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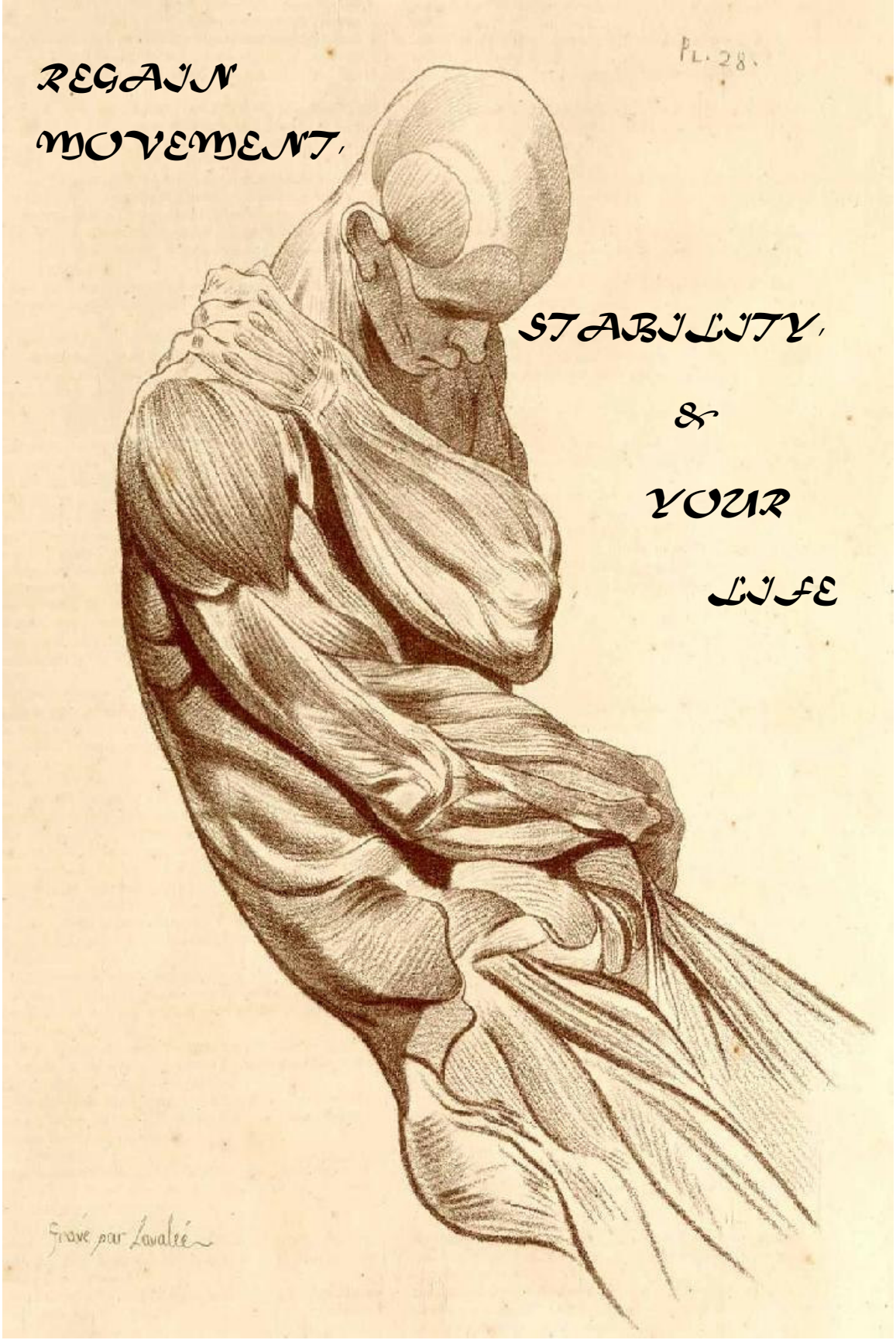

STABILITY,

&

YOUR

LIFE

Regain Movement, Stability, & Your Life (2nd edition)

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DEDICATION

We would like to thank the many patients…past, present, and future… who have enriched our lives by allowing us a glimpse into theirs. With hope and trust, you have made this book a reality. You are forever appreciated.

A very special thanks to our family and friends who believed in us when at times we did not believe in ourselves. Your love and dedication has kept us moving on the narrow road of persistence and excellence.

"Our deepest fear is not that we are inadequate. Our deepest fear is that we are powerful beyond measure. It is our light, not our darkness, that most frightens us. We ask ourselves, 'Who am I to be brilliant, gorgeous, talented and fabulous?' Actually, who are you not to be? You are a child of God. Your playing small doesn't serve the world. There's nothing enlightened about shrinking so that other people won't feel insecure around you. We were born to manifest the glory of God that is within us. It's not just in some of us; it's in everyone. And as we let our own light shine, we consciously give other people permission to do the same. As we are liberated from our own fear, our presence automatically liberates others."

Nelson Mandella

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PREFACE

The vision of Chiropractic is to promote health with a caring hand, insightful guidance and a dedication to the empowerment of each individual.

ONE TEAM

This book is meant to guide you and your health care provider to find the safest and most effective strategies for common musculoskeletal complaints. Remember, it is vital that you consult a licensed health care practitioner prior to starting any health related program.

We are all on the same team when it comes to managing your health care concerns. One important fact to remember is that you are the coach and we are the valued players. This is sometimes lost in the doctor-patient relationship. You have a right to be treated with dignity and respect. With this said, never be afraid to discuss your concerns with your health care provider(s). We are here to serve you and help you regain what has been lost, your health.

Although many neuromusculoskeletal problems can be treated rather quickly, some may require drugs and surgery while others can be treated with stretching and exercise. It truly depends on the severity of the case. A good clinician will ask the right questions to get to the root of the problem. Before starting with the suggestions outlined in this book, certain medical disorders must be ruled out. These include but are not limited to:

1.Thyroid Disease
2.Diabetes
3.Rheumatoid Arthritis
4.Autoimmune Diseases
5.Neurological Diseases
6.Malignancies (ie. cancer)

These disorders, if a cause of musculoskeletal pain, must be known first. This will allow the health care provider to treat you properly and prevent further frustration and anxiety.

Remember to always talk to your health care provider. The only way to regain what you have lost is to be open and honest. Let's work together as a team.

WHAT TO EXPECT

What can you expect?

You can expect to be treated with respect and dignity. You can expect to be listened to. You can expect the best possible approach to treat your neuromusculoskeletal problem whether in this office or in conjunction with other health care providers.

What we expect?

We expect an honest answer to our questions. We expect that you want to take your health into your own hands. We expect you to follow the treatment protocol that we, as a team, decide upon.

Have realistic expectations!

Your problem did not occur overnight; therefore, you will not be out of pain overnight. Although the pain may have started suddenly, you can be assured that the problem has been there for weeks, months and sometimes years. The good and bad news is this: Pain is usually the last symptom to show up and the first to leave. This means that you will feel better rather quickly but the underlying problem may not be corrected. Allow time for this process to occur. Work with your healthcare provider and know that they have your best interest in mind.

Change your mindset!

Shifting from a crisis mindset to a preventative mindset is critical. Most people will wait until the last second (a crisis) to get help. At this point, it takes longer and more money to not only to get you out of pain and correct the problem but prevent it from coming back. What you need to realize is this; prevention is the key. Preventative thinking will save you time and money. You perform maintenance (prevention) on your house and car, how much more important are you? We think you are vastly more important. Prevent it so you do not have to fix it!

PREVENTION IS THE KEY…

GETTING STARTED

The best way to start regaining what you have lost is seek a qualified health care provider. Once this has been accomplished, you and your chosen pain manager can employ the six strategies in this book. Never think for a moment that it is the pain manager's responsibility. You are in control of your life. Take it back!

The six strategies are as follows:

#1: WHY CHIROPRACTIC

Although there are many methods to treat musculoskeletal pain, chiropractic ranks among the best forms of treatment. It is non-invasive and inexpensive. Chiropractors consistently treat patients with all types of painful conditions. Chiropractic is safe and manual manipulation has been shown to reduce pain, increase awareness and more.

#2: AM I EATING INFLAMMATION

Does it surprise anyone that our diet plays a very important role in our health? However, it may surprise you to know that many of the foods we eat actually cause more harm than good. This is termed the pro-inflammatory diet and most Americans are on it and do not even know it.

#3: STABILITY: WHY DO I NEED THAT

You may understand that your muscles need to be strong in order to lift certain objects, but did you know that certain muscles have to stabilize before that action can be performed? In order to walk or simply raise a hand, we need stability. Without stability, pain can and will soon follow.

#4: EXERCISE AND STRETCH: FUNDAMENTALS

Lack of exercise coupled with tight and stiff muscles leads to a deconditioned body and pain. Simple exercise and stretching can revive stiff joints and reduce your pain.

#5: AM I LEVEL?: CORRECTING SKELETAL INEQUALITIES

A skeletal inequality can be a simple anatomical difference from side to side. It could be that you were born that way. However, this inequality can predispose you to chronic musculoskeletal problems.

#6: THE BODY IS A TEMPLE

Our body is made of mind, body and spirit. To take care of all three is unique and a profoundly important realization if we are ever to be truly well.

Although by themselves, each strategy may work, but they will not compliment each other as intended. To truly regain your health, each strategy must be woven together with the help of your pain manager.

WHY CHIROPRACTIC

Before we tell you what chiropractic is and why you should see a chiropractor, let us dispel the myths and tell you what it is not.

Chiropractic Is Not:

1.A procedure, which takes pressure off of pinched nerves.

This is a predominant thought about chiropractic. However, a true pinched nerve does not cause pain but conduction block (anaesthesia or numbness). We will speak later about what happens to cause pain.

2.Therapy for a slipped disc.

Many people believe that a disc can slip in and out of place and cause pressure on a nerve. From #1, you now know that pressure on a nerve does not cause pain. Discs do not slip they bulge or herniate. Dr. Nikolai Bogduk makes this comment concerning disc herniation, “Disc herniation is a relatively uncommon cause of lumbar pain…”

3.A procedure that moves bones.

First, bones do not move out of place. Second, chiropractors do not move bones. The noise that can be heard after an adjustment is gas, mainly nitrogen, being released from the joint capsule. Motion is restored after an adjustment but no bones are moved in order for this to happen.

4.A treatment that keeps you coming back forever.

We are sure you have heard, “Once you go to a chiropractor, you always have to go.” This is not true. Yes, treatment may take a considerable amount of time but remember to have realistic expectations. Just like you prevent problems from occurring to your house or car, you need to prevent problems with your body.

5.A faith healing technique.

Chiropractic is real. It is not only for those who believe in it but for everyone. Chiropractic reinstates normal biomechanical and neurological function.

Now that you know what chiropractic is not, what is it?

What Chiropractic Is:

Chiropractic has been in existence since 1895. Although keeping its’ original distinction as a separate and distinct healing art, chiropractic has evolved to what it is today, a vital part of the health care delivery system. Chiropractors believe that the nervous system controls and coordinates all functions of the body. With this premise in mind, chiropractors try to influence the nervous system through the chiropractic adjustment. What does the chiropractic adjustment do? It improves biomechanical and neurological function by (1) restoring normal motion to the spine and other joints of the body (2) relaxing tight muscles (3) improving

coordination and (4) inhibiting pain. How does the adjustment do this? Before we answer that question, let's look at what impairs biomechanical and neurological function. Impairment is caused by joint restrictions.

Joint restrictions or irritation to the neuromuscular joint complex, can be caused by (1) lifting (2) twisting (3) reaching (4) sneezing (5) accidents (6) sports (7) stationary positions and (8) bad posture. Literally, anything that irritates the neuromuscular joint complex will promote spinal dysfunction and restricts joint movement. Joint restrictions cause pain and steal your happiness.

What Pain Is

Dr. Donald Price states, "Pain is the most common complaint that patients report to physicians and nurses. The clinical problem of chronic pain may constitute the single largest health care problem in the United States with over 90 million affected…" Pain is a serious problem yet it is not normal. Have you ever heard someone say, "It's my normal everyday headache or my occasional low back pain?" It is not normal to be in pain of any kind. To have a "normal' ache of any kind is not normal.

Pain is caused by an irritation to nerves (not pressure on nerves). Specifically, pain is perceived when special pain nerve endings called nociceptors are stimulated. These nociceptors are stimulated by mechanical and/or chemical type injuries. These include but are not limited to accidents, bad posture, sports, sedentary lifestyle, depressive-type states and poor nutrition. We will discuss proper nutrition in the next section. Nociceptors are located in almost every tissue of your body. This means that the potential for pain is very high; remember 90 million people are affected. Neurologically speaking, pain is pain. Pain is perceived in your brain. Your brain does not know the difference between low back pain, headaches and/or finger pain. It only knows the location and intensity of the pain. The more nociceptors that are stimulated the greater intensity of the pain.

PAIN IS THE MOST COMMON COMPLAINT OF PATIENTS…
WITH OVER 90 MILLION AFFECTED.

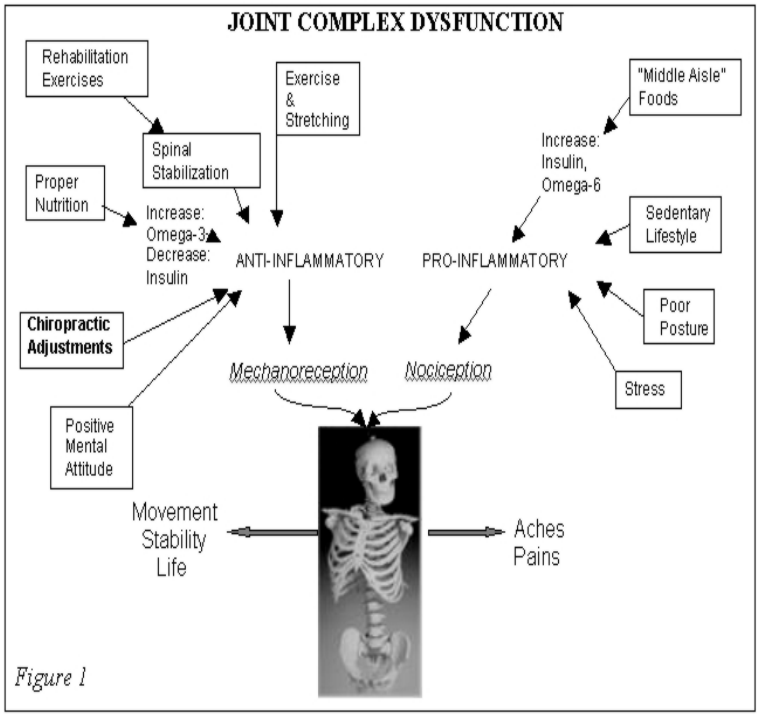
HOW DOES CHIROPRACTIC WORK

As stated previously, a chiropractic adjustment improves biomechanical and neurological function. But, how does it do that? Remember that pain is caused by stimulation of nociceptors. These nociceptors are located everywhere including your spinal joints. Also housed in these spinal joints

are other types of specialized receptors termed mechanoreceptors. Mechanoreceptors or mechanical receptors are dependent upon movement. This means that the less the spinal joints move the less the mechanical receptors are stimulated. Another way to state it is this: The less you move the more potential for nociceptor activity (pain). The more you move the more potential for mechanoreceptor activity (happiness). What do the mechanical receptors do? They inhibit pain, relax tight muscles and improve coordination. That is why the chiropractic adjustment works so well. It starts the process of motion. After this, it is up to you to continue the process with proper living habits.

BRINGING IT ALL TOGETHER

"The worldwide growth of the chiropractic profession, during this century, is based upon the high rate in relieving acute pain." Chiropractors are very good at helping relieve acute and chronic pain. However, this is not the only reason to visit a chiropractor. We, chiropractors, improve the quality of life by restoring motion to an immobile world. We hope you can experience the difference of chiropractic; the difference that a little motion can make. *(See figure 1: Joint Complex Dysfunction)*



THE UNIQUE APPROACH

The body, consisting of many parts, is no different than an orchestra. An orchestra must study, practice and work together in order to perfect a harmony. Our brain can be considered the conductor, our muscles the musicians and the bones/ligaments the instruments. All of these parts must function optimally for our body to move in a harmonious fashion. With a whole body approach, your pain manager can help you realize the potential of **your** orchestra.

Special Note*:* The above statements are not to down-play the need for medical treatment when warranted. MD's, DO's, PT's, etc…are very highly trained and skilled in their respective fields. Chiropractors specialize in spinal and extremity biomechanics. We understand the need for motion as it relates to a healthy and prosperous life. As in anything, all your healthcare providers should work together to find the best possible solution to your problems

EXPERIENCE
THE
DIFFERENCE…

AM I EATING INFLAMMATION

The Surgeon General makes this statement, *"One personal choice seems to influence long-term health prospects more than any other: what we eat."* Another way of stating that: You are what you eat! How many times have you heard someone say that? Probably once, twice, or maybe more. Did you disregard it or pretend you did not hear it? Although, no one wants to hear that statement, it is a very true statement. You are what you eat. Food is the body's way of getting energy. Food is what your body uses to grow each cell, move each limb and solve each problem. So, what are you feeding your body? Are you feeding it healthy, life-enriching food or empty, life-taking food? You are what you eat.

We are not going to advocate any strict diet or food plan, instead simple thoughts about healthy eating. Eating should not be a stressful event. If done properly, eating can be healthy and fun.

What is Inflammation?

Inflammation causes redness, pain, swelling and heat. If you have ever had an ankle sprain or a headache, you have experienced inflammation. Inflammation is your body's way of warning you something is wrong. It is also a protective mechanism. However, what happens when you can't see the redness, swelling or the inflammation lingers? This is what we call low-level inflammation and it can be damaging to your body. *(See Figure 2: Inflammation)*

Inflammation causes pain. Remember, pain is caused by stimulation of nociceptors. With mechanical or chemical injury, your body is going to flood the injured area with inflammatory products. Among the most predominant of these chemicals are prostaglandins. There are three general classes of prostaglandins. Two are pain-relieving (PGE-1, PGE-3) and one that is pain-producing (PGE-2). Greater amounts of the pain-producing prostaglandins increase the propensity towards pain.

A Diet to Avoid

Go to any grocery store and look at where most of the people are. They are in the middle isles. These isles are filled with boxed, canned, wrapped and pre-sealed foods. These foods are highly refined and processed. A good thought about grocery stores is this: "SHOP THE PERIMETER." This is where the meats, fresh fruits and vegetables reside. Why do you need to avoid the middle aisles? These aisles include many carbohydrates such as cakes, cookies, candies, breads and pastas. Sodas can also be included in this list because of its high sugar content. As you consume more and more of these types of foods, your body is

becoming more pro-inflammatory (greater amounts of pain-producing prostaglandins). How does this happen?

Insulin's Role

Insulin is a hormone that is released from the pancreas. Its job is to lower blood sugar. As you eat food from "the middle aisle," insulin has to rise to clear the influx of dietary sugar. Therefore the more sugar eaten, the higher the insulin. While the liver is filtering out the excess insulin from your blood, the insulin signals the liver to increase its production of an enzyme known as delta-5-desaturase (D-5-D). D-5-D is a liver enzyme that regulates the production of prostaglandins. High levels of D-5-D will indicate that more pain-producing prostaglandins get produced. Therefore, eating "middle aisle" food can lead to increased amounts of pain.

Increased levels of insulin also clear your blood of amino acids. The one exception to this rule is tryptophan. Tryptophan is converted to serotonin. Serotonin is known to suppress mental function and promote sleep. Therefore, eating "middle aisle" foods not only can cause pain but can also cause fatigue and a sense of mental fogginess.

Essential Fatty Acids' Role

Another problem with eating "middle aisle" foods is the over consumption of omega-6 fatty acids. Omega-6 fatty acids are converted into arachidonic acid which increases PGE-2 (pain-producing prostaglandins). They are found in all grains and most highly refined foods. Omega-3 fatty acids are the antithesis of omega-6 fatty acids. Omega-3 fatty acids increase PGE-1 and PGE-3 (pain-relieving prostaglandins). Omega-3s are found in abundance in some nuts and seeds, fish and grass fed animals although fish and fish oil remain the best source of omega-3. Omega-3s are found in the perimeter of the grocery store. Exciting new studies suggest that omega-3s play an integral role in overall health. They have the potential to improve everything from vision to brain function and are being used in the treatment of depression, Parkinson's and autism. Omega-3s also seem to reduce arthritic-type pain. So, what role do omega-3s play: a vital one!

How to Become Anti-inflammatory

When you are in pain, what is the first thing you reach for? Is it aspirin, acetaminophen (Tylenol), naproxen sodium (Aleve) or ibuprofen (Advil)? Or is it foods that will help you maintain an anti-inflammatory state?

In order to not be in a pro-inflammatory state, you must stay away from "middle aisle" foods and eat more "perimeter" foods. This means you

must eat more fruits, mainly berries, because of their high antioxidant and bioflavonoid properties. You must eat more green leafy vegetables because of their cancer fighting ability. You must also increase your intake of lean protein, especially fish and seeds, mainly flax seed, because of the omega-3 content.

Beyond this, we feel it is important to supplement you diet with certain herbs and vitamins. The herbs that we recommend are Ginger, Turmeric, Boswelia. These herbs have been found to have the same anti-inflammatory properties as the "typical" pain -killers (NSAID's…ie. aspirin, etc…) without the damaging effects to the liver or kidneys. For example, Tumeric—and its main bioactive compound, curcumin—has been shown to block inflammation, stop cancer, kill infectious microbes and improve heart health. Ginger, in the form of ginger tea has been shown to reduce the affects of inflammatory joint disorders. These herbs block the conversion of arachidonic acid to PGE-2 thus blocking potential pain. Tumeric and ginger can be incorporated into evening meals by just adding the spice to whatever is being prepared. Boswelia can be taken in a capsule form. The vitamins that we recommend are as follows: multivitamin, magnesium (involved in almost every chemical process in the body), and fish oil (EPA/DHA). These are the three that we recommend for everyone. Of course, depending on the severity of your condition, more supplementation may be needed. Because some herbs may have adverse effects when paired with prescription drugs, seek the advice of your healthcare provider before adding herbs to your daily diet.

Water: The Medium of Life

Now that a basis for shopping the perimeter of a grocery store can be understood, let's not forgot about the importance of water. Water is the medium for all body fluids, including blood, lymph, urine and perspiration. It balances acids, moves nutrients and is the solution for holding electrolytes. The body's need for water is second only to oxygen. So, how much water should we drink? It is recommended that 8-12 oz glasses be consumed everyday. However, when exercising, more water should be incorporated. Also, do not let thirst be your guide. Drink continuously throughout the day. As we drink more water and allow our body to be properly hydrated, the potential for pain will decrease.

Bringing it All Together

As the most developed society in the world, isn't it interesting that the United States has the highest rate of many of the leading causes of death. Why is this? The typical American diet consists of "middle aisle" foods instead of "perimeter" foods. This means that insulin and omega-6 levels are on the rise while omega-3 levels are on the decline. The omega-6 to omega-3 ratio should be 1:1 (or no greater than 4:1). Most

people have a ratio that is closer to 16:1 to 25:1. This creates a pro-inflammatory state. Research shows that societies that eat a higher consumption of omega-3s and other anti-inflammatory foods have a decreased incidence of heart and cardiovascular disease, decreased arthritic conditions and tend to be more "mentally alert." As we learn more about the beneficial effects of natural anit-inflammatories consider this: When you have an ache or pain; instead of reaching for the bottle in your medicine cabinet, reach for foods that will perpetually keep your body in an anti-inflammatory state. Remember, you are what you eat. *(See Figure 3: Prostaglandin Production)*

GINGER TEA RECIPE

Boil 1 gallon of water (or what your tea pitcher will hold), then turn off and keep off
Add 6-8 (organic) green tea bags, steep for 30-60 minutes
Add ¼-1 lb of fresh ginger root (sliced/not peeled), steep for 2-4 hours
Strain out tea bags and ginger, place juice in jar/pitcher and cool in fridge
Note: If served hot, excellent coffee replacement.
**If first time making tea, use ¼ lb. ginger so it is not too strong. The more ginger used and the longer it steeps the "spicier" the tea will be.
(Thanks to Dr. David Seaman)

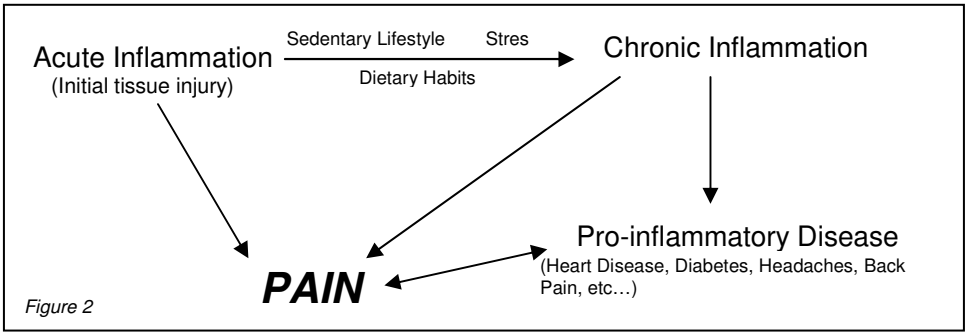


Figure 2

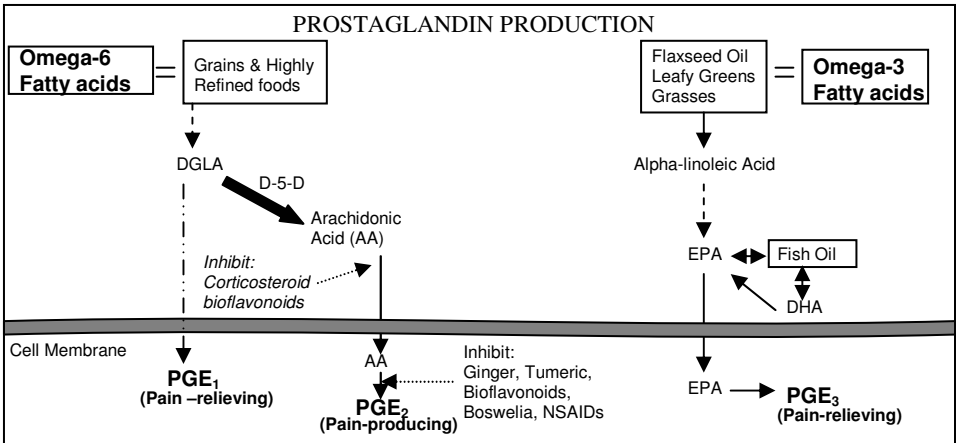


Figure 3

Note: Some steps are not shown but the end-product is the same.

YOU ARE
WHAT YOU EAT...

STABILITY: WHY DO I NEED THAT

Stability is a popular term used when discussing common aches and pains. Many times health professionals, personal trainers, coaches, and physical therapists will talk of "instabilities" as being the cause of problems. We need to be careful when describing something as unstable because this term can have many meanings. This chapter will look at what we mean when we use terms such as *spinal stability, core stabilization, and stabilization exercises.* This chapter will also explain why we need certain stabilizing exercises and why others may cause more harm than good. We will also take a look at how all the tissues in the body contribute to stabilization and common problems that contribute to the loss of stabilization.

What is Stability?

Stability is often described according to the health professional's area of expertise. Instability to an engineer is going to be different than instability to a surgeon. Stability is often difficult to quantify but this chapter is going to attempt to break it down into simple terms and make it understandable.

Stability is classically defined as "the capacity of an object to return to equilibrium or to it's original position after being displaced". Interestingly, stability is also defined by Webster as "firmness of character, purpose and resolution". The given definitions apply to overall health in different but equally important ways. The first definition is the bulk of this chapter but the second definition gives the reader a sense of personal stability and a factor that needs to be addressed if total health is the ultimate goal.

We are going to look at *stability* from a functional sense. Stability is simply the interaction between muscles, ligaments, fascia, and joints that allows for the most protection for a joint. However, stability also needs to allow for movement. A control system needs to be in place that allows for maximum movement with optimum protection. An example of this is taking a step. Each step integrates movement and stability. The joint that allows pelvic motion (the sacro-iliac joint) needs to be able to move on one side and be stable on the other. The leg that is in it's swing phase or the leg that is off the ground, needs to be able to move and the leg that the body is moving over or the leg on the ground, needs to be stable. There is an intricate interaction between the brain, muscles and ligaments that allows for this step to happen with minimal risk of injury. Stability is correct interaction between all these components. Lets take a look at how this is all connected.

How is this All Connected?

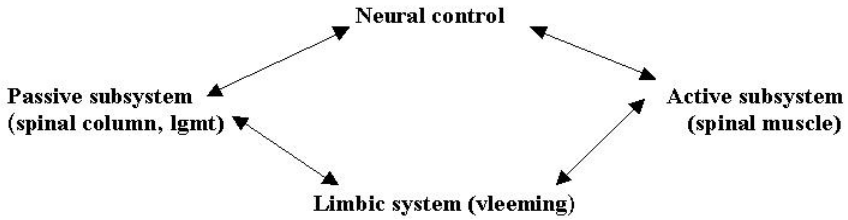
All movements are connected via muscle, ligaments, and the surrounding fascia. This interconnection means that we cannot overlook what happens in our foot and a problem with our low back. How is all this connected? Serge Gracovetsky, a Canadian researcher, described a system of muscle, fascia, and ligamentous connections that run both longitudinal (up and down) and obliquely (diagonal) along the body (see Picture 1 at left).

Picture 1

He termed this system the Back Force Transmission System. This system helps explain why a non-painful problem in the foot may result in low back pain and even can be a factor in headaches!!! When we take a step the forces from the ground (stored energy) is transmitted along these slings. If the body is controlling these components correctly then we will have no problems. However, if there is a problem anywhere along this chain then eventually there will be pain, injury, or dysfunction

How Does the Body Control This?

This chapter has mentioned that there needs to be control of all these components that contribute to stability. The musculoskeletal system and especially the spine is a complex structure, carrying large spinal loads, allowing for movement in multiple directions, all while protecting the delicate spinal nerves. Manohar Panjabi first described the control subsystem as a triad but since then it has been expanded to a 4-part control system. Below is a schematic diagram of the control system and it's interactions.



All components of the above control subsystem need to be functioning optimally and all components need to be communicating correctly. The neural component is your brain and all the pathways that are involved with coordinating movement and stability. Think of it as the control center at a train station. Everything coming in (sensory information) has to be interpreted and routed to the correct dock. Then this information has to be used to send out (motor information) to the correct station (a muscle, an

organ, or a cell). This information has to be delivered in the correct way at the correct time and at the correct speed to prevent problems. The limbic system is a new addition to the control subsystem. The limbic system is our emotional center. It controls and interprets stresses. Stress can be a good thing but many times in our society stress leads to problems. The limbic system is a growing area of research. Much of the research has shown that the limbic system has direct motor (muscle) control connections. As stress accumulates we develop faulty motor control and this leads to dysfunction (i.e. loss of joint stabilization) and eventually pain, which adds to our stress. You can see a downward spiral start with pain leading to increased faulty motor control and more pain and more stress and downward we go. A break down in any of these components will lead to dysfunction. How do we know if these are all working correctly? As has been mentioned earlier, pain is usually the defining factor of a problem. **Pain is not normal!** Many people live with pain everyday but this is not typical and it is not healthy. Any problem in the above system, in any area, will lead to faulty communication, lost motor control (muscles won't work correctly), stability will be supplied by the wrong muscles, joints will begin to wear, and eventually injury and pain will occur. Why is it so important to know about this system? The following section will explain how this control subsystem plays a role in stability and some common myths about stability will be explained.

The Truth About Stability

A popular phrase in the fitness and rehabilitation world these days is **core training.** What exactly is the core? Many people think of the core as the abdominal area. The "ripped six-pack" is the core to many people but in truth that is **not** the core. The core is actually a group of two separate units. The two groups are the **inner unit,** which we will call the **primary stabilizers** and the **outer unit**, which we will refer to as secondary stabilizers or the **mobilizing group.** The inner unit has been an area of much study and research. Many of the world's leading researchers have found the inner unit to be the key to not only rehabilitating low back problems but also preventing re-injury. The **inner unit** is composed of:

Transverse abdominus
Pelvic floor
Respiratory diaphragm
Multifidus

The main function of the inner unit is to provide inter-segmental stability to the spine and pelvis. The inner unit can be looked at as the base of a house. Without a solid base to build from then everything else will fall apart. If I asked you to tell me which muscle was the first to contract

when I raised my arm to my side what would you say? Many people would say the anterior deltoid. Hodges et al. showed that the transverse abdominus is the first muscle to contract when we move our arm in people with no low back pain. In people with back pain the reverse is true. This shows that normal stabilization requires fine control and that pain or injury can lead to dysfunction. Normal function is to stabilize the spine and pelvis first then allow for movement. Keep the base solid and everything else with function optimally.

The **outer unit** is composed of:

- **Rectus abdominus**
- **Iliopsoas**
- **Rectus femoris**
- **External obliques**
- **Erector spinae**
- **Hamstring group**
- **Quadratus lumborum**
- **Gluteus maximus**
- **Adductor group**

The outer unit is primarily used for movement. They are the mobilizers. However, they also provide gross stability when demands call for more muscle recruitment. Overall, stability requires that all these muscles help out in various degrees. The inner unit cannot do all the work on it's own. It needs contributions from the outer unit as well. What happens many times, however, is the inner unit is not functioning at all or very minimally due to injury and neurological inhibition (ie. trying to contract your biceps and triceps at the same time). The outer unit then, has to try and stabilize the spine, pelvis, knee, shoulder etc. and it can do this but it is not designed to do that over long periods of time. It's like trying to hold three apples stacked on top of each other. If you wrap your hands around the top and middle apple with one hand and wrap the other hand around the middle and bottom apple then you can move the stack in any direction and not drop them. This would be equivalent to the **inner unit** providing primary stability. However, if the inner unit does not function correctly then the brain uses the next best muscle group to stabilize our spine and pelvis. This is like trying to hold those same three apples with one flat hand on top and a flat hand on the bottom of the stack. Now try and move the stack in any direction and eventually the stack will buckle and you'll end up with damaged apples. Who wants damaged apples? You get the point though. The **outer unit** is designed to provide stability when more demanding tasks are required or when we move in different directions. Think of stability and movement as an orchestra. The conductor of the orchestra is the brain, the players of the instruments are the muscles and the instruments are the ligaments, tendons, and joints. If everyone is playing their role correctly then the symphony will sound as it should. If one player is not doing their part then the whole symphony is

ruined. It takes the precise interaction between all the players to make the symphony sparkle. This same concept happens within the body. ***Movement with stability is the beautiful final symphony of a coordinated orchestra.*** This is why control over these systems is so important. If injury does occur then rehabilitation should begin with the inner unit and then additional muscle recruitment can be implemented.

Core Training

The importance of developing core strength and stability cannot be underestimated. A thorough training program should include aspects of stabilization and integrated movements that are common to your everyday activities. Core training will (1) provide segmental stability decreasing incidence of injury, (2) improve coordination between the trunk and extremities, (3) enhance motor control thereby ensuring proper movement patterns, and (4) improve posture and maintain proper muscle tension. It is very difficult to say that all core exercises are for everyone because each individual needs specialized programs that fit their activities of daily life. However, there are certain exercises that are beneficial to almost everyone. Core training is all about improving proprioception, which is balance and body awareness. Consult with your health care professional before trying them at home or in the gym. Many of these exercises will be most beneficial if you have been walked through them a number of times before performing them on your own.

The first and most simple exercise is simply sitting on a stability ball. Proper posture needs to be maintained throughout any exercise. This holds especially true with stability ball training. Proper posture is seated with a small arch in your back but in a comfortable position, breathing should be an outward enlargement of your abdomen (stomach) when you breathe in and then a decrease or fall of your abdomen when you breathe out. If your *chest* rises and falls then this is incorrect and you are using small muscles to breath and you most likely are not getting enough oxygen. In this position you can let your arms fall to your sides and turn your hands out and stretch your arms back. This is called Bruegger's Relief Position and is very effective in muscle stretching as well as proprioceptive retraining.

Core training can also be done by activating the transverse abdominus (pulling the lower part of your abdomen towards your spine) and co-contracting the upper core stabilizers. This is an exercise that utilizes co-contractions to stabilize the spine and should be demonstrated and performed with assistance before attempting on your own. The key to core training is retraining correct muscle patterning. It is not about strength. It is about turning on the right muscles. Endurance and control

are the goals. Endurance of these muscles will prevent further injury and faulty muscle patterning.

The next step in any program is to get to where you live. This doesn't mean that we come to your home or work and make you do the exercises…but close. Once muscular control is regained then the system needs to be challenged functionally. It does no good to be able to control these contractions if you hurt when you are sitting at work or lifting something over your head. Functional training means training in a way that allows you to do things on your own in your everyday tasks. It means taking the base concepts and applying them to your everyday life so **you are in control of your pain.** If you have a hard time sleeping due to your pain then find muscular strategies that help your roll over pain free is the goal. Regardless of the problem the goal is to give you power over your pain and put you in control.

Think of the spine as a mast of a ship. The mast is stable when the mast itself is constructed correctly (the inner unit's role) and the guy wires are attached correctly and solidly (the outer unit role). Muscles don't work in isolation so your training or rehabilitation program needs to be desgined to address those functional aspects. You should consult with your health care professional before trying any of these however. Also feel free to ask questions. Many of these exercises require a body awareness that may take some time to reach. However, with the proper training all of these exercises can be done at home, in the gym, and even at work.

Am I Stable?

As was mentioned at the beginning of the chapter stability is more than a biomechanical entity it is also a firmness of character, purpose and resolution. Stability is not only a stable spine or joint but it is a way of life. Stability is being responsible for your own health and taking responsibility for your care. Become active in your life, whether it's in your training, your work, your family, or your treatment program. The goal of all training and treatment programs should be to regain control. It should give you the tools you need to regain your health and continue to improve on that. I hope this chapter helps start you down that path to finding that firmness of character, purpose and resolution…your personal stability.

"STABILITY IS MORE THAN A BIOMECHANICAL ENTITY IT IS ALSO A FIRMNESS OF CHARACTER, PURPOSE, AND RESOLUTION"

EXERCISE & STRETCHING: FUNDAMENTALS

Exercise and stretching have long been coupled together when training or rehabilitative programs are implemented. This has long been the practice of many health care professions. While this is still good practice there has been mounting research that may prove otherwise. This chapter will focus on how to choose an exercise and stretching program, when the proper time to implement each component, and some risk and health factors to consider.

Exercise: Finding the Best Approach

You may have noticed that there are so many exercise programs, videos, diets, and pieces of equipment out there today that the shear volume makes choosing an exercise program very confusing. So how do you choose a program? The answer is actually simpler than you may think. There are really 3 factors to consider when choosing a program:

1. What is your current fitness level? (beginner, intermediate, advanced)
2. What is your goal? (rehabilitation, lose weight, high-level training)
3. Are you willing to make the changes the program recommends?

These 3 factors should be discussed with your health care professional before starting any program. This is simply an evaluation that should be completed before beginning.

The key to a successful exercise program is making sure that you structure it so you make small progressions along the way. A program that is based on losing 50 pounds over a 3- month span is sure to fail if you don't set small goals along the way and make note of those goals. All exercise programs should be structured to fit you as an individual. The following section will look at some effective exercise approaches and some exercise pitfalls.

Getting Started

There are some basic guidelines that should be followed before embarking on any new exercise program. There are certain progressions, especially with post-injury rehabilitation programs, that need to be met before moving on to more advanced exercising. The first of these is **correction of biomechanical problems.** Janet Travell said **"When injured most tissues heal … muscles learn."** A muscle will continue to act in a faulty pattern after injury. If inequalities exist within the musculoskeletal system then most exercises and programs are

doomed to fail. Muscle pattern problems, foot and leg inequalities, spinal and extremity fixations, and incorrect posture will only add to your problems in an exercise program. It is the equivalent of shooting a free throw incorrectly. Even if you practice three times as much and twice as long you are just strengthening the wrong technique, thus you are even worse than before!!! Correction of these problems will allow proper muscles contraction, more stability, less risk of injury and faster progressions. The next progression is **spine position awareness and muscle contraction control.** You need to be able to keep a proper posture throughout all exercises to ensure proper spinal protection (stability). This will also help groove muscle patterns or simply put, help improve proper muscle memory. This will help prevent improper muscle contraction and injury (or re-injury). The final stage is to **ensure stabilization throughout all activities.** Proper muscle contraction throughout all ranges of motion and throughout all advanced activities is key to preventing injury and developing bad "habits". People tend to get to a certain level of fitness and then they feel the need to "cheat" on some exercises. This will only develop poor muscle memory and begin to undo those proper muscle patterns or grooves that were developed earlier. Have you ever been exercising an upper extremity, say a shoulder, and felt a pain in your back? This is improper muscle contraction and it is due to "cheating" or using the wrong muscle to help overcome improper loads.

Exercise Options

You should consult with a neuromusculoskeletal specialist before beginning any of the exercise programs mentioned below.

Aerobic exercise is one of the best places to start. It is very effective at preventing injury and treating injury, especially low back injury. Aerobic exercise has been shown to have low levels of supportive tissue loading while activating the supporting musculature of the spine and joints. Some excellent exercises are walking, fast walking (with lots of arm-swing), swimming, under-water running, cycling, and skating.

Resistance training is a very good alternative to weight -training. Resistance training allows for controlled muscle contractions with increased loads. It will help add strength and endurance to muscle as well as having an aerobic factor.

Stabilization exercises are fast becoming the exercises of choice for chiropractors, physical therapists, and personal trainers. Stabilization exercises promote proper posture, correct muscle contraction, improved balance and spinal stabilization.

There are many other options out there. These are just a few that we feel are some of the best to start with. ***Weight -training*** is also very good when done correctly. Many times lifts are done incorrectly with poor posture and poor muscle control. This often leads to injury. Weight training should be done in a very controlled manner and with loads that don't exceed the muscle(s) being worked. This is often not the case however. We suggest resistance training as an option.

Stretching

Stretching is often an important component to exercise and rehabilitation. Why do muscles get "tight"? Muscles often times become shortened due to **bad posture.** How are you sitting right now? Are your shoulders rolled forward? Is you head way out away from your body? Is your back slouched? I'll bet many of you are sitting just like that. This posture is known as flexion -dominant and it even has a syndrome named after it. Vladamir Janda called this an **upper crossed syndrome.** Along with it come predictable patterns of active shortened muscles and inhibited muscles. These muscles are shortened because they are trying to balance your body or in essence fighting gravity. These shortened muscles are trying to pull your body back to midline. We were not meant to sit or stand slumped over. When muscles become shortened they become oxygen deprived. They are basically starving. Without proper oxygen the muscle cannot meet it's metabolic demands and pain results. **Trigger points** may form. Trigger points are areas of muscle that have become spastic in an attempt to protect the area. They are metabolically starving and very painful. Have you ever felt a small "knot" in your upper back around your scapula (shoulder blade) before? If you have, then pushing on this knot will send waves of pain to many different areas. This is called **referred pain** and can be very difficult to diagnose from other types of pain caused by true injury. This pattern of shortened muscle can occur anywhere along the muscluloskeletal system. Pain shooting down the back of your leg, for instance, may be due to a small overactive muscle in you buttock called the piriformis. This is referred to as **piriformis syndrome.** So how do you fix these muscular inequalities and restore them to a more proper, less painful state?

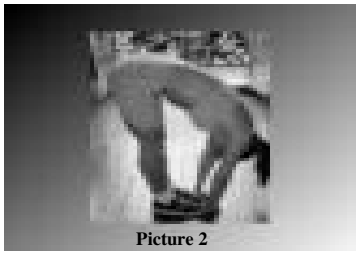
The Facts About Stretching

Stretching is often a very helpful and relaxing thing to do before and after working out, at work, or before and after an adjustment. You need to realize that a muscle is shortened for a reason. As was mentioned earlier there are predictable patterns of active shortening (called **facilitation**), and inactive shortening (called **inhibition**). You may have an area that always feels "tight". There has to be a reason for that. In order for stretching to be most effective the inhibited muscles need to be activated.

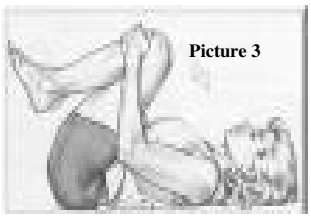
This means those areas of inhibition need stabilizing before stretching can be of full benefit. Think of a mast on a ship. There are many ties and ropes that hold the mast upright. If one of those ropes became weak and slack the rope on the other side would become very tight. Would it do any good to stretch that rope out? No. The mast would fall and you would get nowhere. This is the same concept your muscles are trying to accomplish. In order to release tension on a muscle the inhibited muscle needs to take up the slack and start doing its' job. That's why stabilization exercises should be implemented first before a stretching protocol is started.

Stretches are very specific and should be done by your neuromusculoskeletal specialist first. Stretching at home is fine once you have been shown what stretches are most beneficial, how to properly do those stretches, and which stretches to avoid. Many times stretching and massage work can cause soreness afterward. This is due to a phenomenon called *oxidative reperfusion injury.* Remember that shortened muscles are often oxygen deprived. When a muscle is stretched or massaged then blood is reintroduced to that muscle at a high rate and volume. The muscle cannot handle this large influx of blood so it produces free radicals, which are harmful to tissue, and pain producing. It is, however, preventable. Taking anti-oxidant supplements 30 minutes before will help prevent any soreness (see discussion on anti-inflammation diet). Some good sources of anti-oxidants are **boswellia, turmeric, ginger, berries and cherries**.

Some myths and things not-to-do with stretching include bouncing while you stretch, early morning bending, stretching to the point of pain, and certain specific stretches should be avoided. The stretches that should be avoided include pulling your knee or knees to your chest while lying down and touching your toes. Both these stretches produce high spinal loads that are not safe (see pictures 2 & 3 below). Many people can touch their toes but they are stressing areas that are unstable and are producing loads that can actually damage joints. There are far better and safer ways to stretch these muscles.



Picture 2



Picture 3

All of these suggestions will help you choose an exercise and stretching program that will benefit you most. Every individual needs a personalized program based on the factors and guidelines listed above. Also you must factor your own willingness to make changes. You control the effectiveness of any exercise protocol, we just help guide you along. Ultimately, success or failure of any exercise program is in your hands. With faith in yourself, perseverance, and encouragement from those around you there is no limit to what you can accomplish.

"WHEN INJURED, MOST TISSUES HEAL ... SKELETAL MUSCLE LEARNS."

J. TRAVELL

CORRECTING NEUROMUSCULOSKELETAL DYSFUNCTION

Many of you have heard the term *subluxation.* Have you ever asked what a subluxation really is? The chiropractic profession has used this term for a little over 100 years now and there still remains some question as to what it is and how you find/define it. *Subluxation* literally means partially dislocated or "a little out of place". In the medical literature it means a dislocation without joint disruption. In the chiropractic literature it means loss of proper joint movement, position, or function. There are even more definitions out there that have been individualized. You can see how the term can be a source of confusion. So how do we define a *subluxation?* One way is to not use the term at all but describe fixations along 3 dimensional planes using an *X-Y-Z* coordinate system. That's fine for other professionals but it doesn't sound like a whole lot of fun for us does it? For our purposes we are going to describe a *subluxation* as joint dysfunction. Many have felt that joint dysfunctions lead to nerve impingement but there is very little research that can actually back that theory up (*very little!!).* The research that is out there is usually describing very severe cases of true joint dislocation and/or disc extrusion not joint dysfunction. This chapter will focus on what joint dysfunction is, what can result from it, and what causes it.

What Happens When Joint Dysfunction Occurs?

There are common properties of joint dysfunction. When muscular imbalances occur your body will make reflexive changes to accommodate for those faulty mechanics. This often leads to joint restriction as a protective measure. The joint itself begins to lose metabolic activity. This means that it is not getting the nutrients it needs and is not ridding unwanted material. This leads to an inflammatory condition or *inflammatory soup*, as it has been called. The production of inflammatory mediators, like prostaglandins, leukotrienes, and interleukins, cause nociceptor activation or firing. Nociceptive input, as you recall, is the pathway for pain. This inflammatory cascade will actually up-regulate, or increase the amount and rate of nociceptive firing. This will lead to faulty control as mentioned in a previous chapter. This leads to incorrect coordination between the brain, the muscles, and the ligaments. There will be a shift in joint compression and this will result in increased compression of the articular cartilage (the joint capsule), loss of segmental stability, segemental restriction, decreased mechanoreceptor activity and increased nociceptor activity (more pain). What does the adjustment do to correct this? There has been much misinformation about what the adjustment can do. An adjustment, or manipulation, will actually help in many ways but 3 are of importance to you. The adjustment will:

1. Restore proper motion to the joint. This will allow for nutrient flow and a decrease in *inflammatory soup.*
2. Increase mechanoreceptor activity. This shuts off the pain producing receptors.
3. Creates a window for functional retraining. This will help regain proper coordination between the control subsystems.

When done correctly the adjustment will do all of the above simultaneously. Pain and pain causing mediators will be flushed out, joint motion will begin to normalize, and control will be regained. You can see how the adjustment is a powerful occurrence and how much it can help.

Causes of Joint Dysfunction

There are many things that can cause joint dysfunction. One thing that needs to be kept in mind is how everything in the human body, and especially the musculoskeletal system, is connected in some way. Many of our musculoskeletal problems can be found through a functional examination and a thorough case history. There has to be a reason for your pain because again pain is not normal. There are some common disorders that lead to dysfunction. Outlined below are some of those common disorders.

Foot dysfunction and disorders are a common source of pelvic and spinal dysfunction and pain. How can your feet affect your spine? If you look at the functional anatomy you will see that every step we take (some 2500 a day) works along a kinetic chain that runs from our foot to our upper extremity. The forces from the ground are transferred through muscles, fascia, and ligaments to our arms. That's why our arms swing when we walk (or at least they should). If you have ever jumped on the ground and felt a jarring in your head and neck then the connection isn't too hard to make. If there is a problem with our foot then the forces aren't dispersed evenly and efficiently and one area, usually the weakest, will take the brunt of the force. This will lead to faulty mechanics and lost muscular control and eventually injury and pain

Picture 4

Some common disorders of the foot are **excessive pronation, morton's foot structure, and functional hallux limitus.** Excessive pronation, a condition in which the foot flattens at the arch and the ankle mortis complex turns inward too much, causes among many things low back pain, ankle pain, hip and knee pain, spinal arthritis, and muscular pain. **Morton's foot structure** is a common finding in much of the population. It is when the 2nd metatarsal (2nd toe) is longer than the 1st metatarsal (or the big toe). This common finding can cause excessive

pronation problems as explained above. **Functional hallux limitus** presents as a locking of the first metatarsal-phalangeal joint (the big toe). This is only present during single-leg support stance during walking. This locking will prevent the big toe from flexing during toe-off. This causes one of the foot's 3 pivot points to be altered. Often times the compensation for this is shorter steps, more time on 2 feet and a slumped posture while walking because this structure won't allow for the body to move over the toes. This leads to the bad posture consequences mentioned in the previous chapters.

Many of these problems can be corrected by manipulation of the foot and ankle complex, simple rehabilitative exercises, stretches, taping, and if needed a simple orthotic.

Another common disorder that is often questioned is **scoliosis.** A scoliosis is a lateral (to one side or the other) curvature of the spine. There has been much made about the problems of scoliosis. There are two main forms of scoliosis. The first is an **idiopathic or functional scoliosis.** Functional scoliosis can be easily detected by orthopedic and range of motion testing. This type of scoliosis is due primarily to muscular imbalances, in which the spine is being pulled to a dominant side. It is often seen in an older age group. The cause of these muscular imbalances is due to the same faulty control patterns and incorrect muscle contractions that have been mentioned, such as fixated joints, poor posture, incorrect lifting, poor work habits, faulty walking mechanics, and previous injuries. Some treatment options include manipulation, muscular retraining, soft tissue techniques, and sometimes traction has been used. The second type is **congenital scoliosis.** This type of scoliosis is often seen in a younger age group. It is detected primarily by X-ray analysis and has a specific set of criteria and findings required for diagnosis. Congenital scoliosis must be monitored carefully during the developmental years so any changes can be dealt with accordingly. Treatment options include manipulations, muscular retraining, traction techniques, bracing, and orthopedic referral.

The Big Picture

The fact is there are many reasons people come to see us. It will be our job to find out what the main underlying cause of the problem is and correct it. We're chiropractic detectives so to speak. It is also our responsibility to listen, care, and take time to explain what we are looking for, what we can do about it, and what we plan on doing. More importantly, it is our job to help you help yourselves. Without your help we can't be completely successful. There are many different reasons to come see us. The main reason should be that you want to have someone

there that cares about your problem and is going to help you get better…with your help of course.

"THE ADJUSTMENT IS A POWERFUL OCCURRENCE."

THE BODY IS A TEMPLE

It's true that your body is a temple. It's the only body you were given. Warren Buffet made the analogy of your body as a car. He said to think of your body as the only *vehicle* you are given. How would you treat a car if it was the only one you were allowed? You would probably treat it with great caution and care. You would only use the purest of fuels, the best oil, the cleanest water for the radiator, and the best lubricants for the gears. You need to think of your body much the same way. You have only one vehicle to carry you through this life. Take care of it. Would you put watered down, contaminated gas into your one and only car? Would you let every moving part become rusted and weak? Hopefully the answer is no. Think of the things you put into your body now. Are they quality products? How about your joints? Are they rusty and immobile or weak? We have given you the tools to take care of these physical issues. With a little guidance and encouragement there really isn't anything that can't be accomplished physically and mentally. Holistic health, however is more than a physical entity. Health involves physical, mental, and spiritual well-being.

Holistic Health

Holistic health is attained by a renewing of mind, body and spiritual components that make up a person's being. A person's outlook on life plays a huge role in how they feel. Positive emotions and feelings of well-being correspond to feeling good physically. Negative emotions and negative stressors can and typically do lead to an overall lack of energy, decreased immune function (illness), and an increase in inflammatory mediators. How do you feel when something negative happens to you or you're under a tremendous amount of stress? It spills over into everything that you do. Your body aches more, headaches become worse or more frequent, you don't workout or you skip activities you enjoy. Many times people get sick right after times of stress. It's not just a coincidence. There is a connection. The mind -body connection is very real and it is very powerful. It is important to find that connection and understand it. Inner peace has many different factors that vary from person to person in importance. Once that peace is found you begin to realize your potential. The important thing is to make that connection and find out what is truly important to you.

The Balancing Act of Life

There is a balancing act in life that we all strive to find. The stability in life can be thought as the 5 F's of life: **Family, Financial, Fitness, Fun, and Faith**. Many times we put too much stress on one of the areas. If too much energy and worry is tied up into one category then the others suffer

and so do we. Finding that balance in life is very important. It may not be easy and finding a perfect balance is very hard to do but try to find that balance that works for you. This balancing act is one that will constantly be changing. There are always going to be times when more energy is going to placed in one area but always keep in mind that balance that keeps you happy. **Always make time for yourself.** Set aside a designated time everyday for yourself. This time can be spent anyway you want. Do something you enjoy or do nothing. Take an hour or take 15 minutes. You decide what you need to recharge your batteries. This time can be spent reflecting, meditating, praying, reading, thinking or just doing nothing but make it **your** time. Renewing the mind, body, and spirit is never an easy task but one that will be the most fulfilling to you. The first step of this changing process is the most difficult but most important. Once you begin down this road of change you will find that each step becomes easier than the one before it. With each success doors will open in you that you never knew you had. Before you know it you will make that connection with yourself and your inner peace and happiness will not only follow you but it flow from you. Then you'll realize that it's not the distance that mattered but it was that first step.

"THE DISTANCE DOESN'T MATTER; IT'S ONLY THE FIRST STEP THAT IS DIFFICULT." –M. Vichy-Chamrond

MAKING IT WORK

The suggestions in this book are intended to help you manage your aches and pains. Every person will have various levels of success depending on their activity level, preexisting injuries, amount of joint damage and amount of soft tissue fibrosis. The key for you is to gain an accurate and honest opinion about your health status. We will tell you if we can help you and if we cannot, we will do our best to provide you with someone who can. You deserve to get better. You deserve to have a vision of health again. *"Where there is no vision, the people perish…"* (Prov. 29:18)

Also of importance is that this book be taken as a whole. Each strategy presented in this book can help but it is best when all strategies are woven together and practiced daily. Some will only use one or two strategies but until all strategies are employed, true health will not be gained. Yes, your symptoms may be temporarily relieved but true health is: "Not merely the absence of disease (symptoms) but a complete state of mental, physical and spiritual well-being." (Taber's Medical Dictionary, 17th ed.)

REGAIN YOUR VISION OF HEALTH…

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"My hope for each patient is that when they leave our office, whether out of pain or not, they feel empowered and a difference has been made in their life."

Dr. Corey Campbell earned his undergraduate degree in Human Biology from Chadron State College where he was a two-time Academic All-American in football. He earned his Doctorate of Chiropractic degree from Cleveland Chiropractic College. Dr. Campbell also graduated cum laude and received the Clinical Service Award. He shares all the same professional memberships as his partner Dr. Bryson. Dr. Campbell has done many out-reach programs including lectures and talks to inner-city middle and high schools as well as college programs. Dr. Campbell has traveled to Prague and trained with the Father of Manual Therapy, Dr. Karel Lewitt (2004), and has presented at the Movement Dysfunction Symposium in Scotland, UK (2005). Dr. Campbell is also a faculty member of the Motion Palpation Institute, a national organization that teaches a research based clinical approach. He has participated in many post-graduate programs focusing on manipulative techniques, functional rehabilitation, and biomechanics. In his spare time he enjoys outdoor activities, golfing, and reading.

""I want every patient to feel like they are an integral part of a team that is working to not only get them out of pain but to improve their quality of life."

He who works with his hands is a laborer; he who works with his hands and his mind is a craftsman; he who works with his hands and his mind and his heart is an artist."

REGAIN MOVEMENT, STABILITY, AND YOUR LIFE

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