



Understanding Modern Chiropractic

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Often people will ask what research exists regarding Chiropractic care, and how does chiropractic work. Below is an overview on the mechanisms by which Chiropractic works. If somebody says they are a "non-believer", tell them Chiropractic is not a religion, it is Science! Belief is no longer required, there is significant research to support the mechanisms of how Chiropractic works, its safety, efficacy & the cost effectiveness of Chiropractic!



It's evident to anyone who is truly interested in fixing the problems facing the U.S. health care system that Doctors of Chiropractic (D.C.), with their natural conservative approach to pain relief and health promotion, are an important part of the solution. DCs are the highest rated healthcare practitioners for low-back pain treatments—treating nearly 27 million Americans annually—above physical therapists, specialist physicians/MDs (i.e., neurosurgeons, neurologists, orthopedic surgeons) and primary care physicians/MDs (i.e., family or internal medicine). This is not surprising when you consider that injured workers are 28 times *less likely* to undergo spinal surgery if their first point of contact is a D.C. rather than a surgeon (M.D.), and that treatment for low back pain initiated by a Chiropractic physician costs up to 20% less than treatment started by a M.D. **A 2016 John Hopkins study reveals that Medical Errors and Medical Doctors are the THIRD leading cause of Death in the USA.**

Chiropractic consistently outperforms all other back pain treatments, including prescription medication, deep-tissue massage, yoga, Pilates, and over-the-counter medication therapies according to a leading consumer survey. Unnecessary spinal fusion surgery (a procedure that has seen a 500% increase in the last decade) has resulted in an estimated \$200 million in improper billing to Medicare in 2011 alone. It is noteworthy that Medicare deemed the surgeries medically unnecessary because more conservative treatment hadn't been tried first. What makes this viewpoint so short-sighted is also that the need for providers who offer a conservative approach to pain management has never been greater. The Centers for Disease Control and Prevention recently classified prescription drug abuse in the United States as epidemic. The U.S. is home to only six percent of the world's population, yet consumes 80% of its pain medication.

D.C.'s are designated as physician-level providers in the vast majority of states and the federal Medicare program. The services provided by D.C.s are also available in federal health delivery systems, Medicaid, the U.S. Departments of Veterans Affairs and Defense, Federal Employees Health Benefits Program, Federal Workers' Compensation, and all state workers' compensation programs. D.C.'s complete nationally accredited, four-year doctoral graduate school programs with a curriculum that includes a minimum of 4,200 hours of classroom, laboratory and clinical internship, with the average D.C. program equivalent in classroom hours to medical and osteopathic schools. Chiropractic services are one of the safest and most effective treatments for back pain, neck pain and headaches, and can help patients avoid riskier treatments, more expensive care and get well sooner.

Chiropractors perform approximately up to 95% of all joint manipulation in the world.

Chiropractors are highly trained to perform joint manipulation of most all of the joints in the human body. While other health care professionals may learn some joint mobilization or manipulation as an elective in school, or at a weekend seminar, there is no doubt; **Chiropractors are the experts at the science and art of joint manipulation.** To be safe, effective and proficient at manipulation, this requires a full time dedicated professional effort.

The word Chiropractic comes from the Greek "Chiros" and "praktikos", meaning "done by hand". The profession as we know it today was first developed by D.D. Palmer in 1895 but evidence of manipulation techniques have been used in healing for hundreds of years.

Chiropractic recognizes that treatment of the whole body requires synchrony between the brain, the nervous system and the mechanical control system of the kinetic chain (Muscles, Tendons, Ligaments & Connective Tissues). Chiropractic is based on the inherent natural ability that the body and its electrical energy or life force will allow the body to naturally heal, from above down and inside out. Any electrical interference can impede this natural process.

Any joint injury, misalignment, restriction, or subluxation will have both neurological and mechanical components. These joint misalignments or subluxations will result in minor nerve irritations or even larger nerve entrapments because the mechanical component and gravitation effects of posture are ignored, leaving root causes undiscovered and untreated. The goal of Chiropractic joint manipulation is to treat these injuries, incorporating both neurological and mechanical treatments.

Mechanoreceptors are embedded in the tissues surrounding joints. When these tissues get stretched by a misalignment of a joint, this activates a neurological inhibition or weakening of the adjacent muscle. Discovery of these weak muscles and correction of the misaligned joint to restore normal strength is the specialty of the Chiropractic doctor.

The Mechanism of How Chiropractic Works

The mechanisms for improvements in spinal pain with chiropractic care are many, but they fall into 2 main categories, neurological and mechanical.

1) Neurological Mechanisms:

The rapid speed of the high velocity, low amplitude thrust of a Chiropractic manipulation sets off a barrage of high-threshold mechanoreceptors. According to the gate theory of pain (whose owner received the Nobel Prize in physiology), the activation of high threshold mechanoreceptors is necessary for the inhibition of pain. Low speed mobilization does not activate these receptors. The cavitation created during a Chiropractic manipulation has been shown in numerous studies to stimulate these receptors in the spinal cord and brain.

Individuals with chronic pain undergo a process called synaptogenesis that results in long-term potentiation of spinal pain. Several studies have indicated that stimulation from spinal manipulation affects mechanoreceptive afferent nerves, which proceed to the cerebellum, then the thalamus, the cortex, the hypothalamus, the peri-aqueductal grey, then the raphe magnus nucleus, wherefrom serotonergic neurons project to the dorsal root ganglion. There, at the "gateway" of nociceptive input, serotonin actually has the ability to degenerate maladaptive synapses that perpetuate spinal pain. **Chiropractic Manipulation or adjustments are the only treatment modality that produces this effect.** For more information, see *JMPT June 2004;27(5):314-26*—the article title is "*Central neuronal plasticity, low back pain and spinal manipulative therapy.*"—authored by renowned neurophysiologist Richard Gillette.

The rapid speed associated with the chiropractic adjustment also creates a reflex in the golgi tendon organ within muscle tissue resulting in reduction in spasm and increases in control and coordination (proprioception). A 2006 study in the German medical journal **Manual Therapy**, found that a single chiropractic adjustment led to improved contractability of the transverses abdominis (a "core" muscle associated with spinal stability). ***This is especially significant since the well respected Dr. Vladimir Janda, MD, demonstrated that the transverses abdominis becomes inhibited in individuals with low back pain.***

2) Mechanical Mechanisms:

There are 3 phases to healing injured tissue. **Inflammatory, Regenerative, and Remodeling.** We know that the regenerative and remodeling phases are guided by joint motion. We know that immobilization during healing leads to contracted, disorganized scar tissue that is less elastic and more sensitive to pain. Ultimately, tissue cannot heal where motion is not complete.

There are 3 types of motion; active, passive, and motion into the parapsychologic space. If, by using your finger muscles alone, you attempt to extend your forefinger as far as possible, that is termed *active range of motion*. If you use your other hand to push your finger back further, it will move a great deal more—this is *passive motion*. Lastly, when a Chiropractor applies a short thrust to the joint into extension, the finger will move even further. **This motion is still within the anatomical limits of motion, and does not injure capsular ligaments when properly performed** (this is movement into the *parapsychologic space*).

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This adjustment is capable, however, of breaking down capsular adhesions and fibrosis to restore normal motion in an impaired joint. Therein lies the magic of Chiropractic—no other healing system trains its practitioners to be so adept at palpating segmental joint movement, diagnosing joint dysfunction, and lastly restoring normal, full range of motion to a joint. Obviously restoring movement to a joint produces optimal healing. Less obviously, normal movement leads to normal afferent firing patterns and normal motor organization in the brain. With normal movement patients achieve both normal optimal biomechanics and proprioceptive activity—this optimizes healing and decreases chronic pain.

Chiropractic Manipulation: aka The Adjustment

Jack Lalanne, the famous fitness advocate (who was also a Doctor of Chiropractic), said, “The only way to hurt your body is by not using it!” This is as true for each joint as it is for the whole person. Restricted or abnormal joint function affects the body in many ways. This paper discusses what occurs in the cartilage, ligaments, muscles, and nervous system when a joint is dysfunctional, and how chiropractic treatment changes joint dynamics to restore function.

Motion

Motion is the key to healthy, well-nourished joints. Bob Anderson, the author of a popular book on stretching, calls the stiffness and degeneration of inactivity “creeping rigor mortis”. Movement nourishes each and every tissue in your body. Think about it. Your cartilage, connective tissues, and muscles receive their nutrients in abundance with motion—they stiffen and deteriorate with inactivity. Venous, oxygen-deprived blood is pushed heart-ward by muscular contraction and relaxation. Your heart muscle, like any other muscle, is nourished and strengthened by strenuous activity. Your lungs become conditioned and invigorated as you place a demand on them by exercising your body. Movement massages all bodily organs, and the brain stimulates many organs hormonally during exercise. Your body burns fuel during exercise, eliminates wastes, and allows you to take in more life-giving nutrients. The brain itself changes its patterns during exercise and movement as hormones are released to stimulate the body and mind. Best yet, *your spirits are nourished by movement.*

Chiropractic and Motion

The role of chiropractic is to ensure the optimal function of each joint, and of the nervous system as a whole. This is especially relevant in the spine for many reasons. First, there are nearly one hundred joints in the spine. These joints make up a complex system where joints in one area can become too mobile to make up for joints in another area that are restricted in their motion. As an analogy, consider a long piece of chain containing many links. If this chain is grasped at either end and twisted back and forth the motion will be relatively evenly distributed throughout the chain. Now imagine that a few links within the chain become rusty—these are restricted joints. If the chain is twisted back and forth repetitively the forces will no longer be distributed evenly. Excess motion will take place in the moveable links, and no motion will take place in the rusty ones. As a result the excessively moveable links wear quickly, and each link in the chain is forced into a compromised movement pattern. The links adjacent to the rusty links are most affected. Exactly the same process takes place in the spine.

Spinal joints become restricted (“rusty”) in their motion for many reasons—injury, chronic postural strain, congenital defects, repetitive actions like sports or work, and even stress. Recall from the discussion above that both lack of movement and abnormal movement take their toll on all elements of the joint—cartilage, ligament, disc, and muscle. Now, with our rusty chain analogy, imagine directing a force into the rusty links to free up their motion. This has the effect of normalizing the movement throughout the chain. A chiropractic adjustment targets a restricted joint and frees its motion. This not only affects the joint that is manipulated, but also has far reaching effects throughout the spine and extremities.

Chiropractic and the Nervous System

The spine is not only a complicated system of joints that allows us to bend, twist, absorb shock and move freely, it is the “housing” of a large part of our nervous system. Every nerve that leaves your brain to communicate with your joints, muscles, organs, arteries and veins, skin, etc., travels through your vertebral column.

Most of these nerves go through a “switching box” in your spine just before they exit to go to their target tissue. This can lead to some confusion in your nervous system. Let us use a kidney stone as an example. If you are so unfortunate as to have a kidney stone, your first symptom will often be intense back pain. Why is this? Why doesn’t your body perceive the pain deep in your abdomen where your ureters are desperately trying to pass the stone? The answer is this; the nerves from the ureters come into the same “switchbox” (actually called a wide-dynamic-range neuron) as the nerves servicing the joints/muscles/ligaments etc. in your back.

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Your body can confuse the two messages and perceive that the pain is actually coming from the back. This scenario can happen anywhere in the spine since nerves exit at every level. Dysfunction in your upper neck, for instance, can cause a whopping, migraine-like headache. Dysfunction in your mid-back can cause stomach and upper bowel problems. Dysfunction in your pelvis can lead to lower bowel and/or menstrual problems.

In short, *the nervous system is nourished by movement*. The more we learn about neuroscience, the more we understand and appreciate the importance of Chiropractic care. Abundant scientific research is available to support the importance of Chiropractic care in the maintenance and restoration of health.

Cartilage

In tissue such as skin or muscle, injuries can be rapidly repaired due to the nutrient-rich blood supply to these tissues. Joint cartilage and spinal discs has no direct blood supply. Motion is absolutely necessary for cartilage to receive the nutrients that it needs to maintain and rejuvenate itself. The process by which cartilage receives its nutrients is similar to wringing out a sponge in the sink, then letting it expand again while immersed in water. Similarly, when a joint closes, waste products are “squeezed” out. When the joint opens, new, nutrient-laden fluids are drawn in.

When a joint becomes restricted in its normal movement pattern it becomes deprived of nutrients. In fact, an immobilized joint begins to degenerate and dehydrate after only 2 days! When you wake up with a “crook” in your neck, or get a sore back after a weekend of yard work, joints have become restricted in their motion and cartilage health begins to suffer. Over the years it becomes easier and easier to aggravate the joint and early degenerative changes occur. In human cadaver dissections degenerative spinal joints contain fibrous adhesions (motion-restricting scar tissue) ranging from single strands (these look like dental floss), to fibrous mats that prevent movement altogether. Further, we know that motion alone is not enough to sustain a joint. Healthy, normal movement patterns are needed. Unrestricted, abnormal joint motion has been shown to accelerate cartilage degeneration.

Pain, unfortunately, is often the last symptom to appear in a joint that does not move freely (this is due to the fact that cartilage and discs have minimal pain nerves). A restricted joint will often cause compensations in other joints, causing muscle and ligament tightness and weakness, and actual degenerative changes in both joints and muscles before pain is perceived. Chiropractic adjustments restore healthy movement patterns by breaking up adhesions in joints and freeing restrictions to motion. Chiropractic also changes the nerve pattern in and around the joint, but we’ll discuss that later. These changes not only makes you feel better quickly, they allow the joint to attain the nourishment through movement that joint health depends upon.

Ligaments

Ligaments provide passive support to joints. They “check” joint movement by keeping joints within their safe limits of motion. A healthy ligament is incredibly strong. Pound for pound ligament tissue has a stronger tensile strength than steel. Restriction of joint movement causes ligaments to shorten (ligamentous contracture) and weaken. A sprained ligament heals with scar tissue that restricts joint movement. The result is a perpetuation of decreased motion and an increased susceptibility to injury. Thus, a sprained ankle will often heal with a restricted movement pattern. This pattern can change the way you walk and move, affecting the knees, hips, and low back.

If these patterns continue pain and actual tissue changes begin. If, on the other hand, the sprained ankle is mobilized and “adjusted” soon after the injury, the normal motion pattern is restored and the chain of events described above is stopped in its tracks.

After joint restrictions are treated with Chiropractic adjustments it is important to stretch shortened ligaments to maintain and even increase function. This is where stretching and exercise play an important role. With the simple practice of a few well-chosen stretches motion and joint health are maintained.

Ligament and cartilage are the “passive” components of the joint. Muscle is the “active” component. Muscle is red because it has a rich blood supply. For this reason a strained muscle will heal faster and more completely than a sprained ligament (ligaments take several months to heal, whereas muscle takes about 1-2 months). Muscle has the ability to react more quickly to joint dysfunction than passive tissues such as cartilage and ligament. Sitting in an odd or strained position throughout the day causes muscle to react to the prolonged strain. If you sit hunched over at a computer all day long you begin to feel the tightness and discomfort from unhappy muscles in your upper back and neck, perhaps even your lower back. If you sit that way day after day you shorten the muscles and ligaments in the front of your body and stretch the muscles and ligaments in the back of your body.

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This change in length actually changes the way you use your muscles to accomplish even the simplest movements. The tight muscles become overactive—they fire more often and in a less coordinated way than they should. The stretched muscles become weak and lazy (they gladly relinquish their work to the tight muscles). This results in unnatural movement patterns which stress and damage joints even during simple activities such as walking. The result? A frame that no longer knows what healthy posture and movement is. The body is actually distorted by the chronic strain.

Most Importantly

Most importantly of all, the proof is in the research and acceptance. Over the past 110 years Chiropractic has grown and flourished due to the results achieved in Chiropractic patients. Chiropractic is now the second largest system of health care in the United States. Recent research into different forms of care for injured workers shows that Chiropractic patients return to work in half the time, at half the cost, and with one ninth of the disability of medically treated patients. See my website for the Research Article.

These excellent results are achieved in an environment that supports holistic health. Patients are not “just sore backs”; they are whole people. Your mind, body, and Spirit exist together in a complicated weave where imbalance in any aspect of your being affects all aspects. Beyond masking pain with pills, or goading the body into changing its chemistry with medication, Chiropractic care clears the path for the better health that is your natural state. The ultimate goal of Chiropractic care is to promote healthy people, and prevent injuries through excellent health care.