVEL.

As you can well imagine, if the inner unit were to fail or even suffer altered function under the load of outer unit functions, the spine could easily buckle, resulting in spinal injury. Judging by the statistics on spinal injury, and the authors of clinical experience, it is evident that the population at large commonly suffers from an imbalance between the inner and outer units.

When the inner and outer units are functioning synergistically, there is a characteristic look to the abdominal wall (Figure A-B). There is a noticeable oblique line and the umbilicus moves toward the spine as the torso moves through the zone of the critical point.

A) If your outer unit is dominant over your inner unit, as you bend forward to pick up a load, a string placed around the waist will become tighter as you pass through the critical point (~90 percent lumbar flexion). If the load is significant enough to require activation of both inner and outer units, the string will become loose as you bend forward and tight as you lift the load.

B) When the inner unit is strong enough to provide adequate stabilization, (This is the goal) you will stay under the stabilization threshold as you pass through the sticking point. Staying under the stabilization threshold is indicated by the fact that the rectus abdominis and external oblique musculature have not shortened and thickened, pressing on the string.

Now that you have a better understanding of how our own internal weight belt works and how it functions to stabilize our spine. Fit-Pros want to make sure that the activation of the deep stabilizing muscle is in your “daily verbiage.” It should be the start of every cue. However, do not just throw the words out, and hope the client is making the connection. As professionals, you have to teach proper form and function. Do not assume; do not guess; learn and teach!

A Look at Function, A Fit-Pro’s Mind: “Pulling”

These exercises will demonstrate a non-traditional approach to rowing and pull down movements.

Pulling exercises are often underutilized in weight training programs compared to anterior dominant movements. Chest pressing, shoulder pressing, and anterior deltoid isolation exercises oftentimes far outnumber pulling movements. Anterior dominant programs when coupled with a poor postural set (forward head, rounded shoulders, excessive kyphosis) increase the likelihood of incurring an injury. The most common injuries occur in the shoulder joint, shoulder girdle, and neck. Impingement syndrome, thoracic outlet syndrome, and cervical sprain/strains are top on the list. Programs that have an equal or greater number of pulling versus pushing exercises significantly reduce the risk of these injuries.

Secondary injuries occur within the lower back area, particularly sprain/strains and disk injuries. These injuries do not develop solely because of poor muscular balance. More often than not, people do not appropriately stabilize the spine, pelvis, and lower extremities when performing a ground-based pull. Functional pulling activities usually take place in a standing or bent over posture with the use of one or both arms. The incidence of back injuries could be lower if

exercisers were properly instructed and trained using functional pulling movements that integrate the core and legs. I think we are aware of the need for a well-balanced pulling routine, but it is equally important to examine the type of pulling exercises that are prescribed for our clients.

Let's take a look at exercise selection for the row under the microscope. Rowing exercises are traditionally performed on a variety of machines where the torso is supported by a chest pad in the seated position. There is no question that these exercises target the large back muscles and will help people look better in a tank top or a dress with a low-cut back, but these exercises do nothing as far as integrating the core and legs.

A step in the right direction is performing the traditional seated cable rowing exercise. At least with this exercise, the spinal erectors and the supporting cast of core musculature is activated. The problem still exists that individuals are sitting when training the pulling movement. If this is the only type of rowing exercise they perform, they are more likely to suffer a back injury when having to perform a functional pulling motion on their feet. We must remember that most real-life pulling movements take place on your feet and integrate the core and lower extremities.

We often have to perform the pulling motion in a modified lunge position, such as when lifting a piece of luggage off the conveyer belt, on the job for someone like a fireman, or in sports for an athlete like a wrestler. The squat position is also utilized when performing a pulling motion, such as when moving furniture. The bent over position is often incorporated, such as when picking up a small child from the floor or pulling weeds out of the garden. Last, the seated position must be addressed, as it may be functional for some, such as a competitive rower, kayaker, or crew member. We have to look at our clients with eyes that see what they do in their everyday life and prescribe appropriate exercises that will help them function optimally and avoid injury.

It is crucial that we teach our clients to stabilize the spine effectively prior to and during pulling exercises to avoid injury to the spine. We must stress the importance of ideal posture prior to and during the pulling motion. To review the key points: Maintain ideal alignment lift the ribcage, expand the chest, drive the upper arm(s) and elbow(s) down & back, retract the shoulder blade(s), keep the head/neck and lumbar spine in neutral alignment.

Often, individuals will break down in many of these key areas. Because of poor stabilization ability or too much weight load being used, exercisers often suffer postural breakdown, which is counterproductive and potentially harmful to the spine. The most common breakdown occurs first within the core. Exercisers collapse the ribcage and flex the spine, which sets off a flexion response within the body, followed by rounding the shoulders (increased kyphosis) and a forward head posture. This training effect is the complete opposite of what we want to promote.

Pulling exercises are designed to promote good posture while targeting the back muscles effectively. Our goal is to promote extension, which is set off by drawing the belly button inward (getting skinny) and lifting the ribcage. Expanding the chest and squeezing the shoulder blade(s) toward the spine promotes biased recruitment of the rhomboids, lats, and trapezius. Losing ideal posture encourages bicep recruitment and significantly decreases recruitment of the large back muscles while placing stress upon the spine. Individuals who naturally respond in this manner often exhibit poor hunched-over posture when standing. When performing a pulling motion, it is more natural for them to migrate to their comfortable faulty posture. These individuals need to address their poor postural set and strengthen their postural extension muscles with an exercise called the prone cobra (1). They should hold the end position for 10 seconds and complete 6-10 repetitions with a 10-second pause in between repetitions. Two to three sets of this exercise should be performed every other day for at least 4 weeks initially. Continue as needed to promote correction of their faulty posture.

It's also suggested to lengthen the pectorals, as they are often- times shortened. These tight muscles encourage poor pulling mechanics and may stress the spine and shoulder joint, as optimal posture and joint alignment is lost. Once warm make sure to stretch these areas prior to the weight training session. It is especially important to address this issue in the early stages of a strength program or the exerciser will continue to perform pulling exercises with faulty posture. If left unchecked over a prolonged period of time, the exerciser may encourage degeneration of the cervical and lumbar spine and predispose themselves to a disk injury and a potential shoulder injury.

We will now take a look at several pulling exercises that challenge the body in an integrated

fashion. It is important to start beginners in a position that will encourage them to focus on proper pulling mechanics while teaching the key points of stabilization, posture, and pulling. I like to start people off seated on a stability ball while performing the low cable row with two arms, then one arm.

As the exerciser shows proper balance and posture with these movements, they need to progress to their feet. The ¼ squat and ¼ lunge positions are the perfect start for teaching the integration of the legs and core. The positions are used to train the low row, high row, and diagonal pull down. Stabilizing the spine, pelvis, and lower extremities are crucial when performing these movements so as not to beat up the spine, s.i. joint, and knees. The teaching cues previously mentioned must once again be adhered to. When using the ¼ squat or ¼ lunge positions, exercisers should focus on keeping this position solid during the pulling motion. The ¼ squat positions are often deviated from as people often shift the pelvis or tuck the tail (posterior tilt) on the pulling side.

Remember that the ignition switch to promoting stability occurs by first activating the inner unit. They need to again be reminded to draw the belly button toward the spine, lift the ribcage, and expand the chest. I like to use the analogy of getting skinnier and taller during the pull phase. They need to be reminded to keep the kneecap aligned over mid-foot and imagine pressing outward against someone's fingers along the lateral thigh.

The ¼ lunge position is the most foreign to people and the most challenging to perform correctly, as you will discover. It's a great position that requires a tremendous amount of stabilization. Paul Chek's article on the outer unit does a great job of describing how stabilization is enhanced through recruiting the sling systems that make up the outer unit. If you haven't read it, be sure to do that sometime soon. A more advanced version of these movements can incorporate a parallel squat or lunge prior to the pulling movement. The pulling arm(s) should be extended in the bottom position of the squat. The lunge may be performed eccentrically and concentrically with an extended arm, and with the pull phase performed after the ascent. The lunge position (descent) may also be held statically while performing multiple reps of the rowing movement. These options increase the demand for greater dynamic stabilization, coordination, balance, and work capacity.

You may be wondering why we teach a lot of 1 arm pulling exercises with opposite arm punch-out. The rotators of the spine (obliques and multifidus particularly) must stabilize on the non-pulling side and assist in rotation on the pulling side. Many life, work or sport situations may require this type of response. The inner unit and outer unit musculature must remain activated to protect the spine. Another benefit is that the thoracic spine receives much-needed mobility, as it must rotate on the pulling side. This has a high functional carryover for those involved in throwing and striking sports, including golf. We can also train at higher speeds (under active control) if needed, as the activity may demand. One-arm training will also allow us to note and correct imbalances or weaknesses that are commonly seen on one side of the body. I hope I have challenged your thinking in regard to prescribing pulling exercises in a forward flexed loaded position. I also want to make it clear that I'm not claiming there is no place for traditional exercises like the lat pull down, pull ups, and pull overs. They are all having their place based on a specific goal. Just remember that it's not all about muscle training. There is a strong case to be made for training movements that matter. These exercises help create a healthier spine and solid foundation from the ground up. Remember who your clients are, and remember their goals as well. When was the last time a client came to you and asked for massive hypertrophy of their front delt— or for that matter, hypertrophy of ANYTHING! Get the point?

A Look at Function, A Fit-Pro's Mind: "Pushing"

The purpose of this section is to help increase your understanding of functional training and elaborate on upper body exercises with an emphasis on pushing movements. It must be understood that functional training does not focus on developing aesthetically pleasing muscles, but rather on movements that carry over to our daily life activities, on-the-job activities, and sports performance.

To create functional exercises, we need to think of training movements, not muscles... of integrating, not isolating. We need to incorporate multi-joint involvement and multi-plane involvement to create muscular and joint interdependency. Exercises such as knee extensions, leg curls, bicep curls, triceps extensions, and floor-based torso curls are isolation exercises performed in one plane of movement and are the farthest thing from functional exercises.

These exercises will certainly develop strength and hypertrophy in the muscles involved if we adhere to proper program design principles. The only problem is that our central nervous system (CNS) is not programmed to think in terms of isolated muscle function. The CNS is programmed for integrated kinetic chain movement that involves synergists, stabilizers, neutralizers and antagonists, all working together to reproduce efficient movement (intramuscular coordination). Each joint action can be thought of as a different musical instrument. To perform a movement like throwing a ball, a concert is being performed within the body, as each instrument must sound off in a synchronized manner to accomplish the desired outcome. If you were to only flex and extend the elbow joint to produce the throwing motion—an isolated joint action—little power would be exhibited. Throwing a ball optimally is an integrated movement that incorporates the legs, hips, trunk and shoulder girdle, along with the elbow and wrist.

In addition to thinking in terms of integrated multi-joint movements, a few other criteria have to be met in order for an exercise to be considered highly functional. We must think of ways to challenge the body with movements that are proprioceptively enriched, in an unstable environment, and that excite the nervous system. This is exactly the opposite of sedating the nervous system by lying on a bench, or sitting on a bench with the torso or back supported (which sounds a lot like the environment in which many machine exercises are performed, doesn't it?). We must also choose exercises that engage the spinal stabilizers to a high degree, along with the shoulder girdle and/or hip, knee, and ankle joint stabilizers and neutralizers.

Last, we need to challenge the body's base of support and the need to maintain ideal posture. If these criteria are met, the body has to work as a functional unit with a strong, stable core.

Now let's take a look at functional integrated strength training as it applies to the pushing pattern. There are a tremendous amount of options available when selecting a pushing exercise. A very common pushing pattern we see is the exercise that is performed while sitting upright on a traditional chest press machine. Although this is clearly a pushing pattern, it is not a proprioceptively enriched movement, nor is it performed in an unstable environment, or stimulating to the nervous system. Furthermore, due to the seated position and fixed path of movement, there is little activation of the spinal or shoulder girdle stabilizers and neutralizers.

There is also no challenge to the base of support and minimal need for the postural stabilizers to perform their job to maintain ideal posture.

Not only is the use of machines much for pressing exercises limited, as described above, but many of the free weight exercise options may be low on the functional continuum also. For example, you may prescribe dumbbell and barbell exercises for your clients, which involve lying supine on a bench. In performing these options, the exerciser is exciting the nervous system to a higher degree than on a fixed machine, and the shoulder girdle stabilizers and neutralizers are certainly awakened. However, remember that our goal is to meet all of the criteria to create a highly functional exercise.

THE FUNCTIONAL CHEST PRESS:

A more appropriate push pattern in the supine position would be to perform a dumbbell chest press on a stability ball in the bridge position. Now we have definitely produced a proprioceptively enriched atmosphere, and the nervous system is on red alert so that we don't fall off the ball. The spinal and hip stabilizers are certainly activated, as we must maintain the bridge position without allowing the spine and pelvis to shift laterally, rotate, or flex. The shoulder girdle stabilizers and neutralizers are engaged significantly on the spherical surface, as we must keep the dumbbells traveling along the proper path without allowing inappropriate frontal, sagittal, or transverse planes of movement.

Maintaining the base of support is especially challenged as the quads, hamstrings, glutes, spinal erectors, obliques, and associated postural stabilizing muscles must activate to maintain the bridge position. This exercise may be progressed to further increase these qualities by performing the exercise in an alternating arm fashion or with only one dumbbell.

THE FUNCTIONAL PUSH-UP: Another great exercise that is excluded in base conditioning programs is the pushup. For functional strength assessment, use the barbell pushup, which can be performed using a Smith machine, squat rack, or power cage. For those individuals with poor levels of strength, place the bar between the belly button and sternum while in a standing position. This closed chain exercise gives the trainer a good idea of the client's pushing strength, core control, and shoulder girdle stabilization ability.

THE FUNCTIONAL CABLE SINGLE-ARM CHEST PRESS: In moving along the functional

continuum, we need to perform the push pattern in a standing position. The cable single-arm chest press performed in a staggered stance challenges the entire body to work as a functional unit with a strong stable core. This exercise has a high functional carryover for many daily activities because it uses gravity. Integrating trunk rotation with the pushing pattern is the key here, as the need for dynamic trunk stabilization is required eccentrically and dynamic strength concentrically. The shoulder girdle stabilizers and neutralizers have to work overtime eccentrically with this open chain exercise to prevent external shoulder rotation and excessive extension and/or abduction. The deep abdominal wall and inner unit, obliques, and contralateral quadratus lumborum have to work in a synchronized manner to accelerate and decelerate the torso along with the arm action. It's obvious that all of the criteria are met here to create a very highly functional exercise, as the core links the upper body to the lower body. In summary, I'm sure you all can now see the many benefits to training in an integrated fashion. If you still find the need for a machine exercise, or a solid foundation... please realize that our goal is function, not muscular hypertrophy. Everything we do has a purpose and a goal. Always take into consideration the risk-benefit ratio with every loaded movement. As you complete this section, think of your clients—not your own workouts or your friends at the gym—and think of how you can move your clients along on the functional continuum. It's good for their health, and it's good for your future financial success!

Dave Parise CPT FPTA MES

Keep going your doing great...and if you find a word you don't know...Google!

TERMINOLOGY INDEX: We all need to know these terms.

Terms beginning with: A

Abdomen The region between the diaphragm and the pelvis.

Abduction Movement away from the midline of the body.

Absolute Strength The maximum force that an individual's muscle can produce in a single voluntary effort, regardless of the rate of force production.

Acceleration Increasing the speed of an entity. This rate of change of velocity is with respect to time.

Achilles The thick tendon that attaches the gastrocnemius and soleus to the calcaneus. Or the mythological half man/half god partially responsible for the destruction of Troy, who met his death from an arrow that pierced this tendon—hence, the name!

Acupuncture A practice, chiefly in Chinese medicine, of attempting to cure illness or relieve pain by puncturing specific areas of the skin with needles.

Acute Sharp, brief or severe; the initial stage of an injury.

Adaptation To adjust to new conditions.

Adduction Movement toward the midline of the body.

Adhesion The abnormal union of body tissues that are normally separate (similar to scar tissue).

Adipose Fatty substance.

Aerobic Exercise Exercise occurring in the presence of molecular oxygen in the muscle.

Afferent Neuron Sensory neuron carrying information toward the central nervous system.

Agility Ability to start, stop, and move the body quickly in different directions.

Agonist A muscle responsible for producing a specific movement through concentric muscle action.

Amino Acids A class of organic compounds that are building blocks from which protein is constructed.

Anaerobic Exercise Exercise occurring in the absence of molecular oxygen in the muscle.

Anatomical Position Standing erect, with feet and palms facing forward.

Anorexia Athletica The use of excessive exercise to lose weight, normally associated with anorexia nervosa.

Anorexia Nervosa An eating disorder characterized by a distorted body image in which a person does not take in a sufficient amount of calories, eventually causing harm to the body, and sometimes death.

Antagonist A muscle responsible for opposing the concentric muscle action of the agonist.

Anterior Anatomical term referring to the front of the body; toward the front.

Anterior Tilt Pelvic tilt in which the vertical plane through the anterior-superior spines is anterior to the vertical plane through the symphysis pubis.

Appendage A structure attached to the body such as the upper and lower extremities.

Arthritis Inflammation of a joint usually accompanied by pain, swelling and stiffness.

Articulation A joint or connection of bones.

ASIS Anterior Superior Iliac Spine.

Assessments In relation to exercise, a series of tests or screens to identify specific weaknesses or sub-par areas in a given individual's ability to perform (life, sport environment). These screens may involve nutritional factors, lifestyle patterns and biomechanical screens (flexibility, posture, static/dynamic movements, etc.).

Asymmetrical Imbalance of the arrangement of parts. Not moving together.

Atrophy Wasting away of any part, organ, tissue or cell.

Autogenic Inhibition Inhibition of the muscle spindle resulting from the Golgi tendon organ stimulation.

A vascular Without blood supply.

Avulsion Forceful tearing away of any part of a structure

Terms beginning with: B

Balance A state of equilibrium; a state in which the body has the ability to move in space in a controlled movement.

Ballistic Fast, dynamic movement.

Basal Energy Expenditure (BEE) The amount of energy required to maintain the body's normal metabolic activity (i.e., respiration, maintenance of body temperature, etc).

Basal Metabolic Rate (BMR) The rate at which the body expends energy while at rest.

Bilateral With reference to two sides.

Biomechanical Efficiency How effectively the body operates with absolute minimal stress on specific joints.

Biomechanics The study of motion and the effects of forces relative to the body.

Blood Pressure The pressure of the circulating blood against the walls of the blood vessels.

Body Composition Refers to the ratio of an individual's percentage of fatty mass to fat-free tissue mass (i.e., muscle, organs, etc.).

Body Part Exercises Exercises that isolate a particular muscle group.

Body Slings Four groups or "slings" of muscles otherwise known as "the outer unit." (Deep Longitudinal Sling, Anterior Oblique Sling, Posterior Oblique Sling, Lateral Sling.) The groups of muscles are generally referred to as the body's global muscular system and are made up of primarily phasic or movement-based muscles/fibers that are prone to early fatigue as compared to the tonic or stability-based muscles/fibers of the inner unit.

BOSU An acronym that stands for BOth Sides Up, the BOSU is flat on one side, domed on the other and is used in balance training.

Bursa A synovial-lined sac existing between tendons and bone, muscle and muscles, and any other site in which movement of structure occurs.

Terms beginning with: C

Cadence The measure or beat of a movement.

Calcium Deposit Abnormal hardening of soft tissue, usually from repeated injury.

Calisthenics Gymnastic exercises designed to develop physical health and vigor, usually performed with little or no equipment.

Calorie The amount of heat required to raise 1 kg of water 1° C; unit of energy.

Calorimeter An apparatus for measuring the heat generated by a chemical reaction, change of state or formation of a solution.

Cardiovascular Relating to the heart and blood vessels.

Carpal Tunnel The space or "tunnel" between the wrist's flexor retinaculum and carpal bones. The median nerve and the flexor tendons of the fingers pass through this tunnel.

Catecholamines A group of amines derived from catechol (including epinephrine, norepinephrine and dopamine). They play important physiological roles as neurotransmitters.

Center of Gravity The center of a body's mass. In the human body it is the point at which all parts are in balance with one another. The center of gravity is dependant upon current position in space, anatomical structure, gender, habitual standing posture, and whether external weights are being held.

Cervical Of or relating to a neck or a cervix.

Chest The trunk of the body from the neck to the abdomen.

Circadian Relating to or exhibiting approximately 24-hour periodicity.

Circuit Training Selected exercises or activities performed in sequence.

Circumduction The circular movement of a limb such that the distal end of the limb delineates an arc.

Closed Chain Exercise Exercise that occurs when the distal segment of an extremity is fixed (such as performing a squat, in which the foot is in contact with the ground).

Closed Skill A skill for which the environment is stable and predictable.

Collagen The protein of connective tissue fibers.

Combined Movement Any combination of exercises or trunk movements.

Concentric Action (shortening) The force produced by the muscle is greater than the external resistance; therefore, the muscle is able to shorten while overcoming the external load.

Connective Tissue The body's supporting framework of tissue consisting of strands of collagen, elastic fibers between muscles and around muscle groups and blood vessels, and simple cells.

Contralateral The opposite side. For example, "the right latissimus dorsi works in conjunction with the contra lateral (left) gluteus maximus."

Coordination Harmonious interaction; synchronizing movement.

Core Training Refers to the progressive training of the musculature of the lumbo-pelvic-hip complex.

Cramp A spasmodic contraction of one or many muscles.

Terms beginning with: D

Davis' Law Davis' Law states that soft tissue models along the line of stress. When applied, this means we must train in optimal alignment and never allow gross compensations or the tissues will adapt to the potential detrimental forces placed upon the human movement system (kinetic chain).

Delayed Onset Muscle Soreness (DOMS) The gradually increasing discomfort that occurs between 24 and 48 hours after activity; a common result of physical activity that stresses the muscle tissue beyond what it is accustomed to.

Diastasis 1) The abnormal separation of parts (adjacent bones/joints, abdominal muscles during pregnancy); 2) Cardiac diastole's "resting phase," which occurs between the filling of the ventricle and the beginning of atrial contraction.

Diastolic Blood Pressure Pressure exerted by the blood on the vessel walls when the heart is in its filling stage (bottom number).

Discectomy A partial or complete excision/removal of an intervertebral disk; also called discotomy.

Distal Further away from the center or median line.

Diuretics

A class of drugs used to force the kidney to excrete more sodium than usual. Increased sodium excretion causes increased water excretion, so urine volume increases. The increased sodium excretion is desirable and therapeutic in disorders causing abnormal fluid retention due to heart failure, liver failure or kidney failure.

Dorsal Pertaining to the back.

Dorsiflexion The act of bending backward (of the body or a body part). Commonly referring to the turning upward of the foot or toes or of the hand or fingers.

Dynamic Exercise Joint movement resulting from muscular exertion (concentric or eccentric).

Dynamic Posture The maintenance of the instantaneous axis or rotation of any/all working joints.

Dynamic Resting Heart Rate Term used to describe your resting heart rate as it changes daily (it is not fixed).

Terms beginning with: E

Eccentric (lengthening) Action The force produced by the muscle is less than the external resistance, but it is causing the joint movement to occur more slowly than the external resistance would tend to make the limb move.

Edema Accumulation of abnormal quantities of fluid in spaces between the cells of the body.

Edema can accumulate in almost any location in the body.

Efferent Neuron Conducts impulses from the CNS to the effector organ (e.g., motor neuron).

Efficacy The power to produce the desired effect.

Electrolyte A charged ion capable of conducting electrical current when in solutions.

Electromyography (EMG) The recording of the electrical activity in the muscle; recording the action potentials in a muscle or in muscle groups.

Endocrine Of or relating to endocrine glands and/or the hormones produced/secreted by them.

Endomysium The thin connective tissue surrounding each muscle cell.

Endorphins Any of a group of peptide hormones that bind to opiate receptors and are found mainly in the brain. Endorphins reduce the sensation of pain and affect emotions.

Endurance The act, quality or power of withstanding hardship or stress.

Energy The potential or capacity to do work.

Epimysium The sheath of fibrous connective tissue surrounding a muscle.

EPOC Excess post-exercise oxygen consumption.

Ergogenic Increasing the body's ability for physical and/or mental work by eliminating the element of fatigue.

Extension Dorsal exercises or trunk movements performed in the sagittal plane around a transverse axis.

External Rotation Rotation occurring away from midline; outward rotation.

Extrinsic Originating from the exterior or outside of an entity (i.e., an organ, muscle or the body itself). Example: A dumbbell is an extrinsic load.

Terms beginning with : F

Fascia A general term for a layer or layers of loose or dense fibrous connective tissue.

Fatigue In terms of training and exercise, it may be defined as: the failure of one or more neuromuscular energy systems (phosphagen, glycolysis, and oxidative systems), caused by repetitive movements (exercising) of given intensities (intrinsic/extrinsic resistance loads, etc.) over specific durations (minutes, hours, days, weeks, etc.)

Feldenkrais Method A method of working with the body devised by Mosh Feldenkrais. Its main goal is to deprogram poor postural and muscular habits and reprogram new patterns by gentle awareness through movement exercises.

Fibrosis The formation of fibrous tissue. Fibrosis is caused by many factors, including injury, inflammation and infection.

Fitness The state or condition of being physically sound and healthy, especially as the result of exercise and proper nutrition.

Fixed Pattern Many machines are designed with a predictable pattern of movement. Equipment manufacturers have designed machines to aid in the fixation of joints, allowing for precise placement of limbs. This ensures that a target area is maximally recruited while other muscles remain largely dormant.

Flexibility The ability to readily adapt to changes in position or alignment; may be expressed as normal, limited or excessive.

Flexion Anterior exercises or trunk movements performed in the sagittal plane around a transverse axis.

Force An interaction between two objects in the form of a push or pull that may or may not produce motion.

Force Couple Two forces that are equal in magnitude and, acting in opposite directions, produce rotation about an axis.

Free Weights Free weights are often used without the constraint that machines offer. For example, in the standing position, the entire body supports the free weight, taxing a larger portion of the body's musculature than would a traditional machine. The movement of a free weight is constrained by the lifter rather than a machine, requiring muscles to work in stabilization as well as in motion. The lifting of free weights involves a more natural coordination of several muscle groups.

Frequency Rate of reoccurrence.

Frontal Plane A plane parallel to the long axis of the body and perpendicular to the sagittal plane, which separates the body into front and back portions.

Function (noun) The acts or operations expected of a person or thing. The ability of a living being to perform in a given way or capacity for a particular kind of performance. (verb) To perform the duties or functions of. To serve, operate, perform.

Functional Carryover The skill obtained through training that can be carried over to everyday function.

Terms beginning with: G

Gait A particular way or manner of moving on foot; locomotion (i.e., walk, jog, run).

Gait Cycle Sometimes called the walking cycle, the gait cycle begins when one foot contacts the ground and ends when that foot contacts the ground again. To put it another way, the gait cycle extends from heel strike to heel strike of one leg and includes the stance and swing phases of both legs.

Generalized Motor Programs Consists of a stored pattern, which can be modulated slightly when the program is executed. This allows the movement to be adjusted to meet the altered environmental demands.

Genu Valgum Knock-knees, defined as a medial displacement of the distal end of the distal bone in the joint.

Glucophage An antidiabetic drug (trade name Glucophage) prescribed to treat Type II diabetes.

Glycemia The presence of glucose in the blood.

Golgi Tendon Organ A sensory organ located within the tendon that has a high threshold and responds to great amounts of tension on the tendon, regardless of whether it is produced by a stretch or a contraction. When stimulated, it will cause an inhibition of the agonist and facilitation of the antagonist.

Terms beginning with: H

Heavy Weight Training Usually defined (definition changes based on author) as a load used to enhance strength adaptation or neural adaptation. Strength training usually utilizes 6-8 repetitions for 3-4 sets @ 75-85% intensity. Neural adaptations utilize 1-5 repetitions for 4-8 sets @ 85-100% intensity.

Hernia The protrusion or rupture of an organ or other bodily structure through the wall of the cavity that normally contains it.

High Blood Pressure A common disorder in which blood pressure remains abnormally high (a reading of 140/90 mm Hg or greater). Also known as hypertension.

Homeostasis Maintenance of the body's internal environment.

Humerus The long bone of the arm or forelimb, extending from the shoulder to the elbow.

Hyper A prefix meaning above, beyond or excessive. For example, hypertonic means tone

beyond normal.

Hyperkyphosis Excessive curvature of the thoracic (middle) spine.

Hyperlordosis Excessive curvature of the lumbar (lower) spine and/or cervical spine.

Hypertrophy Excessive growth of an organ and/or tissues.

Hypo A prefix meaning below or deficient. For example, hypotonic means tone below normal.

Hypokinetic Lack of physical activity.

Hyponatremia Lower than normal level of sodium in the blood, which can be associated with dehydration.

Terms beginning with: I

Ileostomy The construction of an artificial opening from the ileum (lowest division of the small intestine) through the abdominal wall, permitting drainage of the contents of the small intestine.

Iliotibial Band (IT Band) The thick band of fascia that runs down the lateral length of the upper leg from the iliac crest to the lateral condyle of the tibia.

Imbalance The state or condition of lacking balance (muscular imbalances). Lack of balance and normal symmetry within the muscular system.

Impingement An encroachment on the space occupied by soft tissue, such as nerve or muscle. In this text, impingement refers to nerve irritation (i.e., from pressure or friction) associated with muscles.

In Vitro Functioning outside of or detached from the body.

In Vivo Functioning within the body.

Innervation Nerve stimulation of a muscle.

Internal Rotation Rotation occurring toward midline; movement inward.

Interstitial The space within an organ.

Interval Training Athletic training that alternates between two different activities, such as walking and jogging, or between two different rates of speed.

Inversion A dislocation of a bodily structure in which it is turned partially or wholly inside out, or the condition (as of the foot) of being turned or rotated inward.

Ipsilateral The same side of the body.

Ischaemic Localized tissue anemia due to obstruction of the inflow of arterial blood (as by the narrowing of arteries by spasm or disease).

Isokinetic Exercise Contractions performed at constant angular velocity.

Isolate-Integrate When a weak link is identified, it may be important to emphasize the target area by isolating the joint movement. Isolated strength can then be integrated with the rest of the body.

Isolation Normally defined as a single joint motion. It is important to remember that one cannot isolate a muscle while resistance training. For example, immediately following a load application, the stabilizer muscles become partially involved, due to the machine's assistance. The outside assistance (machine) helps the body or specific joint(s) to remain stable while the prime movers cope with the load. Although we cannot isolate muscles, we can use certain machines to isolate joints, which will emphasize a target area.

Isometric Action Iso = same; metric = length. The force produced by the muscle is equal and opposite to the external resistance, therefore, there is no net change in muscle length—no limb movement; also referred to as static exercise.

Isotonic Of or involving muscular contraction in which the muscle remains under relatively constant tension while its length changes.

Isotonic Exercise Exercise involving constant muscle contraction.

Terms beginning with: J

Joint Capsule The thin, cartilaginous, fatty, fibrous, membranous structure that envelopes a joint. Fluid inside the joint capsule lubricates the area, allowing bones to glide smoothly against each other.

Terms beginning with: K

Kegal Exercises Exercises designed to gain control of and tone the pelvic floor muscles by controlled isometric contractions and relaxation of the muscles surrounding the vagina.

Ketone Body A ketone-containing substance, such as acetoacetic acid, that is an intermediate product of fatty acid metabolism. Ketone bodies tend to accumulate in the blood and urine of individuals affected by starvation or uncontrolled diabetes mellitus. Also called acetone body.

Ketosis A pathological increase in the production of ketone bodies, as in uncontrolled diabetes

mellitus, or the state of depleted glycogen stores (which can be seen in individuals on very low-carb diets).

Kinematics Area of study that examines the spatial and temporal components of motion (position, velocity, acceleration).

Kinesiology The scientific study of human movement.

Kinetic Chain The connection of all the parts of your body to one another, directly or indirectly. Moving one part of your body can affect another body part. Your trunk is where the kinetic chains come together.

Kinetic System Any system where each part of it is in some way influenced when changes occur in other parts of the system.

Kyphosis A condition characterized by an abnormally increased convexity in the curvature of the thoracic spine as viewed from the side.

Terms beginning with: L

Lactate Threshold (i.e., anaerobic threshold). The point at which there is no longer adequate oxygen for the mitochondria of the working cells to produce ATP energy (i.e., aerobic energy production has failed), and thus, the cells go into anaerobic energy production (i.e., fast/slow glycolysis and phosphagen systems) for that needed energy. This is also the point at which lactic acid begins to accumulate within the muscle, eventually inhibiting normal contractile ability.

Lactic Acid A syrupy, water-soluble liquid present in muscle tissue and blood as a result of anaerobic glucose metabolism.

Laminectomy A surgical procedure that removes the posterior arch of a vertebra. Also called rachiotomy.

Length-Tension Ratios The relationship between the length of the muscle and the tension produced by the muscle.

Ligament A fibrous connective tissue that connects bone to bone or cartilage to bone, supporting and strengthening a joint.

Litmus Test A crucial and revealing test in which there is one decisive factor.

Loin Pain Haematuria (LPH) Syndrome A combination of loin or kidney pain and haematuria, a medical term for blood in the urine.

Lordosis An abnormal anterior curve, usually found in the lumbar region, and as such is an exaggeration of the normal anterior curve; often called “hollow back.” (Avoid the use of the term “normal lordosis.”) It is accompanied by anterior pelvic tilt and hip joint flexion. If used without any modifying word, it refers to lumbar lordosis. In the thoracic region, occasionally there is a slight lordosis, which is a reversal of the normal posterior curve. In a typical forward head position, the neck is in a position of extension that is greater than the normal anterior curve, and as such resembles a lordosis. (“Muscles Testing and Function,” Kendall, McCreary & Provance)

Lower Cross Syndrome This condition is characterized by tight hamstrings, tight psoas (deep abdominal flexor), weak abdominals and weak gluteal muscles. This is a very common presentation for chronic low back pain/buttocks and hip pain.

Luxation Bones in a joint that are no longer in the correct functional position to each other. It means the same as dislocation.

Lymph Node A small oval structure located along lymphatic vessels.

Lymphatic The system of vessels involved with drainage of bodily fluids and toxins.

Terms beginning with: M

Machine Assistance Outside support that equates to less overall muscular effort.

Maintenance of Center of Gravity Most activities involve the influence of gravity in a three-dimensional, unstable environment.

Meniscus A disk of cartilage between the articulating ends of the bones in a joint.

Menopause The period of natural and permanent cessation of the female menstrual cycle that usually occurs between the ages of 45 and 55.

Metabolic Equivalent (MET) 1 MET is equal to the amount of energy expended during 1 minute at rest, which is roughly 3.5 milliliters of oxygen per kilogram of body weight per minute (3.5 ml/kg/min) or 1.2 kcals per minute for a 70 kg (150 lb.) person.

Micronutrients The vitamins and minerals that help structure the body, as well as regulate all reactions and processes that take place within the body.

Micro-Progression Very slow changes in progression.

Mobility Capable of moving or being moved readily (as in joint mobility); movement around an

entire joint.

Motor Neuron Neurons that carry impulses from the brain and spinal cord to the muscle receptors.

Motor Unit A motor neuron and all the muscle fibers it stimulates, innervates, or activates. The size of the motor unit is usually related to the degree of control required by the muscle.

Movement A result of the harmonious functioning of the sensory and motor systems in concert with the central and peripheral nervous system.

Multiple Sclerosis (MS) A chronic autoimmune disease of the central nervous system in which gradual destruction of myelin occurs in patches throughout the brain, spinal cord or both, interfering with the nerve pathways and causing muscular weakness, loss of coordination, and speech and visual disturbances.

Muscle Soreness Muscles that are painful to the touch or tender.

Musculoskeletal System The skeleton and its associated bones, the ligaments, tendons and the muscles.

Myofascial Skeletal muscles ensheathed by fibrous connective tissue.

Myofascial Unit A muscle and the fascia that directly surrounds it.

Terms beginning with: N

Nervous System The brain, spinal cord and all the nerves in the body.

Neural Drive A measure of the number and amplitude of nervous system impulses to a muscle.

Neuron A conducting cell in the nervous system that specializes in generating and transmitting nerve impulses.

Neutral Posture A halfway zone between a person's ability to flex and extend. Neutral posture involves a minimal amount of stress and strain, and is conducive to maximal efficiency of the body. (Also called ideal posture)

Neutralizer Muscle A muscle responsible for eliminating or canceling out an undesired movement.

Terms beginning with: O

Obesity An excessive accumulation of body fat—generally speaking, over 25% for men and over 30% for women—with a wide range of causative variables including and not limited to: stress,

nutrition, dehydration, toxicity, poor sleep/wake cycles and genetics.

One Repetition Max The greatest amount of weight a person can lift one time in good form.

Open Chain Exercise Exercise that occurs when the distal segment of an extremity is free, such as performing a knee extension exercise.

Open Skill One for which the environment is stable and unpredictable.

Osteoporosis A decrease in bone density.

Overload Stressing the body or parts of the body to levels above what is normally experienced.

Terms beginning with: P

Par Defect A fracture or separation of the Pars Interarticularis. This is the small bridge of bone known as the neural arch that connects the facet joints at the back of the spine. A pars defect can be referred to as spondylolysis or spondylolisthesis. A spondylolysis is presence of the defect only. Individuals with a bilateral pars defect can progress to spondylolisthesis—a forward slipping of the vertebral body of the vertebra with the defect on the adjacent vertebrae.

Path Variable Many path options.

Pattern Overload Many repetitions performed in the same pattern can lead to overloading soft tissues beyond necessary stimulus.

Pelvic Girdle The two hip bones.

Pelvis Composed of the two hip bones, sacrum and coccyx.

Perceived Volitional Fatigue Similar to Rate of Perceived Exertion (RPE). The exerciser is choosing/deciding on a specific level of exertion/fatigue based on how they feel.

Perimysium The connective tissue enveloping bundles of muscle fibers.

Periosteum The fibrous connective tissue that surrounds the surface of bones.

Peroneal Of or relating to the fibula or to the outer portion of the leg.

Pilates A method of physical and mental exercise involving stretches and breathing that focuses on strengthening the abdominal core.

Piriformis Syndrome A condition in which the piriformis muscle irritates the sciatic nerve, causing pain in the buttocks and referring pain along the course of the sciatic nerve. This referred pain, called “sciatica,” often goes down the back of the thigh and/or into the lower back.

Planes

The three basic planes of reference are derived from the dimensions in space and are at right angles to each other. Sagittal Plane: A vertical plane that extends front to back. It may also be called anterior-posterior plane. Coronal Plane: A vertical plane that extends from side to side. It is also called the frontal or lateral plane, and it divides the body into anterior and posterior sections. Transverse Plane: A horizontal plane that divides the body into upper and lower portions. It is also called the horizontal plane.

Plantar Fasciitis Inflammation of the plantar fascia (bottom of the foot) causing pain during any weight-bearing activity.

Plantar Flexion Movement of the foot that flexes the foot or toes downward toward the sole.

Plyometrics A type of exercise using explosive movements to develop muscular power, especially bounding, hopping and jumping.

Popliteal Space The space behind the knee joint, which is bounded by ligaments and contains soft tissue including nerves, fat, membranes and blood vessels.

Posterior Behind; to the rear; the opposite of Anterior.

Postural Response A change of body position that leads to a change in the projection of the center of mass.

Power Ability to exert muscular strength quickly.

Prehabilitation Refers to the prevention of injury by training the joints and muscles that are most susceptible to injury in an activity. Unlike rehabilitation, prehabilitation deals with injuries before they occur.

Prenatal Existing or occurring before birth.

Prognosis Prediction of the course of an injury or disease, including its end result.

Prolapse The falling down or slipping of a body part from its usual position or relations.

Prone Lying face downward.

Proprioception The neurological sense that allows one to know not only where one is in space, but also the position and location of each individual part and joint.

Proprioceptive Neuromuscular Facilitation (PNF) A method of promoting a response of neuromuscular mechanisms through the stimulation of proprioceptors in an attempt to

facilitate increased range of motion, increased strength and movement pattern control.

Protraction The act of moving an anatomical part forward.

Proximal Nearer to the center or median line, or to the thorax.

Pyramidalis A small muscle, triangular in shape, placed at the lower part of the abdomen, in front of the rectus abdominis and contained in the same sheath with that muscle. The pyramidalis are tensors of the linea alba.

Pyramiding Method of lifting that can be done in two ways: 1. Beginning with sets that use a lighter load and higher rep count, then progressing to a heavier load and lower rep count. 2. Beginning with sets that use a heavier load and lower rep count, then progressing to a lighter load and higher rep count.

Terms beginning with: Q

Q-Angle The angle formed by the longitudinal axis of the femur and the line of pull of the patellar ligament.

Terms beginning with: R

Range of Motion The range, measured in degrees of a circle, through which a joint can be flexed and extended. Active range of motion: voluntarily moving a joint through a controlled range of motion; active movement of a joint. Passive range of motion: having an external force move a joint through its range of motion.

Reciprocal Inhibition The concept of muscle inhibition caused by a tight agonist, which inhibits its functional antagonist.

Rectus Abdominis A long, flat muscle on either side of the linea alba that extends along the whole length of the front of the abdomen; it arises from the pubic crest and symphysis, and is inserted into the cartilages of the fifth, sixth and seventh ribs. This muscle acts to flex the spinal column, tense the anterior wall of the abdomen, and assist in compressing the contents of the abdomen.

Repetition The act of repeating (doing again) an action/movement.

Resting Heart Rate A measure of heart beats per minute when the body is completely at rest, such as in the morning while still in bed.

Retraction The act of drawing back or in; shrinking.

Rhabdomyolysis An acute, fulminate, potentially fatal disease that breaks down and destroys skeletal muscle; it is often accompanied by the excretion of myoglobin in the urine.

Rotation Exercises or trunk movements performed in the transverse plane, around a longitudinal axis, to the left or right.

Terms beginning with: S

Sacroiliac Joint (SI Joint) The joint or articulation between the sacrum and ilium that forms the junctions between the spine and each side of the pelvis. Like the vertebrae in the lower back, the SI joints bear the weight and stress of the torso, which makes them susceptible to injury.

Sagittal The sagittal plane (otherwise known as the anterior/posterior plane) is an imaginary line that divides the body into right and left halves. Sagittal plane exercises lie on the frontal axis.

Saw Palmetto Extract The extracted nutrition of the Saw Palmetto tree's berries, thought to possibly be beneficial to prostate health.

Scaption A shoulder movement that is between a shoulder lateral raise and a front raise. You raise your arm at a 45-degree angle from your body, so it's not straight in front of you or straight out to the side, with the thumb pointing upward. This allows the greater tubercle of the humerus to avoid impingement with the acromion process.

Scapulohumeral Rhythm The movement relationship between the humerus and the scapula during arm-raising movements.

Self Myofascial Release (SMR)

A "self-massage" technique generally performed by moving the desired muscle(s) over a foam roller, with the goal of increasing flexibility through the general decrease of muscular adhesions.

Set A series of consecutive repetitions of a given exercise, performed as a group.

Soft Tissue Usually referring to myofascial tissues, or any tissues that do not contain minerals (such as bone).

Soy Protein A high-protein product made from soybeans, used as a supplement and as a meat substitute or extender.

Speed Ability to move the whole body quickly.

Spina Bifida A congenital defect in which the spinal column does not fully grow closed and remains exposed so that a portion of the spinal cord cover (meninges) or the spinal cord itself may protrude, often resulting in neurological disorders.

Spondylolisthesis A condition in which one vertebra slides forward over the bone below it. It most often occurs in the lower spine. In some cases, this may cause your spinal cord or nerve roots to be squeezed, resulting in back pain and numbness or weakness in your legs.

Spondylolysis A stress fracture that occurs in the posterior part of the spine known as the pars intrarticularis. It can be unilateral (involving one side) or bilateral (involving both sides).

Although the defect can be found at any level, the most common vertebra involved is the 5th Lumbar vertebra (or L5). Spondylolysis is the most common cause of spondylolisthesis.

Sprain A stretch and/or tear of a ligament, the fibrous band of tissue that connects the end of one bone with another.

Squat To sit in a crouching position with knees bent and the buttocks on or near the heels.

Stability Remaining consistent and steady. Joint stability: integrity of the entire joint.

Stabilization The ability to control the body both statically and dynamically.

Stabilizing Muscles Muscles that support or stabilize the body, while the prime movers and synergists perform movement patterns.

Static Posture The position of the body at rest, sitting, standing or lying.

Static Stability An ability of the neuromuscular system to coordinate low amplitude perturbations in order to resist significant displacements through the skeletal system.

Sticking Point The point in a movement or exercise through which movement is most difficult.

This is especially pertinent in free motion exercises like the squat, where posture and body position are so demanding—it is often very tempting to break form in order to pass through the sticking point, and that is where the body becomes most susceptible to precarious positions and potential injury. Another example: The point in the range of motion where the person performing it is at a biomechanical disadvantage, such as the 90-degree position in an isolated arm curl.

Stomach The enlarged, saclike portion of the alimentary canal, one of the principal organs of digestion, located between the esophagus and the small intestine.

Strain

A twist, pull and/or tear of a muscle and/or tendon, the fibrous cord of tissue that attaches muscles to bone.

Stress A physiological or psychological response to a stressor beyond what is needed to accomplish a task.

Stressor Any stimulus or condition that causes physiological arousal beyond what is necessary to accomplish the activity.

Structural Exercises Exercises that require neural communication between muscles, and promote coordinated use of multi-joint movements.

Subcutaneous Below the skin.

Subluxation Incomplete or partial dislocation of a bone in a joint.

Super Set 1. Two exercises involving ANTAGONISTIC muscles performed back-to-back (i.e., overhead press/pull-ups), OR 2. Two exercises involving the SAME muscle group performed back-to-back (i.e., overhead press/lateral raise).

Supine Lying with the face upward.

Synchronization of Motor Units A neural factor that could increase force production. The greater the synchronization, the greater the number of motor units firing at any one time.

Syndrome A set of symptoms occurring together.

Synovium A thin layer of connective tissue with a free, smooth surface that lines the capsule of a joint. Synovial fluid lubricates and facilitates movements of the joint.

Terms beginning with: T

Tactile Pertaining to touch.

Tempo The rate of speed of a repetition.

Tendons A cord of dense, tough tissue connecting a muscle with a bone or part of a bone.

Testosterone Primary male hormone responsible for skeletal muscle development.

TFL (Tensor Fasciae Latae) A muscle of the hip and leg. Origin: Iliac crest just posterior to the ASIS. Insertion: Tibia by way of the Iliotibial tract (IT band). Function(s): Concentric—hip flexion, hip abduction, hip internal rotation. Isometric—dynamic stabilization of the lumbo-pelvic-hip

complex. Eccentric—deceleration of hip extension, hip adduction, and external rotation.

Thermogenetic Generation or production of heat, especially by physiological processes.

Thoracic The chest or rib region of the trunk consisting of twelve vertebrae.

Thorax The region between the neck and abdomen.

Thyroid Gland A two-lobed endocrine gland found in front of and on either side of the trachea in humans. It produces various hormones such as triiodothyronine and calcitonin.

Tibialis A skeletal muscle arising from the tibia; it provides plantar flexion and inversion of the foot.

Tightness Shortness; denotes a slight to moderate decrease in muscle length; movement in the direction of lengthening the muscle is limited.

Transverse Abdominis Muscle inserting on the last six ribs, iliac crest, inguinal ligament, lumbodorsal fascia, linea alba and pubic crest; increases intraabdominal pressure.

Transverse Plane A plane across the body at right angles to the coronal and sagittal plane, and perpendicular to the longitudinal axis of a body or object; OR a plane dividing the body into an upper and lower section. Also called a horizontal plane.

Trunk The part of the body to which the upper and lower extremities attach.

Terms beginning with: U

Unilateral Pertaining to one side.

Upper Cross Syndrome Exhibited by a forward head and rounded shoulder posture.

Terms beginning with: V

Valsalva Maneuver A common technique used in lifting weights, where the breath is held during a forced exhalation to increase thoracic pressure.

Venous Return The flow of blood from the venous system into the right atrium of the heart.

Vertebrae Individual bones that comprise the spinal column.

Viscosity The degree to which a fluid resists flow under an applied force.

VMO Otherwise known as the vastus medialis, the division of the quadriceps muscle that covers the inner anterior aspect of the femur.

VO2 Max The highest volume of oxygen an individual's body can use/consume during exercise, otherwise known as maximum aerobic capacity.

Volume Refers to total work load done within the context of a training session and/or particular time frame (i.e., total sets, reps, load, etc.)

Voluntary Movement A movement performed under the volition of an individual.

Terms beginning with: W

Watt A unit of power equal to one joule (unit of electrical energy) per second.

Whiplash A non-medical term meaning an injury to the neck caused by hyperextension and/or hyperflexion.

Work The product of force and distance.

Terms beginning with: Y

Yoga Freedom of the self from its temporary state through methods such as exercise and relaxation.

Yogi A person who practices yoga.

No definitions for X or Z in this Glossary.

Hope this helped! Dave Parise CPT FPTA MES

“ALWAYS GIVE YOUR CLIENTS MORE THAN THEY EXPECT TO GET... AND IT WILL RETURN TENFOLD!”

*****Think Beyond Boundaries!*****

Consult not your fears but your hopes and dreams.

Think not about your frustrations, but about your unfulfilled potential.

Concern yourself not with what you tried and failed in, but with what is still possible for you to do.

The more goals you set, the more goals you get!

The proper way to change people is through genuine kindness and concern.

Desire is the key to motivation, but it's the determination and commitment to an unrelenting

pursuit of your goal—commitment to excellence—that will enable you to attain the success you seek.

It doesn't matter how many say it cannot be done or how many people have tried it before; it's important to realize that whatever you're doing, it is your first attempt at it.

Remember, your attitude determines your altitude!

Go beyond your typical training session. If you give a bit more...it will be noted and return ten fold!

A Great Read for Fit-Pros

What made Tiger Woods great? What made Warren Buffet the world's premier investor? We think we know: Each was a natural who came into the world with a gift for doing exactly what he ended up doing. As Buffet told Fortune magazine not long ago, he was "wired at birth to allocate capital." It's a one-in-a-million thing. You've either got it—or you don't.

Well, folks, it's not so simple. For one thing, you do not possess a natural gift for a certain job, because targeted natural gifts don't exist. (Sorry, Warren.) You are not a born CEO or investor or chess grandmaster. You will achieve greatness only through an enormous amount of smart work over many years. And not just any hard work, but work of a particular type that's demanding and painful. Buffet, for instance, is famed for his discipline and the hours he spends studying financial statements of potential investment targets.

Talent has little or nothing to do with greatness. You can make yourself into any number of things, and you can even make yourself great. Understand that talent doesn't mean intelligence, motivation or personality traits. It's an innate ability to do some specific activity especially well.

No Substitute for Smart Work

The first major conclusion is that nobody is great without work. It's nice to believe that if you find the field where you're naturally gifted, you'll be great from day one, but it doesn't happen. There's no evidence of high-level performance without experience or practice. Reinforcing that no-free-lunch finding is vast evidence that even the most accomplished people need about ten years of hard work before becoming world-class, a pattern so well established that researchers

call it the ten-year rule. What about Bobby Fischer, who became a chess grandmaster at 16? Turns out the rule holds: He'd had nine years of intensive study. The ten-year rule represents a very rough estimate, and most researchers regard it as a minimum, not an average. In many fields (music, literature) elite performers need 10 or 20 years' experience before hitting their zenith. So greatness isn't handed to anyone; it requires a lot of hard work. Yet that isn't enough, since many people work hard for decades without approaching greatness or even getting significantly better. What's missing?

Practice Makes Perfect

The best people in any field are those who devote the most hours to what the researchers call "deliberate practice." It's activity that's explicitly intended to improve performance, which reaches for objectives just beyond one's level of competence, provides feedback on results and involves high levels of repetition. For example: Simply hitting a bucket of balls is not deliberate practice, which is why most golfers don't get better. Hitting an eight-iron 300 times with a goal of leaving the ball within 20 feet of the pin 80 percent of the time, continually observing results and making appropriate adjustments, and doing that for hours every day—now that's deliberate practice.

Consistency is crucial. Elite performers in many diverse domains have been found to practice, on the average, roughly the same amount every day, including weekends.

The Skeptics

Not all researchers are totally on board with the myth-of-talent hypothesis, though their objections go to its edges rather than its center. For one thing, there are the intangibles. Two athletes might work equally hard, but what explains the ability of New England Patriots quarterback Tom Brady to perform at a higher level in the last two minutes of a game?

Certainly some important traits are partly inherited, such as physical size and particular measures of intelligence, but those influence what a person doesn't do more than what he does; a five-footer will never be an NFL lineman, and a seven-footer will never be an Olympic gymnast. Even those restrictions are less severe than you'd expect: Some international chess

masters have IQs in the 90s. The more research that's done, the more solid the deliberate practice model becomes.

Real-World Examples

All this scholarly research is simply evidence for what great performers have been showing us for years. To take a handful of examples: Winston Churchill, one of the 20th century's greatest orators, practiced his speeches compulsively. Vladimir Horowitz supposedly said, "If I don't practice for a day, I know it. If I don't practice for two days, my wife knows it. If I don't practice for three days, the world knows it." He was certainly a demon "practicer," but the same quote has been attributed to world-class musicians like Luciano Pavarotti.

Many great athletes are legendary for the brutal discipline of their practice routines. In basketball, Michael Jordan practiced intensely beyond the already punishing team practices. (Had Jordan possessed some mammoth natural gift specifically for basketball, it seems unlikely he'd have been cut from his high school team.)

In football, all-time-great receiver Jerry Rice—passed up by 15 teams because they considered him too slow—practiced so hard that other players would get sick trying to keep up.

Tiger Woods is a textbook example of what the research shows. Because his father introduced him to golf at an extremely early age—18 months—and encouraged him to practice intensively, Woods had racked up at least 15 years of practice by the time he became the youngest-ever winner of the U.S. Amateur Championship at age 18. Also in line with the findings, he has never stopped trying to improve, devoting many hours a day to conditioning and practice, even remaking his swing twice because that's what it took to get even better.

What It Takes to Be Great...

This Side of Business

Dave Parise had the idea of becoming an uncommon personal trainer. His passion was over and above the idea of making money. He developed uncommon exercises, he ridiculed most "body builders' gym science," he laughed at "Muscle & Fiction" magazine. He built his dream with customer service, continuing his education, and thinking instead of following. Today he has earned a dollar for every ounce of passion and desire he possesses. He deliberately practiced

relationships, nurturing, pampering, and giving people more than they expected to get. It worked! The evidence, scientific as well as anecdotal, seems overwhelmingly in favor of deliberate practice as the source of great performance. Just one problem: How do you practice business? Many elements of business, in fact, are directly practicable. Presenting, negotiating, and delivering evaluations... you can practice them all. Still, they aren't the essence of great managerial performance. That requires making judgments and decisions with imperfect information in an uncertain environment, interacting with people, seeking information—can you practice those things too? It's all about how you do what you're already doing... you create the practice in your work, which requires a few critical changes. The first is going at any task with a new goal: Instead of merely trying to get it done, you aim to get better at it. Being a Fit-Pro involves finding information, analyzing it, presenting it, teaching it, and observing it... and observing it... and observing it! (Did I say to observe it?) Anything that you do at work, from the most basic task to the most exalted, is an improvable skill. When you take service beyond the workplace and follow-up with your client, you take your reputation to a whole new level.

Adopting a New Mindset

Arm yourself with a new mindset; go at your job in a new way. You aren't just doing the job; you're explicitly trying to get better at it in the larger sense. Research shows you will process information more deeply and retain it longer. You will want more information on what you're doing and seek other perspectives. You will adopt a longer-term point of view. A positive mindset persists and remains creative and clear. Again, research shows that this difference in mental approach is vital. For example, when amateur singers take a singing lesson, they experience it as fun, a release of tension. But for professional singers, it's the opposite: They increase their concentration and focus on improving their performance during the lesson. Same activity, different mindset. Feedback is crucial, and getting it should be no problem in business. Yet most people don't seek it; they just wait for it, half hoping it won't come. Without it, as Goldman Sachs leadership-development chief Steve Kerr says, "it's as if you're bowling through a curtain that comes down to knee level. If you don't know how successful you are, two things happen: One, you don't get any better, and two, you stop caring." In some companies, like General Electric, frequent feedback is part of the culture. If you aren't lucky enough to get that,

seek it out.

Be the Ball

Through the whole process, one of your goals is to build what the researchers call “mental models of your business,” mental pictures of how the elements fit together. I call it “a preview of coming attractions” and how they influence one another. The more you work on it, the larger your mental models will become and the better your “performance attitude” will grow.

(Positive self talk...)

Are You Creating a Blue Ocean?

Concept of the Blue Ocean

The “ocean” refers to the market or industry. “Blue oceans” are untapped and uncontested markets, which provide little or no competition for anyone who would dive in, since the markets are not crowded. A “red ocean,” on the other hand, refers to a saturated market where there is fierce competition, already crowded with people (companies) providing the same type of services or producing the same kind of goods. The idea is to do something different from everyone else... produce something that no one has yet seen, thereby creating a “blue ocean.” An essential concept is that the innovation (in product, service, or delivery) must raise and create value for the market, while simultaneously reducing or eliminating features or services that are less valued by the current or future market.

BLUE OCEAN STRATEGY

How to Create Uncontested Market Space

Make the Competition Irrelevant

Since the dawn of the industrial age, companies have engaged in head-to-head competition. They have fought for competitive advantage, battled over market share, and struggled for differentiation. Now imagine instead the prospects for growth if companies could operate with no competitors at all. In BLUE OCEAN STRATEGY: How to Create Uncontested Market Space and Make the Competition Irrelevant (Harvard Business School Press; February 3, 2005), W. Chan Kim and Renée Mauborgne challenge everything you thought you knew about the requirements for strategic success, and instead argue that the way to win

is to

stop competing.

Examples:

1. Curves, the Texas-based women's fitness company, entered the oversaturated fitness market to acquire more than two million members in more than six thousand locations with total revenues exceeding the \$1 billion mark.

2. In less than twenty years, Cirque du Soleil grew to levels of revenue that took Ringling Bros. and Barnum & Bailey over a hundred years to achieve.

3. The [yellow tail] brand of Australian winery Casella Wines took only two years to skyrocket to #1 in the fiercely competitive U.S. market for imported wine.

Each of these companies created blue oceans that made the competition irrelevant.

The strategies they used can be replicated in any industry and in every company—start-ups and established Fortune 100 companies alike—with the tools and principles presented in BLUE OCEAN STRATEGY.

Most companies make the mistake of battling for success in a bloody “red ocean” of rivals fighting over a shrinking profit pool. In the red ocean, industry boundaries are defined and accepted, prices are driven lower, and the competitive rules of the game become known. As the market space gets increasingly crowded, prospects for profits and growth decline. To create blue oceans, Kim and Mauborgne argue that companies need to use an opposite approach. Instead of benchmarking the competition, they set their own rules and create “blue oceans” of uncontested market space ripe for growth.

By changing their strategic thinking and using a systematic approach, the authors show how companies can reach beyond existing demand to find a blue ocean of new market space with the potential for huge profits and growth. In the red ocean, companies limit their own growth by only seeking customers from the current market. Instead, they should look to non-customers outside of the market so they can create a new market space as vast and limitless as a blue ocean.

While all blue oceans eventually inspire imitators, the unconventional logic of true blue oceans renders competitors obsolete for decades. BLUE OCEAN STRATEGY offers an inspiring message: that success is not dependent on fierce competition, expensive marketing or R&D budgets, but on smart, strategic moves that can be used systematically by established companies and start-ups alike. The tools they describe level the playing field for success. At a time when global competition is intensifying and supply exceeds demand, this landmark work will chart a bold new path to winning the future.

I personally recommend the book, BLUE OCEAN STRATEGY, as one of the top reads for anyone who wants to make mega \$\$\$\$.

Below are the top resources that made this manual possible.

Please call us we would love to lend an ear, and give some advice.

1. Joint Structure And Function: A Comprehensive Analysis (Joint Structure and Function) by Pamela K. Levangie and Cynthia C. Norkin (Hardcover – Jun 30, 2005)
2. Measurement of Joint Motion: A Guide to Goniometry 3rd Edition by Cynthia C. Norkin and D. Joyce White (Spiral-bound – May 2003)
3. Anatomy Coloring Book, The (3rd Edition) by Wynn Kapit and Lawrence M. Elson (Paperback – Jul 5, 2001)
4. NASM Essentials of Personal Fitness Training by National Academy of Sports Medicine (Hardcover April 1, 2007)
5. The Clinical Orthopedic Assessment Guide by Human Kinetics
6. The Endless Web: Fascial Anatomy and Physical Reality by R. Louis Schultz, Rosemary Feitis, Diana Salles, and Ronald Thompson (Paperback – Nov 11, 1996)
7. Movement That Matters by Paul Chek (Paperback – May 15, 2001)
8. The Complete Book of Personal Training by Douglas S. Brooks (Hardcover – Dec 2003)
9. Muscles: Testing and Function, with Posture and Pain (Kendall, Muscles) (Hardcover)
10. Cholewicki J, Panjabi MM, Khachatrian A. Stabilizing function of trunk flexor-extensor muscles around a neutral spine posture. Spine 1997

11. McGill SM, Sharratt MT, Sequin JP. Loads on spinal tissues during simultaneous lifting and ventilatory challenge. *Ergonomics* 1995

12. Legal and Risk Management Concerns for Personal Fitness Trainers

by David L. Herbert, J.D. and William G. Herbert, Ph.D., FACSM

Take this factual information as a “Pill of Truth” swallow it, digest it, Its been tested, approved, researched and ridiculed, for over 32 years! That’s right! as you wonder why I said ridiculed. The truth goes through three stages 1- They laugh 2-They ridicule 3- It becomes self evident. The evidence always shows its face after the fact. Those who wish to create illusion will fail, those who are open to science, and truth will prosper!

This information is part of my 32 years of working with hundreds of personal Trainers and coaches. I believe every personal trainer should hold a nationally recognized certification. We also know that most trainers base their exercise selection on subjective data. These subjective claims however are heavily (if not entirely) influenced by personal considerations. Opinions are not facts... they are personal preferences, persuasion, and propaganda. I will say this about facts “All the facts in the world can’t help if we don’t know how to apply them. No matter what you have learned, there is no point where we have learned enough. This manual and data is in no specific order. I decided to talk randomly about the science behind most of the common exercises we see trainers teach. Why did I decide to speak random? I believe (I know) that most trainers pick exercises “on the fly” randomly. The question is where did they learn them? Please understand we never said not to perform a specific exercise. We did say- if you choose to do a specific exercise there will be a risk and benefit ratio. The education your about to embark on is just some of the ‘typical’ nonsense we/I see on a daily basis.

Let Me take you back to 1986. My name is Dave Parise. In 1986 I opened Results Plus Personal Training Center in Hamden CT. I had an idea...a passion...a vision. I wanted a way to apply my passion to help others look and feel better. The way I started was like most personal trainers in the gyms selling my services to anyone who would listen. I watched the rest of the trainers mimic all the same exercises for every client trained. I must admit my frustration, as I watched the evolution of ‘cookie cutter- one size fits all exercises. I call it “painting by numbers”- “training by numbers”. I built my client

base by educating myself on how the body works, also by being a professional friend, and listener. People love the fact that we have two ears and one mouth. I never judged, or made fun of people performing nonsense exercises. I wrote about it, I explained it based on science and anatomy, however never said "hey that's wrong". I continued to teach based on science and proper form and always maintained a professional relationship with anyone who crossed my path. I gathered my following (client base) took a chance and went solo. I found a location, negotiated on a rent, and started to write my own financial ticket. I transformed my visions, desires, and passion into reality. I continued my education and set my own stage. Today I can say that was the easiest part of the process. Our facility is five thousand Sq. ft and we have 12 qualified Fit-Pro professional trainers. Eight of our trainers are full time with 9-10 clients per day. We average two new clients per week, along with a 90% renewal rating. This simply means clients do not leave the training center. Guess what? Results Plus is not in an upscale community. The way it works is simple. "We" meaning the Results Plus Trainers... give more than any client expects to get. The client is not a number, and we are not timekeepers. We don't talk about ourselves; we focus on them (the clients). We believe when you give more, you get more, and then we give right back. "The focus is always on you"...and only you". That is our mantra! I receive hundreds of e-mails from trainers, fitness directors, and club owners, who all have a common question. "How does a 13 trainer facility write over 1.2 million in client retainers a year?" (Nothing but personal training) You must always continue to research the trends in the industry, as well as be uncommon. You must always have on your game face and be ready to face any challenge. Trainers must understand it's not about getting out when the bell rings. It is not about getting to the beach earlier, and cancelling your last client. It is not about relaxing when you had a great revenue week. We, as professionals, should take creative responsibility and put 'first things first'. We lend two ears, maintain eye contact, are sincere, honest, and above all do not judge. We follow-up on the last workout and let clients know that "they matter". Our fee structure: We offer twelve to one hundred visits. The professional fees are paid prior to their first visit. Wow! Clients pay in full prior to their first workout! Fact: Sixty percent pay in full without ever-stepping foot in the facility prior to their first workout. Why is that? We lend an ear, address the concerns. We don't show features- who cares about the

museum tour, or the furniture? We talk about the benefits that follow, and the path leading to those benefits. We teach from the very first phone conversation. That's what makes us different.

I will now explain the client retainer part. This does not mean we make 1.2 million; we project 1.2 million in client retainers. All overhead costs are deducted from that retainer. Entry level professional fees are based on the amount of visits purchased at one given time. The professional fee starts at 85.00 per 50 minute session. The average fee based on 'total retainers rendered' is \$70.00 per visit. Our lowest professional fee is \$49.00 per visit. The \$49.00 visit is offered for 100 visits, and because the client pays in full day one, a fee discount is established. You are now asking "what are the steps to achieve these rewards in business"? May I be constructive? I do apologize for this next statement. I am going to leave no stone upturned. You wanted the truth. I personally have noticed that most trainers from east to west and across the pond have a one-size-fits-all attitude. I call them "rent-a-buddies". They count reps... they perform single plane movements from a fixed manufactured machine. Some learn the latest "functional" moves from a magazine or downloaded from the internet. They walk around recording reps and sets in a little book with a training company logo. Some, like a statue with arms folded, watch as their client performs nonsense improper form exercises. They have no clue what the next exercise may be so on the fly they remember an exercise from their workout, or a one-day seminar. Once in a while they come out of the circle and offer a brief moment of insight or motivation. Why? Maybe personal training is just looked at as a supplement to their 'real job'. I would now like to state a fact: Generally speaking certifications do not demonstrate or develop one's hands-on ability. Personal Trainer examinations do not effectively delineate between qualified and unqualified personal trainers. Knowledge is not power, application is power. Passing a test, exercising, or having a certification doesn't make you a "qualified" Personal Trainer. There is no National Board that enforces a mandatory prerequisite essential to one's hands-on capability—which leads to a safe and optimal exercise program. Accredited organizations do not mandate that trainers have a certification. However, you will gain informative "book" knowledge. This makes you nothing more than a smart textbook "rent-a-buddy". I highly recommend that you obtain a certification from only an

accredited organization ie: N.A.S.M. I want you to consider this as a major platform to exert knowledge. However by no means should you feel you are ready to work as a professional. I did not say you can't – I am just stating an objective fact. We want to stop all the painting by number trainers, and create personal Picasso's. As professionals we must understand the body and how it functions — based on science not “gym” talk or how an exercise feels. “A law in science (anatomy) is different than a judicial law. A judicial law is argument. That's why we go to court. So, in physics we have a different law and you cannot change anatomy and the way it functions. We changed anatomy based on the way it feels!” When we do we are asking for trouble! Remember that f

I do not know anyone who is an expert. I am still learning. I do have 29 years experience in the trenches over my transverse abdominus. I have had the opportunity to learn from the top personal trainers, physical therapists, and massage therapists in the industry. I have a great deal of respect for massage therapists. They learn more about the musculo-skeletal system than any other profession, in my opinion. The factual information you are about to embark upon has been taught to me, hands on, by many different professionals. The challenge is to retain that information then apply it. I personally researched any and all information. I also did research on the person who did the research. I needed to be sure of all my findings before informing other fitness professionals or trainers new to this field. I still have much more to learn and apply. When the day comes that anyone feels they have learned enough, that is the day you have decided to become stagnant and profits will diminish. You will learn everything that will soon guide you, and has made Results Plus, and if I may say with confidence (not cockiness) myself, and our center probably the most profitable seven digit Personal Training Center in the country. My thought process is for you to step out of the common trainer mold, and preach the truth. The truth is based on science and anatomy. (Not gym talk). I hope you learn the difference between feeling an exercise vs. working a muscular region anatomically correct. Below you will read my dissertation. I am writing this to help you achieve wealth, prosperity, confidence, and distress your frustration of not being where you should be at this stage of your life. I would like you to have an open mind. I would love for you to get out of the “gym science attitude” and think analytically. We all need to make more than a paycheck. We want to help you build a

reputation and a following. A following simply means “you will be requested” rather than “selling yourself”. I want to educate you... the money will come. I want you to forget about the statement “build it and they will come”. That is furthest from the truth! I never thought a small personal training center would make seven digits. I never wished, or waited for my big break. “A wish never changes anything, a decision changes everything” I never said “some day I’ll be rich”. Moreover I did not sit around and wait for opportunity to knock. I want you to go out and build a door and knock it down yourself! A personal trainer is personal right? I want you to be proactive...visualize...dwell and move towards your goals and desires. If I may provide you with one more recommendation...Be a leader and remember when you’re training your clients “God gave you two ears and one mouth for a reason. Remember “The focus is always about them. They may act like they are your friend, they are not. Remember they hired you for a purpose, a goal, and the lack of commitment so they expect you to fill those voids. If you slack, and become lazy, late for their set appointments, you will lose their trust, and renewal. We have one more fact: When a person is out socializing with a friend, or a group, when exercises comes into the conversation it should always be positive. When a client loves you and your services they will tell a few friends. When a client is upset and feels your service is less then expected...they will tell (vent) to the world! Service= satisfaction=revenue streams. Change the way you think, and you change your world...

Changing your thoughts will change your life. The statement what we think we will become or... “What we dwell on we move towards” are facts that give us vision, clarity, and we feel it- so now we do it. Most people live in their “current reality state” this is everyone’s comfort zone. To move away from what we are used to, and change our environment or habits puts us in an “unaccustomed state”. In this unaccustomed state we are stuck in uncharted territory. When we are out of our comfort zone we look for anything that will drive us back to our current reality and lessen the pain...WE GIVE UP! We all need, from time to time, an understanding of who we are and where we want to be. Sometimes our thoughts dictate our actions. Often times we read something and everyone has a different opinion, or definition of what it really says. Try this: Look at the following word and say the word out loud ...

OPPORTUNITYNOWHERE

If you said “opportunity nowhere” we need to change your thought process. Think before you speak...the word clearly reads opportunity now here. This positive way of looking at things gives us forethought. It gives us a preview of coming attractions. Changing your thoughts changes your life, and world!

Sometimes based on past occurrences we feel like we are stuck and cannot achieve what we would like to accomplish. We believe we can't. However it's a LIE because this is only past circumstances being projecting into your current reality. This subconscious fear is the root cause of dysfunction. If you B E (L I E) V E you cannot achieve something, it's a **lie**. Our subconscious mind has a hard time distinguishing between what is real and what is well imagined. We imagine it is too hard, no time, too busy, too stressed, and anything else that puts us back to our comfort zone. Some people try to drive a nail in the wall with the back of a screwdriver. It will work, however it is not the best tool. Our best tool is our mind. You must use your imagination; this sets the stage for a preview of all coming attractions. In conclusion, there is no conclusion...just a continuous cycle of healthy ideas, a balanced lifestyle, and the ability to believe in your abilities. So Believe, Conceive, and you will achieve!

I would like to start by stating not an opinion, but a fact. Not a notion based on personal experience, but a law of science. We invented exercises and all the movements. Some exercises are based on sensation. Most are based on one's physical inclination to perform a movement. Chief engineers designed machines to sell health club memberships. Some engineers, over a glass of scotch and water, designed machines based on marketing (the ones we dislike.) We are referring to all the machines which try to mimic joint movement in one-size-fits-all-fixed environment. If that's not bad enough, people still mimic old habits in free motion machines. They have all the right tools... however they continue to drive a nail in the wall with a screwdriver. The best understanding I could give you, without thinking I am just another dissatisfied fitness guru, involves the following three ideas:

1-The mind is not only a terrible thing to waste; we only use one-fourth of our brains.

2-We must be as open as a parachute to slowly absorb the knowledge as we decelerate to a perfect landing.

3-Most exercises we see and show are based on sensation, not anatomical function.

Here It Is 'Do the research"... My favorite statement! All too often we read an article, or listen to a professional bodybuilder or fitness model tell their view of how they became so 'fit". If you ask my teammates (The Professional Qualified Certified Trainers) @ Results Plus) they will tell you this may sound logical but far from the truth. Never base any exercise on the way it looks or feels. As fitness professionals we must understand a client's active control. Please never confuse range of motion of a sport for range of motion for health and fitness. (What we attempt to bring to our clients). So let's not increase the risk of our clients by not assessing their active range. Your resisted range will never be more than your active range. Another way would be to think that you're resisted range would never exceed your active range because of the microscopic internal forces that take place. We will talk about the micro anatomy of muscle. Active range of motion is your assessment tool. You're teaching the client a motor skill, but also assessing their ability to move through a proper path and range of motion. That gives you a margin to understand their resisted range.

You never want to go outside of this margin (in other words, you want to stay in the lines). We all must understand that your body's job is to maintain a gravitational field, so when one joint is off, it starts to trickle through the entire system. **(This explanation of active and resisted range will be followed up with a video during your visual lesson plans)**

The closer you maintain proper posture (somewhere between drive and reverse) I will explain in video...the less stress and strain on the muscular system. The further you stray from the standard, the greater the stress and strain on the musculo-skeletal system. Why is this so important? Remember, you can't see forces. Just because you don't feel pain does not mean you're not dealing with stress. Your limb is not going to fall off if you go too far in a bench press; it's the accumulative stress process over time that will lead to an injury. (Bang your head against a wall six times YOUR OK! Bang your head against a wall six times 3x per week for three months you have a concussion! Using this information we are about to embark on a course of action that will alleviate most of the risks.



Ladies and gentlemen!!!

I want to introduce to you my three anchors ... (Left) Mr. Goal Needs ...(clean cut) (Top) Mr. Engineering (you can tell by the glasses) ... and Mr. Active Control. (Control freak- but in a good way)



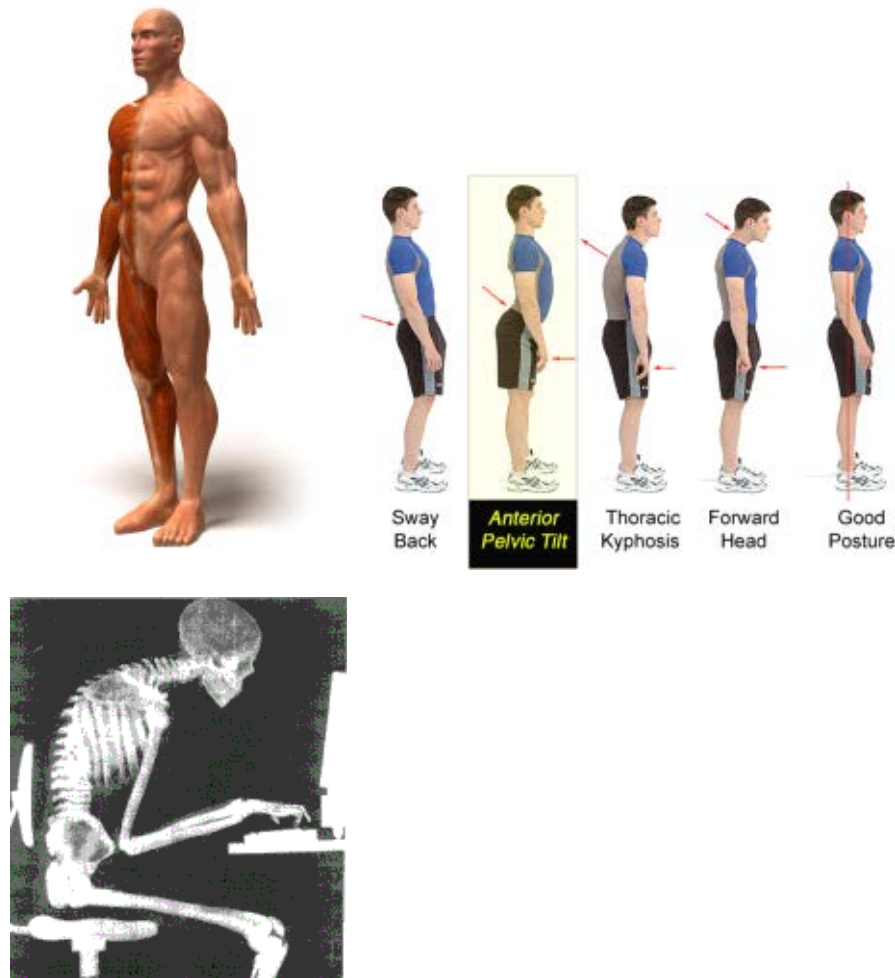
These guys above are the most important people in your life as a Qualified /Certified professional. (But please remember certified does not coincide with qualified). They will set the foundation for every single repetition you show your clients. We all must know the client's goal and their present structure. Trainers should base exercise application on postural abnormalities, muscular imbalances, and any orthopedic concerns. Then under active control an exercise can be taught. Even then, it is all trial and error, with regression and progression in the mix. Exercise

patterns and movements are never black and white. I personally dislike the idea of memorizing from a textbook, a start and finish position. I dislike movement screens, and postural evaluations. The entire thought process is skewed. If someone has disrupted smooth coordinated joint motions (artho-kinematics) they may compensate to trick or hide those imbalances. Those postural distortions will veer their ugliness as soon as you start training. It's not brain surgery it's simply this: You first establish the goal...then you determine the position of the body...is it in direct opposition of the anatomical region being stimulated...(load application) "that's called direction of resistance"...then we watch the path of motion to assure it's smooth and rhythmic" assess the wrist to the foot. Now the grand finale is what I call 'Path of motion'. There is no such thing as "full range of motion" who's range? A full range for me could be an excessive range for another. Every rep is an assessment, watching the joints not the machine or dumbbell. We also want to look above and below the joints to assure proper stabilization. Do you really think a person at every given workout will optimize or train with perfect form and congruency? A robot may have that ability. The joint will dictate the range, along with the client's ability to maintain their neutral spine. Watch the sternum does it drop, do they sway, rock to help facilitate the movement? There are so many ways to assess a rep! Why is all this so important to us? This is where the muscular skeletal system works most efficiently. We live in a mechanized society and most people sit all day working with labor saving devices such as computers. They are fixed to a chair as their posture is going to hell! So, we need to teach how to correct this in the fitness center. You need a foundation in order to be productive, regardless of your goal. To get that foundation you must maintain ideal skeletal alignment. Think of ideal skeletal alignment as a race car with perfect alignment.

The better the alignment the greater the performance and the less energy were going to waste.

Do you want to create faulty patterns, and disproportionate forces?

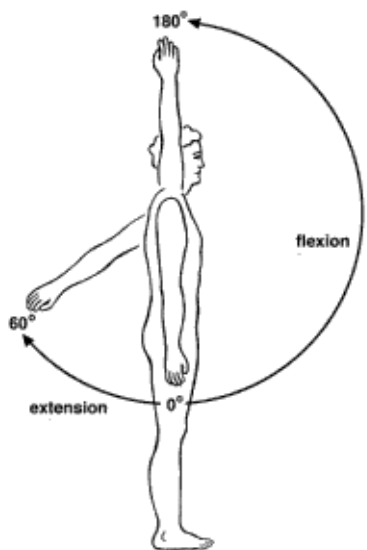
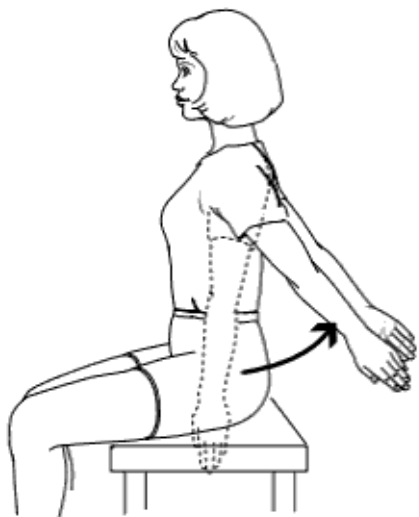
Teach proper positioning! Verbal and tactile cues.



When we teach improper exercises we start to use joints that are not part of the goal. We set the stage to de-emphasize the goal. Why? Because if more joints are moving, what's moving the joints? Muscles! What are muscles? Muscles are internal forces they're helping out, and that's important for you as a fitness professional to understand. Your body's job is to make life easy. When it experiences a stress or strain, it's trying to dissipate it the best way it can. Remember the greater the difference between passive and active, the greater the risk involved. This is a statement I want everyone to remember: **"Just because you feel it, does not mean you are working it."** I had a dancer in one of our seminars who had excessive range of motion, and everyone said, "Oh that's so great!" I said, No it is not great! We all have a certain amount of joint laxity." Here is a statement found on most certification tests: "The greater the mobility ... the less stability." That's really important to remember when you start to analyze posture. You

are going to find muscles that are short and facilitated, some that are tight, and need to be stretched or elongated properly. These postural distortions are going to disrupt smooth coordinated joint motion. If a person has more laxity, we have to obey his or her body mechanics. The range of motion should be under the individual's active control. Ask yourself "within what range of motion can you control the load"?

So..the pic below shows our active range of motion...think about how far your arm can extend as seen in the picture of woman on bench. Ask yourself why you would do a bench dip, or regular dip of any kind? You will see a video explaining this excessive range of motion in the GH shoulder joint.



One of the biggest mistakes fitness individuals make is try to lift too heavy of a weight, thereby using momentum to lift the weight rather than the muscle. As Fit-Pro professionals we must always remember who our clients are, their present physical condition and their goal. When was the last time a client asked you for maximum hypertrophy of the anterior delt, or of any other muscle? When we over-zealously load a movement, its risk exceeds the benefit. This will result in a less effective training program, and injury over time (Accumulative stress process). Using a slightly lighter weight that can be performed under your client's active control is our recommendation. We must always watch the contours of the body at every given repetition. Only if one is training for a power or speed sport is it necessary to change the application or cadence of the set at hand. We will not touch upon speed training, or power lifting moves. This book is dedicated to the general population, office worker with a sit down job, corporate executive, mom, dad, blue collar, white collar, and everything in between that dominates the fitness arena and personal training populist. (The revenue streams are not with the bodybuilder, athlete, or power lifter. (One man's proven opinion) Unless your hired privately by an A-list athlete. This has been researched over the last 25 years.

Lets talk about Time-Under-Tension TUT ...

Time Under Tension...



It can be a useful method to ensure that the exercise is challenging enough to actually cause a training response, and is a scientifically proven way to place more stimuli in a region. By manipulating the speed of the repetitions and the time the muscles are working, one can target specific goals, such as muscle endurance, maximum hypertrophy, strength and power. However movements must be done smoothly, in our neutral posture, and within our active range. Beginners will have more success avoiding injury by moving quite slowly (at least 3 seconds up

and 3 seconds down). Always remember the neurological adaptation of a beginner exercising. The goal of the exerciser is to adapt to pathways (extension, flexion, abduction,) rather than strength gains. We, as professionals, must remember that our clients must learn kinesthetic awareness first and foremost. Time under tension is a critical element in every exercise program. It ensures that you are giving your body the correct instructions in the form of muscular contractions to send and receive messages efficiently without synergistic dominance, and overload of one or more joints. We don't need to call upon muscles that are not part of the goal. More importantly create inertia, or momentum that will disrupt smooth coordinated joint motion. The human body is similar to a computer in the way they both interpret instructions. When you are giving a computer a command you have to be exactly right, if you are off even by a little bit in your command you can hit enter all day long and still not get the results you want. I equate improper motions as a "delete". I will say this, it will delete your opportunity to retain your client and also stage for an injury.

Our bodies make Specific Adaptations to Imposed Demands. (SAID) Scientific studies have shown that the most effective way to gain muscle is to safely/ progressively provide overload to the muscles using contractions to momentary failure between 30 and 60 seconds per set. Another common mistake is to go for the largest weights you can handle and throw momentum into your reps. (Muscle momentum vs. muscle force) Manipulation of momentum does have a vital role in the proper biomechanical efficiency of any joint complex. Momentum decreases muscle stimulus, and adds a host of disproportionate forces across joints. However, if you want to educate your muscles to promote the correct changes in your body you have to challenge them with the appropriate time under tension, not just throwing big weights around. Fact: Every second that momentum is bringing the weight up is taking away from the muscle stimulus of the contraction making the exercise less effective. Time under tension really is a simple concept to grasp when you take a second to think about it. That is one of the reasons why it is often overlooked in many exercise programs. No one can escape the passage of time, even if you are not paying attention to it. A set is constant tension... if the tension is relieved at any point the set is actually over. Time under tension is the key to clear communication with our bodies. This

technique is an integral part of the foundation of fact, science and the art of proper training methods.

Just because we can be Mr. Ms. Elastic doesn't mean we should exceed our active range of motion.



Ideal alignment must be maintained to keep optimal recruitment for the muscular system. Yes trainers, Fact: you will have more stimuli in a region by having perfect posture during the exercise repetitions. We are dealing with a road map to the body. What we all must understand is that it's not the exercise that caused the pain. It is gravity-induced lack of awareness and poor posture that are just making matters worse. When we look at a client's body we have to look at it in a natural position, and that's important when we all analyze posture. However, feel free to use whatever verbiage you need to help people come to a deeper awareness of their posture throughout the day. We must make a difference and teach proper kinesthetic awareness. One of the common postural distortions/muscular imbalances is the "protracted shoulder girdle" or protracted shoulder syndrome." This problem develops with poor posture in the workplace or working with any lack of spinal awareness. This gravity-induced position (protracted shoulder girdle) can lead to injury if poor exercise techniques are learned in the gym.

*This chair born daily posture which is so prevalent in today's workplace decreases muscular recruitment patterns...thus training efficiently becomes unbalanced. As professionals, we want to look at the body as a road map. We must figure out what is tight, short and facilitated. We must understand what needs to be lengthened, and the opposing muscle regions (antagonists) strengthened. We must always do specific exercises that are relative to our posture, and our client's posture. There are many common mistakes we make as personal trainers. When we put a dumbbell in someone's hand that has not been accustomed to exercise, this can be very uncomfortable. There is a lot going on with the entire muscular system, and that's okay if we can get the client to maintain an optimal spinal position. We all need to train the brain to maintain the optimal position of neutral alignment. That is why stability training always comes before mobility training. I can't be more serious! I want you all to remember this: "The static and dynamic orientation of the muscular system depends on prior motor learning." This means understanding the client's background, and what they or we as professionals have practiced in the past. The way we water this down for the client might be as follows: "I want you to take a piece of paper and write your name down, now switch hands ... did you notice the expression, verbal or facial?" How many of you think the names would look identical? If the names look identical, the client has practiced to make them look identical. Let me ask you a question: If I was to say "come back in 10 days, and I offer fifty thousand dollars if both names are identical" would you come back? I believe not only would you come back; you would leave right now and do what? **PRACTICE**. You have to practice positions to be good at positions. So when we design exercise programs for our clients we have to look at what we are trying to accomplish, then design exercises based around that goal. When we have clients in this protracted shoulder position we have engrams that are produced in our muscular system. An engram is a series of complex commands, tied with a thought to produce position or movement. If I ask you to tie your shoe, or write your name you don't have to think... it's done. However, if I ask you to switch hands? Wow! You do not have the connection. But guess what? You and your client do not have the connection for ideal alignment, but we can develop it! When I take a client with crummy posture and make him or her sit tall, stand straight, and then add movement, or weight — guess what happens? The client automatically (because of postural engrams) migrates to a strong*

position. But is that strong position always the optimal position? NO! The optimal position is one in which the entire muscular skeletal system works most efficiently; this is the standard position or neutral position we all are looking to achieve. The fact is, when people experience pain, they may go to a chiropractor or physical therapist. The therapist may alleviate the pain; however, two months later those people are right back to where they started and in most cases feeling worse. They were taught neuromuscular re-education, however the practitioner never taught them proper exercise techniques. They are now pain free, but what do they do from that point on? So all this passive manipulative therapy may alleviate the problem, but it does not fix the problem. How do we go about teaching our clients ideal alignment in an active sense? We first need to find the client's end stage. The end stage is the point during a position where the client can't maintain ideal alignment.

Lets briefly talk about posture and balance awareness... Have your client stand on one leg as they try to maintain optimal spinal positioning. We also can use a stability ball: Have the client hold proper posture while seated on the ball. The ball is different than a flat bench or a chair. The way to size a client to the ball is as follows: the femur should be parallel to the floor. If the ball is too soft it will promote slouched posture. Many machines in the gym promote slouched posture. The point is the ball will challenge the client to maintain proper posture. Always make sure the femur is parallel to the floor. With the feet under the knees, use a prop such as a pole/wooden dowel to give a visual of what proper spinal alignment should look like. This gives the client a visual of what proper spinal alignment should look and feel like. The next objective is to have the client lift one foot one inch off the floor. This will again create the proprioceptive environment that stimulates/activates the stabilizers (local system-all muscles you do not see in a mirror) that in turn will challenge the client to hold the position. How does this have carry over to the real world? When the client goes to sit in his or her chair at the workplace it's a no brainier (just like writing your name). They remember the posture, and thinking about it is half the battle. Remember, we live in a three dimensional unstable environment.



Should I roll or stretch?

When I was 265 lbs (yea right!) I could not move a piece of furniture without throwing my back out. When my buddies asked me to shoot hoops I got injured. My goal was hypertrophy, maximum muscle hypertrophy. When I went into a piece of equipment it was fixed! I did not train in a functional environment, which would have carry-over to my world. My neutralizers and stabilizers did not have to work, but I could produce more force from the prime movers, thus giving more stimuli for the goal of hypertrophy. I had huge muscles but they were all speaking a different language. When I went to function in the real world, I got injured! It's really important to find out your clients goals. If the goal is a little muscle hypertrophy, you will incorporate the correct moves for stimulus of those prime movers. However, if Mom and Dad, Pam, or the office worker, wants a little function, or wants to mobilize with the kids, then you will challenge them in different environments. We all need to learn how to manipulate the tools in our toolbox. We need to look at it like this: We have a fixed piece of equipment that dictates our path and joints...and exercises that do not dictate our joints. (moving freely under our active control) The more fixed it is the less the brain has to work, and the less carryover to the real world. We all need to understand, as personal trainers, that it all comes back to this: goal needs, anatomy, and levels of control. Let's recap quickly so we are still on the same page. Many personal trainers start a program picking exercises that are way too demanding. Improper exercise form will cause poor neuro-muscular motor programming leading to or exasperating muscular skeletal imbalances. These demanding improper exercises use the outer muscles. Think of the outer muscles (global) as all muscles that expand over a certain number of joints. (They create movement-motion) muscles you see in the mirror. Think of the inner (local) as muscles that stabilize the spine inter-segmentally. They connect from vertebrae to vertebra

block to block. They also run along or very close to the spine. An example of this would be as follows: I have a client who comes in after sitting all day at the office. He /she have a slight anterior pelvic tilt, protracted shoulder girdle, and forward head posture. We take our client over to the ab machine (to flatten the tummy...right!). There is no way the machine could match the spine's path. The machine is on a fixed axis of rotation **the spine is not on a fixed axis of rotation**. THE SPINE IS MOVABLE AND ACTS LIKE A CHAIN, SO MOTION OCCURS AT EACH AND EVERY LEVEL. The client grabs the handle behind his head, anchors the feet and yanks the handles promoting more forced forward head posture. The illio psoas that attaches to the pelvis and the lesser trochanter of the femur now becomes a major trunk flexor. The legs are fixed, overpowering the other muscles in that region. WT_? are we doing to this person? We are totally screwing up their posture. The client now leaves with poorer posture than he came in with. Do you understand what we mean by anchoring the feet you bring in other muscles? **(Video explanation)** We all need to look at the body as our assessment tool.

The question to all of you reading this would be... what does exercise mean to all of you? When you're out, socializing with family or friends, and the word exercise pops up (does it ever?) what do most people think of? One answer might be work... but most people think of cardio-vascular training. They may say treadmills, elliptical, running, long walks, and biking. I then may ask: "What do you think about when I say working the muscles?" They might answer machines or free weights. What if I said to those people... "I am going to incorporate exercises to enhance your structure"



We found that, nine times out of ten you will lose the client's interest, and bore the client with tech talk. We as trainers need to know how the musculo-skeletal system reacts to specific joint

motions and positions. We all need to incorporate these movements to our toolbox of exercises. We must water them down for the client when we explain why we are performing these movements and positions. Moreover we, as professionals, must understand the difference between nonsense, useful, and useless exercises. We explained that when the core is strong, and activates properly, it will help with a more solid base of support to exert force off as the outer muscles do their job. If the system (L.P.H.C) is connecting properly, we can train the system to maintain proper congruency during movement exercises. There are many exercises that challenge local muscles...those that help stabilize as we mobilize in a position.

*Why is your guru better than my guru? **Most people follow someone's experiential subjective***

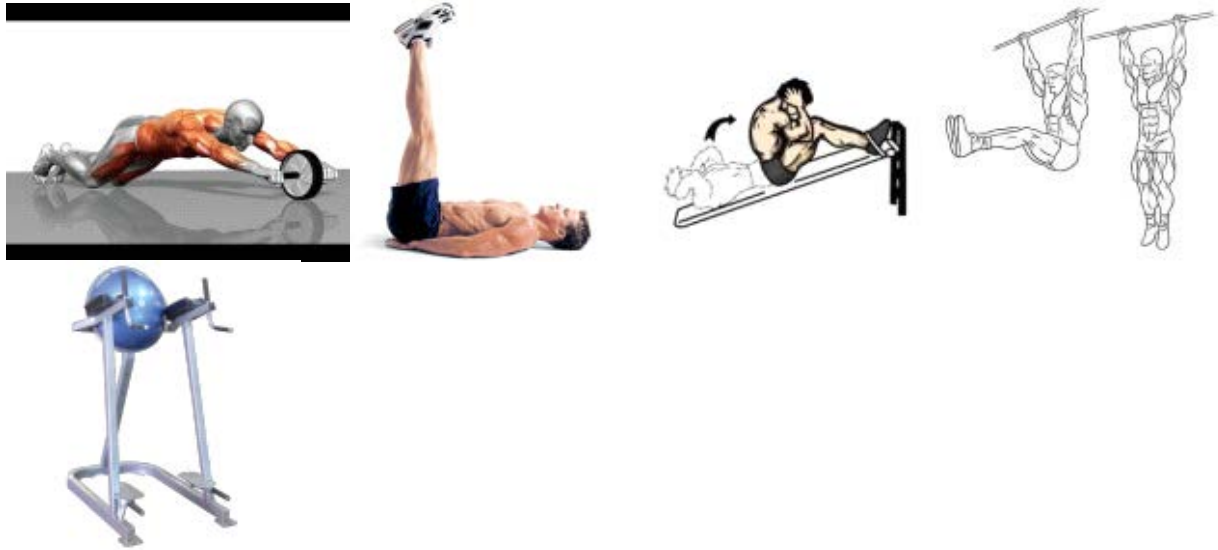
***opinion....**these opinions are based on a feeling / sensation / how far you can push or pull a load. This is far from the truth. We come to identify that as "The truth" about a particular exercise. All too often we dismiss the science behind true joint function. Knowing also that there's nothing new under the sun and that many others share the same common view, then groups (whatever their view may be...usually, ridicule or have skepticism or agonistic behavior), come to what in their eyes/hearts/minds, is, "the truth" about a particular exercise. They become married to it, or they say "well look at her or him... it must work! Today's exercises are influenced by the emotions or prejudices. An individual invents these exercises hence the feeling and it can never be considered to represent a general and objective belief. So for those that deny there are absolute truths in anatomy and exercise mechanics and/or say all truth is relative, are misrepresenting just to create the illusion. This illusion is totally based on a feeling, and repetition range. Objectively exercise is below the skin where the joints tendons and ligaments experience internal forces. We must stop watching pieces of skin moving and equate that to making sense. We must now search for truth. Do you dare to know the answers? Can you handle the truth? We believe when you tell the truth you don't have to remember anything.*



Lower abs? really? Wheres your lower bicep? How about Hip flexor group? YES!

*Do you remember straight leg lifts? Remember how they arched / stressed the low back? Remember how you felt the pull / burn in the front top part of your legs? The reason is because everyone started at end range. Why do you think people put their hands under the lower back while performing leg lifts? It is because the abdomen region is now working as a stabilizer to protect the lower back so it wont arch? What muscles are the prime movers in a leg lift? If you answered the hip flexor group, rectus femoris, psoas and iliacus you are correct. What.. no spot reduction, no lower abs? **There are no lower abs in the human body- that is geography not anatomy.** However you can research a gentlemen named Kendell who coined the term “lower abdomen region” which is different from training the upper and lower abdomen. Many articles can be found on Kendell’s research such as “Pelvic Floor Stability and Trunk Muscle Co-activation”. As far as the picture below this is the norm. We need to understand the safe range, what activates, and how to correct poor exercise techniques. The picture below develops great hip flexors, stresses the lumbar region (hence the hands under the back to protect) and we need to look at our legs and feet right? (Promoting forward head posture) I ask you... what’s the goal? I bet he/she says stomach / lower abs.*

Here are the pictures of Ab exercises that engage other muscles that are not part of the goal of “spinal flexion” that’s what the ABS do! I know you feel it...remember that’s stress. We don’t want muscular imbalances, and tight hip flexors when the goal was AB training. In regards to the straps, and chairs you climb up onto...holding your body weight with your lats, and shoulder girdle muscles to train ABS? Really? A qualified trainer would eliminate these and many others you will learn about in this course.



Ab roller, leg lifts, sit-ups, hanging leg raises (straight leg or bent) Queens or Kings chair, Roman chair, Ab straps (hanging) Ab rocket...

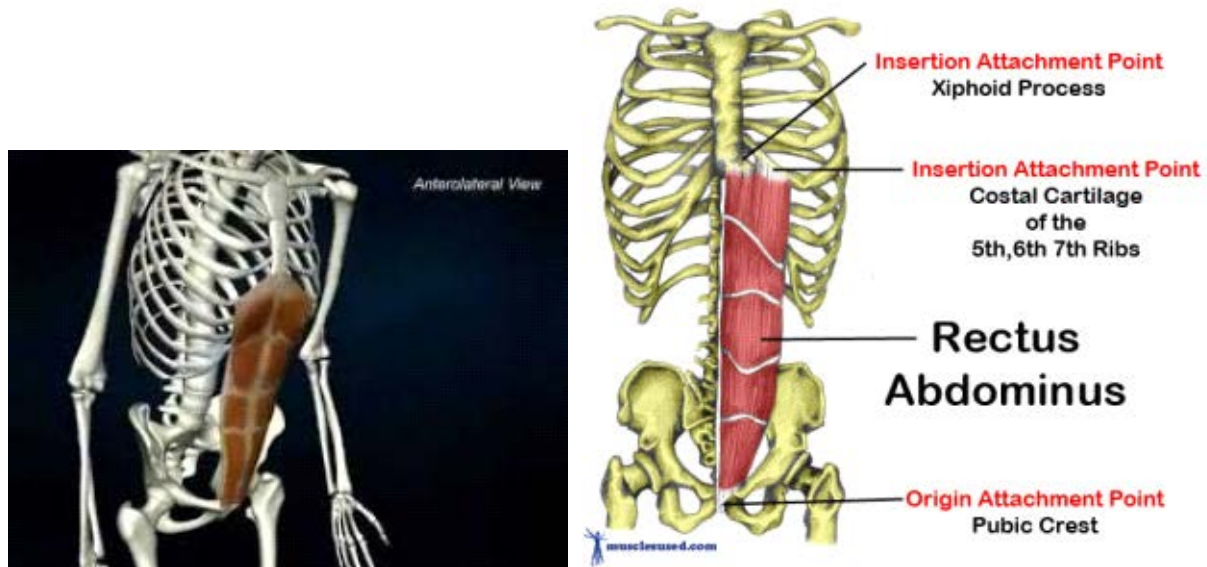


I will also show the best on the planet!!!

Another explanation would be; the legs are just extensions off our core a lever arm. When you throw them out and away from the pelvis, it creates a pull on the pelvis. Moreover the rectus abdominis acts like a stabilizer to maintain congruency with the entire lumbo pelvic hip complex. This is now a stress and strain on the lower back and pelvic area, and a host of microscopic tears being created. We all must understand how to decrease specific disproportionate forces that trickle through the system and create muscular stress, strain and imbalances.

Think about the body's position while in a roman chair. This may also be called the king's, Queen's, or captain's chair. They now put a Bosu for your comfort! There is no difference

between the bodies position as seen in the picture as to the position of lying leg lifts above. (On the floor) However the risk elevates higher in the chair. Question: Why would you load your entire body weight on your shoulder joints, to stress your low back, and train your hip flexors?



Oh look the abs don't attach to the legs!!! So why do we hang like monkeys, or throw our legs out in front of us? Why do we climb up into the chair? These are all sensation based, high risk, objective opinions by the manufacture, and the gym goer.

Lets embark on the facts: The Rectus a long flat superficial muscle (6 pack abs muscle) originates (starts) on the pubic symphysis and the pubic crest, and it inserts (finishes) on the xiphoid process of the sternum and the 5th-7th costal cartilages. Its actions are to compress the abdominal contents to stabilize the spine, and flex the spine (pull it forward like in crunches).

The rectus, like the external oblique is a phasic muscle. This means its primary role is to move the spine, and its secondary role is to stabilize the spine. The rectus provides most of the strength for bending motions in the spine. The rectus is the muscle that gives you the 6 pack abs look. (However there are no blocks) The rectus has white tendinous intersections or inscriptions that divide the muscle into sections. Think of sitting bare butt in a strapped lawn chair. The abs only get there six pack look from the thickness of the fascial tissue. I have clients who have 5% body fat with no "6-pack" no blocks because of their predisposition to thinner connective fascial tissue. Since the rectus is only anchored to bone at its ends, it does not have great leverage

without the tendinous intersections. I ask again...after knowing the attachments and the actions, how can hanging strap leg lifts concentrically and eccentrically contract the "6-pack". This is another form of perception, sensation, marketing, and the ability to "feel" tension in a region. Is it wrong? No... However is super high risk, creates a host of muscular imbalances over time, activates the lats, and demands stabilization from the gleno-humeral joint. What was the goal? I think to train the abs? We can think of more beneficial anatomically correct movements for the goal of spinal flexion. (Abs) Do we need to flex the spine to get definition/ripped/shredded? NO!



Dave Paris 2013 November Age 53

Sorry the abs above were not developed by any particular exercises. I have never done a crunch, leg lift, or any Ab roller, Ab bench, Kings chair, or Ab rocket that trains and stresses everything but the long flat superficial musculature we call "6-pack" ITS ALL DIET! We will talk in regards to macro nutrients and their role in substrate utilization.



So funny did you ever notice you have to have your shirt off, or expose your abs while doing these rotations, or side bends? Did you ever see an obese woman (clinically) overweight beer belly man, posing for the pictures? NO that's why these Models are in the picture! I am not saying they don't do these moves...I am saying is building a blocky waist. I am teaching you that the above moves are a total waste of time!

Isolated rotations seem to be one of the most popular exercises in the gym. What are people thinking of when they are doing isolated rotations? They are all thinking spot reduction. This is what the manufacturers of the products or machine companies want you to think. Then we go ahead and mimic the movement by doing rotations with a broomstick, or side bends with a dumbbell or 25 lb plate. If you want to build a blocky waist do dumbbell side bends. Now that the medicine ball has been re-introduced in the fitness industry we have clients doing seated 'disk grinder' rotations. How many degrees of rotation does the lumbar spine have in a "fixed"

position? Moreover to make matters worse a trainer takes the client over to the declined ab-bench connects their clients feet, as they grind and twist side to side. This is just another form of “perception” a new cool move to sell a medicine ball, or to alleviate boredom in a routine. Unfortunately it is a great way to add a host of orthopedic concerns over time. Remember there is no such thing as spot reduction. You cannot reduce inches or burn fat in any area by working that area. Think of this when your shaving your legs, or face. When you cut yourself do you say, “Oh, man chin blood,” or “leg blood?” Fat is like blood; it is systemic. So moving the body in specific ways does not justify a reduction in girth, or inches. Also people doing stick twists, side bends with weights are in what we call a “tension under time block” thirty to ninety seconds is the goal of maximum hypertrophy (muscle building). I ask you this, think about this intuitively: Who wants to build a blocky waist? As a personal trainer did any client walk into a gym and ask to build his or her obliques? On a scientific level, when we talk about the micro-anatomy of muscle, and all the specific finite functions, ninety-two percent of the people out there have a deranged disk. Under safe micro-progressions it will strengthen, but you better not do a rotation with a client if that client has not progressed over time to do it. Did you know the lumbar spine only has three to four degrees of rotation? When you rotate with a stick, or lock your feet in an ab bench while twisting with a medicine ball, you are putting a tremendous amount of stress and strain and a host of crummy forces across the disks (scientific word “crummy”) the last thing we want is to provide the straw that broke the camel’s back. I don’t recommend this if you want to remain an injury-free trainer (and this is my professional opinion): I personally omit rotations from my toolbox of exercises. There are reasons to do rotations and specific articulations / movements that are close to human function. However for the safety of my clients we do not do fixed rotations. I coined the term “disk grinder.” I find most fixed environments that twist and rotate the spine are nothing more than a way to increase accumulative stress in the lumbar region.

Exercises like the medicine ball twist (side to side) are just more reasons to market a product. I personally love medicine ball training, however...I would never fix anyone to the ground, or rotate him or her in a seated position. We must not dictate a range of motion by becoming fixed or connected to the ground or chair.

The one I dislike the most is the 'triceps press / push-up on the ball" I am referring to the 'two hands on ball". (Below) Talk about highest risk, and dysfunctional!



I want you as the professional to figure this one out. If you want the reasons why you should never perform this exercise you can e-mail me.. daveparise@resultsplus.com. We know that someone out there decided to create hundreds of exercises with medicine balls deemed functional. Or did they deem them marketable? Remember I did not say don't do it...just understand the risks.

Proper spinal alignment: Here is a great way to understand how to maintain proper spinal alignment with your clients. During the exercise program, use the following information as your assessment tool. Write down these two words "The axial skeletal system" and the appendicular skeletal system. In our role as personal trainers, we are going to create different exercises for our clients to create stimulus in different regions. You must remember you cannot isolate a muscle (for instance, work only biceps). You can isolate a joint motion to emphasize a joint region. Think of the body as one complete muscle separated by compartments, enveloped in a fascial system controlled by a computer (the brain), it will help with this next statement. You are an integrated system, not a bunch of segmented pieces. For years, I thought I was working my chest; However, I was working my anterior shoulder muscles, my triceps. However, I could put myself into different positions to emphasize different regions of the body. That is so important and it's what gives us trainers an endless toolbox of exercises. So, if my goal was to work the biceps, remembering there are other muscles that flex the elbow joint, what joint will I move? I

would move the elbow by itself. If I move other parts of the body such as knee muscles, or shoulder muscles, I deviate from the goal. So, as I mentioned, we need to know the difference between the axial and appendicular skeletal system.



APPENDICULAR ABOVE...(GREEN) UNTOUCHED IS THE AXIAL.

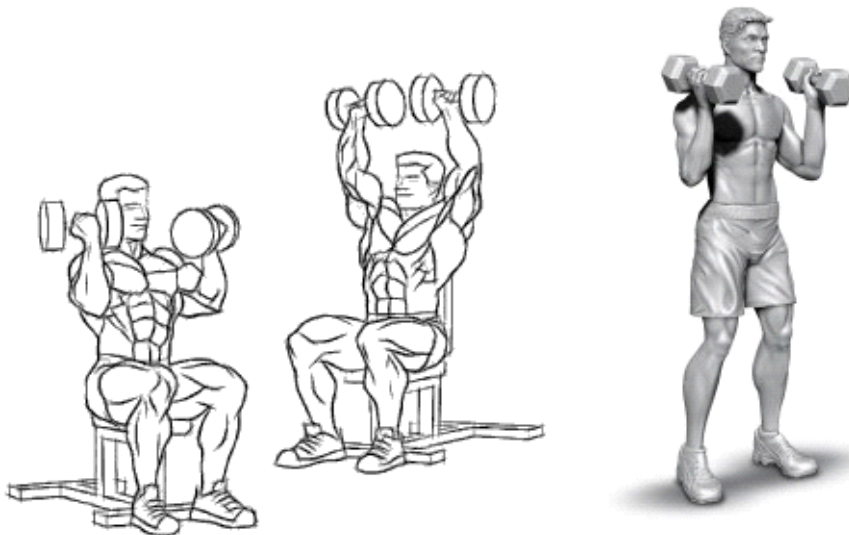
The axial is the skull, vertebral column, ribs, and sternum. With the appendicular system, you're dealing with the shoulder girdle (think of appendages) shoulder blades, clavicles, arms, pelvis, and legs for the lower extremity. Now... let me explain to you why this is so important to remember while training yourself or your clients. When we are doing a standing cable chest exercise our goal to exercise the anterior shoulder girdle muscles. The key is to understand the difference between axial and appendicular. The sternum does not drop; it's part of the axial skeletal system. We're moving the sternum with the appendicular skeleton, the shoulder girdle and arm in the chest press. We are not watching our client; we are assessing proper maintenance of the axial system. What would be a great verbal cue? (Your time to shine!) THINK.

In order to make sense of this information you need to practice what you're learning...make the fitness center your lab.

Let's talk about scapula-humeral -rhythm. What does it mean? The job for that region is to maintain congruency, a likeness with one another. There is not much bony contact as you can

see below.

If we teach a person a crummy motor skill, we increase their chances for a muscular imbalance. Think about the client who is performing an exercise that is not part of the goal. The client cannot maintain proper congruence with the the girdle. If the trainer is off in left field, chilling out, not assessing their ability to maintain proper concongruenceere will be dysfunction leading to an injury. The problem with letting the client continue the exercise is you're now training the brain to perform two different motor skills. When the goal is to maintain proper scapula humeral rhythm they must work together! There's no one perfect exercise, but there is a strong position you must maintain while moving the extremities. Remember the three (3) anchors: 1-Awareness 2-Control, and 3-Challenge. The more you understand about the body and the equipment, the more you will realize the dysfunction of machine based training. Always ask yourself: Does the path or arc of the machine match the path of the body? In most cases, it does not. Hammer strength equipment does this a lot. They have a lat pull machine that gets harder as you pull, so when you drive your elbows into your sides, you perform more elbow flexion than scapula depression. What's the goal? The machine just matches the path to which we're moving therefore it dictates our path of motion. Tell me when our movement patterns should be dictated? Please understand our joints are not arbitrary; they have specific finite functions and move safely without restrictions. So how does the machine apply the resistance needed in the real world? It does not!



First picture- YES...Second- Yes look at the position of the arms. The arms in in correct Anatomical positioning. As you read this factual dissertation, you will learn what I mean by proper anatomical arm positioning. Please understand there is no majic to an Arnold Press...sorry Arnold. The twist and turn of the lower arm adds momentum via the dumbbell rotating disproportionately. You may feel a challenge as you rotate, thats balance and stress on the anterior shoulder girdle muscles. The top end or finish position is externally rotated...the weakest position in the GH as the load is at its heaviest. Does that make sense?

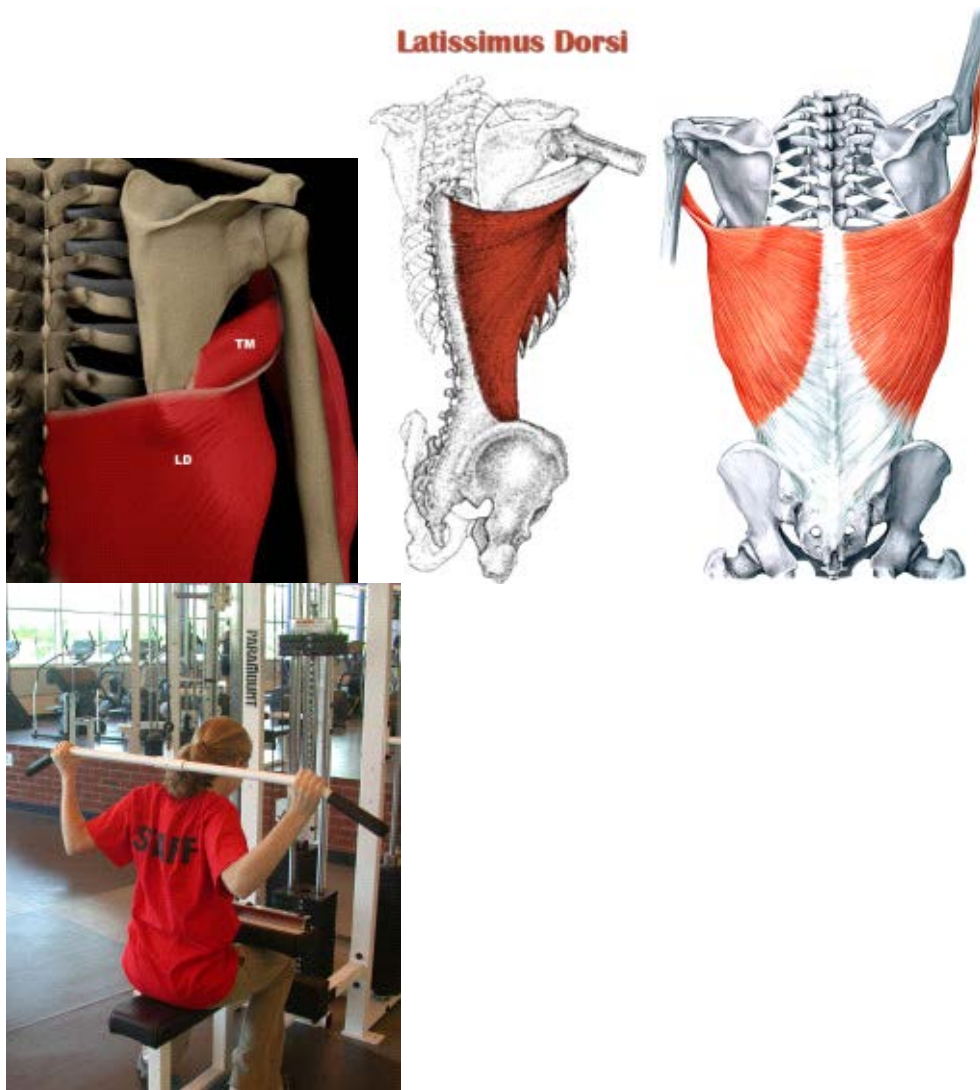
If you're looking for dysfunction and pain in the shoulder region, you can find it with an over head press. This is due to the externally rotated position. I did not say not to do them; I said there is a huge risk! I promise you great delts were not achieved with overhead presses. The most common exercises that lead to Shoulder Impingement Syndrome (SIS) are; military press, seated straight bar or dumbbells, and of course the upright row. I will not talk about behind the neck presses, they are just dysfunctional. Shoulder presses generally train the anterior shoulder girdle muscles (front delts) a professional trainer asks, what is the goal? Some other exercises that have also have lead to impingement can be corrected if the proper path and range of motion are changed. These would be the flat barbell bench press, and lateral raise from the side with dumbbells. Now the tech talk: Impingement syndrome is defined as a compromise of the space between the head of the humerus and the acromial arch. In simple terms: the top of your upper arm bone is too high and close to your acromion (part of the shoulder blade-scapula) and your clavicle (collarbone). This decrease in space can come from either a structural problem (usually bone) or a functional problem (usually muscular). Since a structural problem would likely show up as soon as someone begins lifting weights, we'll focus on functional causes of impingement. This is most likely the culprit in the gym. When you raise your arm, a complex chain of events takes place. A group of muscles called scapular stabilizers (serratus, trapezius, levator scapulae, rhomboids, and teres major) function in a very precise manner to ensure that the scapula is in the right place at the right time. At the same time, the rotator cuff muscles (supraspinatus, infraspinatus, teres minor, and subscapularis) finely coordinate the movement of the humerus to ensure proper alignment in relation to the scapula. If these muscles do not coordinate this movement perfectly, the head of the humerus is likely to rise up and forward and

bump into the bottom of the acromion. To feel the top of your acromion, slide your fingers from the middle of your collarbone outward toward your deltoid. Just before getting to your deltoid you will feel the top of your acromion sticking up a bit. When this impingement occurs, the supraspinatus muscle and tendon, as well as the subacromial bursa, are trapped between the humerus and the acromion. When two soft structures are trapped between two bony structures, you can guess who loses. This results in swelling and tenderness of this bursa (bursitis) and the supraspinatus muscle and tendon (tendonitis). If you need more to make your self-diagnosis, try this orthopedic test. Raise your arm in front of you to an overhead position while keeping your pinky up and thumb down. If that movement hurts or is impossible due to pain, then you likely have some degree of shoulder impingement. Some think it is macho to just train through pain. That again is based on sensation and someone's own perception of how an exercise feels. Please as a certified professional on the ladder to qualified always remember there are many ways to train the anterior shoulder girdle muscles with greater benefits. Just to name a better way to perform the overhead press would be the following: This is for those whose goal is hypertrophy. If it's for function (carry over to daily activities) remembered we don't put anything over our heads in a typical shoulder press position. We put things overhead in a scapular plane 30 degrees from abduction. We reach up on a diagonal; this is our biomechanical strong position. For the people who want the proper stimulus try this: On a slight incline 65 degrees, using dumbbells have your arms in a scapular plane. i.e. This environment will give you scapula anchoring for the goal of muscular hypertrophy. If you follow the elbows they are one to two inches outside your hips. Another way to figure out this position is to stand up and get in an anatomical position. Let your arms hang naturally along your sides- with palms up. Take your hands and slowly bend the elbow simulating a bicep curl stop at top range and turn your hands facing towards each other. This is the position will stimulate like a volume knob the anterior shoulder girdle muscles. This will also decrease the risk of SIS by 40%! Seated is far superior then standing for the goal of muscle building. However if you stand there will be core and functional value and less stimulus in the shoulder region. The reason for this is that there are more internal forces. The load has to start in the hands and travel to the feet, and then back up the chain. This is simply called 'enter-exit" principles. We choose the environment and exercise based on the

goal. We choose all movements and positions based on the engineering of the body. It all comes down to goal needs, and levels of control.

Some trainers follow the principles of the three monkeys. Do you? I see paint by number trainers every day I work out...it's sad!

THE LATS



Fibers run diagonal, almost vertical. Why would she do a behind the neck pull? Think intuitively!

LD stands for Latissimus Dorsi you can see how the fibers run on a diagonal. Not straight down...figures STAFF is doing a behind the neck lat pull...WOW! Sad.

Let's explore lat pulls and cables rows and everything in between. Why are front pull downs in most cases not as efficient as they should be? How can we make them more efficient? What are the risks involved? These are some questions we are going to answer for you. I want you to sit in the machine in perfect alignment (lat pull system), maintaining perfect skeletal alignment shoulder flex for me. Did you notice you could only raise your arms so high before your scapula starts to rise? Now, we grab the bar and what happens? We immediately rip the shoulder blade to an upright position. This position traumatizes the shoulder joint. Think about the position, some engineer said... "Let's design a lat pull machine". Now, let's throw a pulley up there over our head." What was this guy thinking? He was not thinking about the specific finite function of the shoulder joint.

The manufacturer did not take into consideration the congruency the scapula needs to maintain with the humeral head (a rhythm with one another). To make matters worse, he did not understand that your arm overhead is the weakest position you can be in and the greatest position for shoulder impingement. If you were to maintain proper skeletal alignment and pulled the bar behind your neck you would bop yourself in the head. I am not going to say anymore than this: Stay clear of behind the neck pulls.

This is an extremely high risk position with no benefit. We migrate to external rotation, shoulder impingement, hence more elbow flexion than depression of the diagonal fibers of the lats, forward head posture... "Can I stop"? I do want to say before you read into this about front pulls: Remember it's only because of where the manufacturer placed the boom, and pulley system. Some of the machines are made terribly. So when we grab the bar passively we move our shoulder joint to and overhead position. This forces the shoulder joint to an upright position. Who wants to rip their shoulder joint? I have another fact. The fibers run on a diagonal, so why are we sitting straight? So, what position do you need to be in to get the proper fiber alignment for the goal of lat pull/vertical pull? We need to lean back (slightly), and form the hip joint so we have proper alignment. What we are doing is creating a different relationship with the shoulder joint, so it has less force loads, and greater congruency to allow for optimal fiber recruitment. We found endless research involving testing the electrical activity of muscles (EMG) during the lat pull, and found the most effective and least risky position was to have your hands neutral

(30-degrees – palms facing each other) and in a sagittal plane. (The Videos will demonstrate for you) If you look at the microanatomy of the shoulder joint when you tear/rip back the joint passively, you do not get optimal recruitment from the lats. Your body tells you what position to be in. Have you ever noticed when someone grabs the “lat bar” they automatically lean back? What does that tell you? The body most often wants to migrate to a better position. Remember, this is for all those machines that are poorly made with the boom directly overhead. Today equipment companies have invented lat pull machines that do not dictate a specific joint. The machines move freely, which is very cool. Unfortunately they still design them with the axis of rotation directly overhead. I am still waiting for the guy who finally figures it out.



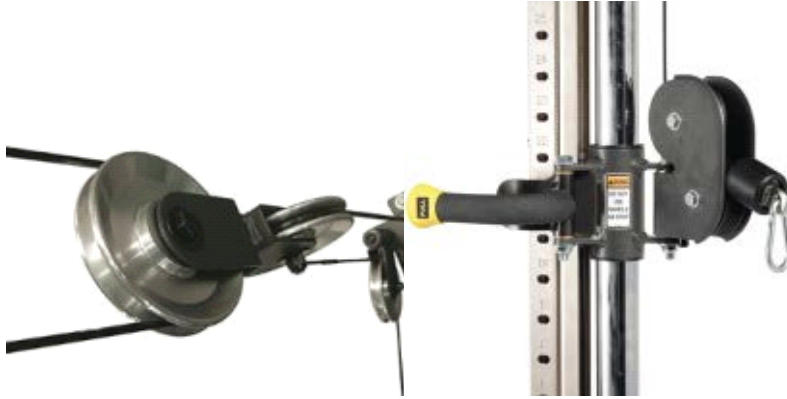
Seated cable row...

Well... I could not find a picture that was correct. Wow, what a mess, look at the angle of the wrist to the elbow. (This is the best picture I could find) When done correctly this is an awesome beginner exercise, because you are seated in alignment (hopefully) and you are mobilizing the upper extremity. The movement pattern provides shoulder extension concentrically, and eccentrically performing shoulder flexion. If you want to emphasize your lats the wrist MUST be in line with the elbow. So this leads to the question: Who manufactured all those funky small close gripped handles?



Did you know we are getting more stress in our rotator cuff musculature, (internal rotation) then the horizontal fibers of the lats during a seated row, using those small handgrips? The wrist must be in line with the elbow. Remember you are training the horizontal fibers of the lats, rhomboids, elbow flexors, and some small scapular muscles. The better the alignment during this movement pattern the greater the performance. Also the alignment dictates the amount of regional fiber recruitment. Please do not spinal flex while doing this exercise. We see this all the time along with the lat pull. If you drop the sternum — you blew it! DO NOT drop the rib cage. Remember motions and positions are relative to the body not the world. This is crucial, and we must think about this when we take the client through all his or her exercises. We live in a three dimensional unstable environment, so this is very important to us all. When you start grabbing different bars, the different hand positions will affect the joints articulations differently. As Personal Fit-Pros we need to look at the joints not the bars, or dumbbells. Always ask yourself: Does the machine or the bar match the motion of the body, based on the optimal strong path of motion. Will this machine or bar recruit the muscles fibers necessary for the goal? We do not want to create dysfunction in a muscle region, by moving in planes that are not part of the goal. If we teach our clients crummy motor skills we will create all types of muscular imbalances.

Now let's explore a pulley.



It's nothing more than a circle with an axis in the center. When we look at a pulley system like a pull down machine, nothing changes but the direction. When I pull one inch the stack moves one inch. When you go over to a cable crossover machine and move ten inches the stack moves five...Why? Unlike the pull down machine, the cable is not attached to the stack. The pull down machine — the pulley is attached to the stack — this gives it a one-to-one ratio. This is cool, because if a person has a difficult time controlling the weight, the weight is moving slower now. Now a cam is kind of like a pulley but the axis is not in the center. Most cams are made poorly as well. When the resistance gets further from the axis it gets tougher, and when it gets closer it's easier. So what happens is you have variable resistance throughout the motion because of the cam. The question again is: Did the manufacturer develop the cam correctly? If the cam were correct you would not feel the difference in the weight application. There should be no difference during the entire range of motion (ROM). A company called Hammer Strength makes their machines in the reverse of how load should be applied. Hammer Strength goes through a rotatory path of motion, which is cool, but in your strongest position the resistance is the weakest. When you're in the start of your weakest position the machine has the most resistance. This makes no sense ... is it bad? That's not the question. As professionals we just need to understand this information so we have the ability to know better and create proper load application. Think! Do not harm!

Let's explore a dumbbell pull over



Lets connect our hands to a dumbbell...dictate the range and path of motion in the (GH) shoulder joint / complex as its in external rotation. As the load is over our head it will arch your back, rips your shoulder blades back! Why? Because in 1979 bodybuilders would say "It will expand your rib cage" really? Is that why I can breath better? Another one of those useless High Risk old school moves! Read on and find out why...

The arm is in a fixed range of motion. Think of the motion, and think of the force. This exercise is shoulder extension concentrically. When the shoulder is at its weakest position, the load application is at its highest. This means you better have extreme control, and advanced integral strength. I wonder why people do this exercise: what is the goal? There is no chest involved based on the direction of the pull of the fibers. The lats are involved however; the risk is at its highest, because the shoulder joint is at its weakest. We make this exercise more productive for the goal of muscular fitness?

We can take out the risk range by using a cable machine that eliminates fixation (fixed close chain motion with a predictable outcome) and move freely through the motion of horizontal shoulder extension. We can perform a straight arm pull, with shoulder blade retraction at end stage. (See Below)



A preview of the Videos you will review. They will demonstrate proper bio-mechanics. I will be explaining in great detail. The rope you see I made, its simple! You soon will understand why the short ropes or straight bars are not as optimal choices.

By doing it as seen in the picture you have not only eliminated the risk, you changed the direction of resistance and now have more regional stimulus in the lats (the goal in the first place).

*Let's talk about the exercise that everyone does first with themselves as well as their clients "the chest press". The chest has clavicular fibers, sterna fibers, and costal fibers. **The chest is a horizontal shoulder adductor, which simply means to get the most, and safest stimulus we must bring our arms to midline. So, if the goal is to build a little muscle in the chest region, then a straight bar would be the worst choice for hypertrophy.** Also we must understand when you anchor the shoulder blades against the bench we become a fixator. A fixator is a position where joints can only move via the foundation they are in. The risk of injury increases when our scapula is fixed to a flat surface it cannot move freely and maintain congruency. For the trainer here's the uplifting education.*



Research via EMG (electromyography) which measures the activity (stimulus) in a muscle shows that the chest works most efficiently between 15-30 degrees. (No incline no decline) Think about this intuitively. What the heck are we doing in an incline with a straight bar or dumbbell, if the goal is hypertrophy of the pectorals region? Answer? Not as much if we stayed in an optimal range ... oh, so simple. We now know that anything below 15 degrees or above the 30-degree mark is emphasizing the anterior deltoid. So, remember the all-or-none principle is not all or

none pectorals major. If that were true then when you brushed your teeth you would go right through the side of your face. Or when you picked up an egg – yolk everywhere! Think of it this way, if I was to throw a glass of water on you, you would get hit, but not all the water would land on you. Think of stimulus in a region as a volume knob. Depending on the anatomical position of the body, the environment, the path of motion – all these factors will determine the volume to which the muscles are accepting load. Whenever you change the position of the body, the role of the muscle changes. This fact is very important, because if your goal in fact is to put emphasis in the chest region, then the 15-30 degree plane is the most optimal position. This statement goes hand and hand with any goal. If you're on a flat bench with dumbbells, your shoulder blades are fixed to a bench. The force enters your arms, trickles down to the shoulder blades that are fixed to that bench. The bench pushes back to the shoulder girdle; this causes the shoulder blades not to mobilize properly. This puts a tremendous amount of stress on the shoulders because of the absence of scapula humeral rhythm. The humeral joint can no longer maintain congruency with the scapula. Ouch! There are risks for major hypertrophy depending on someone's anatomy. The type of anatomy will dictate the level of risk. You are on your way to becoming a Qualified Personal Trainer. Why would you perform a chest press with a client who has a sit down job? Is your client on a computer? Do you think there chest would be tight? Always think intuitively regards to exercise selection, so we can correct, not imbalance.

Let's talk more chest...



Think about it...we have scientifically proven the flat bench is half the stimulus of the dumbbell. However when have you ever seen a powerlifting competition using dumbbells? Too funny right...or dumbbells overhead clean and jerk right? A deadlift with dumbbells...get my point! We

move towards or migrate towards what we see mainstream. We watch pro football athletes bench press. We say “look at them it must work” However behind the scenes (I witnessed this) they all use cables and dumbbells.

*Hey! Dude how much you bench? I was giving a talk to prove a point. I asked, “How many people think that you must perform a barbell chest press to have a huge strong chest”? Most of the room raised their hands. There was one student who had a massive chest (thanks to his parents, and something in the mix of his exercises). I asked him how much he could bench. His reply was 480! “Holy Pec-major!! Who is your trainer?” Let me ask you a question, can you take two 240 pound dumbbells and bench them on a flat bench”? He smirked and of course he said no. What does that tell you? You go into a straight bar, and there is a predictable outcome. Moreover, the straight bar is a closed chain dictated movement and your hands are fixed to a bar. The prime movers are the triceps, because your hands are connected to the bar. In addition, there are more joint forces with the straight bar, more stress on the hands, and more force generated through the bar. The stick all the force loads, which are invisible. Remember forces are below the skin where the bones and tendons experience internal stress. Moreover, this is the reason why people eventually have pain in the AC joint, where the acromium meets the clavicle. If I had a client who wanted maximal muscle in the pectorals region, I would use dumbbells as opposed to a straight bar to get more fiber recruitment. **When you have dumbbells in your hands your chest has no choice but to fire maximally.** Okay, enough bashing the straight bar bench-press.*

Next, I would like to explain an exercise a trainer was showing a client at a club on the shoreline in CT. Look at this machine...



It is a great because it moves freely, and you can create an endless amount of exercises. I love this machine, along with all other free motion fitness equipment. I had the privilege to be invited to Colorado by Roy Simonson, President of Free Motion Fitness to analyze the design / function of this free motion fitness machine prior to its release to the public. His entire line is by far the best I have seen thus far. I have a picture of the exercise below- using a cable cross machine to give you a better visual. Picture the pulleys all the way to the bottom adjustments on the machine above. I see many trainers performing shoulder flexion loaded from the bottom pulleys.



*Look !! Someone actually designed this Anatomy Man, "this must work the horizontal fanned fibers of the pectoralis region" ! **Not!** Do you understand we invented this exercise...someone lowered the pulleys...selected a weight, and did an awkward front raise...with a squeeze at the*

top! Do you feel the squeeze? This is another follow the leader move. It is predominantly anterior shoulder girdle muscles...just be a visionary and put dumbbells in your hand...its the same! Opposing forces are always pulling down. (Gravity) This is shoulder flexion concentrically. Here's the facts about this particular exercise: Someone will stand facing away from the machine as if to perform a chest press. They have the client start in excessive shoulder extension (a stretch?) and perform what looks like a fly from the bottom pulley. Their hands come together at eye level, in a dysfunctional arc motion. This is nothing more than anterior shoulder muscles. (Front delts) Moreover, a front raise out of opposition creates internal rotation of the shoulder joint and acromioclavicular impingement. It is impossible to put stimulus in the chest region when you are not in horizontal shoulder adducted position. Is this wrong? No... this is what we see in the industry today, exercises based on a sensation, and a repetition range. On daily basis we see trainers applying loads across joints basing everything on a "feeling" or because they saw it demonstrated in a magazine, or on the internet. Just because you can, does not mean you should.

I have been waiting to teach you this one.

Yes see the exit sign..exactly LEAVE this one out of your life! Look at #2 Pic arrow towards the head shows extreme external rotation...shoulder impingement syndrome. Lower arm arrow shows opposition of gravity...KB want to drop, as it transitions to the smallest joint in the body. Thw wrist takes the longest to heal, and it's being forced into flexion. All this to create a screwed up side raise...with a little shrug at the top! I say do a side raise...then do a shrug!



I apologize to those who are married to this old school exercise. I laugh when you see the kettlebell being used like a dumbbell. What is the goal for barbell upright row? The most popular response is the shoulders. Well, that's specific! Most people who perform upright rows have a goal of building their shoulders (maximum muscle hypertrophy) However, we have some muscles that retract the shoulder blades, elevate, depress, protract and flex, depending on the direction of resistance, body position, and path of motion. We also have specific muscles in that region, you see in the mirror, the rhomboids, rear deltoid group, traps, and anterior aspects of the front deltoid. Are you with me? The traps for example, which I am specifically referring to the upper fibers that insert to the occipital ridge, (the base of the skull) to the spine of the scapula. The way the fiber runs determines its action in anatomical positioning (standing straight). So, why if the goal were traps, would you not perform shoulder blade elevation? (Shrugs) If our goal is rear delts, or front delts, and everything in between, then why don't we

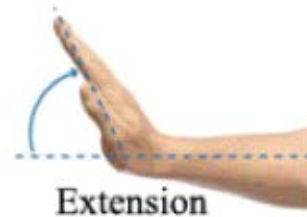
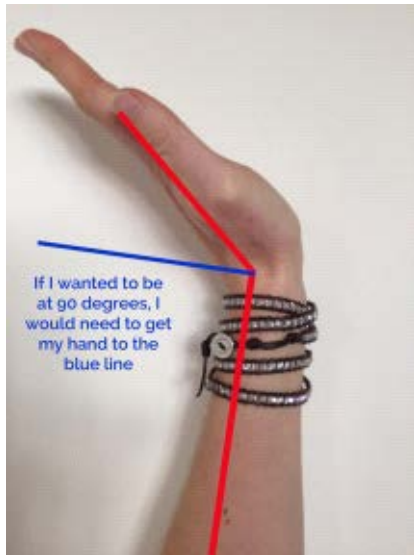
perform exercises that really emphasize that region, like shoulder retraction, scaption, (A front raise with the humerus in line with the spine of the scapula) shrugs, and cable side raises? What is the goal for the barbell up-right row? Well, stand up right now and let's go through the motion. You're going to pronate, and then grab the bar. When you pronate, your body works as an independent system. In other words, you can't pronate and keep proper congruence with the shoulder blades and humerus. It is impossible to keep a neutral position, so our bodies compensate. However, with a straight bar we are connected. Remember the barbell bench press analogy; we are in a fixed, closed chain position. At the start of your pull, we are starting in a closed position. (hands fixed) This means we can pull a lot of load. Recall the student who benched 480-pounds? The student was strong with the bar, but weak with the dumbbells. This occurred because he went from a fixed dictated environment to a free motion environment that created more stimuli in the chest region. What motion are we performing when we start a pull with a bar with an upright row? The motion is abduction; the humerus is abducting. There is no way to get proper concentric contractions when our shoulder joint is not properly aligned. You may be thinking you have to pull the bar all the way to your forehead or under our chin. So what do you do? You externally rotate because of a bump (bony process) to get the bar all the way up to the chin or higher. Humeral abduction with external rotation with load at the top is one of the highest risk exercises on the planet! Moreover, you go from a closed chain (strong) to an open chain at the top (weak) fully loaded... it's much heavier at the top range, yes? We have now taken this load to the weakest system we have in the human body, an externally rotated position. So now you are creating all kinds of stress and strain on the joints, along with impingement and a host of other disproportionate forces. What was the goal? See my point? Moreover, does the wrist joint in the picture look normal, safe or about to snap? This is an extreme high risk position for the entire shoulder girdle complex. Epicondylitis anyone? **An upright row, based on microanatomy, is nothing more than a major nonfunctional way to perform a screwed up side raise, with a small shrug.** Also, we have omitted the long extension of the forearm. I assure you your strong dense shoulders did not come from the up-right row. I do however, promise you, the pains in your shoulders you or your clients are experiencing now or in the future is most definitely from the up-right row.

I now would like to explore a push-up. (Me at 14 months)



I apologize for the cervical extension, with ipsilateral as well. Well my first anatomy class was 13 years later. I want to share a story with you...At the gym I recall watching another “rent-a-buddy” personal trainer. Sorry, not all trainers in gyms are “rent-a-buddies”, just the majority. He was super-setting push-up with a row. I thought that was cool, an antagonist / agonist group made sense and I understand what he’s trying to do. Then all his certifications not qualifications shined at that moment as he was looking at himself in the mirror, maybe his triceps or calves ... as he’s saying five more, three more... while his client was performing push-ups. I looked down at the client’s hands and they were literally red! Then they were starting to turn pure white. I had to jump in at that point (another story). Not good, however The client agreed and approached me after the workout and thanked me. He stated “My wrist always hurts when I do push-ups! Do you think the trainer did not assess properly? YES! They did not.

Take your hand right now and put it straight out in front of you, pronated (palm down, spill the soup) and extend it back (bring fingers towards you). Notice how far your range was in the wrist joint? The wrist only has 60-70 degrees in extension.

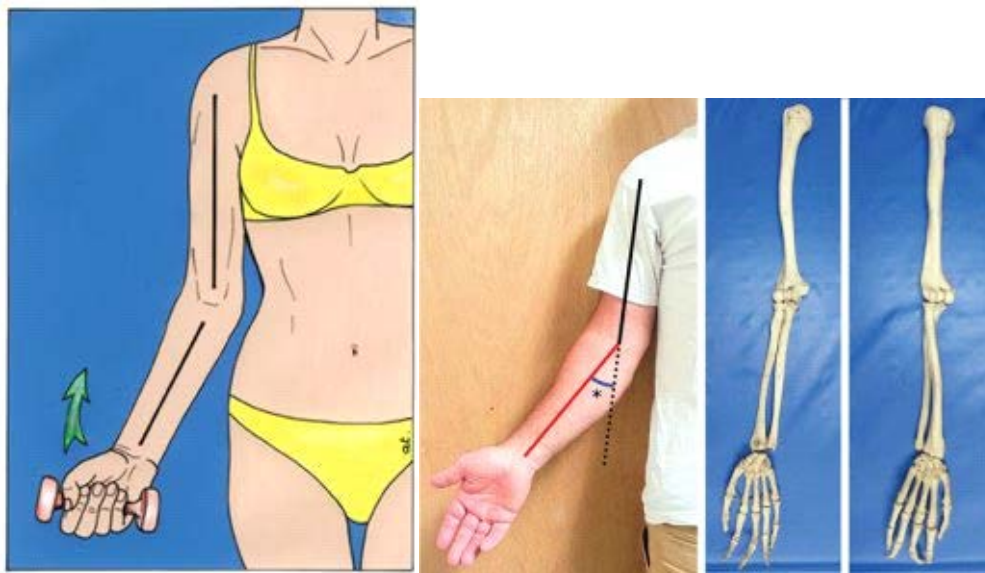


*However, during a push-up (on the floor position) you wrench it to 85-90 degrees, which will create dysfunction over time. The wrist joint is very complex, and due to its complexity, wrist injuries and dysfunctions (you do not see) are difficult to treat. Also, if the client's hands are in front of the shoulder joints you will migrate to a protracted shoulder girdle with a forward head posture. Remember a push-up is a plank right? A push-up although is bottom of the barrel chest developer, has its benefits if done correctly. If the head drops the body follows. The entire skeletal system **MUST** remain neutral. I will teach that to you!*

Motions and positions are different relative to the body, not the world.

Please assess your client's positions, to assure proper joint articulations. I am not against a push-up if you place your hands on two dumbbells, or a bar of sorts elevated off the ground, anything to keep the wrist from forced hyper-extending. Remember to hold congruency with the scapula; it should not be protracted, retracted or externally rotated. The spine must be neutral from the cervical to the lower lumbar. Think about this intuitively when you are at the longest lever position (on your hands and toes)...it may be difficult to perform a push-up. I suggest to put a foam roller under the knee (mid shin) to help stabilize the the link and support system. You can also have the client drop the knees, however no butt in the air! Keep the plank position regardless of the decreased lever / moment arm. This will set the stage for proper mechanics, and build core value over time...till we can perform 10 in perfect spinal

alignment. Moreover, there is not a sport in the world that a push-up can enhance or carry over to, and the development in the pectorals region is only around 43 percent based on EMG studies. If your goal is to stimulate the chest, there are many alternative movements that create more emphasis in the chest region without the risks involved with the push-up. The choice is yours, hopefully you're thinking. Remember this analogy... "Your body is the blueprint to every exercise you do." Therefore, I want you to go out to your car, roll down the window, and rock back and forth (full body weight) on the door hinges. Why not? That's what you're doing every time you do not obey the specific finite function of you elbow joint. When we put crummy force on the door we will strain the hinge, correct? I want you to stand in an anatomical position (like an anatomy chart/palms up — supinated as if you're holding a straight bar with your hands. Let your arms hang naturally by your side. I want you to envision a line drawn straight down from your humerus. Would that line coincide with your forearm? No. Any time you connect to a machine or a bar you must follow this natural carrying angle.



Trainers go by our clients carrying angle...there are three types of carrying angles. That's not important to know...what is important is your ability to have them stand there and say "Put your hands in an anatomical position please" Palms towards please...The you would place the bar...without them moving a muscle. This is only in a fixed environment (straight or EZ-curl bar) The fixed joint of the elbow will work most efficiently at this angle. Doesn't this picture remind you of the anatomical charts? The anatomical charts represent a perfect carrying angle.

*Interesting who thought of that? We all have different anatomical angles we must obey and when you do not, one of two things will happen. You can get all types of medial forearm strain and if you are not experiencing any pain, chances are you were protracting the shoulder girdle to compensate for these forces being employed. The elbow is a hinge it is not designed to deal with asymmetrical forces. Most of the force analysis is through the extensor groups and that's not the goal. The biceps are not working to maximum capacity because of all the internal forces vectoring through the joints and connective tissues. Also if you were to analyze your ability to supinate (when you put your arms in an anatomical position palms up) you cannot supinate all the way (nine times out of ten). What the heck are we doing with the straight bar? The ez-curl bar is far from easy if you hold where the manufacturer designed the angles. We suggest holding the bar in your carrying angle regardless of any bend via the bar. Always determine if you are in correct anatomical position for total regional emphasis of the elbow flexors. **I am not saying that if you were in proper positioning it would be wrong.** I am just stating the fact that there are much better ways to isolate the hinge joint to place more regional emphasis on the biceps.*

For example, the dumbbell or a cable are free motion and will not dictate or create crummy forces. The force analysis is different and the environment is far superior for the goal of hypertrophy without the stress of internal forces. Elbow flexion and radial ulnar positions are all different. If I am totally supinated (palms-up) the biceps shine through as the prime mover. If I am in a semi-pronated position (shake a hand/hammer curls) the brachial radialis shines as the biceps and other forearm muscles assist. If you go into a pronated position (spill the soup) the brachialis shines, and the biceps default. What I mean by default is the radius is a bone that moves into a pivot situation, so when we pronate and elbow flex, the tendon, which connects to the radial aspect, gets twisted under the bone. There is not much force production,(stimulus) because the tendon is twisted under the radius.

More about elbow extensors



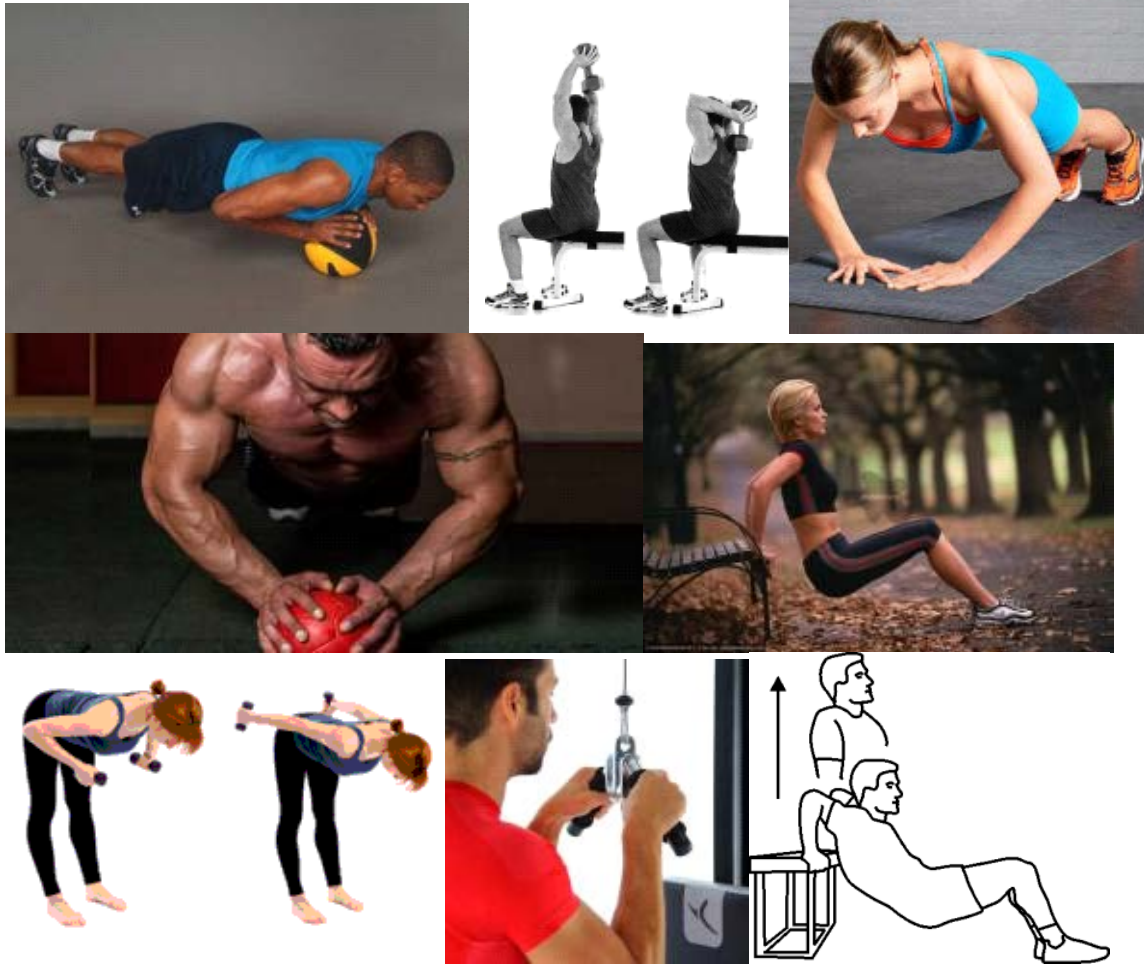
Your triceps do not attach to the radius; therefore, when you extend the elbow (triceps press down/extension), your biceps have no idea you're doing it. The muscles don't know but the bones do. When you pronate (hold a straight bar palms down, "spill the soup") envision that the radius locks over the elbow, as you go to elbow extension (triceps ext) as you get near the end. Anatomy dictates that if you twist the two bones, they now touch upon one another. This causes an unwinding of the shoulder joint where you migrate to internal rotation of the gleno humeral joint. The goal is to avoid internal rotation when performing tricep extensions. We lose optimal fiber recruitment when we leave our neutral position. Actually, you're deviating from the goal and using muscles from the chest because they are strong internal rotators via the shoulder joint. Always look at the contour of the body during motions and positions. Neutral alignment will be our optimal position if your goal is to emphasis triceps. Videos will show you the best Tricep moves for humans!

FACTOID- Do you know those little V-bars? What a waste of time!



I have yet to figure out why a manufacturer made this piece of equipment. The elbow joint is limited and bio-mechanically inefficient when connected to this V-bar, or any V-bar of sorts. The shoulder joint protracts, internally rotates, and to make matters worse, you get that funky little wrist ulna radial deviation as you pull the rope all the way down to your side. Moreover, too many extraneous motions are not part of the goal. However, if you use double ropes it will correct this issue. We as professional must understand the common sense facts as presented in this course. We want you as the professional / or novice to remember: we did not say you can't perform these exercises we deem dysfunctional, we are stating a fact, and now it's your choice. There is no such thing as a wrong exercise. There are many exercises that the risk exceeds the benefit. – It's either your own thing, or factual data based on science. The choice is yours to figure out, we already decided!

Triceps; (Elbow extensions) these are non-sense ways to train your triceps- The risk exceeds the benefit. I personally would never perform these movements with any human being regardless of their present condition or fitness goal.



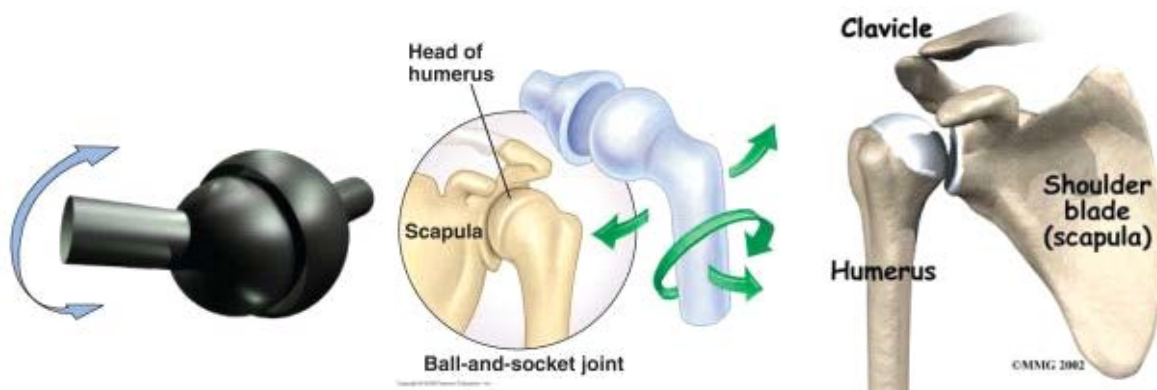
Some are comical- some make no sense-most are high risk-some based only on a feeling. Is it anyone's fault? No! Do people follow someone's objective opinion? Yes! Did the manufacturer, or inventor do his or her homework on specific joint function and relative risk before test marketing? NO NO Absolutely not!

As few examples prior to the video lesson plans: Let's talk about kick backs:

Why would anyone bend over (forward flexed with a dumbbell) just to get opposing force in the shoulder joint concentrically. Its shoulder extension, however we need to bow so we have gravity in the right direction. Now we hold a long lever position, and lower the dumbbell with 50% less eccentric contraction. This is one of those "well I feel it" moves. Look at the fifth picture form the left. (above) This woman is forward flexed stressing the segments of the spine 200% more than in a standing position. She for some reason has the innate need to look up...welcome

cervical extension...do you look at the ceiling all day? The second picture from the left is cool, however there are so many other safe and optimal ways to get faster results with your clients. Picture one and eight...a total waste of time with a risk of 100! Your shoulder joint extending averages around 15 degrees. Now you fix your arms on a bench or chair...closed and fixed, with a predictable outcome. You decelerate (start to drop down) and exceed that range, so far into the joint it can't dissipate the force. Synergistic dominance anyone? The risk is tenfold in the entire scapula humeral complex. The rhythm deviates, and the goal is lost due to internal forces and compensation.

Why do we dip? Are there more optimal ways to train our triceps? If we need strength holding our bodies in that static straight arm position...why don't we just hold the position? When we apply load in a dysfunctional environment hence the chair dip, or regular dip...we create disproportionate forces across joints in a high risk fashion. The shoulder joint was not meant to be wrenched back eccentrically concentrically to an excessive range (beyond 60 degrees) with your body weight...let alone plate loaded. (Old school) The shoulder joint extends the humerus if you're lucky from 0 to possibly 55 degrees...we take that to 70-90 with load. Ok gang not to bore the tears out of you...Unlike the hip joint, the shoulder joint is not a true ball-and-socket joint; in fact, it is more analogous to a golf ball sitting upon a tee. (Less boney contact)

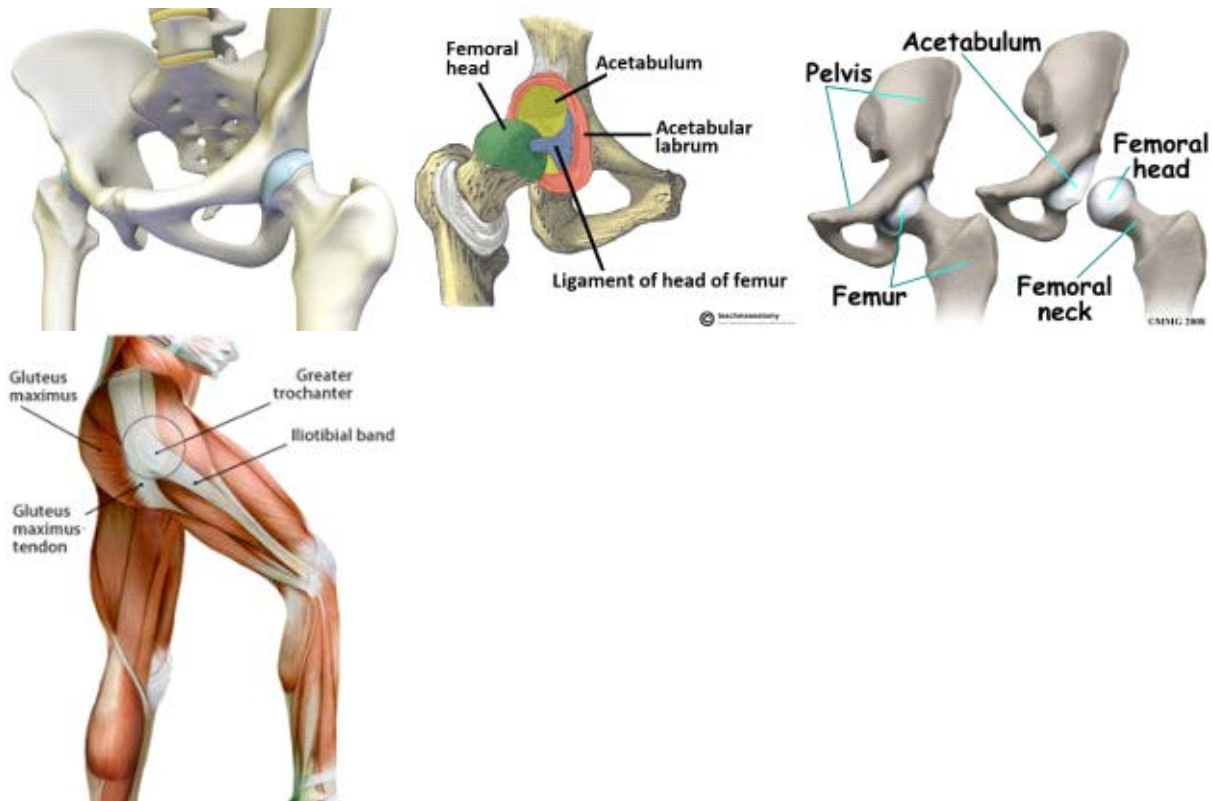


It is highly mobile, this joint generally lacks the stability offered by the surrounding bones and relies more upon the active structures (muscles) and passive structures (joint capsule, ligaments, etc.) for stability. The entire shoulder joint is now more prone to injury. Exercises like the bench press (flat bench) and dips, create compression within the joint capsule, increasing shear forces and impingement of nerve endings. Here is the important message...Dips also push the gleno-

humeral joint beyond the normal anatomical range of shoulder extension. The joint capsule is now stretching beyond 'safe ranges' and reducing its ability stabilize and produce force, again rendering it more prone to injury. Additionally, as the humerus extends during the lowering phase of the exercise it internally rotates, adding to the potential for impingement, while also forcing a rounding of the shoulders that compromises stability within the entire scapula-thoracic region. Oh in case you didn't get it...don't do this exercise! (Risk exceeds benefit)

The Hip Joint

*The **hip joint** is a synovial **joint** formed by the articulation of the rounded head of the femur and the cup-like acetabulum of the pelvis. It forms the primary connection between the bones of the lower limb and the axial skeleton of the trunk and pelvis. This is a ball and socket joint. You have an acetabulum and a femoral head and they sit nicely within one another. Can my clients maintain stability in this three dimensional environment that we live in. I will make them stand on one leg while performing hip motions on one leg. I have them hip flex, extend, abduct, adduct, flex rotate internally and externally. Remember, if you're performing hip extension (single leg posteriorly for glute work) you only have ten to fifteen degrees of extension. Please, it comes from the hip. If you lean forward, it came from the spine there is a huge delineation between the two. We must remember to maintain pelvic positioning as we extend beyond neutral. The hip is the body's second largest weight-bearing joint after the knee. It is a ball and socket joint at the juncture of the leg and pelvis. The rounded head of the femur (thighbone) forms the ball, which fits into the acetabulum (a cup-shaped socket in the pelvis). Ligaments connect the ball to the socket and usually provide tremendous stability to the joint. The hip joint is normally very sturdy because of the fit between the femoral head and acetabulum as well as strong ligaments and muscles at the joint. The hip is a synovial joint, it's not a bone. Look that one up! Test. Also there are other structures that give stability to the hip as you can see in the 4th picture.*



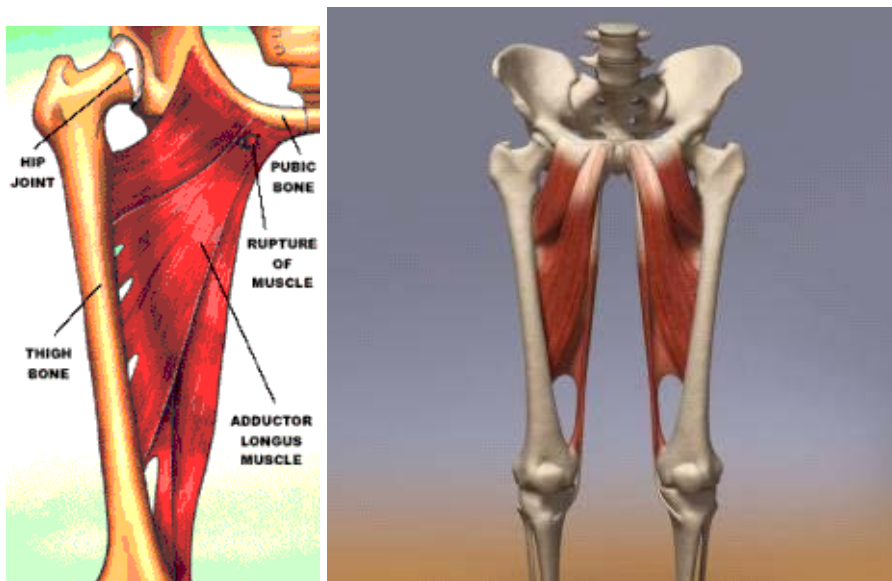
Glutes



The statue of David was designed to show the amazing glute work of Michelangelo. Venus kallipygos0 Greek Goddess also trained her glutes 3x per week. Let's think about this intuitively, what does the gluteus medias do? Please do not think it abducts, that is a textbook definition. Tell me when in life we have to keep our leg straight and kick to the side? This is how we learn functional anatomy by looking at muscles from three perspectives. We must look at it concentrically, eccentrically, and isometrically, to figure out what its function is in the human

body. We should not base its function on machine makers, or infomercials, nor because we “feel” it in that area. Remember the butt blaster? There are many “butt” machines which are based on marketing, and sensation not function. There are many machines that you get in a four-point stance or apply resistance for the goal of spot reducing or toning. Why do they make machines for the butt, to sell health club memberships to women? The butt-blaster adds resistance to a four point postural position but how much motion do you have above neutral anyway? Not much at all, so any extra motion comes from wrenching the spine. Why all this wrenching of the spinal structures if you are building and squeezing the butt? As it turns out you feel it in the butt because the resistance is locked though the joint. However, you are not working the butt. If you want to train your clients butt, use the low pulley with an ankle strap standing as you go through hip extension concentrically. This will allow you to train functionally integrated and have carry-over to real-life application. Think outside the box; choose an exercise that maintains pelvic stability, as you mobilize through a safe range.

What are the functions of the adductors?



They are re-positioners; they help with your gait, putting one leg back to midline in front of the other. Without the adductors you would walk into a split. Concentrically, the adductors can adduct the leg, eccentrically they can abduct the leg, and isometrically they can prevent

abduction. That is the true function of the adductors. They were never meant to take forces across the femur in a seated adduction machine. Remember we can create load application for the adductors without stress across the femur. You need to understand the risks and benefits associated with a seated adductor movement. How does this carry over to real life for our clients? When during our daily activities do we apply that type of force across our femurs, with our hip in 90 degrees of flexion? It does however, have tremendous carry-over to equestrian training (riding a horse).

Every trainer for some stupid reason does Burpees with their clients...the educated ones try to regress to a lesser degree making it seem safe. One on my Top “I will never on my watch do this with a human being outside of the military. Its one of those Monkey see Monkey do moves.



Seriously does one-size-fit all? hows that posture? Jump and land on toes, knees drive forward, face plant and arch your back, hip flex, drive forward with load...repeat! Really? Lets read below and learn as a professional.

One of the worst exercises on the Planet. *The Burpee makes my Top Ten “what not to do with a human”. I am not military, and I understand risk benefit ratios with every exercise. The trainer who makes his or her client just start burp-in really should lose their ability to train, let alone be called a personal trainer.*

Created by Royal H. Burpee in the 1930s as a way to test the agility, strength and coordination of prospective soldiers, this exercise quickly gained in popularity throughout boot camps everywhere (we’re talking real tonight-we-dine-in-hell boot camps, not your spandex-wearing-

tire-flipping-lets-get-a-latte-after-this boot camps you see littered among your city parks). Eight burpees completed in 20 seconds was considered poor, 13 or more in 20 seconds was considered excellent. That was it. One set. Twenty seconds. Remember that the next time you hear someone talk about how many burpees they did before they lost their protein shake on the gym floor.

So why a burpee for the military? , The burpee is probably the very best exercise for the military. Or should I say more specifically, for people being shot at by other people with guns. It stands to reason that if a soldier can't quickly get down to the ground and then quickly get back up again, they're simply fodder for target practice. A primary need is to be able to drop into a firing position and then bounce back up lightning-fast to move to a safe position — and without a certain standard of ability to complete that particular movement, they are at a significantly higher risk of getting shot than their other, more agile companions.

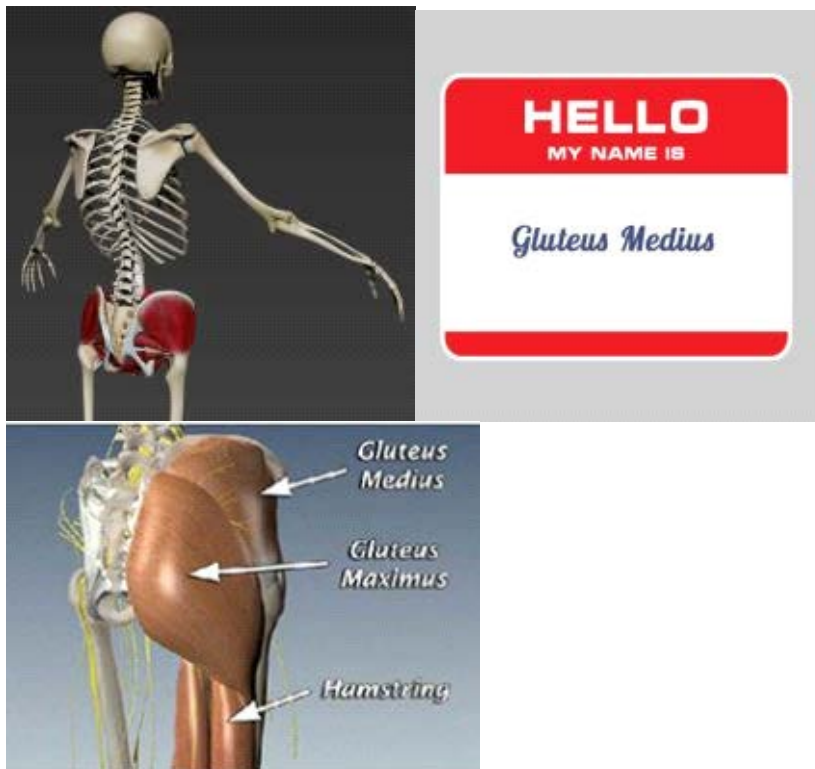
But if you are not in the military, there are two simple reasons you should not do burpees: Your knees, and your low back. I might ask, how can it be a workout if it puts your body at high risk of injury with burpees? I see trainers who have not even taught a proper jump squat, or an overweight client who cant even hold a straight arm plank. They go right into a push-up...go right into a lumbar extension, their entire link and support system is compromised. It nothing but an ugly burpee... I do not see any regression, no verbal tactile cue, no correction...just Yea!! Keep going!!! Typical rent-a-buddy...with no education HOWEVER level 3 trainers because of sales! It's the dynamic nature of the burpee that demands quick and powerful bending of the knee and low back done repeatedly (certainly more than eight to thirteen times) that with each repetition moves further away from benefit, as we move towards imminent injury.

In short, the burpee is an exercise created and designed to be done as a test for a short number of repetitions to predict a soldier's ability to prevent lead poisoning. The exercise may have great benefits for the already accomplished athlete who needs to drop to the ground quickly and/or return quickly (as in perhaps rugby or American football), but serves little purpose and actually a significantly higher risk to the cubicle dwellers and stay-at-home mothers of the world who just want to feel better and look good in the mirror.

As a fitness professional, and educator I have a responsibility to help my clients, and students

achieve their goals in both the fastest and safest way possible. IF you're doing burpees as part of your workout, why stop there when there are other, equally nonsensical workouts to pursue? Maybe you'd like to try some other popular sports with a similar benefit/risk ratio, like bull-riding.

Time to think ... how often do we stand on one leg? Tick, Tock ding!!! Every time we take a step and walk. When we are standing, the muscles that connect to the pelvis and the outer part of the femur (Glute medius) prevents adduction isometrically.



It's hard to write what a person would look like if they had gluteus medius weakness. The best way is to professionally say it would be, he or she would walk like the a Victoria Secret model, strutting on the catwalk, (swaying) their hips side to side. Basically you would have a wandering pelvis. Therefore, as trainers, you must train your client's weakness. Over time (accumulative stress) that person will develop all kinds of muscular imbalances that will trickle through the entire system. Think ... we don't put them on the butt blaster machine, or leg press machine. The body must maintain balance in a vertical field. The message here is ask and assess a person before designing a conditioning program. Do they wear heels, how often do they sit, are they

walking most of the day or standing? This will give you a good start on the types of corrective conditioning exercises that must be employed. So if we are assessing weakness in the abductors we must strengthen the area. The best way is (so easy) to have the client stand on one leg and maintain perfect erect posture. To most of us this is not a challenge, unless you have weakness. We must get this area to fire; we are dealing with a gravitational field, so laying a person on their side and performing side leg lifts is not the same application. I won't get into why people do side leg lifts ... okay because you asked ... they think they are toning that area. (Enough said).

Fun time!

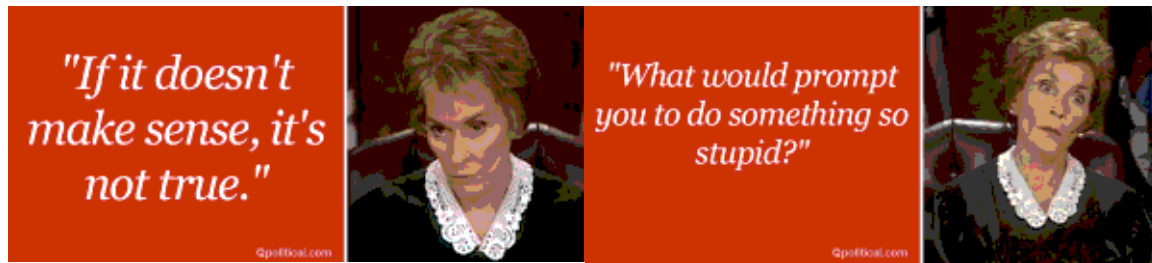
We have our next exercise in the gym. What are you working while in a seated **ab**-ductor machine?



PLEASE DO NOT DO THIS STUPID STANDING MOVE WITH YOUR CLIENTS...

We must know this if we were going to prescribe it, or do it as professionals. We can't spot reduce, (I chew gum all day, my face is no thinner) so one of the risk factors is the fact that we're allowing clients to think that we are spot reducing. Are we really working the gluteus medius? We are not because the direction or role of the muscle has changed and it is in another

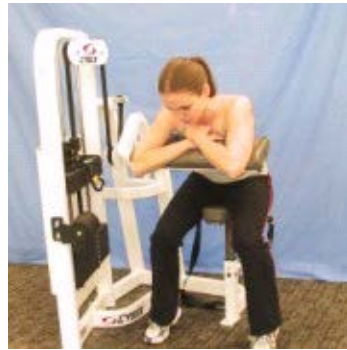
anatomical position. Remember muscle conversion? When you are seated with your hips flexed sixty to ninety degrees, the position of the body has changed as well as the relationship to the axis. The role of the muscles changes when your position changes. So guess what muscle you're working? The gluteus maximus is now dominating. When was the last time you walked up to your client / a person on the hip abduction machine and said, "Hey do you really want to hypertrophy your butt?" You're not in the optimal position to train your butt and are now creating a stimulus. There are much better positions. Remember the glutes are not a good abductor, they are strong extensors concentrically. I always say your structure is a function of gravity. Humans are dealing with the force of gravity. What the_____ are we doing in the abductor machine; we decided to create a hunk of metal; we sit in the machine and apply force across the femur. The femur was not meant to take force in that plane. The femur, in a standing position, has more so called shock absorbers and can handle more forces. When you are seated, the cushioning dissipates versus when you are standing. The cushioning is greater standing and can handle more force across the femur. Seated ab-duction is not a great choice for our clients. This is one more reason to move our clients through integrated motions and positions as dynamic professional trainers. Always keep the flow and transitions steady not stagnant. It's time to create exercises that have more benefit and less risk and reach the goal. We need to educate our clients on the marketing gym talk, versus the real science behind function. As professionals, if we choose an exercise we must have a goal in mind. We must know what we are trying to work. I asked some trainers why they are doing this ab-ductor machine and they replied skiing! If you ski with your hips sixty to ninety degrees flexed "you suck as a skier." Think how a fixed machine would have carry over to a three-dimensional sport such as skiing. Enough said... I think it may be a great adductor stretch, do you?



Here's a statement I read and it made so much sense... "A law in science (anatomy) is different than a judicial law. A judicial law is argument that's why we go to court. So in physics we have a different law, and you cannot change anatomy and the way it functions. We have changed anatomy based on the way it feels, and have now screwed up the system. THIS IS HOW WE SCREW UP OUR BODY, AND THOUGHT PROCESS. Remember that sound bite.

NOTES: Wow this makes so much anatomical sense. Imagine how much I can increase my revenue stream, help my workout by applying this knowledge to my daily practice. (Sorry wrote your note)

Wow I need a six pack!!! I would love handle this one. This is the almighty ab-crunch, plate loaded, tummy flatten-er machine. This is guaranteed to tone your tummy! I am getting off the subject of tone for a minute. These are the worst exercises for you Ab region. Below are sensation based "Everything hip flexion, trunk flex, without spinal flex (Abs) I know you feel it. I understand you have Abs. You did not get them by performing these!



Ladies and Gentlemen, I am sorry to announce the manufacturers of these devices are using your emotions, and sensations, to make you believe in illusions!

What does tone mean?

Well, first let's get rid of the stomach statement, I never trained my stomach outside of the kitchen. What exactly does "tone" mean? Please do not use this statement with your clients.

Tone means low level of contract activity in relaxed muscle. If you are not tone you are paralyzed. Can you tone up a region? Well, if a region has low levels of tone — yes you can tone

up that region — but that will not change the texture of that region! Our clients need to know that there's hard muscle under their fat. The only way to have it show is to burn more calories than they take in. But by no means can you train or reduce an area. The great benefit behind strength training is the increase of muscle metabolism, and fat burning enzymes. This makes us more metabolically active and burns more calories at rest. Question: What is working when you anchor your feet while performing sit-ups? If you answered "abdominal musculature" you are "GRAY ZONE" correct. The prime movers are the hip flexor complex. The group is comprised of the Iliacus (originates on the pelvic crest and attaches on the femur) and the psoas (originates on the lumbar vertebrae and attaches to the femur), which makes up the Iliopsoas complex. The final muscle that contributes to hip flexion as well as serves as a knee extensor is the rectus femoris because of its origin and insertion point. I ask you again why would you connect your feet to perform crunches? What is the goal? "The action of the rectus abdominis along with many other muscles in that region is to flex the spine. When you connect the feet you perform "trunk flexion" a totally different force analysis, and over time can create excess strain on the lower back. (Lumbar spine) Moreover, you are creating an abnormal anterior tilt of the pelvic bones". There are 33 muscles that either originate or insert on the pelvis, which means that if these three hip flexor muscles pull the pelvis out of place it will have a huge impact on the surrounding musculature. When the hip flexors become overly tight, it causes a condition called Lower Crossed Syndrome. The change in alignment causes the hamstrings to become tighter as well as the muscles that bring your legs together (adductors) and the muscles that extend your lower back. With all of these muscles becoming tight it causes the opposing muscles to become weak such as your gluteals, quads and abdomen. Instead of using the powerful gluteal muscles to run and jump, the hamstrings have to change their role from helpers to prime movers in extending the hip. When the hamstring is overloaded with the extra work an injury is sure to follow. Unfortunately it is at this time that people begin extensive hamstring strengthening trying to fix the symptom rather than curing the cause (tight hip flexors and weak gluteus). This is just one of the many examples of the difference between picking the high risk exercises based on a manufactured machine, or a sensation in an anatomical region. How do we prevent all

these muscular imbalances we subject our clients to? Step out of the common personal trainer box...be uncommon.



Trainers please assess your client's ability to stand on one leg (ability to stabilize proper ankle, knee, and hip positions prior to performing walking lunges.



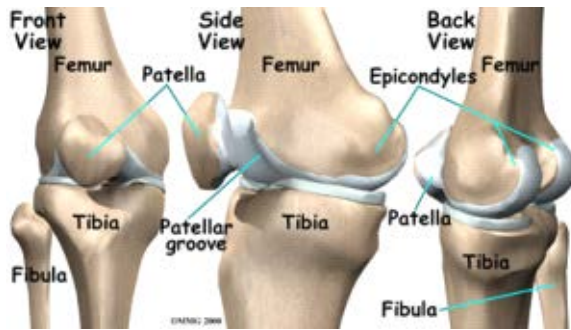
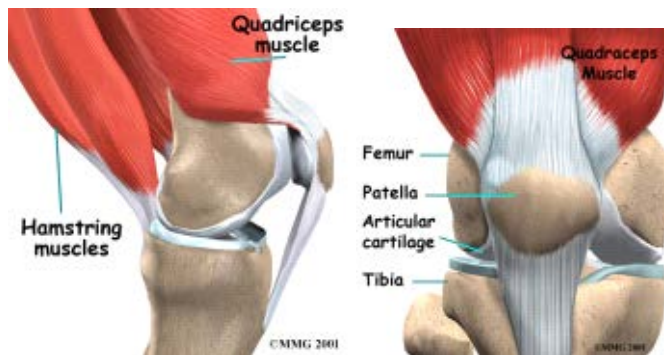
If you teach walking lunges you will get to know the above pain cycle. (Above) vs. what we all want in our life “the motion cycle”!

Remember, maintaining spinal stability, and proper positioning, is far more important. We are creating degenerative wear in the entire structure when we cannot maintain ideal alignment of the spine. Instead of walking around the gym in crummy posture, we can do a static lunge as we maintain proper axial alignment (knee) and optimal neuro-muscular efficiency. The fact is the majority of clients cant maintain balance. I want you to watch someone doing walking lunges. Pin point the front foot. Watch the heel lift and shake as they walk around, driving the femur into the knee cap, and pulling on (PCL-ACL-tendons. Also...please do not think lunges help cross-country skiing. When do we carry dumbbells, or even worse load our spine vertically while

skiing? I am not being sarcastic we (Fit Pros Academy) just want you to think about application and goals. Performing a static lunge is more efficient, and we can be more creative with load application. Performing a step back lunge, (You will see many variations in the vignette lesson plans) Knee pain is a common injury that impacts overall health. To resolve knee pain, it is critical to understand that the knee is sort of a biological “fall guy” because it is located between two mobile joints: the ankles and the hips. If there is a lack of mobility within these joints, then greater demand is placed on the knee and problems can arise. Research has shown that tight calves and hip flexors are directly correlated to knee pain. I wonder if the certified trainer assessed his or her client’s active range or did they just pull the string on the clients back like a wind up robot and say go? I saw a trainer at a local gym; The trainer put a 30-pound ez-curl bar on the clients back. Stats: Client male, 35 years of age, sedentary, office worker, sit down job, fifteen to twenty pounds over weight, and approximately six feet. I will not talk about femur tibia ratios — another dissertation. (They should not be walking around in crummy posture after sitting all day in poor posture) The trainer watched his client walk around as he said, “All the way down ... touch your knee almost to the ground.” As I watched from the front (walking towards me) the lateral instability was like waves in a sea of dysfunction. Here is the back-breaking news. The client was neurologically exhausted from trying to maintain his center of mass in a three dimensional environment in which we live right? When finished, the trainer instructed his client to take off the bar and place it on the ground. The client then forward flexed with a twist, and pressed the bar sideways off his back, which was on C-7 the entire time. Do you understand that is extreme? This was the head trainer. P.S. They had two certifications on the wall. I am only trying to reiterate what we see out in the real world of personal training. Most all those trainers go to weekend seminars, conventions, listen to a speaker, and pass their “written exams”. No application !

Hence the reason why you are reading this, and taking my course! The Fit Pro it is about application and certification. (Certified versus Qualified.) We must understand the joints involved and all internal forces below the skin. Safe and optimal always wins over “But I feel it, and look at that guy!” I will teach you moving forward what to say when someone says “Well I feel it”

The knee and its relation with the hamstring complex:

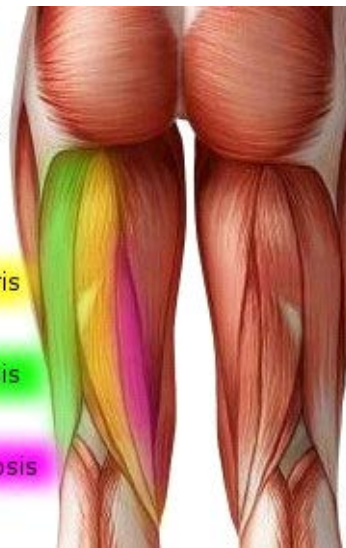


Hamstrings

Biceps Femoris

Semitendinosus

Semimembranosus



The knee is a modified hinge joint. Not a pure hinge joint, like the elbow joint. You should know that the knee joint is moving in one plane (that is critical). The quadriceps's are strong muscles, as well as the hamstrings. However, when you analyze hamstring motion it was not meant to be

strong at knee flexion. (Like a leg curl machine) The hamstrings are very powerful at the hip complex. (Hip extension) I ask trainers all the time, “What do you do for the hamstring complex?” Of course they answer with a leg curl or knee flexion movement. There is nothing wrong with that, but we must understand the hamstrings are powerful hip extensors as well. Hip extension is a great way of emphasizing the hamstrings, along with the glute max. Notice I did not say you should not train hamstrings at the knee joint (leg curl). However, I am saying, the hamstrings from an engineering perspective, were not designed to be strong in knee flexion?” We invented the machine, hence we equate the body part to that move right? However here is what a professional like yourself should know...It is a great re-positioner when we ambulate (one-step in front of another) along with the adductors. However, all the exercises we do which involve knee flexion (stability ball curls, prone leg curl, slide board knee flexion) are just more tools in your toolbox of movements. **Just remember its strength comes from the hip region.**

Did you notice when someone performs machine leg curl his or her butt goes in the air?



Did you know that's why they started to design leg curls machines with a bend in the center of the bench? What's the action when the butt lifts? Hip flexion, along with lumbar extension. Think intuitively; if the strength came from the knee joint (modified hinge) the hips would not flex. As a trainer if you're working with someone and they have a goal of weight loss, the last thing you want to do is put her/him on a machine that throws their "big backside" in the air. We laugh about it but it's something we need to think about as professionals. Another machine for the hamstrings, which puts you in a chair position, is a seated hamstring curl. This position

promotes slouched posture, and when do you see anyone sit in perfect ideal skeletal alignment when performing this movement? The challenge as trainers is to educate our clients on the kinesthetic awareness of having all the vertebral blocks lined up properly. So we have a double negative with the seated leg curl. 1. The sternum drops and we go into spinal flexion. 2. The hamstrings pull on their attachments at the ischial tuberosity. (Sits bones.) The sits bones, will than pull on the pelvis and you will lose spinal alignment. Remember, we don't want to create muscular stress, strain, imbalances, decreased fiber recruitment, by promoting slouched posture. Always, no matter what, maintain "the closest standard" or what we call a neutral spine during all exercises. Remember single joint motions (like the fixed seated or lying leg curl) are for the hypertrophy (muscle building) goal. However, it's a non-functional means of load application. Always remember the goal? The squat however is what we really need to teach. Do you know how complex the motion of the squat really is? Most people do not maintain their center of mass in a true to life three-dimensional environment. I bet you never thought of getting into your car as a squat. This is funky ... you are performing a one legged squat with a lean, and a twist! As professionals, we teach motions and positions so we alleviate the possibilities of accidental overstress. We teach the proper squatting patterns so we can undo most of the muscular imbalances that are created with improper exercise from a rent-a-buddy trainer, or poor posture in the workplace. We teach all movement patterns so our clients have the ability to push, pull, squat, lunge; twist, and bend. When our clients have that ability to perform a proper squat, they now have a greater chance to function properly in a three dimensional environment. These exercises are amazing for weak-link structures, hypertrophy, function, and add variety as well as volume to our program design. This movement is the foundation from which other exercises stem from. An example of proper mechanics from a squat is that now we can now introduce a row (horizontal shoulder extension/retraction) for a "squat-pull." Now we have more joints moving, more internal forces (muscles) working and are more functional, which results in more calories burned. Please do not limit yourself to fixed equipment because you're de-training the system for function in everyday life. The muscles, after adapting to fixed machinery, will all speak a different language. When you try to work them together the system breaks down and synergistically cannot control the demand. Does

that make sense? During the squat we must analyze lever arm length. People who have told you to squat to parallel were memorizing textbook or muscle & fiction magazine “gym talk.” Humans are a series of lever arms; so think intuitively and assess every movement. Remember your active range will determine your resisted range. The knee is most prone to injury because it sits between the two longest lever arms in the body (Femur / tibia). When you teach, use this as your assessment guide and look at the positioning of the feet, knees, hips, lumbar spine, and every vertebra up to the head. We must understand and learn lower extremity alignment.

Loaded or no load, teach the squat! Here are some “Fit-pro-approved squats for the purpose of muscular fitness.



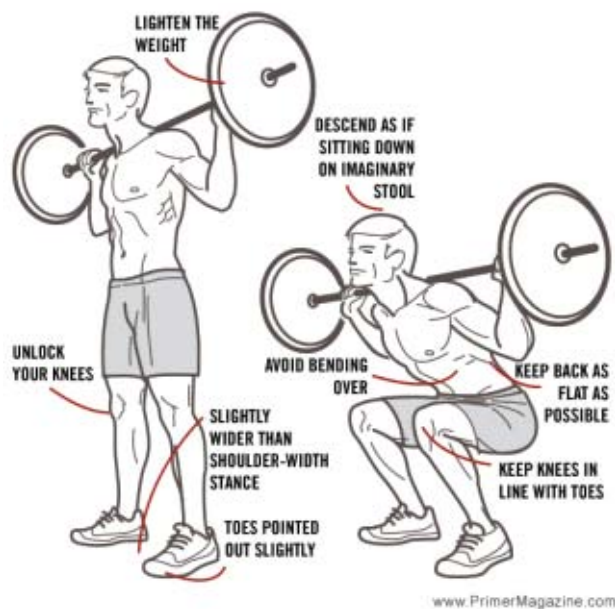
The femur and tibia must be in the same plane. Most people find by keeping the knees center inside the greater toe is most efficient and safe. The knee will function and feel the best (less risk) when the center of the knee is tracking over the first and second toe. (Inside the big toe) If it does not, you will get disproportionate forces along the knee joint. I get so freaked out when I go into a gym and watch people with their legs wide and feet like a duck on the leg press or in a squat position. Its comical, and huge risk internally. Do you really, or do they really think they are working their inner thigh? I do not recommend you load this center as seen below. Why? Think about gravity induced. The load is protracting the shoulder, taking it out of alignment. Look at the center picture, her knees are so far out of alignment, its creating sheering forces, and stress on the entire knee capsule, as it sends other stresses to the hips. I love the ripped models stepping on 2- flat benches, and decelerating (Dropping down) as far as possible as if they really needed to go super deep? Why? A better stretch? The glutes are not involved with the deep squat, its more ligaments, tendons, and disproportionate muscle engagement. Read on Fit-Pro ...



What are they thinking? They are thinking they're working the inner thigh, but really (you should know this) what are they working? The hinge joint of the knee is working. Do I go over to your car, roll down the window park my 215-pound frame on your door and rock back and forth? I do not, and you would not want me to. The hinge of your car door will strain. Get my point? The knee as I said is a functional hinge joint. I see people all the time that can't maintain the center of mass as they squat. When you go to a gym and put weight on a leg press its much greater then gravity itself. We must make sure no matter what position the legs, or feet are in, the alignment stays the same throughout the entire motion/set. You will soon find how many of your clients are unable to perform a proper squat. There are going to be so many factors and complexities. The fact remains that once learned, it will become an engram (a series of complex commands tied in with a thought to produce a task/movement – see our Journal "Anatomical Profitability" for complete definition of an Engram) The key component to true professionalism

is to be involved. A trainer should actively participate (teach, educate, assess) in all motions and positions during an exercise. We feel every repetition is an assessment.

Individual Lever Lengths *If all people could squat to parallel each would experience different forces. Think of the body in three segments (but remember we are integrated). Segment one is head to hip, segment two is hip to knee, and the third is knee to ankle. When you squat down it's like an accordion folding.*

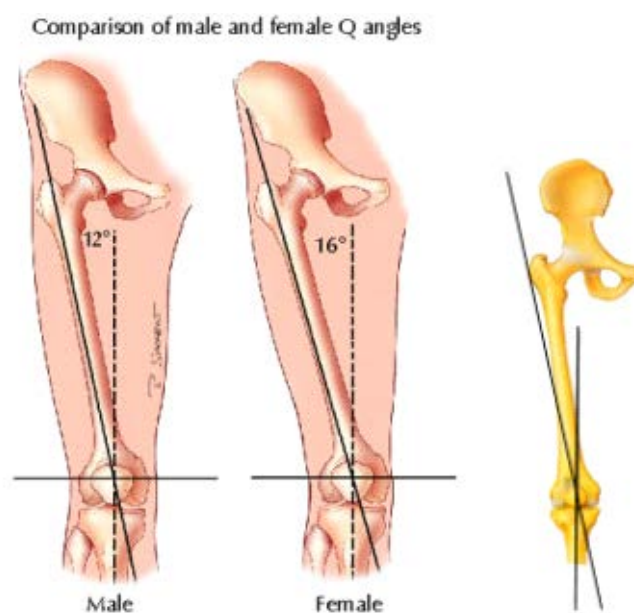


We all have different lever lengths. So guess what? If you have a very short femur (not that your short in height) comparable to the other levers, you will be able to squat deep with no problem. That same person should have an easier time maintaining a neutral spine during the squat as well. In high school the coaches for the football team used to take the players, make them squat and most of the taller athletes had their heel pop up as they decelerated. Why was that? The coach would then try to manipulate the stance, or plane so they would keep their heels down (basically screwing up their mechanics). Over time this would produce less force from the prime movers, and create orthopedic concerns. The reason the heels popped up as they decelerated was the tibia was short relative to the femur. During deceleration, and acceleration the tibia and femur have to go along with one another. So when a person went into a squat, the femur went down and the tibia said, "Hey, I have to go along for the ride," so it followed and the heel

popped up. It is that simple. If your femur is much longer than your tibia, you can elevate your heels. A slight incline (two 2.5 lb plates) will extend the length of your tibia. A power lifter could squat lower and maintain better alignment during the squat if they elevated their heel. By elevating the heels you extended the length of the tibia. But think...are you going to have wood block or plates to elevate your heel every time you squat? Let's understand: not everyone is a squatter. I am six feet and can only decelerate to 45% until I go into hip flexion. When and if you squat (any form) please do it when you're neurologically fresh. This way you can maintain the most optimal spinal alignment under active control.

Let's explore what we call the "Q" angle of the hip region.

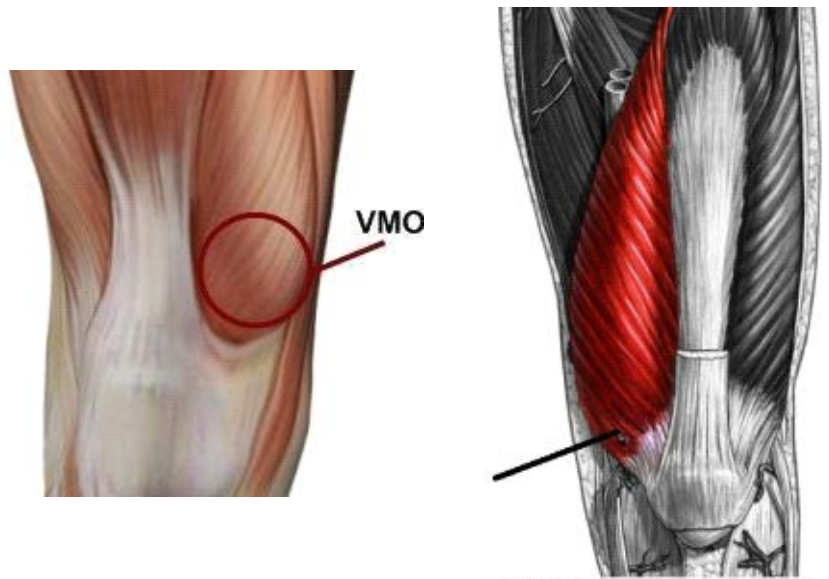
The Q angle is an important indicator of bio-mechanical function in the lower extremity. This measurement reflects the effect of the quadriceps mechanism on the knee (hence the "Q" angle).



This simply represents the quadriceps angle. The greater the angle the more disproportionate forces on the knee. Envision this: you have very strong quadriceps muscles and they do not coincide with their tendon. They actually run obliquely to one another. If you have a greater "Q" angle it pulls the patella laterally. Most people have experienced this one time in their exercise routine. You have a strong muscle pull, and this pulls you out of alignment. If you feel the bump under your knee cap, the tibia tuberosity, the tendon and ligament do not coincide with the

patella, so it causes that lateral pull. As professionals we cannot fix a “Q” angle; it’s an anatomical angle. We also see a greater angle in a female for childbearing reasons. (Wider pelvis.) Again we can’t fix it but we can teach awareness of it, and then strengthen the hip and ankle muscles, and all the stabilizers in that chain so it does not get worse. We do not want this asymmetrical force over time not to be identified. We can help and possibly alleviate any hypertonic tight and facilitated musculature. A person with a wider “Q” angle will feel more comfortable tracking his or her knee over the lateral toes. Comfort is your guide, so we must ask and assess when we squat, or press, and step-up. I had a client who kept moving her knees medially during a loaded squat pull. I had to have her push into a towel as she went into deceleration. This activated the weaker muscles to stay in proper alignment.

I want to reference the rotator cuff of the knee. What? Yes, the knee has a patella stabilizer, as the shoulder has the same stability mechanisms. Remember the closer (local) the muscle is to a joint the greater the role in stability ... rather than strength.



The VMO “Vastus medialis oblique” which name also represents its fiber direction is a strong patella stabilizer. We all agree (Educators) that when a person has a lateral tracking problem of the knee, it most likely is related to a weak V.M.O. This is why we must teach proper axial alignment when squatting. One of the ways we can activate the V.M.O is to (palpate) touch center on the V.M.O while using a light load in a leg extension machine. We call this tactile queuing.

When you go in and touch the V.M.O. the brain responds to that area and you increase force output. The exercise I find to be the most beneficial and corrects most weaknesses in that VMO region is walking backwards on a slight inclined treadmill (6-% grade). We also perform what's called in the physical therapy world as "Terminal extensions" you will see this in the videos preceding this book. As a professional trainer to be uncommon (Know more than most other trainers) is the secret behind your success. I recommend you do your own research on backwards walking. I will share some of what I learned over the years: There is reduced shearing force on knees since the direction of knee joint shear force is reversed, backward walking may help anyone who experiences pain going up and down stairs or hills, or anyone who has pain when performing lunges or squats even with proper form. Our clients want to increase energy expenditure activity of the lower extremities appears to be greater in backward versus forward walking, which suggests that you can expend more energy in a shorter period of time, at a similar pace. Some of this difference is simply due to improved motor learning over the span of 2-4 weeks-not many of us or our clients walk backwards, so allow for some extra time to get used to it. This is a great training option for those with hamstring strain since the overall range of motion at the hip joint is reduced in backward walking. (i.e. greater hip flexion and lesser extension) for those clients who are recovering from a strained or pulled hamstring, who lack flexibility in the hamstrings and lower back, or who need to return to a regular training session will benefit from a period of running / walking backward before sprinting or walking forward. No eccentric loading of the knee joint in backward walking, either on flat or inclined terrain, eliminates the eccentric component of training on the knee joint. The eccentric or lengthening component (i.e. lowering phase of going down hills or stairs) is usually what causes the most problems with knees. By removing that component in training, you allow the body to continue to train while increasing cardiovascular capacity and strength endurance simultaneously, but also let the body heal from overuse or injury. The greatest benefit is the increase in stabilization for the patella femoral complex (knee joint). I mentioned that the VMO is like the rotator cuff, and its location via (local) close to the knee hence its role to increase stabilization of the joint. The stronger the VMO is the stronger the knee complex. Imagine helping someone with their

knee pain. Do you think this would be more beneficial then trying to strengthen your client's legs on a leg press? NO not yet...

Always perform corrective applications to enhance the training program. This will lead to more referrals, a happy client, and sound business principles.

Ask yourself why we feel it more in the quads during a leg press?



When we are on a leg press, you don't have to balance the load over your center of mass. The neutralizers and stabilizers are "sleepy" so you have more force through the quads, because of the platform to which force is exerted. You can also manipulate your mechanics while in a fixed leg press but do not go to the extreme. We found the hip joint cannot maintain congruence with the feet totally together or wider then shoulder width. When you change the position of your feet on the leg press it is a whole different force analysis. If you put your feet to low, you're going to increase knee stress. You always see this in the gym. It is bad enough that a leg press does not match the proper path of motion that the ankle, knee, and hip perform in a free motion environment. When you watch the leg press from the side view, it's almost as if you were leading the squat with your knees first, as they drive forward. Its not your fault, its the lazy manufacture who hasn't figured it out yet!



“Smile for the camera” your feet may be too low (patella stress) possibly forward head posture, and the femur is driving forward. Improper feet placement will force you to lead with his knees first. The heels lift, as the pressure drives through the balls of your feet. We can make this work by making several adjustments to alleviate stress and improper firing patterns. As a trainer this is one exercise that could be omitted. Plus how do you get involved by watching? Don’t be a number counter. For those personal trainers who are frowning now, and you must use this machine, remember this. We want to initiate with the hip complex first, right? However, based on the goal of hypertrophy and lower extremity conditioning, we can use a leg press if we do it correctly. Also, when your client is in a leg press, draw an imaginary line through the ankle down to the knee. This is one way to assess the level of stress placed on the knee joint. The best way to decrease stress is to press through the ankle, not the balls of the feet. The line we imagined should be level and the knee joint (if all is sound) should be at a perfect right angle — 90 degrees. Another great tip would be to look down at the center of your clients knees, draw a line down to the inside of the greater (big) toe (second metatarsal) this is proper axial alignment. Research has found this position to be more congruent with patella tracking, which decreases

improper force loads. For the sensation trainers...please never put anyone in a plea position thinking your training the inner thigh. This puts all types of stress in the SI joint, especially in females. It is a fact that women have more joint laxity at the SI joint for childbearing reasons. Fact: orthopedic docs also see more laxity in females regardless of any reason, or time of year. Moreover the inner thigh does what? Can we train those muscles in a loaded sagittal plane? My point is not to put unnecessary stress in the SI joint when you have all these other planes in between. To me, it's like doing behind the neck presses. You see this in the gyms all the time: you traumatize the shoulder girdle; but we have the ability to train in more functional anatomically correct planes. If you are going to do a leg press or a smith machine, perform a squat first while you're neurologically sound. If you always perform a smith and leg press, you will have an extremely difficult time maintaining your center of mass in a real life environment. Please incorporate a free motion loaded or unloaded squat in your exercise program. There is another cool move if you want some variety. I once asked myself how I could create an unstable challenging environment on a fixed leg press. I placed a non-skid surface (sheet of thin rubber) on the plate of the press with a wobble board on the plate. I had my client perform slow and controlled presses while the client's feet were placed on the wobble board. This is one way to add not only variety to the program design, but a way to create structure to function in a stable base as well. Should you use a heavy load? No! You recruit more from your neuron pool when it's more demanding. If you have a client that wants to increase his or her leg press this is one sure way to do so. I promise if you do this twice a week for four weeks, at the end when you revert back to a solid base, he or she will push more weight! This is simple and common sense. You can only recruit so much from the pool, and if the nervous system has less of a demand, by being in a stable environment it will respond with more force output. When your neuron pools do not have to recruit as much, you can localize more tension in a region, which means more emphasis in the area you are concentrating on. Think about this experiment they did with gymnasts who train proprioceptively. They had a competition with weight lifter and gymnasts. Two study groups were asked to perform cable pulls and presses in various stances. The gymnasts hands down blew away the weight lifters because they did not have to recruit as much from their neuron pool. The weightlifters could not maintain their center of mass.

Professional trainers must train clients in many environments to build a base or platforms to exert force from. This is simply training the motions that matter.

Please I cant resist! Here are some monkey see, monkey do, STUPID leg press moves, just a few...I have seen them all!! LOL 😊



The ankle joint, and the subtalar joint, BELOW



There is a difference between the **ankle and the subtalar joint**. I never see people train the ankle muscle correctly. While sitting plantar flex (plant the seed in the ground with all your toes), now dorsi flex (pull all the toes up towards you). I want you to stay in that one perfect hinge motion. When you want to train your calf muscles (seated working the larger fascial system the solius) or the superficial aspect, (the gastroc) you must always stay in this perfect hinge joint motion. Please do not think you can rotate and spot train the medial or lateral regions of the calves. The sub-tailor joint, the joint below the ankle has a different control

mechanism. Take your little toe and go down as little toe comes up. A great exercise for someone who walks with their feet rolled in would be to walk with the weight distributed to the out side of the feet. Imagine if you were to hold a half tennis ball under the ball of foot and big toe. This curling and walking exercise will correct most gait concerns and will benefit the entire kinetic chain. We are working ankle muscle as we walk the treadmill. What are we doing with all these calve raises when our clients really need to correct and strengthen the calves prior to hypertrophy? When you look at the client, assess their gait rather than going right to the calve machine. You will find the majority of your clients will benefit from this exercise. When you get to the stages of loading the calve musculature for hypertrophy reasons remember that the gastroc is a two joint muscle that attaches to the condyles of the knee. When you do a seated calve raise, you bend the knee the volume knob goes down so we have less musculature involved. However, if you look at cadaver anatomy at the facial system the solius is much thicker, and for the purpose of getting larger (hypertrophy) calves seated is the optimal choice. With your legs straight as you decelerate (resist the load) the motion that occurs at the ankle joint is called dorsi flexion eccentrically. As we accelerate and press the load, we plantar flex concentrically. The risk involved is that we can load our joint with what is called eccentric inefficiency, but too much weight will be an excessive range of motion. Please it is not about dropping as far as you can to “feel” the stretch. There is a limit and we need to understand the definition of excessive range of motion. Range of motion has nothing to do with how far you can push or pull a load. Sometimes we do not realize the trauma we put on the body.

Most trainers who disregard the science behind the movements base everything on a “feeling or sensation.” In conclusion I hope you enjoyed my factional, not muscle & fictional dissertation. I want you to take time to look around at some of the exercises being performed at your fitness center. You may have a laugh, a wonder, or a moment of insight. I hope you see and understand the difference between function, and dysfunction. I hope you understand the meaning of “Just because we can... does not mean we should”. It is about proper biomechanics, and application. We must introduce a new level of hands-on education! Education that focuses on teaching proper application; not gym science, and not on sensation based training.

Remember this: If your body adapts to fixed, or improper movement patterns overtime your ability to maintain inter-segmental support diminishes. When you're in a position / environment that demands balance and stabilization you start bringing in more muscles, because you have more joints moving. When you have more joints moving, you start to d-emphasize the goal. What's moving the joints? Muscles... What are muscles? Internal forces—and this is really important, because your body's job is to make life easy. When the body experiences a load/resistance it tries to dissipate the load as best it can. Remember, your body can't see forces; you can draw them with arrows do in your textbook. You can quantify those using numbers. Just because we do not feel "the pain" doesn't mean we are not dealing with accumulative stress. Your back is not going to blow a disk if you hyperextend while doing a bicep curl. It is the accumulative stress over time that will eventually lead to pain and dysfunction. Using this vital information, we can avoid poor exercise techniques and unnecessary injury. If you understand your client's active control, you will understand the range of motion in which he/she should move. Your resisted/loaded range should never exceed your active range (non-loaded). We must assess a client's ability to move.

This leads to posture and the definition of ideal skeletal alignment...

It's where the skeletal system functions most efficiently. In fact, it's where the entire body functions most efficiently. Poor posture will cause tension, an increased volume in the abdominal area, and it even messes up your digestion. With correct posture, the nervous system works better because it can receive and transmit messages more quickly and smoothly.

Remember, your body's job is to maintain balance in this gravitational field, so when one joint is off, that disproportionate load starts to trickle through the whole body.

HOW TO EXPLAIN THIS TO THE CLIENT:

“Ideal skeletal alignment is like a race car in perfect alignment. The better the alignment, the better the performance and the less energy wasted. Therefore, you will have more energy to do what you are trying to accomplish. Most of your clients will be tired because they sit in a gravity induced posture/position. This position is not the strongest neurologically. Dave Parise.

FACTOID: We live in a chair-borne society. Because of labor-saving devices and technology, life is getting easier. In just 10 years, America has gone from 21% obesity to 39% clinically obese. We move less, expend less, and indulge more. We get up in our box beds, get into our box cars, sit in front of box desks, eat our box lunch, and head right back to our box lifestyles.

QUALIFIED PERSONAL TRAINERS NEED TO THINK OUT OF THE BOX!

Why would we start our clients program with a chest press movement, or a crunch? Why do some trainers start with a forward flexed position? Why would anyone take a client to any machine at all after a day at the office? These postures create elongated and tight muscles, which creates muscular imbalances. The body automatically responds by compensating for these imbalances. This is not the optimum position for the body. Over time, the body adapts to this new posture dictated by its environmental factors. Now the body migrates toward an efficient position. This position is far from correct, but it can be corrected.

If a client has protracted shoulder girdle with slight upper cross syndrome, how would we demonstrate a corrective functional training program for this finding?

What happens in upper cross syndrome is that several muscle groups have become shorter and tighter. They can decrease strength, flexibility, range of motion and lead to further degenerative processes (wearing down of the body—arthritis, etc.). Upper cross syndrome refers to the upper part of the body, namely the neck/upper back/chest/shoulder area. Other muscle groups have become weakened as a result of the tight muscles.

These problem areas start a bad cycle of more tight muscles and increased weak muscles.

Unless the problem areas are corrected, there will start to be a change in the composition and integrity of the surrounding joints, muscles, cartilage, nervous structures and other tissues. This means osteoarthritis (aging or regenerative arthritis) can rear its ugly head. Postural changes of

the body will also occur with these syndromes. Upper cross syndrome consists of various tightened and weak muscles. The tight muscles are as follows: upper trapezius, the sternocleidomastoid (a large muscle in the front of the neck), the pectorals major/minor, and levator scapulae (a muscle at the back of the neck). The weakened muscles are as follows: rhomboid major/minor, deep neck flexors, middle and lower trapezius, and the serratus anterior (a muscle starting at the side of the rib cage and going back to the shoulder blade). How do you know if you have upper cross syndrome? You will see your head going forward, increased cervical curve, protracted shoulders and increased thoracic (mid-back) kyphosis (curve). This is the beginning of upper cross syndrome. These and many more thought processes are important to remember.

Remember where it all started. We carried over old school thoughts, and training principles into the fitness industry. Today we have the knowledge to understand anatomy and how it functions. The challenge is to delineate between a feeling, marketing and true anatomical joint function. I hope this information brings you to the next level of a successful qualified personal trainer. I believe anyone can pass a test, go to a weekend seminar, and call themselves a personal trainer. I know the application is next to nothing, yet they can do a seminar (book smart). I believe being qualified is far more important than certified. Please email me with any questions, daveparise13@gmail.com I am always available to listen and share "factual" information. I am available as a consultant.

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Dave Parise 2012 National Fitness Hall of Fame Inductee

Dave Parise you are now noted to be a nationally recognized, "Body of Work."

Congratulations Dave Parise from Hamden CT. Last year you were chosen as one of the Top 20 personal trainers in the United States. This year you have been overwhelmingly selected by The National Fitness Hall of Fame's Board of Directors, past Inductee greats like Arnold Schwarzenegger 2005, Tony Little 2006, Douglas Brooks and Keli Roberts 2007, Tamilee Webb, Kathy Kaeler 2008, and Jack Lalane with his lifetime achievement award. Mr. Parise you will be one of those greats to be inducted into The National Fitness Hall of Fame "Top 20 trainers in America" on April 29, 2012.

Youtube.com Dave Parise personal trainer CT Google search Dave Parise personal trainer CT

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Anatomical Profitability: by Dave Parise CPT FPTA (Paperback-March 2009) Educate your passion... Your choice...or continue to pretend you know...

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Certified vs. Qualified delivers exactly what the title says. There is a huge delineation between the two. We have been misinformed and brainwashed by the way an exercise feels. Understanding proper anatomical function is what separates the requested professionals from the "rent-a-buddies"™.

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