TECHNIQUE

Network Spinal Analysis: A System of Health Care Delivery Within the Subluxation-Based Chiropractic Model

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Abstract — The theoretical basis and clinical application of Network Spinal Analysis (NSA) is described. NSA delivers health care within the subluxation-based chiropractic model and seeks to contribute to the distinction of the various techniques and methods within the profession by describing and discussing its major characteristics. In this regard, clinical observations relative to the application of the Network Protocol have been described in relation to the monitoring of patient and practitioner outcomes. Relevant research from a separate Network Care retrospective study, which impacts on its characterization, profiles the patient population as predominantly female. Other data indicates that Network Care is widely and consistently practiced. Additionally, patients report significant, positive changes in health-related quality of life measures linked to certain clinical components of Network Care.

Key Words: Network Spinal Analysis, Chiropractic, Alternative Health Care, Outcomes Assessment, Vertebral Subluxation.

Introduction

Chiropractic is rich in its diversity of approaches,[1-2] variously referred to as techniques, methods, or specialties. As the wide range of approaches have certain principles in common, it is important for each to describe and document its tenets. This is both beneficial to the inquiring public, and informative to practitioners and the scientific community at large; assisting in distinguishing chiropractic approaches from one another, as well as from other forms of health care.

There has been a dramatic shift in public perception of health care as evidenced by the recent emergence into the mainstream, of many different types of alternative health care; [3] some emphasizing wellness care as the objective, while others focus on the objective of alleviating symptoms and treating disease, thus representing unorthodox or complementary medicine. [4] The reported increase in public participation in these programs[5] increases the importance and need for developers of each chiropractic approach to describe their rationale, objectives, protocols, and report outcomes. This allows for scrutiny of any given approach while increasing, in general, public awareness of chiropractic and its many benefits.

The level of scientific evidence which addresses each of these topics will assist in the evaluation of the validity of a given chiropractic approach. While it is understandable, and expected, that newer approaches will draw from a smaller body of evidence than the more well established approaches, it is incumbent upon proponents to conduct on-going programs of research designed to investigate its theory, application and methods. It is also expected that well-established approaches will have on-going research programs to continuously expand and refine understanding and affect positive modifications in patient care.

Ongoing inquiry is also driven by the need to guarantee public safety and professional reliability, as well as demands by state and federal oversight committees. In this regard, it is important to demonstrate that an approach is being administered consistently among its practitioners who adhere to the same objectives, methods and professional guidelines.

This paper presents a characterization of Network Spinal Analysis (NSA), also referred to as Network Care. Its objective, subluxation hypothesis, and clinical application are described. Pertinent outcomes which 1) reflect Network Care methods, 2) assess its general acceptance, 3) report consistency of care, and 4) indicate wellness benefits, are reported elsewhere (Blanks RH, et al, in preparation; Dobson M, et al, in preparation) in conjunction with an on-going research program.

Description and Objective

NSA is an approach to health care, utilizing certain long-standing chiropractic methods and employing certain principles of quantum mechanics,6 neuroanatomy and neurophysiology, [7-9] psychoneuroimmunology,10 and changing perspectives in health care. [11-12] The clinical practice of NSA involves a specific system of classifying vertebral subluxation, which was originally developed in 1982, and administered as Network Chiropractic. In 1985, a clinical Phasing System was added. In 1994, the Phasing System was formally organized into three specific Levels of Care. The system of vertebral subluxation classification and

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Phasing System is referred to as the Network Protocol. Although the rationale, theory, and sequence of adjustments within the Phasing System has remained the same, the introduction of Levels of Care resulted in Network Chiropractic being supplanted by Network Spinal Analysis. Consequently, in this paper, in all areas except reference to the clinical aspects of the Levels of Care, Network Chiropractic and NSA (Network Care) are used interchangeably, or collectively as the Network Approach.

The objective of NSA is to assess and correct two classes of vertebral subluxation; facilitated subluxation and structural subluxation, using safe, "hands on," low-force adjustments of the spine and its contiguous structures.

Subluxation Hypothesis

The clinical application of NSA is based on an expansion of the traditional description of vertebral subluxation13 and later development of the vertebral subluxation complex, [14] in which vertebral subluxation arises from a provoking or deleterious stimulus which produces a sequence of events; specifically 1) misalignment of adjacent vertebrae, 2) narrowing of the intervertebral foramina, 3) subsequent tissue or fluid-related pressure on the nerve root, and 4) a resulting interference to the "flow of mental impulses," [13] or otherwise described as "nerve interference"14 in the vertebral subluxation complex model. While considerable direct evidence supports the first three components of this model, [15-25] the fourth component is not readily measurable. While the boney subluxation is assessed by clinical, neurological, and chiropractic procedures, [26-27] it remains to be demonstrated how these assessments are linked to the "nerve interference" component of subluxation. Indeed, the term "mental impulse" currently lacks strict scientific description, and the term "nerve interference" is also vague. Nevertheless, investigation regarding neuronal axoplasmic flow[28-30] and the re-framing of neurotransmission as the flow of neuropeptides and other "informational substances"[31] lends credence to the fourth component, and opens promising avenues for research and greater understanding of this component of vertebral subluxation.

Using this model, the rationale for NSA is that the minimum four components of vertebral subluxation may arise in any sequence, depending on the provoking stimulus which can be physical, emotional, and/or physiological events impacting the body. More specifically, when these events exceed the limits of the adaptive response of the nervous, meningeal, musculoskeletal and humoral systems, a sequela is initiated which leads to the formation of vertebral subluxation. These relationships are presented in Figure 1.

The basis for this rationale has been recently provided by Panjabi who describes three "subsystems" 1) passive/ligamentous, 2) active/musculotendenous, and 3) neural control. [32] When functioning within their adaptive limits, these three subsystems act synergistically to provide overall stability to the spine. Panjabi further states that loss of stability to the spine can result when any of the "subsystems" succumbs to injury, degeneration, and/or disease. Further, various deficiencies are perceived by the neural control subsystem which then attempts to compensate through the active/musculotendenous subsystem. Even though short-term spinal stability may be maintained by the neural control and active/musculotendenous subsystems, the long-term effects are often deleterious to the spine (e.g., accelerated degeneration of spinal column components, muscle spasm, injury, and/or fatigue). Panjabi emphasizes that over time the consequences of long-term adaptation may be chronic dysfunction, pain and loss of spinal stability.

NSA recognizes the dysfunction scenario described by Panjabi as also giving rise to two categories of vertebral subluxation. One of these is the traditional structural subluxation and the other is a facilitated subluxation. While both subluxations manifest the same minimal components (osseous misalignment, foraminal encroachment, nerve root pressure, and nerve interference), they differ in the way in which they are initiated and as to which component is primary.

The Class A, or structural subluxation, is thought to be initiated by a mechanical or physical stress imposed on the body. In this type of subluxation, the vertebral misalignment is the initial event, and nerve interference is a secondary consequence.

The Class B, or facilitated subluxation, is thought to be initiated by the phenomenon of adverse mechanical (meningeal) cord tension, first described by Breig. [7] NSA proposes that adverse mechanical tension in the spinal cord is promoted by, or arises from, acute or chronic facilitation. Thus, in Class B subluxation, nerve root pressure associated with adverse mechanical tension in the spinal cord is primary, and the osseous misalignment component is a secondary result of adaptive neuromuscular changes.

Facilitation occurs when a number of subthreshold stimuli (which may be noxious stressors such as cord tension, toxins, or microtraumas) are synchronously activated by any single threshold stimulus. This results in an abnormal sensory and motor response which is disproportionate in magnitude to the initiating stimulus. The spine is in a hyperactive or over-responsive state when it exhibits facilitation. [33]

The importance of chronic facilitation, which elicits hypermotor responses to a buildup of

subthreshold sensory input, is that it may affect spinal integrity, or stability. Spinal integrity is at risk if the motor activity elicited by facilitation promotes hyperactivity of paraspinal musculature leading to osseous misalignment, or through dural stretching leading to elongation or torquing of the spinal cord, directly or indirectly compressing the nerve root. [8] Either or both of these situations may be involved in the formation of facilitated vertebral subluxation.

In order to effectively reduce vertebral subluxation, NSA is first concerned with reducing facilitation arising in the spinal cord. If unresolved, this state gives rise to recurring Class B vertebral subluxation, despite frequent corrective adjustments by the practitioner. Once facilitation has been reduced or resolved, then Class A, (structural) subluxations, if present, are more easily corrected. Overall, the ability of the practitioner to distinguish and address these two types of subluxation is important to effective short- and long-term management of the patient. Since the condition of vertebral subluxation is postulated to diminish the body's adaptive abilities, with a subsequent loss of natural health including healing or repair, the clinical goal of NSA to reduce this condition, is supportive of the health seeking trend evident in today's society.

Methods: Clinical Application of NSA

In Network Spinal Analysis, the Network Protocol has two clinical aspects, the subluxation classification system, and the Network Phasing System. The first, involves the characterization of Class A (structural) and Class B, (facilitated) subluxation. The two categories of subluxation can exist alone, or simultaneously, overlapping at the same segmental level. Furthermore, a Class A subluxation can exist at one segmental level and a Class B subluxation at another. Figure 1 illustrates the etiologies of both classes of subluxation.

The second aspect is concerned with identifying the osseous segment(s) to be adjusted. The system has five Phases, each correlated with specific osseous segments and spinal cord tension. Biomechanical and palpatory findings, combined with other clinical observations, serve as indicators to guide the practitioner in the determination of which Phase is presenting in the patient. Once these correlations are determined, contact on specific osseous segments is made, with appropriate applications of low force to affect an adjustment. This often induces movements of the spine which reduce facilitation within the spinal cord. These movements also promote correction of the misalignment component of the associated vertebral subluxation, which is adaptive to, or in complex with, the spinal cord tension.

Levels of Care

The Phasing System is administered sequentially through three levels of care. A fourth level is currently being investigated. Each level is designed to coincide with a specific set of desired clinical outcomes combined with the patient's assessment of functional status and indicators of health-related quality of life.

A flow chart depicting the clinical scheme of patient evaluation, plan of care, and assessment is presented in Figure 2. All Levels of Care utilize aspects of contemporary chiropractic adjusting techniques and share the following features:

(a) Assessment of the patient's spinal health through a case history and chiropractic examination;

(b) Determination of progress through physical re-assessments and questionnaires to monitor patient and practitioner outcomes; and

(c) Modification of any level of care, deemed to be ineffec-

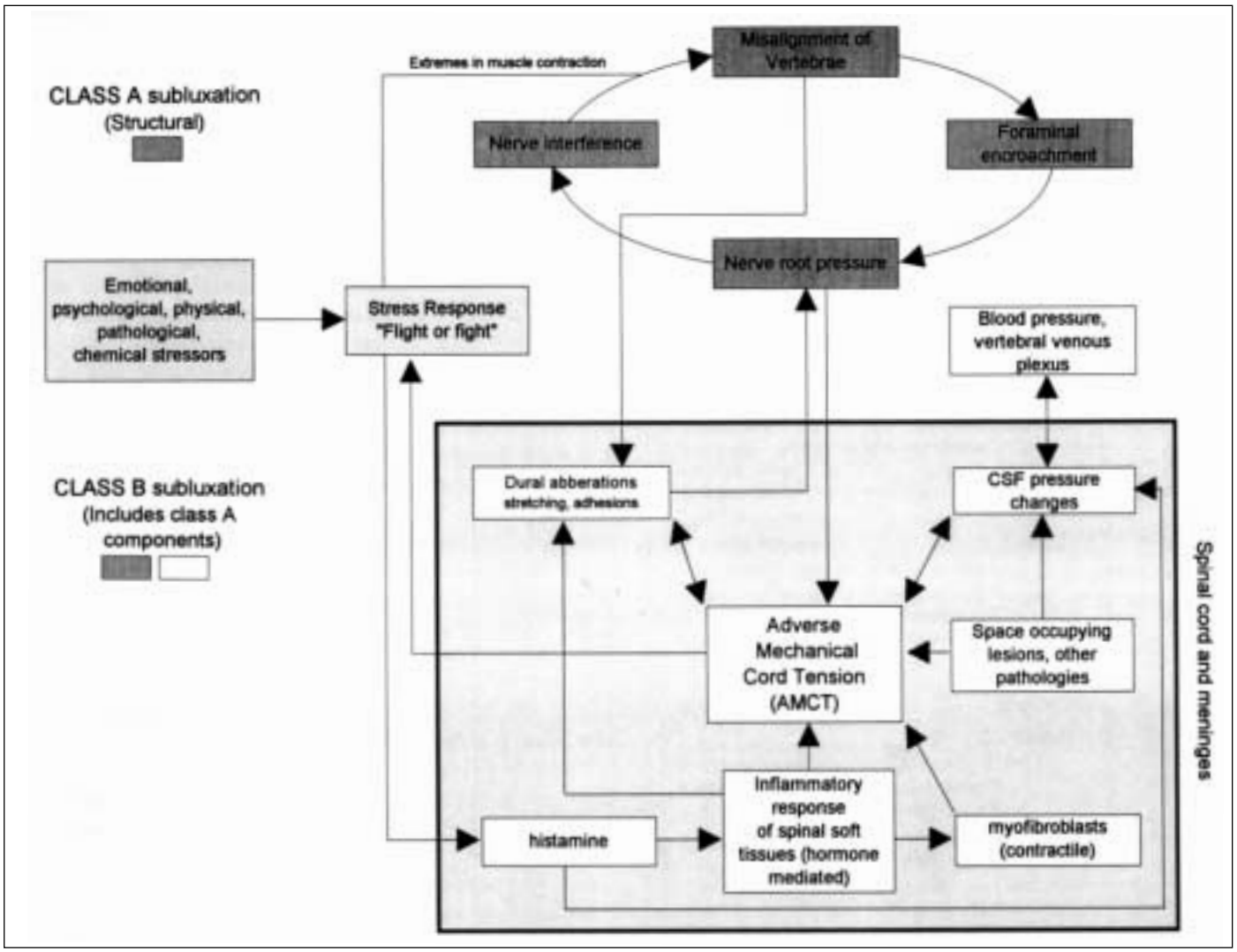


Figure 1. Relationship between Class A (Structural) and Class B (Facilitated) subluxations in regard to physical, physiological, and emotional factors. The arrows suggest that these factors may promote either or both of the two types of subluxation, either of which may then promote the formation of the other. (Source: Epstein D. Position Paper on the Theoretical Basis and Clinical Application of Network Spinal Analysis (NSA) 1995, Longmont, CO. Innate Intelligence, Inc.).

tive or inappropriate, to a level which more accurately parallels changes observed in the patient.

Level One (Basic Care):

Description and Objective:

Level One care is introductory care for new patients, or re-initiation of care following trauma or other periods of stress. The objective is to reduce facilitated (Class B) subluxation to the extent that adaptive muscle contraction patterns are relaxed. This allows the spine to be more flexible in its range of motion, thereby alleviating previous postural maladaptations. Clinical observation indicates that Class B, facilitated subluxations, return frequently in patients who have not experienced substantial reduction of facilitation in the spinal cord.

Clinical Observations:

The practitioner notes changes in objective and subjective signs of vertebral subluxation. The assessments and clinical indicators most commonly used in determining the presence of vertebral subluxation and its further characterization are found in Table 1.

Figure 3 is a flow chart of the clinical Phasing System. Since the chart represents all currently observed possibilities, the pathways leading to identification of two common clinical phases are outlined to illustrate how decisions are handled in the Phasing System. The first test in all instances is the leg check. The first patient illustrated presents with a short leg (right bold line, Fig. 3) and other findings. Contacts were taken to correct an anterior-inferior sacrum with the final result (•), resolution of indicators, being achieved. The second patient illustrated presents with balanced legs (left bold line, Fig. 3). Additional testing led to a contact made at C2/sacral apex resulting in a resolution of indicators (•). Positive indicators are assessed post-adjustment to determine the efficacy of the corrective force applied.

Clinical notations are also made of regions of the spine that stretch or spontaneously move with the adjustment of other segments. For example, adjustment in the cervical region is often accompanied by movement in the lumbar or sacral regions of the spine. This is manifest through muscular and bony movement as subluxated segments related to spinal cord tension receive a self-directed corrective force.

Reduction of spinal facilitation is often accompanied by a smooth, rhythmic muscular movement, which is synchronized with deep respiration. When fully developed, this movement emanates from the sacrum to cranium, segment by segment, exhibiting muscular expansion along the axial and anterior/posterior planes simultaneously, and is referred to as a "Respiratory Wave."

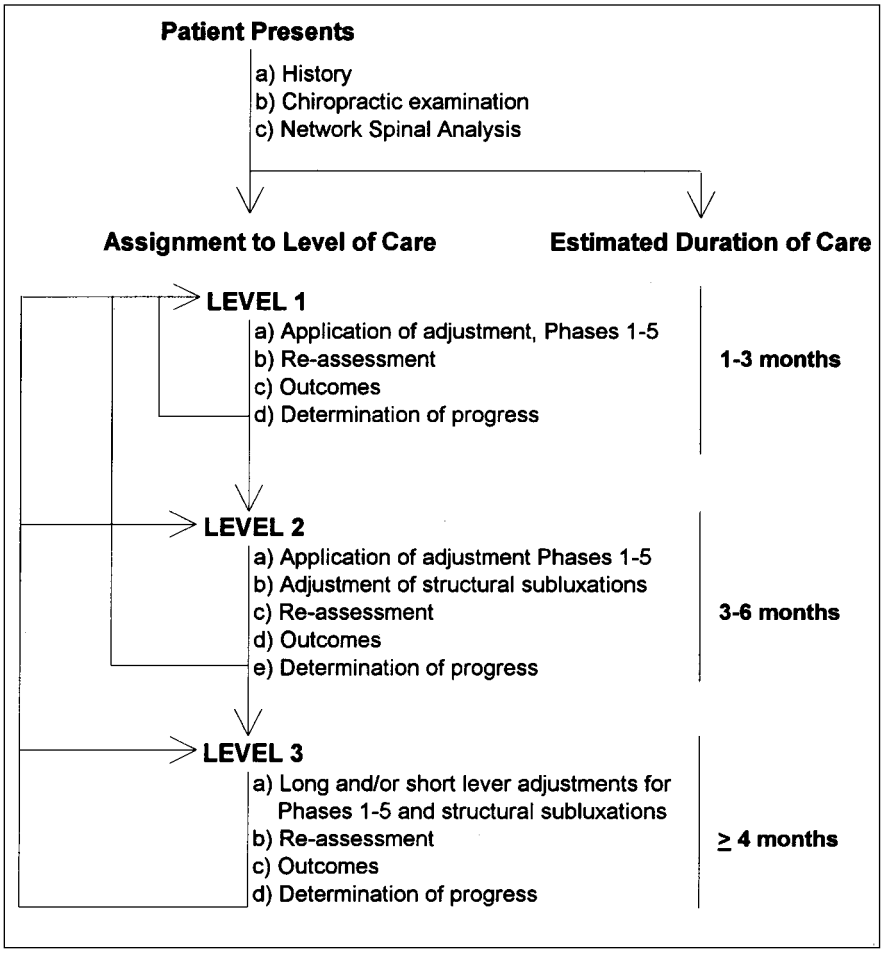


Figure 2. Network Spinal Analysis Plan of Care in regard to patient assessments, re-evaluations, outcomes, and estimated duration of care. The schematic represents the progression of patient assessments through the three current Levels of Care. Evaluation of outcomes at each level determines if the patient will remain in that level, return to the previous level for intermittent care, or move to the next highest level of care (as indicated by the arrows).

Duration of Care and Clinical Assessments:

Level One care generally requires one to three months, with recommended visits of three time per week. During this level of care, a "spinal health" education program is made available to the patient. The program discusses the normal spine and its functions in contrast to a spine exhibiting vertebral subluxation. Concepts such as facilitated subluxation, and signs of improved spinal function such as; the importance of spinal flexibility, respiration, and natural tone associated with spinal integrity, are presented verbally, and supplemented with take-home literature.

A re-examination is performed no later than eight weeks under care, to determine the patient's progress. During this level of care, the practitioner also records findings and maintains information to evaluate the plan of care. Additionally, a questionnaire is given to the patient at the beginning of care and at the re-examination period to assess their personal progress, health related quality of life, and lifestyle changes. If the spine has recovered from the subluxation patterns formed by chronic facilitation, there will be a demonstrable enhanced range of motion, with improved synergistic movement between vertebrae and associated musculature. This is accompanied by an improved muscle tone, deeper respiratory rhythm, and early signs of

quality of life changes (e.g., reduced stress, increased energy).

The end of Level One care is signaled when chronic facilitation is substantially reduced in the spine. At the end of Level One care the patient should have an appreciation of the movements and natural rhythms of their spine.

Level Two (Intermediate Care):

Description and objective:

Patients beginning Level Two of care (Figure 2) will have recovered substantially from the presenting patterns of spinal cord facilitation, and restricted movements, etc. Often, new areas of facilitation arise due to any number of physical, physiological, or emotional variables. However, since new areas of facilitation have not had time to produce secondary (accumulative) maladaptive patterns, the associated vertebral subluxations are more likely to resolve quickly under Level Two care due to improved synergy of spinal components.

Class A (structural) subluxations, which may arise from environmental trauma (Figure 1), are first addressed in Level Two of care, since the body is more accepting of structural adjustments in the absence of chronic underlying facilitation. Any number of adjusting techniques can be utilized. [1] However, the force applied is minimal to moderate, never extreme. The objective of Level Two is to achieve correction of facilitated and structural subluxation and, if only temporarily, the elimination of any "new" or acute facilitation which produces Class B subluxation.

Clinical Observations:

A spontaneous movement of the body, found in NSA, may begin during this level of care. This movement, is referred to as a "Somatopsychic Wave." When fully developed, it is observed as a coordinated wave motion of the major muscle groups, primarily of the back and spine. The wave may originate in the sacrum or occiput and progress to the opposing end of the spine. It may also involve only the neck, or may encompass several regions simultaneously or synchronously such as the arms, legs, and shoulders. As described above for the Respiratory Wave, it is believed to be corrective in nature, gently rocking the affected segments through their range of motion. Even though these waves are not induced consciously, they may be consciously ceased at any time. Although the Somatopsychic Wave may be restricted, during Level Two of care, to a gentle rocking of the spine, the Respiratory Wave (described in Level One of care) will be experienced fully throughout the spine.

Duration of Care and Clinical Assessments:

Level Two care currently requires three to six months, with recommended visits of a minimum of two times per week. The same indicators used in Level One care are used for the identification and/or characterization of the vertebral subluxation (Table 1).

Assessments in this level may be complemented with instrumentation (Table 1), such as surface EMG[34] or thermography, [35] in order to gain a complete, objective profile of spinal patterns. The practitioner performs a re-evaluation of the patient and plan of care at two months into Level Two care. Re-evaluation is repeated in two month intervals until a determination is made in regard to progression to Level Three. In two month intervals, patients are asked to self-report various items, dealing with their perception of changes in their body, using a questionnaire format. They are also asked to comment on occurring traumas, and lifestyle changes.

Level Two of care is considered complete when there is; 1) no consistent re-appearance of facilitated subluxation, 2) a coordinated Somatopsychic Wave, 3) a Respiratory Wave manifested as muscular movements (expansion in the AP and axial planes) synchronous with respiration throughout the spine, 4) spinal contours which are flexible and segments that appear to move in a coordinated fashion without intermittent segmental fixation, 5) effective elimination of vertebral subluxation following corrective adjustment, and 6) exempting any traumatic events, no return of vertebral subluxation in a compensatory cycle.

Level Three (Advanced Care):

Description and Objective:

This level of care is administered to individuals who present with spines free of generalized facilitation (and associated spinal cord tension) or to those exhibiting compensatory structural subluxation. Generally, patients who are in Level Three seek care as a means of enhancing their overall health, not for the alleviation of symptoms or a cure for a particular ailment; consequently, they are referred to as "practice members," as opposed to "patients."

Individuals under Level Three of care present with a spine that is consistently flexible and, as a result of less frequent recurring segmental fixation, exhibit greater segmental synergy. In Level Three care the body has coordinated the Somatopsychic

Table 1
Spinal Assessments for Vertebral Subluxation*

Assessments (Recommended)	Instrument Assessments (Optional)
1. Hard Tissue Palpation	**1. Physical Analysis**
a. Restriction	a. Plumb Line
b. Fixation	b. Photography
c. Misalignment	c. Moire photography
d. Hypermobility	d. R.O.M. measuring devices
e. Postural shifts	e. Cine radiography
2. Muscle Palpation	f. Bilateral weight scales
3. Phase Indicators	**2. Physiological/Neurological**
f. Short Leg Syndrome (Derifield)	g. Temperature patterns
g. Heel tension	h. Imaging
h. Elevated leg	i. Surface EMG
i. Cervical syndrome	j. Biochemical profiles
j. Ankle Eversion Stress	k. EEG
k. Leg adduction/abduction	l. Muscle testing
l. Z-flick	
m. Leg crossover (positive ilium)	
n. Sacrotuberous ligament tension	
o. Sacral/thoracic correlation	
p. Respiration changes	
4. Observation of Respiratory & Somatopsychic waves	

*The assessments and indicators currently used in NSA have been observed to be adequate to fulfill its objective; but are not intended to exclude other assessments or indicators which may be of equal value in the evaluation and characterization of vertebral subluxation.

Source: Epstein D. Position Paper on the Theoretical Basis and Clinical Application of Network Spinal Analysis (NSA). Longmont, CO: Innate Intelligence, Inc. 1995

Wave from sacral to cranial ends of the spine. Respiratory and Somatopsychic Waves radiate through the spine and/or extremities in synchronous, longitudinal, and coherent patterns.

A distinguishing feature of this level of care is the means by which subluxation correction is addressed. Frequently, the approach is to use an extremity as a long lever, or the head as a short lever, to position the spinal contours and optimize the "waves" thereby enhancing self-correction of the vertebral subluxation. The force of adjustments administered in Levels One and Two is also modulated in Level Three care.

Clinical Observations:

The practitioner observes and notes subluxation patterns using the indicators presented in Table 1. Effects of the Respiratory and Somatopsychic Waves are also observed and noted with regard to the efficacy with which subluxation patterns are corrected by these movements.

Duration of Care and Clinical Assessments:

Although the duration of care for Level Three is projected to be at least four months, the exact duration is yet to be determined. This uncertainty arises since Level Four care will involve those who no longer exhibit generalized facilitation within the spine and have developed coordinated Respiratory and Somatopsychic Waves to the extent that self-correction is consistent. Currently, even the most advanced recipients of NSA have intermittent periods when Level One and Level Two care is required. Only continued application of NSA to its current pool of recipients will permit a more meaningful determination of the duration of care for Level Three.

The practice member, during this level of care, is educated and encouraged to refrain from conscious interference to the body's natural movements. Since the wave phenomena can be consciously over-ridden at any time, it is important for the practice member to understand what the body is attempting to achieve. In this sense, the practice member is encouraged to "act in harmony" with the self-induced movements.

The practitioner evaluates the spine closely during this Level to assess whether the spine is maintaining its integrity or reverting back to a state requiring Level One or Level Two of care. This assessment is important as a duration of care for this level is yet to be determined; ultimately resting on the length of time required for practice members to consistently maintain the level of spinal stability with which they entered into Level Three care.

Table 2
Effect of Awareness of Somatopsychic Wave Movements or Respiratory Wave in Network Patients' Wellness Index Outcomes.

Index	Somatopsychic Wave: Aware (mean ± S.D.)**	Somatopsychic Wave: Not Aware (mean ± S.D.)
Physical State	0.65 ± 0.45	0.40 ± 0.51 *
Mental/Emotional State	0.75 ± 0.67	0.45 ± 0.56 *
Life Enjoyment	0.73 ± 0.68	0.42 ± 0.54 *
Stress Evaluation	0.88 ± 0.83	0.53 ± 0.73 *
Quality of Life	1.07 ± 1.03	0.54 ± 0.82 *
	Respiratory Wave	
	Aware (mean ± S.D.)	Not Aware (mean ± S.D.)
Physical State	0.65 ± 0.56	0.40 ± 0.49 *
Mental/Emotional State	0.76 ± 0.20	0.38 ± 0.47 *
Life Enjoyment	0.74 ± 0.67	0.33 ± 0.49 *
Stress Evaluation	0.88 ± 0.83	0.47 ± 0.65 *
Quality of Life	1.05 ± 1.03	0.53 ± 0.75 *

* Statistically significant using Mann-Whitney one way analysis of variance (P<0.001).

**Mean scores (±S.D.) are composite scores derived from indices measuring wellness-related parameters in Blanks et al. (in preparation). A higher score indicates greater reported change between "Before" scores and scores "At Present."

Outcomes

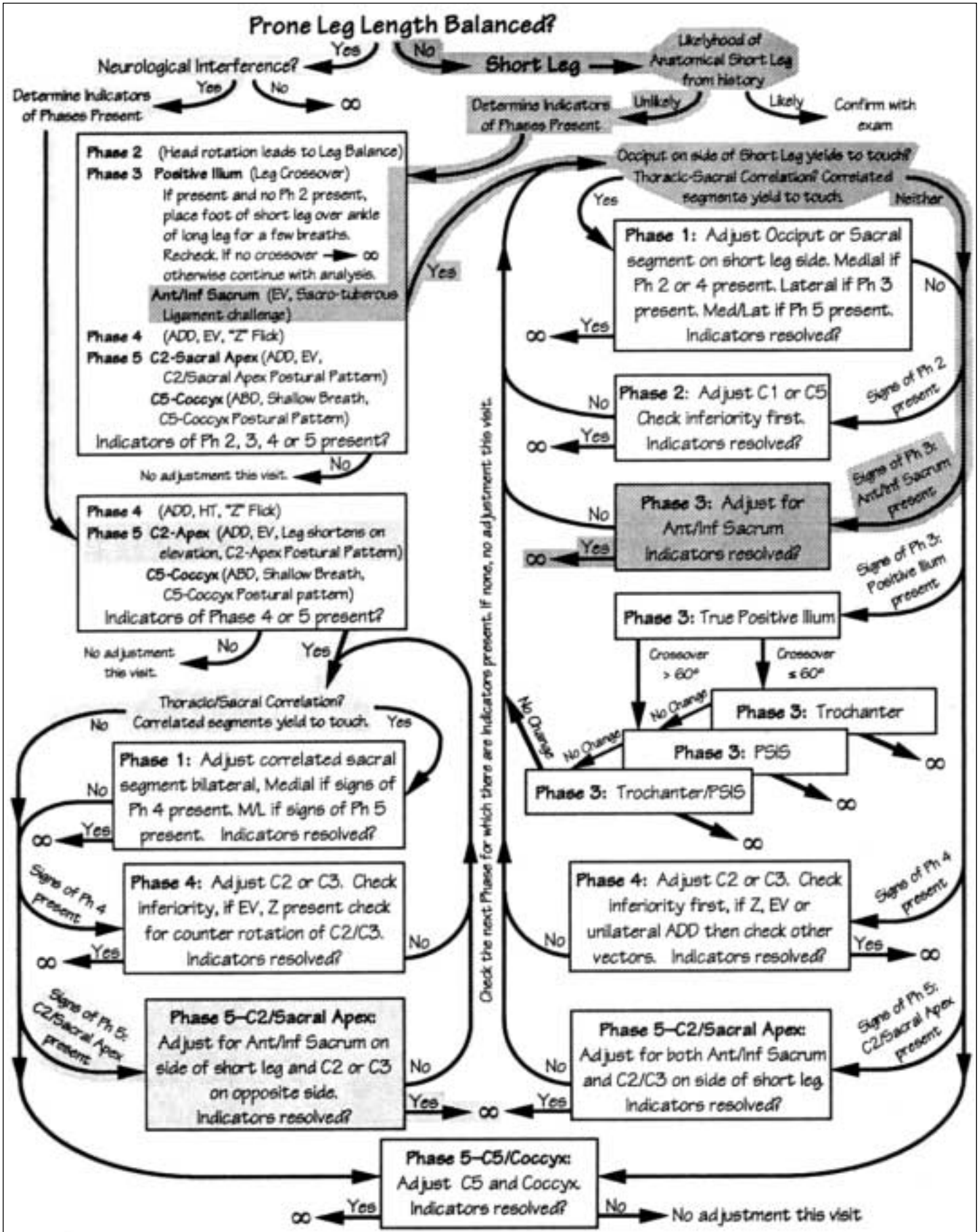
Proponents of the Network Approach have considerable interest in several issues relating to its theoretical basis, practice as a health care discipline, and its effects within the recipient population. The following questions have been addressed as a first step in elucidating this approach to the correction of vertebral subluxation:

1. How wide spread is the Network Approach?
2. What are the demographics of recipients under care relative to age, gender, ethnicity, occupation, education, and income etc?
3. Is the Network Approach practiced consistently across geographic regions?
4. What is the occurrence and time of onset of the Respiratory and Somatopsychic Waves?
5. Are recipients satisfied with the care?
6. Are there wellness benefits?
7. Do the Respiratory and Somatopsychic Waves influence the outcomes of care?
8. What aspects should be studied next?

Findings

A retrospective study was recently conducted by Blanks et al. (in preparation) between November, 1994 and April, 1995 among an estimated 13,200 patients receiving Network Care. The study results which provided information relative to the questions posed above, were based on 2,818 responses, or 22% of the estimated pool of recipients. Additionally, the study reported five variables, as they related to five wellness indices.

➞ Figure 3. (On page 57) Vertebral subluxation phases determined by leg length and other indicators. This flow chart represents the full range of combinations of major indicators of facilitated subluxation currently used in NSA. However, not all indicators may be present. Facilitated subluxations are identified in five Phases, each being a combination of specific segments linked to specific patterns of adverse spinal cord tension observed through indicators of musculoskeletal aberrations or dysfunctions. Two typical pathways are shaded as examples of the "logic tree" employed in determining the presenting vertebral subluxation phase.
ABD - Stress upon prone passive abduction of leg(s); ADD - Stress upon prone passive adduction of leg(s); EV - Stress upon prone passive eversion of heel; HT - Stress upon prone passive flexion/extension of heel; Z - "Z" Flick occurs upon prone head rotation if there is a flicking movement of one or both legs; Leg Crossover -The prone short leg becomes long during passive bending of legs at knee; Ph 5: C2/Apex Postural Pattern - Elevated shoulder and/or hip. Torso flexed from thoracics sitting.; Ph 5: C5/Coccyx Postural Pattern - Flat or reversed cervical curve in prone position.
∞End point of evaluation, indicators have resolved.



(Source: Epstein D. Position Paper on the Theoretical Basis and Clinical Application of Network Spinal Analysis (NSA) 1995, Longmont, CO. Innate Intelligence, Inc.)

While the specifics of methodology and findings of the retrospective investigation will be reported in a separate paper, some general aspects of the study and other information not included in the Blanks et al. manuscript are reviewed in this paper.

Patients participating through questionnaires were randomly generated from the offices of practitioners representing 34 states in the U.S., and Puerto Rico, as well as two foreign countries, Australia and Canada. Female patients predominated. Interestingly, this finding is consistent with reports over the last several years demonstrating a distinct gender bias in conventional and unconventional medicine. [36-37] The gender bias in this study has been further investigated by Dobson et al., (in preparation) for comparison with these other reports.

From the 330 practitioners contacted, 116 also responded to a Doctor's Questionnaire. Eighty-three percent of these practitioners reported using the Network Approach exclusively. Of this group, ninety seven percent performed an analysis for the presence of vertebral subluxation on every visit, and an average of 95% routinely used the indicators recommended in the Network Approach (Table 1). These finding suggest that the Network Approach is applied consistently over the range of practices responding.

Since the wave phenomena observed in patients are believed to be associated with the correction of vertebral subluxation, as well as a process involved with diminution of facilitation in the spine, it was of interest to evaluate "wave awareness" relative to wellness benefits. This hypothesis was tested by evaluating the 5 wellness indices as a function of those experiencing or not experiencing the Respiratory and/or Somatopsychic Waves. A significant increase in positive self-reporting in all five indices was shown for those experiencing the wave phenomena, as opposed to those who had not (Table 2).

Additionally, practitioners were asked whether they had observed significant (positive) changes in vertebral subluxation indicators in patients that had not experienced the wave phenomena as opposed to those who had experienced either the Respiratory Wave and/or the Somatopsychic Wave. Ninety-five percent of practitioners reported that the greatest change in indicators was observed in patients who had experienced only the Respiratory Wave, while (91%) observed changes in subluxation indicators in patients that had experienced both phenomena. Fewer (64%) observed changes when only the Somatopsychic Wave had been experienced.

The significance of the practitioner responses with regard to positive changes in subluxation indicators in patients experiencing the Respiratory Wave, or both of the "Waves", as opposed to experiencing only the Somatopsychic Wave, will have to be determined from additional study.

In summary, it is apparent that changes which suggest resolution of subluxation to the practitioner, are more evident in patients that have experienced the Respiratory Wave and/or the Somatopsychic Wave. This parallels the higher ratings in wellness measures by the patients actually experiencing the waves (Table 2). These collective responses clearly indicate the significance of these phenomena relative to an enhanced perception of wellness as determined in wellness measures. It is of interest, therefore, to pursue these findings as they impact with other factors believed to influence individual health.

Discussion

These findings are supportive of the positive benefits of the Network Approach to health care using the subluxation-based chiropractic model. It will be of interest to follow the population of patients under NSA care to re-examine the demographic distinctions and wellness outcomes which characterized the population in the retrospective study by Blanks et al.

The strong gender bias also observed in the retrospective study was found to be consistent with other studies which report similar findings in conventional and unconventional or alternative medicine. [36-37] In this regard, Dobson et al. (in preparation) provide an interesting insight on the significance of gender in reporting health care outcomes, as well as possible explanations for why a gender bias exists in the patient population receiving Network Care. This information has also served as an alert to Network practitioners to recognize that males and females apparently have different reasons and needs for seeking care, as well as the fact that they report differently in regard to wellness outcomes. Future research will need to address the issue of gender to achieve realistic clinical goals and to improve the wellness care delivery with NSA.

From the retrospective studies conducted, it is apparent that the Network Approach is practiced widely and consistently. However, more definitive confirmation as to the efficacy of NSA awaits the results of longitudinal, clinical trials providing more specific data on outcomes. In this regard, it will also be necessary to conduct follow-up questionnaires to evaluate the influence of administering the Phasing System through specific levels of care to ascertain effects on the various parameters of practitioner and patient outcomes, and to further demonstrate consistency in its application.

Future studies will be aimed at characterizing the biological basis of the wave phenomena, as they have been shown to positively impact on self-reported wellness indicators. Additional study is underway to investigate physiological changes in subjects under care. The positive responses derived from the retrospective study suggest that an improved ability to cope with stress is a positive benefit of care. Relative to this finding, a longitudinal study is scheduled to commence which investigates changes in stress-related hormones of the pituitary-adrenocortical axis. Although other forms of health care also report enhanced stress adaptation, little has been done to evaluate the physiological events which accompany these observations. Consequently, it is imperative to link anecdotal reports of wellness outcomes to substantive physiological measurements in order to clarify the processes through which these benefits occur.

The research conducted to this date, along with the ambitious research program planned for the immediate future, has been designed to accept the challenge of stating and studying the theoretical basis of NSA, describing its benefits, and rigorously reporting patient outcomes. The objective of this type of investigation is to provide the scientific community and public at large with a body of knowledge concerning NSA which permits an evaluation of its value in the health care area; ultimately determining the extent of its utilization.

NSA Training

NSA is currently taught to doctors of chiropractic and chiropractic students at the postgraduate level. Seminars are offered across the U.S. and abroad several times per year. The complete program of seminars is presented under the auspices of the Innate Intelligence, Incorporated. In 1997, only candidates successfully completing practical and written examinations will be certified to practice NSA.

References

1. Leach RA. The Chiropractic theories: a synopsis of scientific research, 2nd ed. Baltimore: Williams and Wilkins, 1986: 4.

2. Bergman TF. Chiropractic technique: an overview. Lawrence DJ, ed. Advances in Chiropractic. St. Louis: Mosby, 1995; 2:429-31.

3. Collinge W. Alternative medicine. New York: Warner Books, 1996.

4. Barrett S. Complementary self-care strategies for healthy aging. Geriatrics 1993; 17 (3):49-52.

5. Eisenberg DM, Kessler RC, Foster C, Norlock FE, Calkins DR, Delbanco TL. Unconventional medicine in the United States. New England J Med 1993; 328(4): 246-52.

6. Prigogine I. Order out of chaos. New York: Bantom Books, 1994: 226-290.

7. Breig A. Adverse mechanical tension in the central nervous system. New York: John Wiley & Sons, 1978.

8. Sunderland S. Meningeal neural relations in the intervertebral foramen. J Neurosurg 1992; 40: 756-761.

9. Pert CB. Neuropeptides, the emotions and bodymind. Noetic Sciences Review 1987; 2: 13-18.

10. Black PH. Psychoneuroimmunology: brain and immunity. Scient Am 1995 (Dec.): 16-25.

11. McGinnis L. Alternative therapies. Cancer 1991; 67: 1788-92.

12. Kenny JW. The consumer's view of health. J Adv Nurs 1992; 17(7):829-34.

13. Strauss JB. Chiropractic philosophy. PA: Foundation for the Advancement of Chiropractic Education, 1991: 66-69.

14. Lantz CA. The vertebral subluxation complex part II: the neuropathological and myopathological components. Chiro Res J 1990; 1(4): 1-17.

15. Schmorl G, Junghanns H. The human spine in health and disease. 2nd ed. New York: Grune and Stratton, 1971.

16. Korr IM. Proprioceptors and the behavior of lesioned segments. Stark EH, ed. Osteopathic Medicine. Acton: Publication Sciences Group, 1975: 183-89.

17. Hadley LA. Intervertebral joint subluxation, bony impingement and foramen encroachment with nerve root changes. Am J Roentgenol Radium Ther 1951; 65: 377-402.

18. Sunderland S, Bradley KC. Stress strain phenomena in human spinal nerve roots. Brain 1961; 84: 120-24.

19. Epstein JA, Epstein BS, Lavine LS, Carras R, Rosenthal AD, Sumner P. Sciatica caused by nerve root entrapment in the lateral recess: The superior facet syndrome. J Neurosurg 1972; 36: 584-89.

20. Kovacs A. Subluxation and deformation of the cervical apophyseal joints. Acta Radiol 1955; 43: 1-15.

21. Lindbloom K, Rexed B. Spinal nerve injury in dorsolateral protrusions of lumbar discs. J Neurosurg 1948; 5: 413-32.

22. Gelfan S, Tarlov IM. Physiology of spinal cord, nerve root and peripheral nerve compression. Am J Physiol 1956; 185: 217-29.

23. Rainer GW, Mayer J, Sadler TR, Dirks D. Effect of graded compression on nerve conduction velocity. Arch Surg 1973; 107: 719-21.

24. Sharpless SK. Susceptibility of spinal roots to compression block. Golstein M, ed. The research status of spinal manipulative therapy. Washington: GPO, 1975: 155-61.

25. Jackson BL, Harrison DD, Robertson GA, Barker WF. Chiropractic biophysics lateral cervical film analysis reliability. J Manip Physiol Ther 1993; 16: 384-91.

26. Faucret B, Mao W, Nakagawa T, et al. Determination of bony subluxations by clinical, neurological, and chiropractic procedures. J Manip Physiol Ther 1980; 3:165-76.

27. Bergmann TF. Chiropractic technique: an overview. In: Lawrence DJ, ed. Advances in Chiropractic. Saint Louis: Mosby, 1995; 2: 416.

28. Ochs S. Energy metabolism and supply of P to the fast axoplasmic transport mechanism in nerve. Federation Proc 1974; 33: 1049-58.

29. Sjostrand J, Rydvik I, Lundborg G, Mclean WG. Impairment of intraneural microcirculation, blood nerve barrier and axonal transport in experimental nerve ischemia and compression. Korr IM, ed. The neurobiologic mechanisms in manipulative therapy. Plenum: Mosby, 1978: 337-55.

30. Luttges MW, Kelly PT, Gerren RA. Degenerative changes in mouse sciatic nerves. electrophoretic and electrophysiologic characterization. Exper Neurol 1976; 50: 703-06.

31. Pert CB, Ruff MR, Weber RJ, Herkenham M. Neuropeptides and their receptors: a psychosomatic network. J Immun 1985; 135 (2 Sup): 820s-26s.

32. Panjabi M. The stabilizing system of the spine, part I. function, dysfunction, adaptation, and enhancement. J Spin Disorders 1992; 5 (4): 383-89.

33. Cavanaugh JM. Neural mechanisms of lumbar pain. Spine 1995; 20 (16): 1804-09.

34. Kent C, Gentempo P. Protocols and normative data for paraspinal EMG scanning in chiropractic practice. Am Chiro 1990 (Oct.): 64-67.

35. Plaugher G, Lopes M, Melch P, Cremata E. The inter- and intra- examiner reliability of a paraspinal skin temperature differential instrument. J Manip Physiol Ther 1991; 14(6):361-67.

36. Cleary PD, Mechanic D, Greenley JR. Sex differences in medical care utilization: an empirical investigation. J Health & Soc Behav 1982; 23:106-19.

37. Thomas KJ, Carr J, Westlake L, Williams BT. Use of non-orthodox and conventional health care in Great Britain. Br Med J 1991; 302(6770):207-10.