GRAVITATIONAL PATTERN ALIGNMENT ™

A Systematic and Unique Methodology

Creating

Complete Structural Correction and Body-Balance

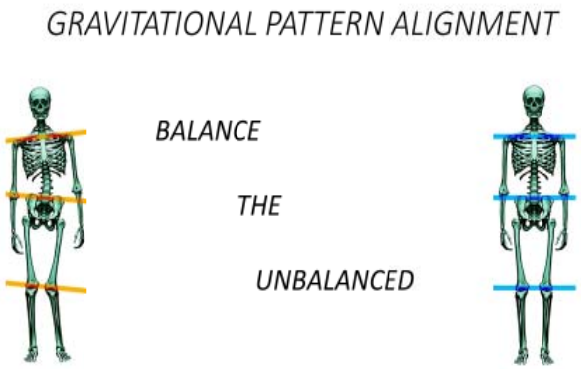
developed by

Dr. Nelson W. Vetanze – BS, D.C., CCEP

Dedicated to My Teacher, Mentor, Friend and Inspiration

The Great Chiropractic Leader

Dr. Joseph Janse, DDT, DC, ND



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ACKNOWLEDGEMENTS

Dr. Joseph Janse, DDT, DC, ND

As my professor and mentor, Dr. Janse instilled a deep sense that simply correcting a problem for a patient was not enough. This mindset inspired me to create methods to discover and correct the cause of patient discomfort and thereby accelerate the healing process. Accomplishments of Dr. Janse are prolific as outlined below.

Joseph Janse: Legend in his own time

A number of individuals will always have a place in chiropractic history — for example, the Palmers, attorney Tom Morris (a crafter of the legal defense of chiropractors in the early years) and John Nugent, DC, (a reformer of chiropractic education).

Among these individuals is Joseph Janse, DDT, DC, ND — president of National College of Chiropractic from 1945 through 1983, leader in chiropractic educational reform and a proponent of chiropractic science.

Janse was born in 1909 and died in December 1985. His family relocated to Ogden, Utah, sometime in 1916 or 1917.

A favorable experience with Palmer graduate Ross McCune prompted his interest in Chiropractic. Later he heard a lecture by National College of Chiropractic owner and president, William C. Schulze, MD, DC, which sealed his decision to enroll at the institution located in Lombard, Illinois.

In 1937, he was awarded the "Doctor of Drugless Therapeutics" (DDT) degree, and the following year the DC and ND degrees.

Janse joined the faculty of National soon after graduation and in 1939 became one of four deans of the college. He participated in the school's conversion to non-profit status in 1941 and became president of National in 1945, where he served until 1983.

His legend as NCC's president
Janse's accomplishments at National became legendary:

• Helped found the Council on Education of the National Chiropractic Association. The Council later became the independently chartered Council on Chiropractic Education (CCE).

• Led the quest for educational maturation and accreditation.

• Gave impetus to the 1962-1963 formation of the National Board of Chiropractic Examiners by the Council of State Chiropractic Examining Boards (today's FCLB).

• Led National College to become the *first* to achieve federally recognized status when the school received regional accreditation by the New York State education department in 1971.

• Was the voice of the profession during the CCE's final push for recognition by the U.S. Office of Education.

• Was a leader of “rational chiropractic.” Janse was renowned as an anatomist and held certification as a radiologist.

• Established the *Journal of Manipulative & Physiological Therapeutics (JMPT)*. Distressed by the American Chiropractic Association’s disinterest in scientific publishing, Janse committed National College to creating a forum for the dissemination of a more skeptical and critical literature than had previously been available in the profession. With Janse’s imprimatur, Dr. Roy W. Hildebrandt began publishing the most enduring, blind-peer-reviewed and most widely indexed periodical in the profession.

ABOUT THE AUTHOR

NELSON W. VENTANZE, BS, DC, CCEP

CURRICULUM VITAE

EDUCATION:

National College of Chiropractic, Lombard, Ilinois
Years Attended: 4
Diploma: 1971-Doctor of Chiropractic

University of Illinois / N. Central Accrediting Agency
Year Attended: 1971
Diploma: BS. Human Biology

Ohio University: Athens, Ohio
Years Attended: 3

St. John's Central High School, Bellaire, Ohio
Years Attended: 4
Diploma: 1964

LICENSURE:

- Certified Chiropractic Extremity Practitioner (C.C.E.P.) by Council of Extremity Adjusting, Board of Examiners, Council of Chiropractic Extremity Adjusting, 1998
- Parker Research Foundation (Chiropractic) Seminar, graduate certificate, 1972
- Electrotherapy License in Colorado, 1972
- State of Colorado, State Board of Examiners, license issued 1971
- State of Minnesota. State Board of Examiners, license issued 1971
- State of Iowa, State Board of Examiners, license issued 1970

- 20 Hours Certification to perform S. EMG's

EMPLOYMENT DATA

- Private practice in Aurora, CO 4090 South Parker Road - OMNI Chiropractic, 1988 – Present.
- Private practice in Denver, Colorado 1984-1988
- Partnership practice of chiropractic in Denver, Colorado with Dr. John W. Hanks, 1977-1983
- Associate practice of chiropractic in Denver, CO with Dr. Robert Ohson 1971-1975

PROFESSIONAL ORGANIZATIONS, HONORARY,SOCIETIES,. APPOINTMENTS

- President and Founder, Yeomen Club, National College of Chiropractic,1968
- President of the Junior American Chiropractic Association of National College of Chiropractic 1969
- Diplomat of the National Chiropractic Board 1970
- Member of the American Chiropractic Association Council of Internal Disorders 1971-1987
- National College of Chiropractic Department of Clinical Laboratory Diagnosis, 1971
- Clinical Practice Physiotherapy, National College of Chiropractic, 1971
- President, Student Council National College of Chiropractic Class of 1971
- Member of the American Chiropractic Association 1971-Present
- District Director of the Colorado Chiropractic Association 1973-1984
- Referral doctor for the Denver Broncos, Coach John Ralston and Coach Red Miller, 1974-1979
- Alumni Association, National College of Chiropractic Centurion, honored member of Century Club, 1974
- National College of Chiropractic Department of Roentgeneology completed course in radiology and spinography 1974
- President's Cabinet International, National College of Chiropractic, 1975-Present
- Member of the National College of Chiropractic President's Cabinet International, 1978 and 1995
- Member of President's Cabinet International, National College of Chiropractic, 1978-1986
- Co-Admission referral privileges at Rocky Mountain Osteopathic Hospital, 1978-1987
- Member of the Colorado Chiropractic Association Peer Review Committee, 1978
- Council on Sports Injuries, American Chiropractic Association, 1979
- Founder and President of American Academy of Chiropractic Practitioners1982-1983
- National College of Chiropractic Alumni Association, Research and Development of Chiropractic Profession and National College of Chiropractic 1983
- Foundation for Chiropractic Research and Education, special recognition as a "Partner in Progress" for si£1nificant contribution to chiropractic research 1983-1984
- Chiropractic Consultant to Advanced CAT Scan Corporation,1984-1987
- Membership Council of Roentgeneology of the American Chiropractic Association, 1985
- Director at Large of the Colorado Chiropractic Association, 1985-1987
- Member of the American Back Society, 1986
- Council on Sport Injuries and Physical Fitness, 1987
- Approved for Preceptorship Program with Logan College of Chiropractic and Texas Chiropractic College, 1987
- Member of the Legislative Committee of the Colorado Chiropractic Association, 1987
- Member of Council on Diagnostic Imaging, American Chiropractic Association, 1987
- Consultant for research program approved by the FCER on "Lower Back and Pelvis Subluxations in Female Distance Runners", Grant #86-3-8, 1987-1989
- Member of the American College of Sports Medicine, 1987
- Second Vice-President of Colorado Chiropractic Association, 1987-1988
- First Vice-President of Colorado Chiropractic Association, 1988- 1989
- First Vice-President of Colorado Chiropractic Association, 1988-1989
- National College of Chiropractic for singular and generous support provided by the College of Chiropractic Grant, Certificate of Appreciation, 1989
- President of Colorado Chiropractic Association, 1989-1990
- Dept. of Labor-Division of Workers Compensation Level IAccreditation, CRS 8-42-101, 1994-Present
- Member of American Council on Chiropractic Neurology, 1995
- Credentialing Committee Member for Columbine Chiropractic PPO, 1997-Present

- Chiropractic consultant to the Denver Broncos, 1998-Present
- Official Denver Bronco Chiropractor, 1998-1999
- Consultant to Light Force Therapies , 2000
- Medical Advisor to Pain Management Technologies , 2001
- Alternate delegate representing Colorado, American Chiropractors Association, 2001
- Second Vice-President of Colorado Chiropractic Association, 2009-2010
- First Vice President, Colorado Chiropractic Association , 2012
- Chairman of the Board, Colorado Chiropractic Association, 2013

- Adjunctant Professor, Texas Chiropractic College
- Certified as member in good standing in American Council on Chiropractic Neurology
- Member of the Council on Chiropractic Orthopedics of the American Chiropractic Association
- Member of the Council on Sports Injuries of the American Chiropractic Association
- Member of the Council on Physiotherapy of American Chiropractic Association

LECTURES, CONFERENCES AND PRESENTATIONS

- Author of Gravitational Pattern Alignment, a pattern methodology of extremity and spinal manipulation to balance the entire skeletal frame.
- Co-Author of paper: "Sacroiliac Lesions in Female Long Distance Runners", 1985
- Sponsor, paper on Paget's Disease written by Dr. Terry Yochum published in Archives of Medicine, 19B2
- Council for "Sports Injuries, Treatment and Care of Sports Injuries" Seminar, March 27-29 , 1981
- Council for "Sports Injuries, Treatment and Care of Sports Injuries" Seminar Lake Tahoe, NV,1979
- Board of Examiners approved presentation and paper on Differential Diagnosis, Colorado Chiropractic Association Convention. 1978
- Substitute teacher at the National College of Chiropractic , 1971

PROFESSIONAL RECOGNITION

- Chiropractor of the Year, Colorado Chiropractic Association, 2011
- Nominated for Chiropractor of the Year, Colorado Chiropractic Association, 2007, 2008, 2009, 2010 and 2012
- Features National Journal of the American Chiropractic Association, May 2005
- Personal Chiropractor to Heavy-Weight Champion DaVarryl Williamson of Aurora, CO, March 2005
- On site chiropractor for Actors and Crew of the re-make of "The Longest Yard" Movie, 2004
- A.C . Jenkins Track Award, Best Chiropractor, 1993-2001
- Received Distinguished Service Award from Colorado Chiropractic Association, 1989 and 1990
- Colorado Chiropractic Association Award for sincere appreciation and recognition of distinguished service to the membership of the Colorado Chiropractic Association, 1989-1990
- National College of Chiropractic for singular and generous support provided by the College of Chiropractic Grant, Certificate of Appreciation, 1989
- Distinguished Service Award, Colorado Chiropractors Association, 1987, 1989, 2000
- Who's Who Among Students in American Universities Merit and Accomplishments, National College of Chiropractic, 1971-1972
- Achievement Awards from the National College of Chiropractic in: 1) Human Dissection, 2) Diagnosis, 3) Electrotherapy, 4) Chiropractic Roentgeneology, 1971-1972
- Outstanding Graduate, National College of Chiropractic Class of 1971
- Achievement Award in diagnosis at the National College of Chiropractic, 1971
- Who's Who in America Among College and University Students, 1970-1971
- Certificate of Proficiency in the Basic Sciences, State of Iowa, 1970
- National Chiropractic Antitrust Committee , Outstanding Contribution Award
- American Academy of Chiropractic Practice- Met educational and clinical requirements and qualifications of this Academy and is entitled to all honors, rights and privileges

CHAPTER ONE

FROM WHERE I SIT

by

Dr. Joseph Janse, DDT, DC, ND
President, National College of Chiropractic
Lombard, Illinois

The principle, that in man, the biped, there is an intimate, homeostatic relationship between the biomechanics of the musculoskeletal system, especially the spine and the pelvis and all neurological elements, is a biological classic.

The clinical premise of disturbance or aberration of this relationship giving rise to dysfunctlons that may provoke the development of pathophysiological processes that eventually could cause, precipitate, aggravate or prolong disease states, defines dimensions of such significance, that all those responsible for health care should be fully mindful of it.

This undeniable fact should comprise the basis of our professional posture and should represent the common denominator of our primary ideological, philosophical, clinical and investigatory approaches.

For thirty-six years, the writer as an educator and investigator has addressed himself to the critical study of these principles. As I approach the inflictions of emeritus status my conviction about their salient significance is unequivocal and there is within me the great concern that we of the profession will continue to impede our own progress, impact and influence, by prolonging the chauvinism of locked-in ideologies and undue emphasis of concept and technic methodologies. I present a number of basic tenets that compel the awareness that no single measure is the total answer.

1. The homeostatic integrity of the human organism is greatly dependent upon the sensorial input provided the neurological elements from all sources. If the input is physiologically normal, well-being is the consequence. If the input is abnormal, the consequence is disturbed function, discomfort and eventually disease.

2. Primary elements, factors and sources of sensorial input include: (1) the integument, the subderma and the myofascial plane; (2) all synovial articular beds, their syndesmological retaining and myological mobilizing elements; (3) the neurological elements sub-serving the anatomical vehicles of the special senses--sight, smell, hearing,

taste; (4) the motivating input from the cerebral conjugations commonly referred to as the emotional, intellectual and spiritual phenomena.

3. In the complex multicellular organism, life is the expression of Tissue, organ and system--a coordinated reaction to stimulation via the aforementioned primary sensorial beds, elements, and composites. No factor, no element, no composite function expresses itself independent of the others. For every emotion, for every thought, there is a vascular, a myological, and an endocrinological reaction. For every sensation, there is a comfort or discomfort, restful or restless feeling that will provoke a maintaining or a disturbing response.

4. These basic neurophysiological facts command the awareness that any procedure that provides normal sensorial input represents a beneficial health maintenance and restorative modality. Herein lies the reason why any application, any measure, and any affectivity that is applied and exercised, defines normalizing restorative benefit. Herein lies the reason why instinctively, empirically, and yet with effective consequences man has resorted to some form of manipulative therapy in his earliest attempt to provide comfort and relieve his distress.

5. Well-executed, soft tissue (myofascial) manipulations, reflex zone, meridian point and trigger point contacts or applications, and various types of well-performed spinal vertebral adjustments define benefit and a commonality of clinical importance. Any manipulative measure of biomechanical and neurological relevance, if properly administered may, from a corrective physiological standpoint, have something in common with other yet similar methods. Could this be the art as well as the science of all principled and performed manipulations?

If this be the case, then there has to be room in chiropractic for all competently designed measures of hand application.

6 Bipedalism and humanism are concomitant to each other. Man could not be man as a quadruped. The forelegs, the upper extremities have to be available for the tooling and artistic dexterities singular to the hands of man. The vertically-held body trunk is imperative to the physical and concurrent mental activities of the human. How all this came to be is conjectural and really not part of this discussion. It is, however, important that all the myological, syndesmological, articular and neurological mechanisms that relate to bipedalism represent primary conditioning homeostatic mechanisms that intimately influence the status of well-being and with equal importance contribute to the increments of discomfort and the pathophysiologies that lead to disease.

7. In man the biped, more than in any other vertebrate, the homeostatic process of health maintenance intimately depends upon the efficiency of conduct of the osseous, muscular., ligamentous, discal, articular and neurological elements that comprise the biomechanical complex of his spine and pelvis. Any disturbance of this complex will so imbalance the neurological element that dysfunctions may ensue in those reaches that are the most predisposed and vulnerable. If this be so, then it is assumed that the spinosomatic and, spinovisceral, yes, even the spinocerebral phenomena cannot be discounted or discredited in evaluating health care imperatives.

8. All intellectually honest authorities in clinical biomechanics now acknowledge that spinal intersegmental derangements are common patho-biomechanical events in the spine of man as he copes against gravity, conducts vigorous asymmetrical efforts of work and play, and is often subject to physical strain and stress mishaps. We in chiropractic call such derangements subluxations. Many attempts have been made to define a subluxation. Various types of explanations have been submitted to describe the biomechanical nature of subluxation, and what the attending neurological events may be. Such efforts are most laudable and certainly should be encouraged and continued. Is not the purpose of any science the expansion upon knowledge and understanding?

9. Subluxations, whatever they are biomechanically, are always attended by: (l) micro trauma of the paravertebral and encasing elements with possible eventual degenerative, proliferative, infiltrative changes that may lead to nerve root entrapment, the development of dural root sleeve adhesions; (2) proprioceptive insult because of the strain placed on the ligamentous retaining mechanism, to include the capsular ligaments and the posterior annulus, so richly supplied with proprioceptors. This disturbance of the proprioceptive bed may not only have its local somatic effects, but because of copious synaptic overlap with vascular, visceral and even cerebral and cerebellar reflexes, mirror pathophysiological reactions in a goodly number of variations far distant to the initial site of disturbance; (3) actual nerve root compression, although not always concomitant to subluxation, may certainly occur, especially if the total circumference of the IVF has already been reduced by such common pathologies as posterolateral prolapsus of the IVD, vertical narrowing of IVF attending degenerative disc thinning, shelving and invasion of IVF by an enlarged and fibrotic interbody articulation; (4) traumatic thickening of the capsular ligament, posterolateral marginal and zygapophyseal osteophytic proliferation, deformation and narrowing of IVF due to pars defect with undue segmental displacement.

10, Over the years, clinical observations have led the writer to conclude that specific spinal manipulations do indeed accomplish a goodly number of biomechanical, neurological and restorative effects which include: (1) mobilizing and realigning the vertebral segment within its motor bed; (2) separation of entrapment adhesions within the dural root sleeves and the IVF; (3) physiological stimulation of the spinal proprioceptive, righting and balance reflexes; (4) augment of the vascular ingress and egress to and from the neuromere; (5) stimulation of the cellular elements within the dorsal root ganglion, the posterior, anterior and lateral gray cell columns; (6)

relief of actual nerve root pressure within the IVF; (7) physiological stimulation of the somatic and autonomic components of the spinal cord and their ascending and descending connections with the higher centers in the brain stem, cerebellum and the various cerebral components; (8) regulation of all important somato-autonomic reflexes helpful in controlling visceral neuroses.

We now conclude that any specific manipulative procedure qualified to make restorative corrective sensorial input is beneficial and should be acknowledged as having clinical value. Any specific manipulation that will effectively mobilize and realign a vertebral or pelvic segment should be considered to be of primary clinical significance. Any specific manipulation that will restore or enhance the biomechanical proficiency of the rnusculoskeletal system, especially that of the spine, should be acknowledged accordingly. Any method of manipulation that specifically enhances the kinesiological capacities of the body should be included in the framework of chiropractic procedures. Any specific contact, pressure, or petrissage like manipulation that will normalize somatic reflexes should experience study and application. Any specific manipulative procedure that will effectively help separate myofascial adhesions and loosen the gluings at trigger point zones should be considered significant enough to include in the chiropractic specific manipulation armamentarium.

We also conclude that the various systems and measures of specific manipulative technic common to the profile of chiropractic methods, have their place in the totality of chiropractic technic, not as conclusives or exclusives, but as significant aspects and chapters. There are no two identical spines. There are no two nervous systems that react to a disturbing factor or respond to a therapeutic measure identically. Always it must be kept in mind that the technic must fit the patient, not the patient the technic. Would it not be a matter of ideological and clinical prudence, therefore, to refrain from technic Armageddon's?

JJ - 9/76

CHAPTER TWO

IN THE BEGINNING

Dr Joseph Janse, a prolific educator, spokesperson, chiropractor and academic created and produced, in depth, accurate and concise scientific articles concerning bipedism of the human. A fundamental factor is how the complicated detrimental effects of gravity affect the structural, functional, physiological, immunological, and neurological systems of the upright biped being.

These interferences most assuredly disturb the homeostasis and energy flow to all physiological systems; weakening the immune, neurological and psychological function, while leading to depression, premature disease and mortality.

Significant research, as early as the eighteenth century and predominantly in the late sixty's, confirms the importance of impeded neurological function as related to the cause of disease. Scientists worldwide acknowledged the spine and nervous system as the source of healing energy. It was widely agreed that increasing nerve energy flow will enhance innate healing. The discovery of the spinal subluxation and subsequent correction by spinal manipulation, relieved nerve root impedance and greatly enhanced the homeostatic efficiency of the nervous system. This was considered treating the cause of disease, not the symptoms. It was understood and accepted that healing occurred inside out, and NOT outside in!

The principle, that in man, the biped, there is an intimate, homeostatic relationship between the biomechanics of the musculoskeletal system, especially the spine and the pelvis and all neurological elements, is a biological classic.

The clinical premise of disturbance or aberration of this relationship giving rise to dysfunctlons that may provoke the development of pathophysiological processes that eventually could cause, precipitate, aggravate or prolong disease states, defines dimensions of such significance, that all those responsible for health care should be fully mindful of it.

This undeniable fact should comprise the basis of our professional posture and should represent the common denominator of our primary ideological, philosophical, clinical and investigatory approaches.

The human is biped and constantly stressed by gravitational forces. The pedal, or foot, foundation, pelvis and occiput are the equalizing balance units that are the most affected and critical in symmetrical weight bearing posture. Structural, postural, weight bearing symmetry in both anterior/ posterior and lateral spinal curves assumes the nerve root interference is structurally absent, thus producing a perfectly functioning spinal nervous system for ultimately healing potential

Because the upright biped human is continuously gravitationaly challenged; posture and spinal symmetry start at the pedal foundation. This symmetry is an architectural engineering fact, that is unequivocally accepted, in both human and structural engineering. The feet must be structurally balanced to form the stable foundation necessary for stress free, weight bearing, postural symmetry. Pedal balance is therefore an absolute MUST!!!

The implementation of postural symmetry correction involves complete structural symmetry from foot to head. We call this methodology Gravitational Pattern Alignment (GPA). This manual will detail the GPA scientific system of hands on adjustments required to achieve our goal of upright postural balance and symmetry, thus promoting the healing process.

CHAPTER THREE

HOW IT ALL BEGAN

In 1973, Otis Armstrong, Denver Bronco running back, was referred to my office by coach John Ralston, for treatment of a partially torn upper right hamstring muscle. In exam, the left ischium was significantly posterior and superior, as the biceps femoris was palpably unattached, swollen, hot, deformed and weak. Any attempted contraction was weak and severely painful.

There was a 1-1/2 " right short leg, with twisted pelvis and LAIN (left anterior innominate). Using blocks to balance the pelvic - sacral misalignment, I was able to balance the pelvis length to EVEN. I then duplicated the correction by using pelvic drop on hemi-pelvis, sacrum, ischium and a dropped navicular bone in right foot.

Post- correction, the pelvis and leg length corrected, Otis felt relief, and the soft tissue therapy began. Mr. Armstrong healed completely, and went on to become an all-pro NFL running back, never having hamstring issues again.

This was the birth of Gravitational Pattern Alignment (GPA), correcting the weight-bearing torso/spine/pelvis/foot led to Otis becoming equally balanced in the gravitational field in the upright position. Since 1973, I have given thousands of GPA drop alignments, fine tuning the technique while adding drop technique to foot and occiput/C-1,C-2 correction to complete alignment.

The historical theory and practice of treating disease is symptoms first, with little consideration of eliminating the cause of the condition. Treating symptoms is acceptable, but treating symptoms AND eliminating the cause of symptoms is ultimate. Using rest, ice, heat, stimulation, drugs, injections, surgery, etc., is purely palliative. For complete healing, the cause of disorder must be eliminated, then healing can begin, from the inside out.

Historically, conservative treatment for soft tissue injuries focuses on treating the soft tissue only, with little regard as to WHY the soft tissue failed! Was it weak, nutritionally poor, dehydrated, suffering from overuse, faulty structural weight-bearing posture? Perhaps all of these!

GPA gives you a different perspective! IT'S STRUCTURAL!!!

The skeletal system is held together by soft tissue. When the skeletal system becomes imbalanced and stressed by gravitational force, the soft tissue holding it together becomes overly stressed, misfires, and eventually FAILS!!!

We are trained to look at the affected area, but we are not trained to analyze and summarize what may have caused that unit to fail. When weight-bearing structure becomes gravitationally distorted - ALL of the body's pulleys, in synchrony, are detrimentally affected.

Otis did not suffer direct trauma to the hamstring, it tore as he made a running cut. Why???? He was in perfect physical condition and in NO way should have TORN a hamstring. But, with his pelvis, sacrum and foot distorted in weight bearing gravity, an increased stressful malfunctioning of muscles tendons, ligaments, fascia and cartilage was produced, thus soft tissue malfunctioned and failed. Period! Upon discharge, the cause of the damaged muscle, structural imbalance, and misalignment was corrected, and his muscle was 100% healed! Otis then went on to become an All-Pro football player.

As another example, consider a new knee or hip, why did it degenerate? Was it from an improper weight bearing position and just worn out from increased wear and tear? Why did it have increased structural wear and tear? Was the cause structural imbalance, and asymmetry of a weight bearing joint?

ABSOLUTELY!!!!!!

We can all relate to how a misaligned automobile will cause damage and uneven premature tire wear resulting in further damage. The body is similar, and skeletal misalignment will cause excessive wear and tear on knees and hips, resulting in ultimate failure. With an automobile, standard procedure is to first fix the cause, put the mechanical frame in alignment; then repair the shocks and replace tires. Yet for the body, the standard medical protocol is, to immediately, replace the hip or knee, disregarding any misalignment. WHY? Poor understanding? Ignorance? Money? Philosophy?

GPA first corrects the skeletal frame putting it into symmetrical weight-bearing alignment. GPA eliminates the cause and often eliminates need for surgery. When surgery is required, the established GPA alignment, prior to surgery, creates normal weight bearing symmetry in the ENTIRE structural frame, producing enhanced outcomes in any joint repair or replacement.

“Do all you can for your patients”, not JUST the standard procedure. Create treatment specific to your patient. Expand your knowledge and this will expand your care, enhancing your outcomes, and enhancing your reputation as a drugless, surgery free, healing hero!

Develop a program specific for each patient, do NOT force the patient to fit your program.

SAVE YOUR PATIENTS !!!!
HEAL YOUR PATIENTS !!!!

This manual and philosophy will teach you how.

CHAPTER FOUR

BASIS OF THE METHODOLOGY

”Gravity is working against me
And gravity is bringing me down”

Wow, when John Mayer wrote the lyrics for this enchanting blues song, we wonder if he knew the powerful impact gravity has on the human body, especially when bones or joints are out of natural alignment. John Mayer and Sir Issac Newton surely have something in common, as Newton's Third Law states:

"FOR EVERY ACTION, THERE IS AN EQUAL AND OPPOSITE REACTION"

The basic concept of GPA (Gravitational Pattern Alignment) derived from this very same law of nature and the effect on the human body. When any body part is out of alignment, gravity immediately forces the body to rebalance and this can create discomfort and dysfunction in a totally unrelated area of the body. Additionally, God designed the eyes to remain horizontal during all natural activities and the brain will make proprioceptive responses and attempt to hold the eyes level and perfectly horizontal, causing a profound impact on how the body compensates against gravity. The combination of structural misalignment, gravity, and level eyes will compound even a minor misalignment, taking a gradual, and increasing toll on body parts, creating symptoms that may not appear for weeks or even years. Multiple mis-alignments often exist and all must be corrected to achieve total body balance. Dr. Timothy Magg's has been studying structural imbalance in athletes and discovered that any imbalance in the standing position creates an environment for increased injuries, even in the absence of symptoms. As stated in Magg's Law, **"**When the loading of a tissue exceeds the capacity of that tissue, compensatory physiological changes occur".

The basic methodology of GPA is to first; investigate the entire skeletal structure and identify all unbalance, and secondly; to create a systematic procedure to achieve and maintain a balanced two-legged postural structure. When an upright structure is symmetrically balanced, relative to the downward stress of the gravitational field, previous discomfort will be profoundly decreased.

The goal of GPA is to correct, posturally, all structural misalignments that are involved with producing or allowing weight bearing postural distortions, thus creating a balanced upright biped. The fundamental concept is to understand that the pedal (feet) foundation is the initiator, as well as the endpoint, in all GPA postural corrections.

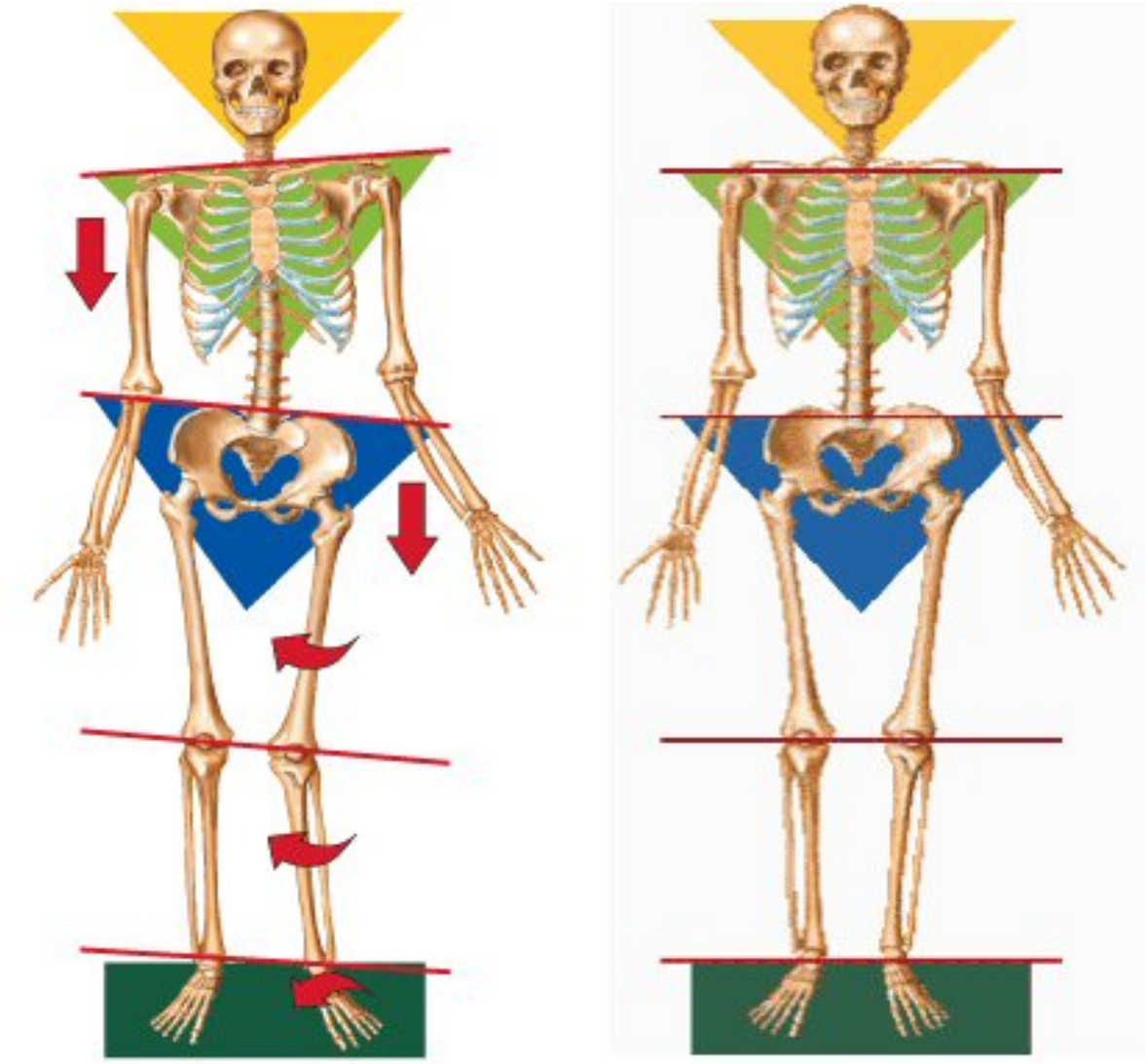
The desired outcome is to balance the weight-bearing spine into an upright, stress-free, posture. This balancing will eliminate stressful compensatory and non- compensatory, structural and functional issues that detrimentally affect normal functional activity, performance, balance, strength and flexibility ultimately leading to poor performance, repetitive micro trauma, injury and degeneration.

GRAVITATIONAL PATTERN ALIGNMENT

WILL

BALANCE THE UNBALANCED

TEN POINT HIT LIST



FEET - ANKLE - KNEE - HIPS - PELVIS - SPINE - SHOULDERS - RIBS -NECK - HEAD

WHAT DO YOU NOTICE ABOUT THE TWO SKELETONS ??????

Note that only one skeleton is balanced, yet both have horizontal eyes; illustrating that, most often, there will be multiple areas of unbalance. The GPA methodology identifies structurally unbalanced areas and systematically progresses through ten major compensatory points to achieve optimal balance. The balanced-man figure illustrates unbalanced areas and the ten-point pattern and examination/correction sequence designed to achieve a balanced outcome. The process of achieving pedal and postural correction, utilizes manipulative drop techniques, involving primarily the feet, sacrum, hips, 1st/2nd ribs and the occiput. Achieving postural balance is requisite before initiating any exercise regimen to stabilize and strengthen postural and core functions of the upright human frame relative to gravitational pull. It is imperative to note that peak functional human performance will be achieved ONLY AFTER weight-bearing, stress free, structural balance is achieved. To put it simply:

STRUCTURE FIRST – FUNCTION SECOND.

CHAPTER FIVE

GRAVITATIONAL BIPEDISM - THE FOUNDATION OF GPA

As Dr. Janse taught:

> "gravitational bipedism is the biological classic, that in man, the biped, there is an intimate, innate and homeostatic relationship between the biomechanics of the upright muscular-skeletal system, especially the spine, pelvis and neurological elements. The clinical premise of disturbance, or aberration, to this relationship creates dysfunctions in the pathophysiologic processes that strongly suggest the cause, precipitation, aggravation, or prolongation of diseased states. This theory defines dimensions of such significance, that ALL involved in health care should be fully mindful of it. The undeniable fact of gravitational effect on bipeds should comprise the basis of our professional understanding and must represent the common denominator of our primary chiropractic ideological, philosophical, clinical, and investigatory approach. We, as a profession, should stop impeding our own progress and discontinue the ego of locked in ideologies and undue emphasis on concept and technique methodologies".
>
> No Single Measure Is The Answer;

WHAT MORE CAN I DO FOR THE PATIENT ?

The human homeostatic process is greatly dependent on the incoming sensorial input of the multiple neurological elements. If the input is physiologically normal, then well-being is the end result. If the input is abnormal, then the consequence is dysfunction, discomfort, and eventually disease! Sensorial Input:

- The integument - sub derma and myofascial plane
- The synovial articular beds-both syndesmological and myological elements
- The (neurological) Special Senses- sight, smell, taste and hearing
- The Input from cerebral conjugations- emotional, spiritual and intellectual

According to Dr. Joseph Janse, human life is an expression of a coordinated reaction to stimulation of

body tissue, organs and systems via primary sensorial beds, elements and composites. NONE of these factors are independent of each other - For every emotion, thought, or action, there is a vascular, myological nervous and endocrinological reaction! PERIOD!

Every sensation is comforting or disturbing, restful or restless, and provokes a response.
The accepted neurophysiological facts dictate that homeostasis of any normal sensorial input produces a health and restorative modality.

Corrective manipulation in any form provokes a normalizing restorative benefit. Herein lays the reason why instinctively, empirically, and with effective conscience, the human has resorted to some form of manipulative therapy in his earliest attempt to provide comfort and release of distress. Well executed and corrrective manipulations of any type, soft tissue or structural, define benefit, and a commonality of clinical importance. Any corrective manipulative measure of bio mechanical or neurological relevance, from a structural or physiological corrective standpoint, has something in common with all other similar corrective measures. Thus, if this be the case, then all competently designed hand manipulations are acceptable in the art and science of a chiropractic adjustment. Bipedism and humanism are concomitant. Man is the exception as a biped. The upper extremities (forelegs) must be available for tooling and artistic dexterity, singular to human hands. The vertically held body trunk is imperative to the physical and concurrent mental activities of the human. In the human biped, more than any other vertebrate, the homeostatic process of health maintenance and restoration intimately depends on the efficiency and conduct of the osseous, muscular, ligamentous, discal, articular, and neurological elements that comprise the bio-mechanical complex of the spine, pelvis and pedal foundation. Any disturbance of this complex will cause imbalance of the structural and neurological element and dysfunctions will ensue.

This being the case, then spinosomatic, spinovisceral and even spinocerebral phenomena, MUST be strongly considered as fact, in evaluating and treating disease. All honest and intellectual authorities in clinical biomechanics now acknowledge that spinal intersegmental derangements are common pathomechanical events in the bipeds weight bearing spine. Considering the detrimental effects of gravity, vigorous fundamental activities will produce physical stress and strain, thus producing subluxation.

Bio-mechanical spinal subluxation, by any acceptable definition, is always attended by one, or more, of the following:

1 - Micro trauma and damage of the para vertebral components with likely eventual degenerative, proliferative and infiltrative changes that lead to nerve root entrapment and the development of dural sleeve adhesions.

2- Proprioceptive insult and strain on the ligamentous retaining mechanism involving the capsular ligaments, posterior annulus, and hyaline cartridge.

3 - Nerve root compression involving the attending vertebral segment, specifically foraminal encroachment, pathologies, degenerative arthritis, or spurs.

4 - Traumatic thickening of the capsular ligament, spurring at involved joints and deformed or narrow IVF's due to pars defect with segmental displacement (listhesis).

Consider, that proprioceptive insults have local somatic effects, as well as, through an abundance of synaptic overlap with vascular, visceral, cerebral and cerebellar reflexes, produce significant pathophysiological reactions that radiate to distant referred sites.

Continuing specific spinal manipulation, or adjustment, accomplishes the following biomechanical, neurological, and restorative beneficial effects:

1 - Mobilization and realignment of the vertebral segment within its motor bed.

2 - Freeing of entrapped adhesions involving the dural root sleeves and the IVF.

3 - Active physiological stimulation of the spinal proprioceptive, righting, and balance mechanism and reflexes producing intended biped, weight bearing, gravitational, symmetry.

4 - The augmentation of increased vascularization, to and from, the neuromeres.

5 - Stimulation of the cellular elements within the dural root ganglia and the spinal cord gray cell columns.

6 - Nerve root relief at the IVF level

7 - Physiological stimulation of the somatic and autonomic components of the ascending and descending spinal cord tracts including their connections to the brain stem, cerebellum and cerebrum.

8. - Homeostatic effect on the somatic- autonomic reflexes involved in regulating visceral activity and dysfunction.

Thus, any specific manipulative procedure has a definite and objective effect on the spinosomatic, spinovisceral, and spinocerebral phenomena, and cannot be discounted in evaluating and treating health care imperatives.

In conclusion, any specific spinal manipulative procedure, direct or indirect, qualified to make a restorative, corrective sensory input, is beneficial to health, and must be acknowledged for its clinical value. Any specific manipulation or adjustment that effectively mobilizes and realigns a vertebral, pelvic, or pedal segment, has primary clinical significance. Any method of qualified specific manipulation or adjustment that restores, or enhances, the biomechanical proficiency and integrity of the recumbent and upright musculoskeletal system, especially weight-bearing spinal gravitational balance, must be therapeutically acknowledged.

There are NO two identical spines or nervous systems. There are NO two identical reactions to manipulative therapy.

Always remember the significant, overpowering effect of gravity on the upright biped human and the resultant stress on structural, functional, neurological, endocrinological, physiological, and psychological factors may detrimentally affect normal healthy homeostasis. Always keep in mind that:

THE TECHNIQUE MUST FIT THE PATIENT

NOT

THE PATIENT FIT THE TECHNIQUE. .

CHAPTER SIX

GPA PROTOCOL – BASIC PREMISE

Basic philosophy of GPA is to determine, and correct, cause of structural misalignment in spine rather than treating just the symptom. Creating upright structural symmetry will result in correction of both the cause, and the symptom, even when there may be no apparent connection. Misalignment always causes muscles to compensate in an attempt to hold the body in a normal upright posture against gravity. When you are not structurally aligned this changes the origin and insertion of muscles to hold body upright, thus causing muscle and soft tissue changes to compensate for the wiight-bearing body not being symmetrically aligned with gravity. The body is designed to send constant feedback to the brain as to where it is in relationship to the forces being placed upon each joint, from gravity or other levers. Each joint mechanoreceptor gives continuous feedback (afferent nerve feedback) to the brain of how gravity is pulling on the joints and muscles. The body in return gives feedback (efferent feedback) to stabilize the body against gravity by adjusting muscular tension and length in order to respond to the structurally altered weight bearing structure. Inherently, three key proprioceptive areas must have stability in order for the body to maintain a structurally aligned posture; the feet, the sacrum, and the occiput. Based upon proprioceptive input received from these areas to the brain, the body will structurally deform to hold the eyes level with the body in an upright weight-bearing position against gravity. Long-standing over-activation of abnormal joint stimuli produces change in spinal cord memory that eventually “burns a groove” in the CNS as the brain and cord are unknowingly saturated, with a constant stream of inappropriate proprioceptive information. Regrettably, the brain comes to rely on this faulty, weight-bearing feedback that determines established posture. The brain simply forgets the proper innate alignment. (Plastic Deformation).

This upright compensation results from the brain causing the body to keep the eyes horizontal. The ongoing compensation patterns, created to keep body aligned with gravity, will also lead to decreased function, strength, and ROM. Signs and symptoms of this often manifest in the patient body as: fasciitis, tendonitis, trigger points, tight muscles, referral pain, decreased coordination, imbalance, decreased eye hand coordination, headaches, numbness, tingling, inhibited tight muscles, muscle weakness, atrophy, joint pain, depression, psychosocial disorders, and mood swings, etc.

Structural alignment goes hand in hand with muscle length and position. In order to achieve the maximum potential of a muscle group, it must be symmetrical in length. This allows the muscle to provide equal recruitment and proprioceptive feedback to the brain via the peripheral nervous system. The job of skeletal muscles is to stabilize the articular structures by changing its tension to accommodate the given biomechanical movement or isotonic position of the joint. When the joint changes position the muscle must respond by changing tension. Thus initiating the theory that muscles can be turned on and off depending on joint alignment. If the structure is mis-aligned, muscle tension will remain for joint stability. Or, muscle groups will be inhibited in order to keep the body aligned with gravity. This can cause muscle groups or individual muscles to overwork, or underwork, and tear, form adhesions, trigger points, etc. In order to have maximal muscle proprioception and recruitment, the articular structures of the upright body must be symmetrically aligned with gravity.
It is important to note that when the body is out of structural alignment, exercise will produce uneven and uncoordinated muscular activity due to the bilateral asymmetrical lengths from joint malpositioning, thus producing uneven cartilage erosion and plastic deformation. Therefore, it is imperative to determine and correct the structural cause, in order to prevent injury and retain optimal function.

Furthermore, in all one sided sports (racquet sports, baseball pitchers, quarterbacks, golf etc.) athletes will develop a unilateral pattern, depending on which side they repeatedly use. This will create a structural pattern that can be seen in the entire biped structure. It is important to note this for treatment purposes, as well as, teaching the athlete to use both sides of the body. An example of this for a golfer would be as follows: if they are right-handed then every time they play, they need to break their pattern by swinging the club left sided in order to balance the musculoskeletal pattern on both sides. This will add stability to the individual's biomechanical structure because it is correcting and balancing the one side pattern. Extreme one-sided patterns are unstable for biped athletes, leading to stability issues, decreased functional performance, and increased risk of injury. Non-extreme sport specific patterns should not be changed, if they provide stability/ balance for the athlete's specific position. (e.g. - as seen with punters: increased lumbar lordosis and pronation/ talus drop of plant leg/balance leg)

Our goal is to create bilateral weight bearing, structural postural alignment. Further consideration is a concern that nerve and innate healing energy is disrupted when the weight-bearing spine is distorted and dysfunctional

LESS BIOMECHANICAL STRESS = MORE HEALING

As stated by Dr. Kevin Hearon, founder and president of Council on Extremity Adjusting:

"The stability of the spine is dependent on the stability of the extremities, and vice versa.

As a patient, you can have a perfectly aligned spine and still experience severe discomfort that may result from misalignment in your extremities. Misaligned extremities put additional pressure on the tissues around the joints, causing subluxations (dislocations of the joint). A spinal adjustment will not fix the root cause of the subluxation, which is a misaligned extremity. Having a properly aligned spine AND extremities, puts the body on the path to optimum health and performance”

CHAPTER SEVEN

BASIC CLINICAL PROTOCOL - I

IMPORTANCE OF VIDEOS

As you study this manual, please keep in mind that the videos are an integral factor and must be studied carefully. Many GPA techniques and sequences have subtleties that must be viewed in order to gain complete understanding and mastery.

QUICK-TWITCH RECOIL TECHNIQUE - (QTR)

Many adjustments are more effective using QTR to avoid trauma to patient. QTR is performed using assisted drop with body involvement to initiate the table section drop as your hands follow through with a low-pressure QTR adjustment at end of drop. This is a dynamic adjustment, created primarily by gravity from table drop and body weight, and not initiated and/or forced by hands, as this could apply excess pressure to contact area and could be traumatic. This QTR technique mobilizes the structure as your

hands make contact at end of drop, or when hands initiate corrective effect at end point. It is important to avoid excessive downward pressure, on the patient before initiating drop. Excessive amount of force can potentially cause injury. (See video 47)

INTRO TO CLINICAL EXAMINATION

When examining a patient, it is crucial to be the "complicated doctor". This means that the body cannot be categorized, as Dr.Janse stated:

> "Man the sentient sensorial organism, will not and cannot be totally categorized, indexed and classified. Always he will demand individual interpretation…The one cause, one cure, concept whether in chiropractic or in other primary health care professions is most limited in its realities. Most human ailments are a mosaic of etiological factors, that vary with the individual and the genetic, environmental, social, emotional and personality circumstances." (From Where I Stand, Dr. Janse).

This places the Doctor in a position to get to know the patient at all levels. The disease process is not limited to one thing. Each patient will need INDIVIDUAL treatment. Do NOT treat everyone the same. Look to guide them in physical, emotional, and spiritual aspects of their well-being. All of these factors are key for the patient to get the maximum results and have optimum function in their daily lives. Give patients the best care possible, do NOT limit your treatments because of ignorance. You are ethically obliged to give the best care possible. The GPA is system is set up to give you a system to examine and treat the biped structure as a whole not just segmentally and physically. Remember according to Janse,

> "Always, it must be kept in mind that the technique must fit the patient, NOT the patient fit the technique."

When the human structure is misaligned due to upright gravitational imbalance, starting and ending at the pedal foundation, the origin and insertion of muscles become abnormally altered. Those affected muscles then develop an abnormal memory pattern that evolves to plastic deformation. With the constant presence of downward effect of gravity, the upright human structure, when not in weight bearing right/ left or anterior/ posterior midline symmetry must constantly adapt by innate involuntary compensatory changes to maintain equal and symmetrical balance. These adaptations constantly correct each other in all upright postures, producing stress interferences that inhibit perfect balance, perfect function, and ultimate performance, while increasing susceptibility to INJURY and poor health.

Basic GPA Compensatory Adjustment Pattern

Posture and Gait

Perfect Structure-> Perfect Function ->Increased joint flexibility and Range of Motion-> Increased strength->Enhanced health-> Perfect Performance = minimal injuries with ultimate performance.

Posture and Gait: the standing posture, combined with the missteps in gait, give excellent clues but also establish pre correction structural and functional faults that form a baseline to compare to the finished product.

The human upright gravitational alignment is not perfect, and will vary from biped to biped. The pedal foundation is the alpha and omega of potentially perfect upright balanced posture. It initiates the start of the body's response to gravitational pull. Always start treatment with the feet unless positive Derifield complication, then correct non-compensatory complication, using speeder board and additional techniques to align feet or occiput/upper cervical

Check pedal dorsiflexion and plantar flexion for ROM, unnatural tracking, elicited pain and palpable abnormalities in Achilles' tendon and gastrocnemius, as well as first toe (flexor hallucis limitis) and metatarsal pattern. Check for calcaneus supination and arch pronation, understanding that the heel will supinate to elongate the lower extremity or correct a short leg. Likewise, when a foot pronates, it may be attempting to shorten a long leg situation. While examining the feet in either prone or supine position, always perform a Derifield test, turning the head in right and left rotation, while noting any change in leg discrepancy. If there is a change, positive Derifield, then a non-compensatory pattern is present that complicates compensatory GPA, and must be corrected first, before continuing the pattern correction. This is usually remedied with a right posterior, superior occiput / left posterior, C1 correction, and/or pubic drop on restricted hip or painful anterior pubic bone. Remember to line up occiput to the same mastoid angular degree of deviation and do not go past 45 degrees in cervical rotation. (N.B: it is critical to view videos for this adjustment.) Then and only then, do you correct the left rotated C1. This will balance and equalize the mastoid bone disparity while also aligning the TMJ's. (Per Dr. Hearon). Next, adjust TMJ accordingly; mobilize with quick twitch decompression adjustment, bilaterally. Palpate TMJ near shallow inferior ear lobe. Have patient open and close jaw. Retest after adjustment. (See video 44)

Next, look for typical pattern of correction:

Right navicular dropped and painful palpation
Right calcaneus posterior
Left talus anterior and medial with decreased dorsiflexion
Left hemi pelvis posterior-superior
Right hemi pelvis anterior- inferior
Left ischium posterior-superior
Sacral apex left and posterior
Thoraco Lumbar junction locked due to transitional compensation from misaligned pelvis,
C1 posterior on left
Involvement of first and second rib
Occiput superior and posterior on right side
TMJ co-ordination (per above)

Remember, you must fix the complicating, non-compensatory factors before you fix the normal compensatory weight-bearing pattern.

1. Carefully observe standing posture and gait, this will provide clues for GPA sequence.

    ● Foot mechanics: supination/pronation/flaring/irregular gait

    ● Pelvis/hip level, movement, and position

    ● Anterior forward loading lower extremity with looping gait

    ● Occiput rotation/tilt/ear level

    ● Shoulder height shift and rib elevation

    ● Uneven non-horizon eye level

    ● Non-symmetrical rib cage below ribs 1-3, or spinal curvature

    ● Hand position (rotation and height)

    ● Irregular gait

Feet – Patient Prone

1. With patient prone on table, examine feet, view video for more details.:

    ● Heel/Achilles tendon rotated inwards/supinated indicates short leg side.

    ● Check Achilles tendons for tenderness and compare the prominence and tightness of both. The more pronounced tendon is likely the side that needs the navicular / calcaneus adjustment.

    ● Also, with patient in prone position, check the foot arch flexibility by placing toes against your body and observing amount of arch flexion while plantar flexing the foot. Restricted arch movement indicates dropped navicular and/or cuneiform. Typically, the tender Achilles will be the restricted side that needs the navicular and calcaneus adjustment.

    ● Palpate the dorsal surface of the forefoot, look for pronounced or high talus, which indicates a superior shift, that requires a supine downward drop of talus.

    ● Using Thuli drop board, adjust navicular, cuneiforms, 2nd metatarsal head and cuboid, then calcaneus; make sure to pronate the foot during the calcaneus adjustment. Traction the heel towards you, plantar

flex, during the arch adjustment. This drop alignment will always alter leg length at the pedal level, and instantly change leg length discrepancy. (Study video 45 for technique)

● Check hallux of great toe for flexion and extension motion, by fixating the proximal base, then performing flexion and extension.

1) Adjust big toe accordingly. (See video 46)

Prone Examination

1. Check leg length and perform Derifield test to rule out occiput, C1-C2, hip, pubic involvement or traumatic injury.

● With knees bilaterally flexed at 90 degrees, Positive Derifield test is indicated by change in leg length when head-neck is rotated right and left. The neck ROM that evens leg lengths, is the direction to adjust the neck ***before*** performing the compensatory postural correction.

1) Derifield test can be performed with knees flexed or straight legged.

● If Derifield is positive; with patient prone, perform cervical rotation, observe equalizing leg lengths during rotation. Adjust occiput and/or neck accordingly to equalize leg lengths. (See video-1).

1) Occiput / C1 can be adjusted prone or supine with QTR or activator.

● Repeat Derifield test: if still positive (Double Derifield), adjust internal rotated restricted hip and/or painful elevated pubic bone. (see video-2).

● Repeat Derifield, if still positive, wait 24 hours, then re-test and repeat above. Derifield will rarely persist unless a permanent structural deformity exists, or adjustment was incorrectly performed.

2. Check knee flexion. Unequal ROM indicates pelvic rotation, knee pathology and dysfunctional quadriceps.

● Increased knee flexion will occur on anterior pelvic side.

● With patient prone, place wedge block under anterior pelvis, then retest. Knees should have equal ROM.

● If flexion is equalized with wedge, adjust accordingly per video-2. Adjust left anterior innominate (LAIN) and left posterior hemipelvis or elevated ishium. Remove wedge and drop- adjust left sacral apex. Knee flexion should now equalize without wedge.

3. Again, check knee flexion without wedge; if not equal find the non-compensatory complication:

● Occipital, upper cervical, 1st, or 1st and 2nd rib involvement.

● Misaligned feet.

●Pubic bone involvement.

● Dysfunctional knee.

● Non-compensatory pelvic shift.

● Retrolisthesis of L4 – L5.

● Spondylolisthetic L4 or L5.

● Dysfunctional hip joint and pubic bone. (See video-3)

Perform assisted drop of the hemi-pelvis, sacrum, and ischium per video-3.

● Confirm proper alignment by re-palpating pelvis and spine, looking for bilateral symmetry. Leg lengths – should now be even. Knee flexion - should also be equal. (See video-4).

4. Confirm the deviation of the sacral apex

● NOTE - deviation is predominately left and elevated; the pelvis rotates right anterior, but the sacral apex elevates and deviates to the left.

● Use assisted drop to correct right anterior rotated hemi-pelvis, using left hemi-pelvis as contact point.

● Decompress sacral apex with pressure and perform quick-twitch recoil assisted drop of left sacral apex.

NOTE – Imperative to use quick-twitch recoil adjustments (QTR), not deep pressure adjustments. (See video 47)

● Finally, perform assisted drop on left posterior-superior ishium, with contact on left ishium. (See video-5)

Lumbar Evaluation

1. With patient prone, perform downward digital pressure palpation on spinous processes and transverse processes, starting at L5. Pain response indicates anterior-posterior or rotational involvement of each vertebra. If inclined, perform muscle test while palpating.

● If painful anterior spinous process, then turn patient supine and muscle test anterior deltoid, as you slowly flex the lumbar spine. Deltoid weakness indicates level of lumbar involvement. (see video-6). If vertebra is anterior or spondylolisthetic, perform knee chest assisted drop at lumbar level where the anterior deltoid tested weak. Adjust and retest for remarkable results.

● If a rotated lumbar vertebra is present, posterior transverse process will be painful indicating posterior rotation. Place wedge under the posterior pelvic side and perform inspiration – expiration recoil drop on posterior transverse process. (See video 47)

● Re-palpate and experience less pain and less palpable posterior transverse process and no muscle weakness during muscle test. (See video-7).

● Perform motion palpation from lumbar to atlas noting and correcting vertebral fixations.

● Patient remaining prone, stand at head and place bilateral index contact at all levels of the cervical spine and gently thrust downward. In compensatory state, the C4 - C5 vertebrae will mobilize (click) painlessly into normal position.

CHAPTER EIGHT

BASIC CLINICAL PROTOCOL - II

Supine Examination

1. Examine leg lengths.

● Check Talus movement and position with plantar/dorsiflexion. Restricted dorsiflexion usually requires a manual, or drop, talus correction. (See video-8).

a) – Talus usually shifts dorsally, but may also drop with navicular.

● Check heel pronation and supination - adjust accordingly

● If heel supinated, use speeder board to adjust calcaneus per video # xxx. With hip flexed and abducted, knee bent with foot laying flat on table, adjust calcaneus.

● Recheck calcaneus for increased ROM and position.

2. Check patella/tibial alignment.

● Tibia should line up on outer 1/3 of patella; if not, first adjust talus. Talus drop or traction thrust adjustment often realigns the proximal tibial positioning. (See video 48)

a) Weight bearing proximal tibia is always affected by foot misalignment.

3. Check internal/external rotation of hip. (both supine and prone).

● Perform assisted drop of pubic bone on side of internal hip rotation-restriction, then re-test for increased internal rotation, usually a dramatic change.

a). If performed correctly, results are phenomenal.

● Adjust the most elevated and sensitive (right or left) pubic bone with gentle assisted drop. NOTE – ask patient for permission before touching pubic bone. After drop, recheck ROM of hip.

● Must use assisted drop on side of internal hip rotation restriction with hip in abduction and internal rotation contacting pubic bone of same side to increase internal hip rotation range of motion, correcting the acetabular malpositioning. (See video 3)

a) CRITICAL – perform *only* assisted drop in this very sensitive area.

4. With patient supine, if indicated by anteriorities, motion palpation, or excessive Kyphotic angle; adjust thoracic spine with patient arms crossed-on-chest technique. Or, perform sitting 'thoracic tonic' adjustment, with or without folded towel. (see video-9).

● Spine and ribs must be relaxed, do not over flex thoracic spine. Adjust table height to your comfort and control level. While standing, bend over onto patient with folded arms, ask patient to sit-up (do not lift patient) place hand and elbow (bent elbow) under patient, with hand cupping patient neck with other arm under patient torso. Rock gently, feel patient relax, then then push body down with base of hand adjusting into spine. (MUST see video-10)

● With patient sitting, standing behind, look down spine from head to pelvis to evaluate convex and concave rib angles, or scoliosis. See Video # new. Standing behind patient, reach in front, take hold of

opposite wrist, place adjusting hand on posterior, convex ribs, then rotate thorax and adjust ribs, or spine with contact hand while in assisted rotation. If posterior convexity noted in spine, or ribs, repeat on other side.

● These findings may indicate impingement, AC involvement, C5-6 nerve involvement, thoracic outlet syndrome (TOS), scoliosis, or shoulder girdle involvement.

● With patient sitting, palpate thoracic outlet anatomy for first rib, second rib, clavicle, and scapula malpositioning. Perform assisted drop in sitting position for elevated first or second rib.

a) First and second rib adjustment may also be performed in supine position. (See video 42)

b) Activator or impax adjusting tool may also be used to perform these adjustments. However, final structural correction may take longer.

c) Remember, this rib alignment is most probably a compensatory change as a result of structural misalignment. Make sure to adjust in sequence of structural compensation.

● Absolutely do not flex cervical spine in the sitting thoracic “tonic” position, or an injured ligamentous nuchae may occur.

5. Palpate mastoid bones for occipital deviation and atlas rotation:

● May possibly be related to positive Derifield Test.

●Adjust accordingly per Derifield Test. (See video 49)

a) Remember that occiput / upper cervical is at the end of the compensatory chain and should be corrected first, ONLY IF confirmed by a positive Derifield test.

● Occiput/C1 can be primary as a result of trauma or an abnormal congenital variant.

● Adjust accordingly, per occipital angle shift, utilizing short Quick Twitch Recoil (QTR), thrust. Use hand QTR with minimal arm torque. Never rotate chin more than 45-degrees. Do not push through! (Must see video-11)

● Palpate TMJ (just anterior to ear lobe) while opening and closing jaw and adjust cephalad to caudad using light touch QTR on posterior-superior TMJ. (See video 50)

● CRITICAL - Adjust palpated pattern of occiput then, C1 or C2. This complex goes together, always look to correct occiput imbalance last, unless Derifield test indicates upper cervical correction first or a primary condition created by trauma. Remember, limit neck rotation and do not exceed total chin rotation

of a 45-degree adjustment. If Derifield indicates, the C1 (atlas) may require correction prior to occiput adjustment. (See video-12).

a) After correcting the positive Derifield finding, restart alignment at pedal foundation.

6. Remember the facet facings of the spine with this acronym:

BUM-BL-BM (C-T-L).

BUM = Cervical: Backward, Upward and Medial.
BL = Thoracic: Backward and Lateral
BM = Lumbar: Backward and Medial

a) Always adjust along facet facings. (BUM – BL – BM)

b) When ready, the vertebrae adjust easily into their natural pattern. When not posturally or GPA ready, the segment will NOT easily adjust, so DO NOT force it.

1) A proper segmental adjustment HEALS, an improper adjustment HARMS.

c) Non-compensatory complications, (caused by trauma, deformities, etc.), must be addressed first, before proceeding with compensating GPA.

Sitting Examination (on level table)

1 - Standing behind patient, check level of SC joint, scapular positioning, and 1st and 2nd ribs.

● Correct primary cause, the starting point of misalignment before correcting misalignment. Be a GPA detective, do not simply treat symptoms only, find and eliminate the cause.

2 - Muscle test anterior deltoid and perform assisted 1st and 2nd rib drop. (see video-13).

● Re-test anterior deltoid, increased strength confirms correction.

● Adjust T3-6 ribs as palpated and tested with patient supine, or sitting. Remember that ribs 1-6 are bucket handle and can be adjusted sitting, prone, or supine. (See video technique-14).

a) Patient supine with straight arm extended and upward and shoulder girdle elevated. , grasp patient's closed fist and press downward or anterior to posterior.

i) Per Dr. Hearon, this tests serratus anticus muscles; weakness indicates need to correct rib involvement. Adjust per video 51

3 - With patient sitting and spine facing you, adjust elevated scapula using assisted drop, after adjusting 1 & 2 ribs. (See video-15).

4 - Test coraco brachialis muscle to determine acromio-clavicular (AC) involvement.

● Per Dr. Hearon; stand behind patient, grasp elbow with arm in 15-20 degree flexion. Pull elbow toward you. (See video-16).

a) pain or weakness indicates AC involvement.

5 - Re-test anterior deltoid and coraco brachialis muscle; observe for shoulder symmetry.

6. High clavicle, high scapula indicates impingement and requires adjustment of ribs 1-3 on involved side. Before correcting scapula deviation.

NOTE: In a compensatory scapular-clavicle shift, usually low left scapula and elevated SC joint; place patient prone and adjust scapula accordingly; only AFTER balancing and adjusting feet, pelvis, and hips.

● High clavicle, low scapula on same side is compensatory. Have patient place back of hand on low back (or internally rotate shoulder and flex elbow). Perform assisted TAP drop contacting inferior border of low scapula. (see video-17).

● Low clavicle, low scapula on same side, is either C5 nerve root or AC joint involvement.

a) C5 nerve root = Levator scapula not firing on involved side.

b) AC, acromio clavicular = Separation at AC allowing clavicle and/or scapula to deviate inferiorly.

HELPFUL HINTS:

NOTE: The feet are married and in a constant relationship. Balancing the pedal foundation balances the spine. Remember, examiner should be looking for:

- Flared foot
- Prominent Talus
- Calcaneus supination, or foot pronation
- Dropped arch
- Limited, or excess, range of ankle motion.
- Proper heel movement.
- Proper arch spring.
- Achilles tendon tension
- Unilateral genu valgus = leg attempting to get shorter. (Knock-Kneed)
- Prone pelvic shift
- Shoulder girdle distortion
- High – Low ear
- Uneven eyes
- Asymmetrical rib cage
- Uneven face
- Proximal tibia shift
- Patellar positioning
- Briskly shaking head when dizzy, indicates

patient attempt to adjust upper cervical vertebra

- Big toe restrictions
- Genu varus = leg attempting to get longer (bow legged)
- Uneven hips
- Distorted spinal curvature

MAGICAL RESPONSE ADJUSTMENT: In prone position, perform downward digital pressure of the lumbar spinous process confirming vertebral positioning with muscle test. If you get elicited pain response, graded as 3-5 (scale 0-5), perform specific assisted drop for spondylitic or posterior shift at that vertebral level. Likewise, painful digital pressure on the lumbar transverse processes indicate vertebral rotational malpositioning; test and adjust accordingly, with a wedge under pelvis of posteriorly rotated segment. (Must see video-18).

1. If tender, with patient supine or prone, muscle test for vertebral segment involvement. (see video-19)

2. Perform assisted supine drop accordingly for Spondylo/anterior lumbar shift.

3. Perform prone assisted drop for posterior / retro shifting lumbar vertebral segment.

4. Palpate and test lumbar transverse processes for tenderness. Place wedge under pelvis of posterior rotated vertebrae and adjust accordingly. (per video-20). Remember to perform inspiration/expiration technique. (see video-21).

5. Impax or activator adjustment is less effective, but appropriate.

SUMMARY

NOTE: Usual compensation pattern is a right short leg with a right anterior pelvis; anything else can be considered non-compensatory to normal GPA pattern. ALWAYS fix non-compensatory or complicated finding first, before proceeding through pattern.

CHAPTER NINE

BASIC CLINICAL PROTOCOL - III

STANDING

Foot-lift muscle test: Perform foot lift test by having patient stand without foot lift. Perform muscle test with elbows up and forward, fists together and pressing down on forearms. (Option is to perform muscle test of your choice.) Reactive test will be weak and patient will easily lose balance and strength. Next place foot lift under appropriate side and again perform muscle test. Add or decrease foot lift until maximal strength and balance are achieved. Re-evaluate using foot lift before ever adding any lift to structural short side. (see video-22).

● Foot lift instead of heel lift to eliminate anterior pelvic shifting and corresponding lumbar facet jamming on involved side.

● Foot lift preferred instead of heel lift. Foot lift eliminates same side anterior pelvic shift, or foraminal facet encroachment, produced by using heel lift only.

● However, if muscle test indicates, then heel lift may be appropriate when lowered hemi-pelvis needs to shift anterior.

1. Supinated calcaneus with same side anterior pelvis will indicate short leg in standing position with probable varus deformity of knee, (leg attempting to get longer) with anterior pelvic shift and corresponding posterior femoral head and acetabulum compensatory positioning. (see video-23).

2. With patient in supine or prone position, calcaneus on short leg side will supinate.

a) Heel supinates in an attempt to lengthen the short leg and establish gravitational equilibrium.

3. With patient supine, observe static short leg medial malleoli level by placing thumbs under the malleoli of each foot. Dorsiflex feet noting restriction of motion, pain, and talar shift.

●Flex knees to 90-degrees, with feet flat and symmetrical on table. Observe level of patellas to indicate short leg. (Derifield can also be performed at this time.)

4. With patient prone, check leg lengths then perform Derifield test by flexing knees and observe any length deviation. Then perform right or left cervical rotation and note change. Place wedge block under anterior pelvis and re-test to confirm that anterior pelvis needs to move posteriorly. Left hemi-pelvis drop adjustment indirectly elevates the anterior pelvis. Derifield test can also be performed in non-flexed knee position.

● Adjust dropped navicular cuneiform. Then adjust posterior calcaneus, then re-test Derifield.

● If the leg lengths switch, than have patient look right and left, to determine which direction equals out the legs. To equal leg lengths, adjust neck rotation, pubic bone, or ribs accordingly, depending on complication indicated. (see video-24).

5. If there is a positive Derifield, adjust occiput or C1 towards side that equaled out leg lengths. In most cases, a right posterior superior occiput is present. Head rotation depends on the degree of posteriority of occiput, i.e. if the occiput is 40 degrees posterior then rotate the head and chin 40 degrees left. The occiput adjustment follows the condylar angle of the occiput on the left atlas lateral mass. Line of drive always follows facet angle. A controlled thrust should isolate occiput/atlas complex without adjustment to the remaining cervical spine. Adjustment must be vertebrae specific. Adjust occiput first if Derifield indicates, (see video-25). Re-check, Derifield short leg. Adjust along articulation or joint facet angle.

● Most often Derifield corrects with left cervical rotation and a RPS (right posterior superior) occiput correction.

● Do not go beyond 45-degree head-chin rotation.

6. Remember our acronym for facet facings of the spine:

BUM-BL-BM (C-T-L).

BUM = Cervical: Backward, Upward and Medial.
BL = Thoracic: Backward and Lateral
BM = Lumbar: Backward and Medial

- Adjust above accordingly, along facet facings, NOT jamming facet facings.
- Much more effective at times to adjust thoracic spine with patient supine. (See Video xx)
- Adjusting against facet facings will damage hyaline cartilage.

7. Trauma, deformities and pathology will complicate compensatory GPA findings.

Next, proceed with GPA pattern.

PRONE

1. With patient prone, assess tension on Achilles tendon when ankles are dorsiflexed. First, visually examine for a thick and protruding Achilles tendon; then assess for tension and subjective palpatory pain of each tendon up to gastrocnemius by lightly squeezing.

2. a) Perform prone arch assessment, with examiner standing; by placing distal metatarsals on your torso and grabbing bilateral heels and flexing arch. In a normal arch, you should see the skin folds of the arch move freely when flexing the arch. A fixated arch reveals less movement and less folds, along with a dropped navicular and/or cuneiform, also with tenderness of Achilles tendon.

b) Take note of an increased forefoot/toe angle on long leg side. Equal forefoot/toe angel indicates equal leg lengths.

CAVEAT – Remember, this pattern is a cause of plantar fasciitis, Achilles tendonitis, and turf toe, as well as spinal curvature. Changing the leg length will ALWAYS change the postural weight-bearing curve. (See video-26)

3. Asses the great toe by placing thumb at base of first metatarsal head with the thumb on the plantar side and the remaining fingers stabilizing the dorsal side. The other hand will test the flexion of the big toes by checking ROM with digital pressure at the base. Normal response is painless free motion. In turf toe and other great toe issues, the toe may be rigid, swollen and painful when attempting to flex. NOTE: when the big toe loses motion, or Windlass mechanism, proper foot mechanics are detrimentally affected. Great toe involvement is secondary in GPA compensation pattern. Unless there is a direct trauma to the toe, Windless is a reaction rather than the cause of dysfunction, and will involve the navicular, cuneiform, calcaneus and talus.

4. Check for dropped, or elevated, talus and metatarsals, which indicates loss, or excess, of transverse arch. This can be done by palpating for transverse arch: flat arch indicates the metatarsal head and talus have dropped and pronated; deep arch indicates superiorly shifted talus, (High arch).

- With knee bent, adjust elevated talus in supine position using thrust or drop board. (See video 52)

5. Usual pattern adjustment begins with right dropped navicular. In order to adjust the navicular, use an extremity drop speeder board by Thuli, with patient prone. Set the drop with proper tension and place dorsum of foot flat on board. With stabilization hand, firmly traction heel towards you and inferior, stressing the arch into flexion. With a lightly closed fist of free hand use a snapping, punch-like motion to strike arch. (see video-27). A proper adjustment will cause navicular to shift into normal position. Also, during initial molding of feet, look to tap cuboid and cuneiform, this will help stabilize arch. Always retest. The goal is a balanced pedal foundation and the barometer of normal is equal tension in Achilles tendons.

- activator or impact adjusting is also acceptable, but not as effective.

- When possible, have an audience, a friend, or family member, witness the dramatic and immediate results. They, along with the patient, will become a referral source, as well as a potential patient.

    a) Always explain your procedure, in detail, to patient. The more they learn and relax, the more they refer. You are the Chiropractic Investigator. You are the “Comprehensive Chiropractic Bioengineering Expert”, specializing in GPA.

6. With patient prone, adjust the posterior calcaneus. Place Thuli speeder board underneath the distal shin, just above the talus. (Remaining ankle should be hanging off the board and table). Gently dorsiflex and pronate the foot. With the other hand, you will adjust the posterior aspect of the calcaneus downward using a motion adjustment and hitting the heel with thenar pad. Using an adjusting glove is optional and highly recommended.

7. With patient prone, observe if a non-weight bearing short leg exists and if there is a supinated calcaneus. Flex the foot to assess restriction of plantar arch flexion. Drop adjust the foot based on your restriction and asymmetry findings, then re-evaluate both feet. Note that following proper foot drop correction, the leg lengths ***WILL*** change. Then forcibly dorsiflex the foot and observe for medial deviation shift of the talus, indicating unstable arch, or an elevated dorsi-shifted, jammed talus.

- Changing leg lengths at foot level instantaneously changes pedal foundation and upright structural balance.

8. With patient prone, examine the pelvis. Typically the left hemi-pelvis will position posterior and the right hemi-pelvis will position anterior; i.e. the left pelvis will be high and the right will be low with a right short leg and right dropped navicular. To confirm this you will take the following steps:

- Have the patient reach back and place the palms of their hands on their buttocks. Have the patient feel that one side is high and the other is low. There will be a noticeable pelvic un-leveling and elbow deviation. Use level per video-28.

- Measure pelvic deviation using a level across pelvis.

- Next, palpate the ischium bone, typical GPA pattern is left posterior / right anterior pelvis with high left ishium and low right ishium, which is considered a hemi-pelvic shift that stresses the lumbo sacral joint. Palpate sacrum, noting deviation of apex, typically left, with the ischium left posterior and superior.

- After drop correction there will be an immediate re-positioning and leveling that equalizes knee flexion.

- After drop correction, always have patient re-evaluate themselves. Also, re-test knee flexion.

9 - With patient in in prone position, put your hand on pelvis and gently rock the pelvis side to side while palpating for movement in the lumbar, thoracic and cervical spine. Adjust fixations accordingly to restore vertebral range of motion. While palpating, notate distortions in vertebral and rib positioning, including anteriority's, congenital defects, soft tissue lesions, spasms, asymmetrical rib cage (scoliosis) and sacroiliac fixation. NOTE: Adjustment explained on video-29.

Prone evaluation continued:

10. In order to confirm the problematic rotation of the pelvis, check the quad tension on both the right and left leg by flexing the leg gently (do not stretch) until you feel tightness, (considering knee arthritis and structural anomaly). If the pelvis is anterior, that side will flex more than the posterior pelvis side. Measure the ROM difference of leg flexion by observing distance from heel to buttock. The greater the distance between the right and left flexion, the greater the rotation of the pelvis. If ROM discrepancy in knee flexion, then put a block wedge under anterior hip and re-test. If wedge equalizes ROM, then perform assisted hemi-pelvic drop (adjust accordingly). Whichever maneuver produces equal knee flexion ROM dictates which side to place wedge when making your body assisted drop-correction. Perform assisted drop-correction of rotated pelvis, high ischium and deviated sacral apex. Most predominantly present are: anterior right pelvis, high left ischium and left deviated sacral apex. (See video-30) NOTE: Eliminate non-compensatory objective findings before proceeding to compensatory alignment.

- Adjust anterior pelvis and ishium with block wedge. Adjust sacrum without block wedge.

- Re-check to confirm 'instantaneous' changes to patient.

- Remember, correcting a structural short leg, using foot adjustment, will increase overall height by 50% of short leg measurement. Producing an arch, elongates the leg length, increasing overall height.

- In prone position, flex the knee, hold foot and internally/externally rotate hips while palpating the PSIS and SI joint.

NON-PATTERN CORRECTIONS

1. Now with patient in supine position, check the tibial tuberosity position in relation to the patella (tibial tuberosity must be outer one-third in relationship with the patella.) Then check foot dorsiflexion to determine talus shift or fixation that is present in dorsiflexion. Adjust talus on medially rotated tibia side with a distraction pisiform thrust of talus, or drop board, to correct the tibial rotation at the knee. Make sure to reevaluate the foot exam to insure proper tibial alignment and foot range of motion. (Remember, a significant chronic weight

bearing issue will lock the talus position and make drop or distraction manipulation very difficult, so repetitive visits and adjustments may be necessary to achieve pedal balance and stability).

- Also perform dorsiflexion correction using speeder drop-board technique on the talus bone. (See video 43)

2. Always observe weight bearing position of occiput and eye level, uneven shoulder girdle, and irregularity of 1st and 2nd rib area (under the trapezius muscle). Note symmetry and movement of humoral heads, high ear - low ear, scapula positioning and spinal curvature. Note if occiput sits anterior or posterior of the sacrum in standing position. Goal is to balance occiput and sacrum so they are in vertical alignment. Anterior head shift is indicative of poor posture, chronic back and neck pain, degeneration and abnormal spinal curvature.

HELPFUL HINT: Shoulder complex: must look at positional relationship of clavicle, scapula, acromion process, 1st and 2nd rib, upper thoracic and lower cervical vertebra. Muscle tests of the deltoid, pectoralis major sternal, and clavicular division all confirm the location of joint malposition. Spine, ribs, clavicle and shoulder height confirm the alignment of the shoulder, spine, torso complex. The shoulder joint is one of the most mobile joints of the body, but if it does not have the stability and proper structural alignment with shoulder girdle, then it will change the length of the rotator cuff muscles creating dysfunction at glenohumeral joint, in turn producing dysfunction/ pain /numbness/TOS/ decreased range of motion/ calcification/ degeneration. In order for the head of humerus to function properly, the adjacent structures must be corrected. (The shoulder girdle is part of the shoulder). If the girdle is aligned, then the shoulder can assume normal position and function in the glenoid fossa. The brachial plexus runs in between the scalene muscles, which insert on the 1st and 2nd rib. If these ribs move out of place due to trauma, stress, prolonged poor posture, etc. then radicular symptoms will develop because the thoracic outlet is narrowed. The outlet can also be compressed by the pec minor muscle, which comes from the coracoid process of the scapula and inserts on the anterior aspect of the upper ribs. Adjust for symmetry of the first, second and 3-6 ribs, opening the thoracic outlet. (See video-31). Balancing the shoulder girdle will produce symptom relief and correct posture.

a) Remember to consider that shoulder girdle asymmetry is not always primary and usually is the result of upright postural change starting at the pedal (feet) foundation.

Anteriorly: look for chest and rib asymmetry, anterior and rotated humoral head, uneven eyes, temporal bulge, bony facial distortion (eye drooping, prominent maxilla, deviated septum), deviated jaw line (TMJ misalignment), prominent supra clavicular space (first rib involvement), uneven or protruding sternoclavicular joints, uneven or prominent acromioclavicular joint, prominent pectoralis major area (spinal curvature), scapular movement on arm adduction/abduction. (see video-32)

Helpful Hint: Occiput C1 malpositioning, is accompanied by TMJ involvement. Mobilize the TMJ with Pisiform Distraction Thrust and stretching maneuvers per Dr. Hearon. (See video-33)

a) Understand that correcting occiput / C1 disrelationship, will partially or totally correct TMJ dysfunction and structural positioning.

CHAPTER TEN

THORACIC OUTLET SYNDROME (TOS) and RIBS

The following articles, by Robert Thompson, outline three types of TOS, the basic symptoms and related structures and spaces in the rib cage. Robert Thompson is a vascular surgeon at Barnes-Jewish Hospital, and the director of the Washington University Center in St Louis MO, for Thoracic Outlet Syndrome (TOS). More information can be found at tos.wustl.edu.

GENERAL FEATURES OF TOS

The thoracic outlet is an area of the body located within the lower part of the neck, beginning just above and behind the clavicle and overlying the first rib, and extending to the upper part of the arm.

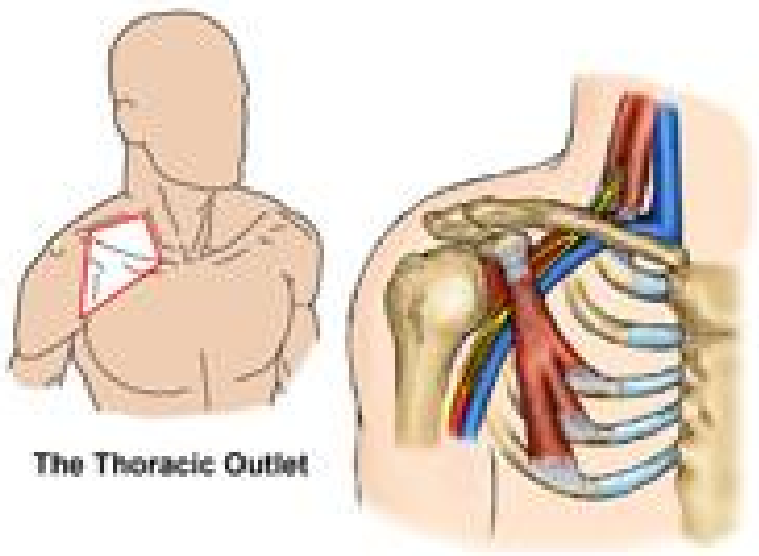
Thoracic Outlet Syndrome (TOS) is a general term used to describe conditions caused by compression of the major nerves and/or blood vessels in this area.

There are three principal types of thoracic outlet syndrome:

- Neurogenic TOS
  - Caused by compression of the brachial plexus nerves that serve the entire arm and hand
  - Patients with neurogenic TOS often have gradual development of symptoms that include pain, numbness, and tingling in the arm or hand, particularly with activity or in elevated positions of the arm, which can progress to become disabling
  - 85-95% of all patients with TOS are affected by neurogenic TOS
- Venous TOS
  - Caused by compression of the axillary and/or subclavian veins, the main veins serving the arm
  - Patients with venous TOS may have the abrupt development of vascular symptoms requiring urgent evaluation and treatment
- Arterial TOS
  - Caused by compression of the axillary and/or subclavian arteries, the main arteries serving the arm
  - Like patients with venous TOS, individuals may have the abrupt development of vascular symptoms requiring urgent evaluation and treatment

All three types of TOS are considered rare conditions. The diagnosis of neurogenic TOS is difficult and often elusive, and may involve extensive testing, multiple specialist evaluations, and prolonged attempts at various forms of management. The diagnosis of the venous and arterial forms of TOS may appear to be relatively straightforward to vascular specialists, but in some cases the signs and symptoms of these conditions can present a confusing picture.

Treatment for TOS may include either non-surgical management or surgery. Optimal treatment for all three forms of TOS requires the experience and expertise of health care professionals knowledgeable about these conditions, and a great deal of patience.



Structures and Spaces

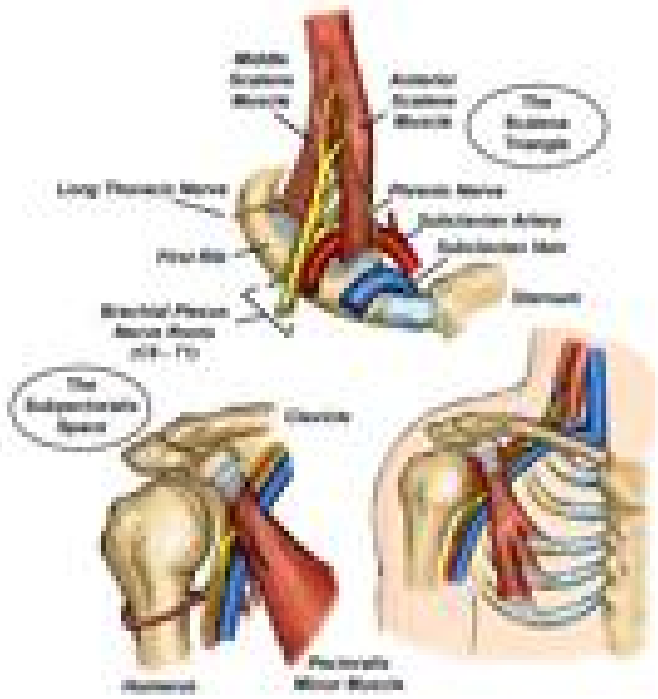
Below the skin in the lower neck is a thick layer of fatty tissue called the scalene fat pad, which helps to protect the deeper muscular and neurovascular structures of the thoracic outlet.

The presence of the scalene fat pad also makes it difficult to feel the structures of the thoracic outlet when pressing with the fingers on the lower neck. Part of the omohyoid muscle, a small muscle that runs across the lower part of the neck, passes through the scalene fat pad.

Directly behind the scalene fat pad lies the anterior scalene muscle. This muscle arises from the cervical spine vertebrae and runs vertically to attach to the top of the anterior first rib. Another muscle in this area is the middle scalene muscle. This muscle also arises from the cervical spine vertebrae and runs vertically, attaching to the top of the mid-portion of the first rib. The narrow vertical space formed between the two scalene muscles, with the first rib at the base, is called the scalene triangle. The major nerves and blood vessels serving the upper extremity lie within or adjacent to the scalene triangle as they pass through the upper part of the thoracic outlet over the first rib. **The scalene triangle is therefore one of the principal sites for nerve and blood vessel compression that causes TOS**.

After passing over the first rib, the brachial plexus nerves, subclavian artery, and subclavian vein all pass together underneath the clavicle. In doing so, they cross underneath a small muscle that runs along the back of the clavicle, called the subclavius muscle. This muscle attaches to the front part of the first rib, anterior and medial to the attachment of the anterior scalene muscle, where it forms a band of dense connective tissue called the costoclavicular ligament. The costoclavicular ligament is immediately lateral to and underneath the sternoclavicular joint. The area between the clavicle and first rib is called the costoclavicular space.

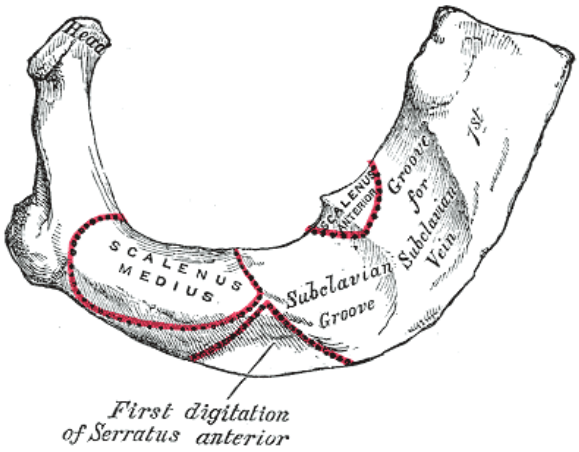
Moving toward the front of the shoulder but before reaching the upper arm, the blood vessels and brachial plexus nerves then pass underneath the pectoralis minor muscle. The pectoralis minor is a relatively small muscle that lies deep to the much larger pectoralis major muscle in the front of the upper chest. It arises from the second, third, and fourth ribs and runs upward to attach to a bony protrusion underneath the clavicle known as the coracoid process. The nerves and blood vessels pass underneath the pectoralis minor tendon through the relatively tight sub-pectoralis space. **The sub-pectoralis space is another site for potential nerve or blood vessel compression in TOS.**



Two principal areas of nerve compression in neurogenic TOS are the scalene triangle and the subpectoralis space. The scalene triangle is bound by the anterior and middle scalene muscles, with the first rib at the base. The brachial plexus nerves (yellow) and the subclavian artery (red) pass through the scalene triangle, while the subclavian vein (blue) passes in front. Beyond the first rib and clavicle, the brachial plexus nerves, subclavian artery and subclavian vein all pass underneath the pectoralis minor muscle, in front of the shoulder.

The following articles, from Classical Osteopathy in Ontario, detail the importance of the shoulder girdle and upper rib involvement. It is vital to understand the importance of postural normalcy in this area. Correcting misalignments and distortion at ribs 1-6 is monumental. For more information, visit website: classicalosteopathyontario.wordpress.com. Now; " Learn ON"

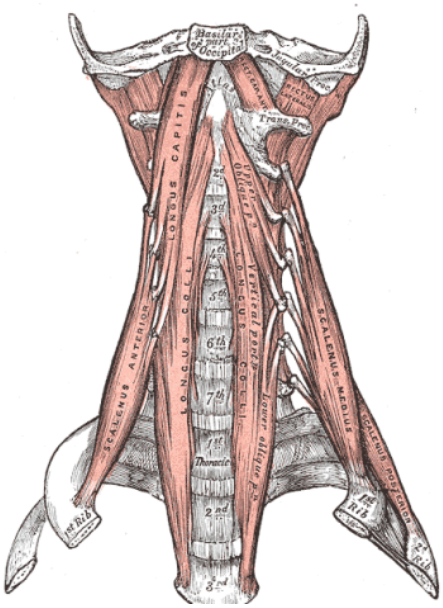
What's The Deal With The First Rib?



In the spirit of understanding the reciprocal relationship between structure and function I am going to take on some quick overviews of anatomical parts while using the work of Marion Clark, DO, to guide the discussion.

A quick note, Marion Clark, DO, wrote what is arguably the most important anatomy/physiology texts of all time. Why don't people know about him? Probably because his book came out in 1906 amidst the political climate that brought about the Flexner Report in 1910.

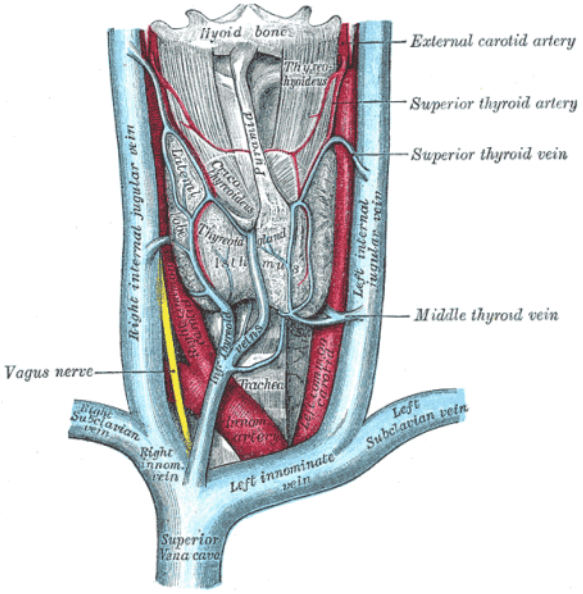
Back to the first rib. The first rib has a very distinct shape. Due to the shape of the articular facet on the transverse process of the first thoracic/dorsal vertebrae being oriented slightly upwards, the weight of the first rib is supported below leading to most deviations of the first rib to be upwards (up in to the clavicle). Their is a groove for the subclavian artery (which passes between the anterior and middle scalenes) and the subclavian vein (which passes anterior to the anterior scalene). As the subclavian artery and vein pass laterally to the first rib they become the axillary artery and vein. Also present are the superior intercostal artery and vein.



As a quick overview, the muscles that attach to the first rib are: subclavius, anterior scalene, serratus anterior, middle scalene, and levator costae. The job of these muscles is either to fix the rib in place or draw it upwards. As is visible by the amount of muscles that attach to the first rib, there are a few different ways to get to it (when one isn't working, go after another one).

Nerves that are related to the first rib are: the median nerve (C5-T1), the radial nerve (C5-T1), the lateral pectoral nerve (C8-T1), the thoracodosal nerve (C6-C8), the ulnar nerve (C8-T1), the stellate ganglion, the first intercostal nerve, and the

recurrent meningeal nerves. Also, due to the relationship with the head of the first rib, the inferior cervical ganglion is affected by the first rib.



Due to the relationship with the clavicle, the first rib has a great affect on the lymphatic drainage of the entire body via the thoracic duct and the right lymphatic duct.

Alright, so now that we have some idea of the relevant anatomy of the first rib we can talk about some related issues. According to Clark, some of the related issues are:

– Muscular contracture related to the nerves at C8 and T1 as well as causing muscular contracture of neck muscles.

– Pain in the arm and along the first intercostal space.

– Functional disturbances of the heart (via nervous connections including the vagus nerve as it passes between the subclavian artery and vein).

– Lung and bronchial disturbances (more common than heart disturbances) due to the nervous connections.

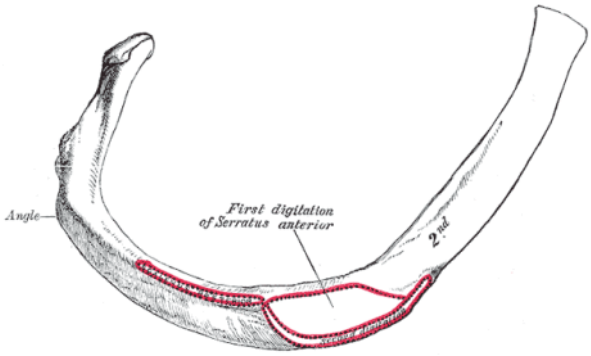
– Disturbed vasomotion to the head and face via disturbances to the gangliated cord.

– Throat issues due to the inferior cervical ganglion and its connection with the laryngeal nerves (often creating a hacking cough).

– The thyroid gland is often disturbed through the connections of the stellate and inferior cervical ganglia by way of altering the vasomotion leading primarily to congestion and hypertrophy (the rib impinges and causes facilitation to the nerves leading to increased blood flow).

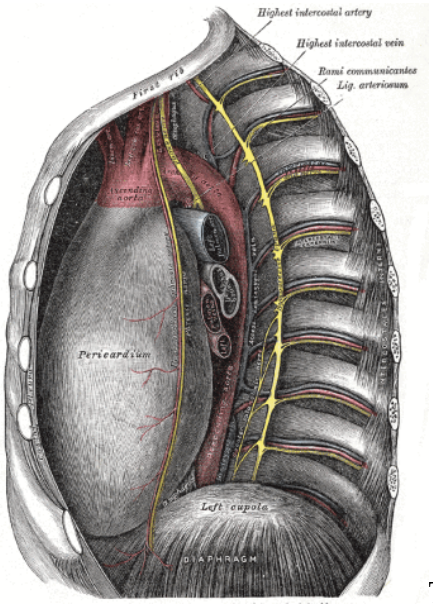
Considering the above noted conditions it is clear that proper articulation of the first rib is very important. Due to the nature of the articulation, attempting to “lower” the first rib may not be appropriate. Instead it is more likely that removal of the contracture of the muscles on the superior surface (neck muscles) is a more appropriate methodology for relieving a dis-articulated first rib. It is also vitally important that the clavicle be lifted from the first rib to ensure that the structures beneath it are not obstructed. For students of the CAO, this is usually accomplished through the 3 cardinal arm movements. For anyone else reading this, consider that the head, face, neck, heart, and lungs can all be directly affected by the first rib.

Let’s Talk About The Second Rib



Continuing with the thought of highlighting structure and function I will take some time to speak about the second rib. The second rib is similarly shaped to the first rib but it is noticeably larger.

The muscles that attach to the second rib are: posterior scalene, serratus posterior superior, levator costae, iliocostalis cervicis, iliocostalis thoracis, and serratus anterior. There are also attachments of the internal and external intercostal muscles (this is important as simple respiration can be used to help re-articulate a displaced rib if it is appropriate). Along with the muscles attached to the second rib, the internal surface of the second rib also acts as an anchor for the pleura of the lungs (this is one of the ways the second rib shows a relationship with lung function).



The nerves associated with the second rib are: the second thoracic nerve (with the anterior/intercostal branch and the posterior branch), and the second thoracic sympathetic ganglion (with pulmonary, cardiac, and aortic branches). There are also branches from T2 that go to the ligaments, vertebrae, spinal cord, and meninges at T2. It is important to note the relationship of all ribs with the sympathetic chain ganglion as sympathetic symptomatology/expression is often related to altered positioning of the rib head.

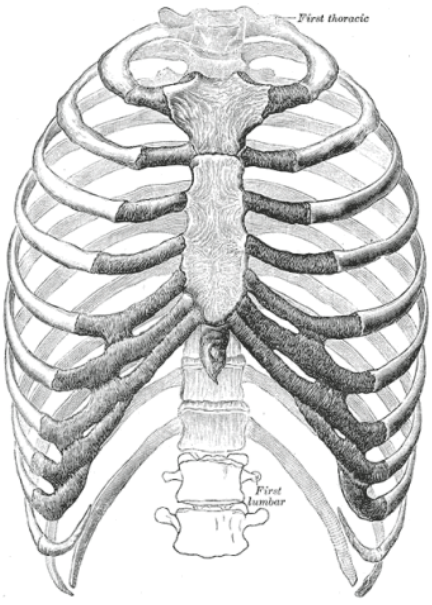
The general lesion pattern of the second rib is to be caught upwards and backwards due to the action of the posterior scalene as well as levator costae. Considering the general lesion the general correction would be forwards and downwards. I don’t want to give away everything I am learning at the CAO here however, if you are a student of the CAO you should be able to make some connections here.

As I outlined the nervous connections and, more importantly, the soft tissue connections earlier the commonly related issues should not be terribly hard to grasp. A lesion of the second rib will generally express through the pleura, the lungs, the bronchi, and the second intercostal nerve. The names of conditions that are often associated with a lesion of the second rib are bronchitis, broncho-pneumonia, pleurisy, and tuberculosis. A lesion of the second rib can either be causative or reflexive in the aforementioned conditions. I think it is fair to say that terming a second rib lesion as causative in these conditions is primarily related to the fact that the nervous transmission to the lung and pleura would be highly sympathetic if a second rib lesion is present as well as the mechanical strain placed on the pleura with the associated alteration in pressure dynamics inside the thorax. Due to the increased sympathetic tone to the area, associated vasomotion would be altered leading to increased fluid in to the area and decreased fluid out. There will be congestion of the area and any toxicity, bacterial, or viral pathogens will have a wonderful area to set up shop. They will have the environment they need to thrive and the conditions they create will happen in relation to the lesion of the second rib.

There are also connections to conditions of the head and neck from a lesion of the second rib through the sympathetic chain ganglion from T1-T4 governing the sympathetic tone to those areas. There are also connections to heart issues through the sympathetic tone coming from segments T1-T5 governing the sympathetic tone to the heart.

To make this as clear as possible I will say that a second rib lesion can set the stage for the sympathetic nervous system to go in to overdrive in the head, neck, heart, and lungs allowing for opportunistic pathogens to thrive. Reducing the sympathetic drive to the area will create better balance related to the parasympathetic tone so that the body can effectively mobilize its natural healing abilities. The other consideration is the mechanical aspect of ensuring that all pathways of nerves, arteries, veins, and lymphatic vessels are clear to allow nature to do its work.

More Ribs? Time For The Third Rib!



Dr. Still told Osteopathic students to “dig on”. In that spirit I will continue reading Marion Clark and reporting my findings/thoughts.

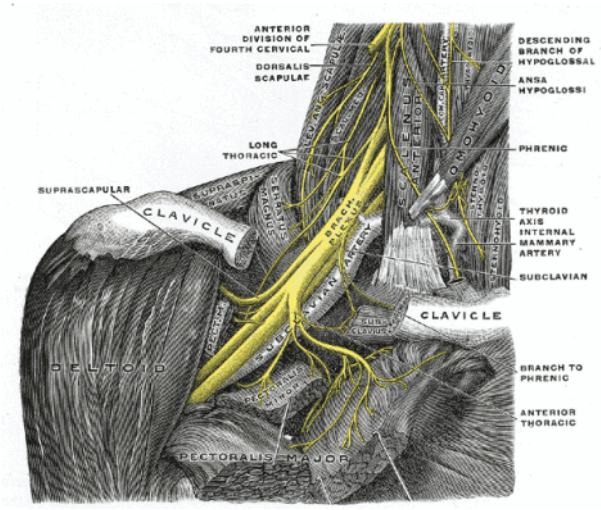
Let’s dive in to the third rib. As the third rib is a true rib, Clark does not provide a deep description of it. That doesn’t mean there is nothing going on here. The third rib has more mobility than the second and as such has more possible lesion patterns. The most common lesion is that of being upwardly displaced at the vertebral end while being displaced downwards and inwards at the sternal end. This lesion often makes the tubercle more palpable due to the upward displacement of the vertebral end that is perpetuated through ligamentous thickening as the body’s response to stabilize the lesion.

The muscles that attach to the third rib are: pectoralis minor, serratus anterior, serratus posterior superior, iliocostalis cervicis, iliocostalis thoracis, internal intercostal, and external intercostal. On the internal surface of the third rib is attachments to the pleura.

The nerves that are associated with the third rib are: the third thoracic nerve (both anterior and posterior branches), the sympathetic chain ganglion, and the third sympathetic ganglion (with associated influences to the head, neck, lungs, and heart).

The circulatory structures associated with the third rib are: the third intercostal artery and vein (this is the only structure mentioned by Clark, the following structures are ones that I searched for), the axillary artery and vein (externally), the superior intercostal veins (internally), the thoracic duct (internally), as well as the bronchomediastinal trunks (lymphatic vessels that drain the chest wall and mammary tissues). I may have missed some but I will keep digging!

Conditions that are associated with a third rib lesion are pleurisy (due to the anchoring of the pleura and the mechanical strain that is associated with alterations in the position of the rib), angina pectoris/other functional disorders of the heart (via the interrupted connection resulting from pressure on the third thoracic ganglion), as well as affecting the mammary gland through disturbed supply/drainage via the intercostal artery and vein as well as altered function of the third intercostal nerve.



Just to add some detail I want to point out the possibility of the majority of the brachial plexus being affected by a lesion of the third rib (in the section on the third rib, Clark briefly mentions that the centers for the arm go as low as the fifth dorsal/thoracic segment and that a lesion of the third rib will interrupt the nervous flow between the arm and the central nervous system). As the brachial plexus exits the neck it follows the subclavian artery and vein then the axillary artery and vein as well as travelling between pectoralis minor and serratus anterior. So, the causative factor of a third rib lesion may come from the brachial plexus or more locally from the thoracic segments. Regardless of the causative or reflexive factors, a lesion of the third rib suggests that the arm, rib, and neck offer possible treatment options. If one does not work then the others are possible ways to deal with the third rib lesion as well as any combination of the three. Long lever approaches anyone?

Below is your outline. If we include we Need intro or review statement &info….. should we put at beginning of chapter as important items or at end of review ?? also there are references to ribs 1-6 ….currently we have only 1-3 per our last discussion…. Since they are mentioned, should we also add 4-5-6?

1 - Relationship of all ribs producing sympathetic nervous system changes when related to rib heads.

2 - Second Rib: pleura, lungs, bronchial and second intercostal nerve.

3 - Head and neck conditions with relationship to T1 - T4 sympathetic ganglionated chain

4 – Heart conditions through T1 - T5 sympathetic ganglionated chain

5 – Rib muscle spasms, attending pain syndromes, and respiration

6 – Muscular compression of anterisi nerves and veins in the scalene triangle and sub-pectoralis space

7 – Costoclavicular ligament, sternoclavicular clavicular joint, pectoralis minor muscle, and sub-pectoralis space.

CHAPTER ELEVEN

GPA SEQUENCE – IMPORTANT POINTS

IMPORTANT POINT # 1

GPA sequence with NO compensating factors.

Following is based on dropped right navicular as historically that is the case. In the unusual event that left navicular is dropped, then reverse all R-L in following sequence.

1. Adjust dropped **Right navicular and Dropped 2nd Metatarsal head**
2. Adjust **Posterior Supinated Right calcaneus**
3. Adjust **Posterior High Left hemi Pelvis** with wedge under **Anterior Low Right hemipelvis**
4. Adjust **Left Posterior Superior Left Ischium**
5. Adjust **Left Posterior Sacral Apex**
6. Adjust any palpable findings in **Lumbar/thoracic/CT junction using motion palpation** and looking for curvature of spine with rib humping and posterior costal cartilage
7. Adjust **Anterior-Medial dropped Left Talus** and **Anterior lateral dropped Right Talus**
8. Check Patella Tibia alignment and Adjust to make sure it **aligns in outer 1/3** if needed
9. Adjust **Anterior painful Pubic bone (supine).**
10. Adjust **Anteriority of Mid spine**
11. Adjust **Posterior Cephalad Occiput**
12. Adjust **Posterior Left Atlas**
13. Adjust **High 2nd Rib**

IMPORTANT POINT # 2

GPA sequence with NON-compensating factors or complicating factors

You must fix the complications before you fix compensations. Gravity puts forces on the body everyday all the time from sitting to standing to walking to running etc. In order to provide the proper GPA adjustment you must fix the complicating factors first. Typical complicating patterns follow.

1. Positive Derifield – Usually occiput- C1, pubic bone, ribs, or hip. Note that 1st and 2nd rib can be adjusted before occiput
2. Adjust pubic bone before pelvis only if the Derifield indicates.
3. Jammed hip capsule as seen with ilium hike during prone leg flexion - perform pubic bone adjustment or interior rotation hip adjustment first, before correcting pelvic misalignment.
4. Pattern may be reversed if left-handed.
5. Ankle sprain with involved talus will prevent adjustment from holding and cause recurring misalignment. Evaluate proximal fibula head involvement with ankle sprains as well as compensatory changes in metatarsal heads, cuneiforms, and cuboid. Utilize OrthoFeet Gel orthotics only to support and protect the feet; NOT for correction of foot misalignment.
6. Jammed facet in lumbar can disguise pelvic alignment. Muscle test and adjust accordingly, maintaining the pattern.
7. When clavicles are not lining up look for AC separation, impingement syndrome, or lower rib involvement; i.e. ribs 2-6. Decide if compensatory or non-compensatory. (Primary or secondary).
8. For bilateral restricted internal rotation of hips look for anterior pelvic tilt. Must release L5-S1 with inspiration expiration adjustment or anteriority drop correction. Perform sacral decompression in prone position.
    a. Consider prone occiput-sacral drop release. (see video-34).
9. Re-check on each visit to note structural changes, results will determine need for continued care and specific corrections. More chronic = more corrections, re-evaluate weekly.
10. Utilize all therapies that provide symptom relief; "do all you can for your patient" – Dr. Janse

"YOU ARE WHAT YOU DO"
"CREATE TREATMENT TO FIT PATIENT, NOT PATIENT TO FIT YOUR TREATMENT"
" BE COMPREHENSIVE AND IMPRESSIVE"

CHAPTER TWELVE

NON – PATTERN TECHNIQUE PROCEDURES

Pattern: Observe standing, walking and movement patterns of the feet, arch of a foot, leg and pelvis. Remember that a patient who loops (sways out his leg on gait) is not taking a normal step. He is bypassing normal foot launch while projecting leg gait with quad and hip flexors.

Solution: Activate tardy foot with speeder board drop and functional activation.
Re-check: palpating and motion ROM palpating, reveals potential pathological involvement at ROM site. Continue GPA for spinal / pelvis symmetry and leveling.

Non-pattern corrections:

1 - Left temporal bulge - patient standing supine or sitting; observe asymmetry (bulging) at left temporal area. Perform inspiration cranial correction. (see video-35)

2 - TMJ is ALWAYS involved, if Occiput / C1 is structurally misaligned GPA adjust accordingly with patient supine. (see video-36). Also, review Dr. Erik Dalton videos.

3 - Tonic (feel good) treatment : after ALL specific GPA corrections completed, have patient sit with hands behind neck (not head), position yourself behind and do a straight upward lift (using your body (chest) into area to be treated), WITHOUT flexing hands and neck forward. (see video-37)

a) Using folded towel between chest and patient will result in more specific correction.

4 - Tentorium cerebellum adjustment - by bilateral outward linear expansion while gripping bilateral ear cartilage (see video-38). Decompression of tentorium cerebellum floor with synchronous local stimulation.

a) Pull must be out and up, so as NOT to tear skin.
b) Contact cartilage and lobe to avoid tearing skin.

5- Sitting: Observe wrist surface for shallow or pronounced lunate bone, if required, perform traction adjustment of lunate bone. Lunate is a pivotal bone involved in a great majority of wrist/hand pain and dysfunction. If traction does not adjust lunate, usually due to injury or scar tissue, adjust again using speeder board. (must see video-39)

6 - Spasm of SCM will create a functional distortion in palpation of SCM, sterno / clavicle joint; and clavicle elevation and must be addressed and corrected prior to structural GPA correction. This is an acute spasm / inflammatory reaction caused trauma. (See video-40). Understand that occipital torsion and shift does not have to be spastic or inflammatory, but painful palpation.

7 - It is imperative to understand concisely, that the distal tibial foot articulation has an absolute effect on the proximal tibial / distal femoral articulation. Tibial tuberosity MUST always be aligned on the outer 1/3 of patellar position. Distraction adjusting, or drop adjusting, of the talus of involved extremity in supine position will re-position the tibial tuberosity to normal. Proceed from this point to correction and 100% function and become a HERO!!!! (see video-41)

CHAPTER THIRTEEN

FINE TUNING ADJUSTMENT

After completing corrections using the GPA methodology, it may be necessary to look for other factors that may have caused trauma, especially when symptoms still exist. The neurological system and/or even psychological factors may be the cause. Sometimes factors are layered in.To get to deeper levels, the following tests and protocol's often improve patient health.

Neurologic Organization Check and Balancing

1 - Polarity/Brain Circulation

Test and find a strong convenient muscle. Then touch glabella point, the place on lower forehead above the nose, and retest the previously strong muscle. It should now be weak. If not weak, it could be due to a blow to the head, seizures, a traumatic brain injury or a host of other causes. If not weak, check cranial bones and Fissure of Rolando reflexes

In AK (Applied Kinesiology) there are 14 cranial faults that could occur. The most common is the cranial respiratory assist (CRA). Test this by challenging each mastoid process forward and backward. If either is weak, note which one(s) and the direction, usually both mastoids: and weak in opposite directions. Correct by pressing forward in the direction of weakness while patient takes a deep slow breath of 3 seconds, and backward on the out breath in direction of weakness while patient lets out a deep slow breathe of 3 seconds. Repeat 2 more times, for a total of 3 breaths.

The fissure of Rolando is tested from the head of the table, with patient supine, and arms straight and pointing toward the ceiling. Have the patient resist while pressing out on a 45 degree angle. Check each arm and then both together. If weak, find the point(s) above opposite ear that will strengthen the weak muscle, while pressing it towards top of head. Correct by holding that point towards top of head for several seconds until it releases and muscle becomes strong. Recheck each side and then both at same time. Correct if additional weakness occurs.

2 - NDO - Neurological Dis-Organization

This is a common condition, created by a variety of factors. Physical or emotional traumas are simple examples.

K-27 is the end-point of the kidney meridian, and is located under the collarbone where it meets the breastbone and 1st rib. There is one on each side, and the test is done by testing a strong convenient muscle and contacting both K-27s at the same time. This should test strong. If not, then:

A) Tap each quadrant and the skull to check for communication errors. If any are weak, then correct the CRA cranial fault, as described above.

B) If the bilateral K-27 still tests weak, this indicates a complex situation which requires two-point testing to find the AOI (area of involvement). Have patient contact both K-27s with one hand while you test around the body to find the AOI. When the weak muscle goes strong, you will have found the AOI. Examine the AOI to determine if a simple adjustment will correct it, if so, have the patient rub the bilateral K-27 points and you simultaneously adjust the AOI. If the problem is more complex, then have patient rub the K-27s while you vigorously rub the AOI. Then evaluate and treat all that needs to be done to the AOI. Next, adjust the cranial respiratory assist (CRA) cranial fault, as described above.

3 - Startle Response/Shock Lock

Find a strong convenient muscle. Then place your open hand over the patient's chest, then form your hand in the shape of a Claw and hold it over chest in each of three places (right, center and left), and test that muscle. If muscle goes weak, check each Great toe in dorsal flexion. Take the weakest toe and two-point test the upper intercostal spaces on that side, looking for strength and rub that area hard for at least ten seconds, then stretch it in eight directions. Test the other great toe, if weak, repeat the two-point test with the upper intercostal spaces on that side, back and forth until both are clear. Record number of levels of shock for future reference. Retest claw test.

IMPORTANT – MUST SEE VIDEO ON FINE TUNING

Check patient's chief complaints

If, complaints are in extremities or complicated spinal areas, there are several Chiropractic options available, make those corrections. If symptoms persist, other items to check:

With patient standing, sitting or supine:

- Adrenal function with the ligamental stretch response on each side. If weak, TL (therapy localize) the adrenal spot on that side, rub accordingly.
- Cervical disc signs or muscle myotome tests
- Upper ribs involvement
- Carpal tunnel signs
- Shoulder functions signs, at least ten tests for each shoulder
- Carpel tunnel signs.

With patient supine:

- Check for Category IV, and leg length.
- Lumbar disc signs or muscle myotome tests.
- Imbrication test or functional facet syndrome test.
- Hip strength test, straight leg raising test.

Recheck patient per GPA (Gravitational Pattern Alignment) procedures

- Check leg length.
- Derifield Test
- Achilles' tendon tightness
- Foot flexibility
- Ankle flexibility
- Knee flexion equality, block anterior hemi-pelvis and recheck flexion
- SI joint movement
- Upper cervical fixation
- L5-S1 fixation

- General spinal fixations
- Occiput and atlas relationship

Also with patient prone check:

- Check for coccyx subluxation or fixation
- Integrity of each SIJ ligament (all 4) and both ilieo-lumbar ligaments
- Ischial tuberosity, check each one, for medial or lateral displacement
- Check involved bones for intra- bone torque involvement and muscle test to determine need for bone nutrition, (such as Nutri-West - Core Level Bone Matrix).

With patient supine check:

- Check hip joint strength,
- Ilium Torque on each side to rule out torque of acetabulum.
- Check alignment of symphysis pubis
- Category ll (2) arm-fossa test
- Ribcage near solar plexus for Shortness of Breath (SOB)
- Knees for rotation and hyper-extension,
- Ankles for shock absorption and dorsal flexibility
- Calcaneus for medial or lateral displacement
- Talus bone involvement
- Check toes for dropped metatarsals and turf toe
- Arch muscle weakness, fix in direction of weakness.
- Check for tarsal tunnel syndrome.
- Check for gravity muscle imbalance: Gravity muscles require repeated muscle contractions. Test a psoas muscle 10 times, inability to perform at least 10 strong contractions indicates need for essential fatty acids, (such as Nutri-West - F Complex)

Shoulder Examination

The shoulder is a very complex joint. For a shoulder problem, there are ten different tests for function and several visual observations. Check for forward placement of shoulder and level of clavicles and upper ribs.

Test the deltoid muscle with the elbow straight out to side. Then raise the near (proximal) end of the humerus toward head: arm weakness indicates the supra-scapular bursa is pulled out of the normal position. Adjust the bursa back in by pressing on the outside of the top of the patient's arm (shoulder). Also, usually need to un-torque the bursa inward.

The sub-deltoid bursa is tested similarly by raising the elbow even higher and testing the muscle, then raise the proximal end toward the head and retest. If arm goes weak, the sub-deltoid bursa is torqued clockwise or counterclockwise. Test for direction of strength and adjust accordingly.

Test the shoulder in all four directions, (up, down, side to side) and if patient goes weak when:

1. Pushing UP: weakness indicates humerus involvement. Correct as follows:

a) Stretch the humerus out from the shoulder joint and retest, if it goes weak again, test the arm in 360 degrees of rotation and find the spot that strengthens it and adjust it inward in that position.

b) If strong, then push the humerus into the shoulder joint and retest. If weak, then find the angle that corrects it and adjust the humerus by pulling the humerus outward while in that angle.

2 - Pushing DOWN towards the feet, but strengthens when you hold the A-C joint together: indicates a separation of the A-C joint. Correct by approximating them together with a thrust, also check if a torque is present either way, if so, adjust.

3 - Pushing INWARD: weakness indicates clavicle involvement. Usually medial, but always examine and correct accordingly.

4 - Pushing OUTWARD: weakness indicates upper ribs involvement. Usually posterior, but examine and correct accordingly.

Check involved bones for intra- bone torque involvement and need for bone nutrition (such as Nutri-West - Core Level Bone Matrix).

Bunion Examination

Check for bunions and equality of size of related joints. The enlargement of the joint (bunion) is due to the rotation of the 1st metatarsal. Making a fist, with arm held out, shows what the opposite metatarsal bone looks like at that joint. The protrusion of the thumb is like the lateral edge of the opposite 1st metatarsal. When the arch collapses, the 1st and second metatarsals roll into each other. There is nothing supporting the lateral side of the 1st toe and it bends at appropriate angle, while 2nd toe bends into first. Adjust with aggressive de-rotation of the 1st metatarsal and again for the 2nd metatarsal.

Check involved bones for intra- bone torque involvement and need for bone nutrition (such as Nutri-West - Core Level Bone Matrix.

CHAPTER FOURTEEN

MUSCLE BALANCING

Seldom, if ever, is there a singular cause of a patient's pain and/or dysfunction. That is why a multi-disciplinary approach to patient care is vital. Chiropractic and Physical Therapy are two different pieces of the health care puzzle that work symbiotically to produce optimal results. Neither one on its own is as effective as the two treatments combined… The whole is greater than the sum of its parts so to speak.

If a patient is structurally out of alignment, rehabilitation programs may be ineffective or even perhaps detrimental. Attempting to strengthen and stabilize a faulty structural alignment may serve to reinforce a dysfunction rather than correct it. Likewise, correcting structural misalignments (subluxations) without also addressing neuro-muscular dysfunctions can prove futile or temporary. As I tell my patients: "If you get put into proper alignment via a chiropractic adjustment, but we do not take care of the muscle imbalances around that joint, then you are more likely to get pulled back out of alignment. Correcting muscle imbalances will enhance and prolong the benefit of a chiropractic adjustment."

Whether the dysfunction/misalignment is due to trauma, repetitive overuse, postural habit, or other source of stress, it is important to treat both the structural and functional issues that surface.

My approach with patient care is to identify individual muscles or muscle groups which may not be functioning properly. Neuro-muscular deficits may present as discomfort/pain, limited range of motion, and/or most commonly a weakness during specific manual muscle testing. I explain to my patients (who are often surprised at their inability to resist certain movements) that the weakness discovered is frequently a neuro-muscular problem and not a muscle strength problem. That is, that the muscle tests as weak not because it is lacking in muscle mass, but because of faulty communication between the muscle and the brain. If a muscle is, for lack of a better word, "asleep" then nearby muscles must compensate for the dysfunctional (sleeping) muscle. This leads to multiple detrimental effects. First, an imbalance around a joint is created where certain muscles are not working as well as they should, and surrounding muscles are over-working. This often leads to the joint being pulled out of proper alignment because of the unstable/imbalances pull of the muscles. Again, an adjustment is beneficial in overcoming that issue, but an underlying cause of the subluxation may be due to the muscle imbalance. Secondly, the compensating muscles are more susceptible to injury as they are trying to

function in a manner that they were not designed to do. There is more stress placed on the compensating muscles and thus they are more prone to injury.

Another consequence of "sleeping" muscles can be spasms, cramping, and hypertensive muscle groups. Whether it is in the dysfunctional muscle itself or the compensating muscle, tightness and trigger points are often present. When a muscle is trying to do too much (either because it is not functioning at 100% or because it is needing to pick up the slack of such muscles) then it tends to be in a state of hypertension. Picture a scrawny, weak guy attempting to lift a box filled with books. It takes great effort and his muscles seize and quake. Now picture a body builder lifting the same box. His muscles contract without the strain shown by the weakling. The same is true around a joint. If certain muscles are dysfunctional (not all motor units are firing) then it tends to strain when working.

I use the "Many hands make light work" analogy with my patients. If I try to lift a heavy piece of furniture on my own, I strain and struggle and will very likely injure myself. But if I get a couple people to help me, we are able to move it without any of us getting hurt. The same is true with our muscles… Both when talking about multiple muscles/groups working together, as well as in individual muscles themselves.

Every muscle is made up of countless muscle fibre bundles—the contractile portion of the muscle. These motor units are individually innervated and controlled by a signal from the brain. In the case of "sleeping" muscles, a certain percentage of these motor units are not receiving adequate neural stimulation from the brain to participate in the muscle's movements. This is the neuro-muscular dysfunction that I, as a physical therapist, am trying to correct. "Sleeping" muscles are able to be awakened manually by stimulating the stretch receptors within the muscle. Each muscle contains receptors which, when stimulated, send a neural impulse to the brain. In turn, the brain sends a signal back down to the muscle and recruits, or turns on, motor units that have been dormant or inefficient. There are a high concentration of these receptors at the musculo-tendonous junction, near the origin and insertion sights of the muscles. I apply a mechanical stretch to these receptors, increasing the efferent nerve impulse flow in order to effect an increase in the afferent impulse flow. Providing a manual stimulation (repeated pressure and release) to the muscle causes the brain to "wake up" the "sleeping" muscle. By recruiting more muscle fibre bundles to actively participate, we get an immediate and drastic increase in strength.

Oftentimes traditional physical therapy took the approach of "Oh, you're weak in this motion? Here, do these exercises to get stronger." This approach is not only ineffective but can be detrimental when the weakness is due to neuro-muscular miscommunication. My goal is to get each muscle/group functioning optimally so that stabilization/strengthening exercises can accomplish their intended outcome. If certain muscles are not functioning properly and other muscles are compensating, then when you perform a strengthening exercise, the wrong muscles are getting stronger. If muscle "A" isn't working, and you engage in an exercise to build strength, it doesn't get stronger because it isn't working. What gets stronger is muscle "B" which is compensating for the dysfunctional muscle "A". This actually leads to an eventual *increase* in the imbalance between the muscles. And as we discussed earlier, muscle imbalances have a variety of unwanted consequences including pain, subluxation, restricted range of motion, and functional deficits.

IMPORTANT – MUST SEE VIDEO ON MUSCLE BALANCING

CHAPTER FIFTEEN

GPA - FOUNDATIONAL REFERENCES

The foundation of the GPA methodology is based on, and evolved from, fundamental anatomy and bio-engineering of the Biped as detailed in references below. Gravity has multiple effects on the unbalanced Biped and GPA begins with a focus on the Pedal Foundation, using hands-on manipulation, considering both bipedism and gravity, to create a balanced biped.

1. Speransky - A Basis for the Theory of Medicine

2 Janse, Dr. Joseph - "The Nurological Element as it relates to Clinical Chiropractic"

3. Illi, Dr. Fred - The Vertebral Column

4. Gray, Henry - Anatomy of the Human Body

5. Judovich and Bates - Pain Syndromes

6. Todd - The Living Body

7. Mennel, John - History of the Development of Medical Manipulative Concepts

8. Schmorl, George - The Human Spine in Health and Disease

9. Goldstein, Murray - Research Status of Spinal Manipulative Therapy, U.S. Dept of Health, Education and Welfare.

10. Dalton, Dr. Eric – Thoracic Outlet Syndrome,