ALL IN ONE DAY SEMINAR, CLINICAL EVIDENCE BASED PRACTICE OF CHIROPRACTIC: ETHICS & LAW, BASIC SCIENCE (NUTRITION), & ADVANCED CHIROPRACTIC ADJUSTIVE TECHNIQUE.

Presented by
Mark Cymerint D.C.

<u>California Approval Numbers:</u>
CA-D-24-06-05011 Advanced Adjustive Technique
CA-D-24-06-05010 Basic Science (Nutrition)
CA-D-24-06-05012 Ethics & Law

<u>Arizona Approval Number:</u>
AZCE23494
“All In One Day, Clinical Evidence Based Practice of Chiropractic: Principles of Practice, Ethics, and Chiropractic Adjustive Technique.”

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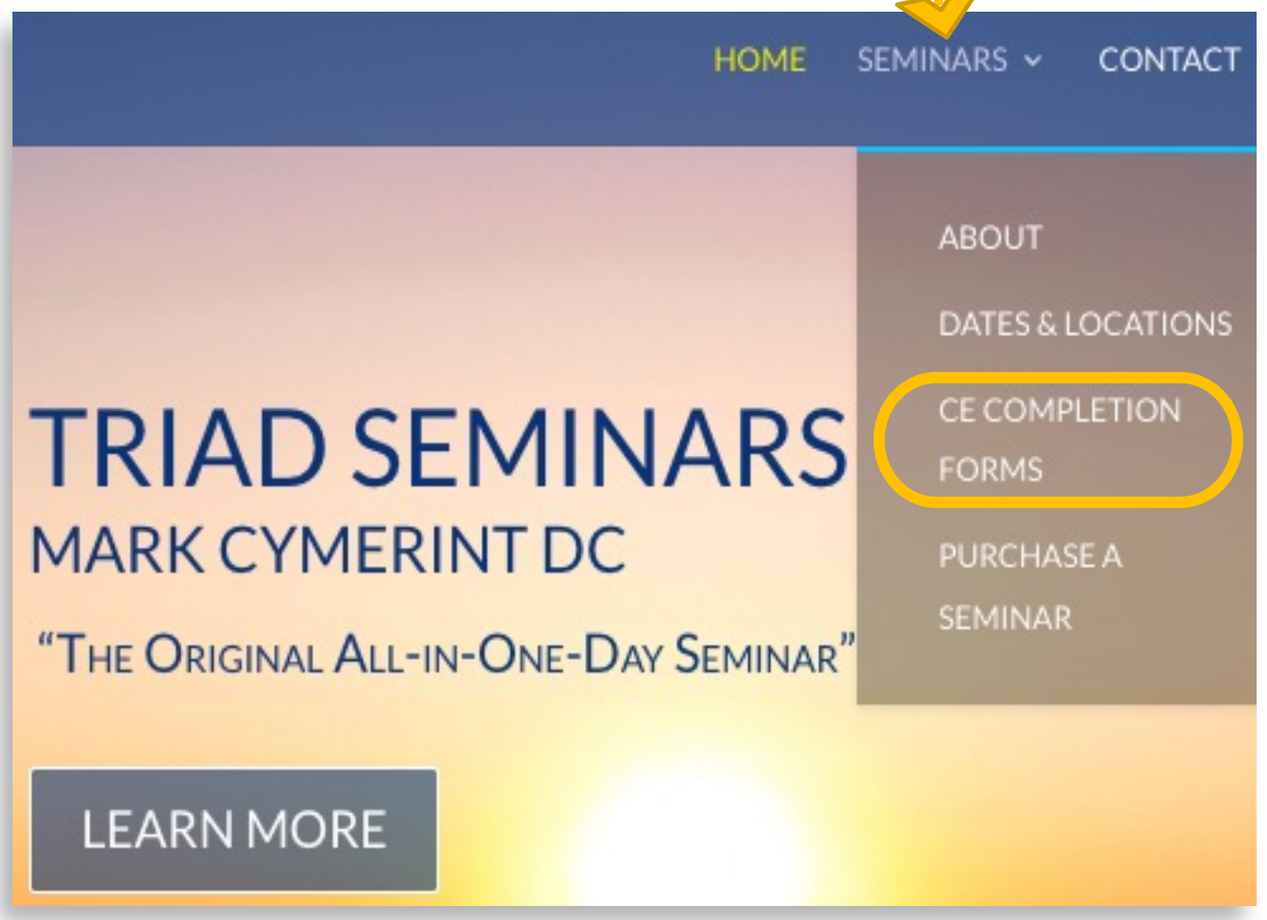

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III. ADVANCED CHIROPRACTIC ADJUSTIVE TECHNIQUE

A. OVERVIEW OF CLINICAL POSTURE NEUROLOGY

1. Posture Analysis / Evaluation of A to P and Lateral Postures
    a. Functional Movement Techniques using kinesiology tape for posture correction.
2. Posture Correction/ Instrument Proprioceptive Posture Balancing
3. Posture & Systemic Health- A review of the medical literature
4. Forward head posture research in children
5. A current review of neurology literature including: posture, proprioception & posture, and conditions commonly treated by chiropractic methods.

Journal of Manipulative and Physiological Therapeutics
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COMMENTARY

JMPT

A Normal Spinal Position: It's Time to Accept the Evidence

INTRODUCTION

Recent trends in our chiropractic profession seem to be leading away from wellness care into an exclusive focus on short-term care for relief of symptoms, especially pain.[1] In contrast, some recent articles authored by CBP Nonprofit, Inc. researchers express an interest in spinal reconstruction, structural outcomes, and care beyond the mere relief of symptoms.[2-6] In a recent commentary, Haas et al[7] have taken exception to this approach.

A commentary by Haas et al[7] concerning one of our recent papers[8] expressed a paradigm for chiropractic science and patient treatment that is different from that expressed in our recent literature reviews and original publications. Their views on normal spinal position, radiograph usage, radiograph reliability, and spinal rehabilitation of normal structure, as expressed in their commentary, did not include mechanical engineering principles, which we believe necessary for understanding the stresses and strains in abnormal or asymmetric loading of spinal tissues.

In 1998, we had discussed a number critical flaws in 8 commonly held beliefs espoused by some diplomate chiropractic radiologists.[8] Thus, given the fact that the "conventional wisdom" of chiropractic radiologists was challenged, it was not surprising that there were a total of 8 authors and consultants who contributed to the rebuttal commentary of Haas et al.[7] What was not expected was the divergence into a critical analysis of Chiropractic Biophysics (CBP) methods and the Harrison spinal model,[9] which is used as an anatomical outcome for patients receiving CBP-based treatment. However, we are pleased to both address those raised concerns and present our rebuttal to Haas et al's misconceptions about the use of radiography in chiropractic clinical practice.

Because this normal spinal model was only self-published until 1992,[10-12] some have denied the existence of the Harrison normal spinal model and its implications for physiology. These implications were discussed in a short review of Wolff's law (bone remodels to stress) and Davis' law (soft tissue remodels to stress) for abnormal sagittal spinal configurations.[3] Because this Harrison model has recently been published in the indexed literature,[13-15] its existence can no longer be denied or ignored.

Inasmuch as Haas et al[7] had many different topics in their commentary and did provide section titles, it is convenient to respond with reference to those section titles. It is noted that some of their section titles are obscure and certainly not mainstream (eg, their reference to Sackett); nonetheless, the titles are useful as objects for debate. First, however, we present a logical approach to movements in upright posture, from which much about a normal upright position can immediately be derived.

It is a basic theorem of physics and engineering that the movement of any object can be decomposed into rotation, translation, and deformation.[20] Whereas White and Panjabi[21] have used this theorem to describe the 6 degrees of freedom (DOF) of individual spinal segments (rigid bodies), we have used this theorem to express all possible movements of the human head, thoracic cage, and pelvis in 3 dimensions.[10-11] Figs 1 and 2 are reprinted from a previous article in the *Journal of Manipulative and Physiological Therapeutics*.[22] These movements will form the basis on which we illuminate a normal postural position.

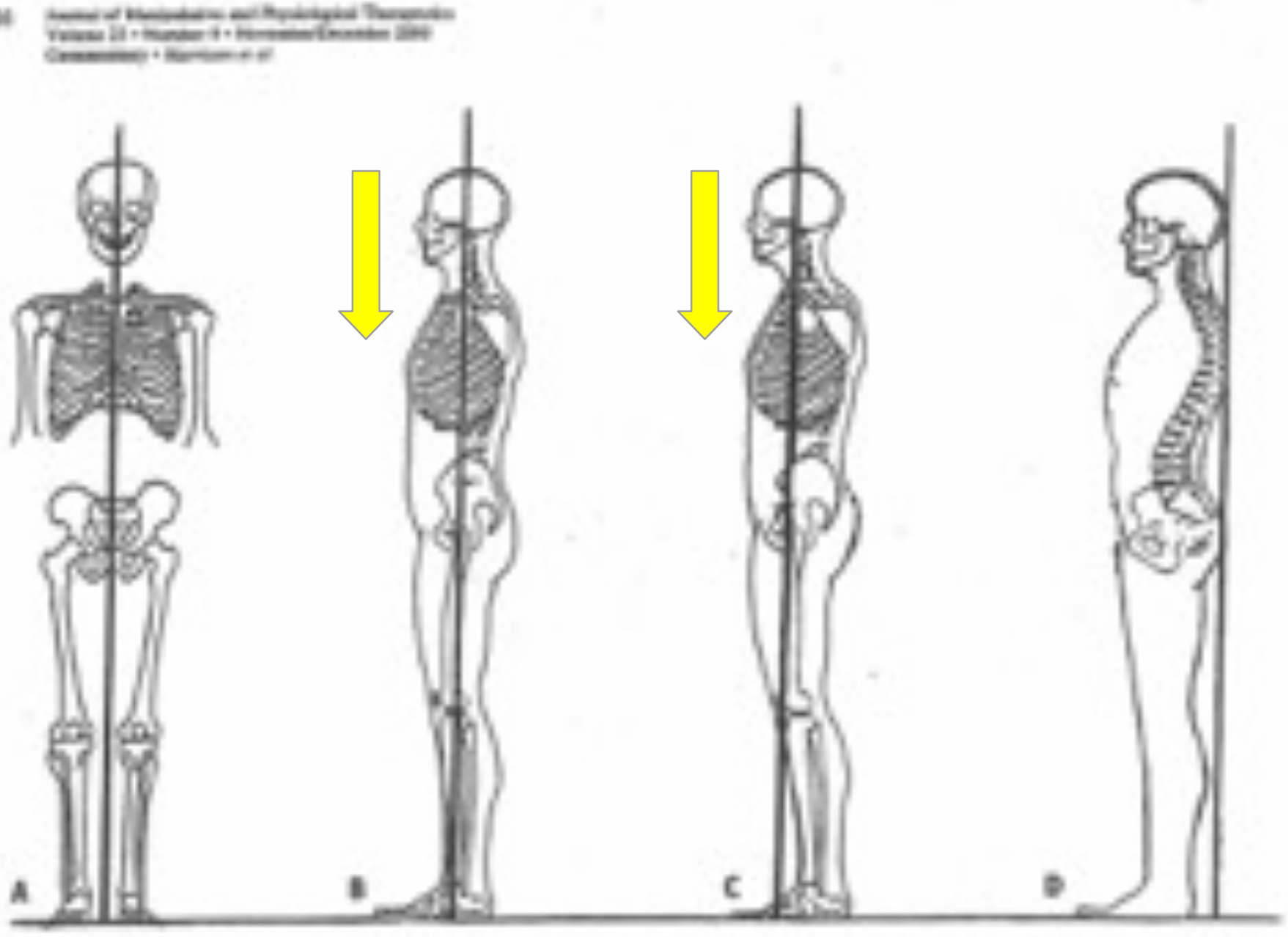
After providing a review of normal upright position in terms of the engineering principles and literature reviews to be presented below, analysis of chiropractic manipulations (which are mostly torsional loads) will lead the reader to conclude that diversified manipulation is inadequate for obtaining a structural change in the neutral resting posture. Thus, precise postural setups (such as those used in the CBP technique) are recommended for the sake of obtaining structural correction in a patient's spine after the relief of symptoms.

Biologic Plausibility and Validity

Haas et al[7] defined "biologic plausibility" for us. They appear to have assumed that the only important "biologic process" is back pain, and on the basis of that view they assume that it is unnecessary to address the upright spinal configuration under gravity. In addition, they state that our model is "merely a mathematical description of optimal stress on a static system".[7] We now reply that back pain is a multifactorial condition. The process of spinal degeneration and abnormal biomechanics causing mechanical distortions of the central nervous system (CNS) is better characterized as a degenerative disease process. Thus, symptoms appear after the disease process is well advanced (as is the

Picture B: Representative of Normal Spinal Model & Good/Perfect plumb line with equal weight distribution along the entire spinal column & joints of the spine.

Picture C: Shows an anterior forward head posture (slightly) and how the plumb line falls anterior to the spinal column & all other joints.



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FUNCTIONAL MOVEMENT TECHNIQUES USING KINESIOLOGY TAPE FOR POSTURE CORRECTION

PHYSIOLOGICAL EFFECTS OF TAPING ON THE HUMAN BODY

Purpose of Taping:

1. Pain Mitigation
2. Decompression
3. Neurosensory Input

Two effects of taping:

1. Tape mechanically decompresses the skin and underlying tissues
2. Stimulates sensory nerves in the skin.

FUNCTIONAL MOVEMENT TECHNIQUES: KINESIOLOGY TAPING

- As tape is placed on the skin, it causes an alteration of the afferent signals going from the taped area to the brain.
- The brain's response to the incoming information is to alter the efferent signals returning to the taped area.
- Taping alters proprioception, muscle contraction timing and forced output, as well as range of motion.

KINESIOLOGY TAPING CAUTIONS & CONTRAINDICATIONS

Cautions:

- Cautions:
  - Infants
  - Elderly
  - Pregnant patients *(especially in last trimester)*

- **Remember:**
  - Don't crank tape.
  - Tape can cause skin irritations, contact dermatitis, or blisters.

Contraindications:

- Open wounds, skin infection, active cancer, deep vein thrombosis, kidney disease, and congestive heart failure.

KINESIOLOGY TAPING CARE

Use soap and water, or mix rubbing alcohol with water to cleanse the area to be taped.

Patient's skin must be clean and dry.

Do NOT tape over hairy patients.

Round all edges of tape with scissors to prevent peeling. Rub tape to activate adhesive.

Tape is water resistant and can last up to 5 days (NO LONGER).

If tape gets wet, DO NOT use hair dryers. Simply pat dry with a towel.

To take off **DO NOT** rip off.
Tape can be removed gently with:

- Baby oil
- Lathered soap
- Hot water in shower

FUNCTIONAL MOVEMENT TECHNIQUES USING KINESIOLOGY TAPE FOR POSTURE CORRECTION

Pain taping requires 1-3 pieces of tape:

2 Stabilizing Pieces - Run along the length of the area being taped.

Applied with NO stretch

Apply with anchors on both top and bottom

1 Decompression Piece - Applied perpendicular (90°) to the stabilization strip.

Applied with 0-50% of stretch in the middle.

Applied over area of greatest pain.

No anchors should be torn in the middle of the tape.

Make sure *all tape endings are on skin, NOT tape.*

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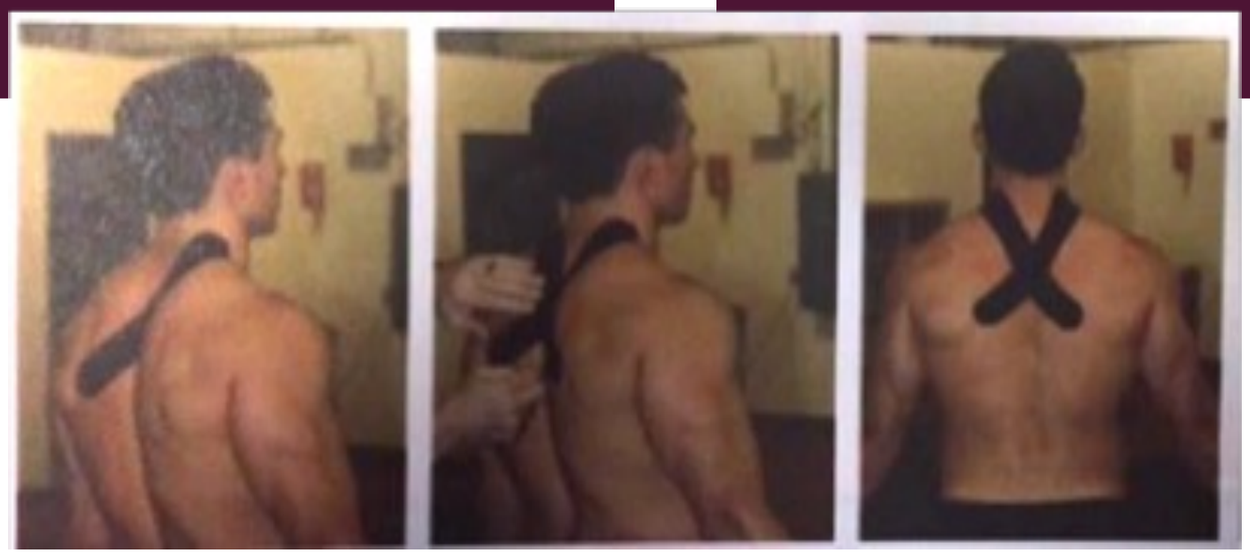
FUNCTIONAL MOVEMENT TECHNIQUES USING KINESIOLOGY TAPE FOR POSTURE CORRECTION

Basic postural faults that are noticed in this region are forward head posture, slumped and rounded shoulders, internal rotation, and/or un-leveling of the shoulders.

1. Position patient in the opposite (neutral), but NOT exaggerated, of their unwanted posture.

2. Simply position the patient where you want them and apply the tape.



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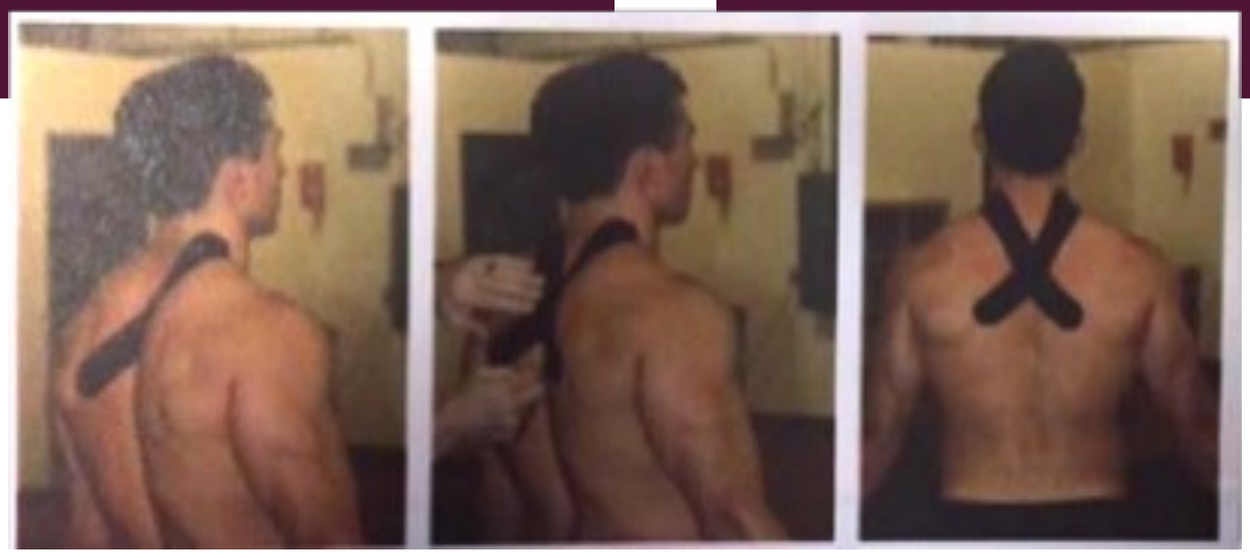

PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION KINESIO TAPING IMPROVES RANGE OF MOTION OF ANKLE DORSIFLEXION AND BALANCE ABILITY IN CHRONIC STROKE PATIENTS

Date & Journal: Healthcare (Basel) . 2021 Oct 22.

Abstract

This study aimed to determine the effect of a proprioceptive neuromuscular facilitation (PNF) pattern Kinesio taping (KT) application on the ankle dorsiflexion range of motion (DF-ROM) and balance ability in patients with chronic stroke. This crossover study included 18 patients with stroke. The subjects were randomly assigned to three interventions: barefoot, ankle KT (A-KT), and PNF-KT. The A-KT was applied to the gastrocnemius and tibialis anterior (TA) muscles, and subtalar eversion. The PNF-KT was applied on the extensor hallucis, extensor digitorum, and TA muscles. DR-ROM was measured using the iSen™, a wearable sensor. Balance ability was assessed based on static balance, measured by the Biodex Balance System (BBS), and dynamic balance, measured by the timed up and go (TUG) test and dynamic gait index (DGI). Compared with the barefoot and A-KT interventions, PNF-KT showed significant improvements in the ankle DF-ROM and BBS scores, TUG, and DGI. PNF-KT, for functional muscle synergy, improved the ankle DF-ROM and balance ability in patients with chronic stroke. Therefore, the application of PNF-KT may be a feasible therapeutic method for improving ankle movement and balance in patients with chronic stroke. Additional research is recommended to identify the long-term effects of the PNF-KT.

Park D, Bae Y. Proprioceptive Neuromuscular Facilitation Kinesio Taping Improves Range of Motion of Ankle Dorsiflexion and Balance Ability in Chronic Stroke Patients. Healthcare (Basel). 2021 Oct 22;9(11):1426. doi: 10.3390/healthcare9111426. PMID: 348284

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EFFECTS OF RIGID AND KINESIO TAPING ON SHOULDER ROTATION MOTIONS, POSTERIOR SHOULDER TIGHTNESS, AND POSTURE IN OVERHEAD ATHLETES: A RANDOMIZED CONTROLLED TRIAL

DATE & JOURNAL: J SPORT REHABIL . 2019 MAR 1.

Abstract

Context: Alterations in posture and motion patterns are thought to play a role in developing shoulder injuries in overhead athletes. Taping is widely used in the sporting population, but there are limited empirical data regarding its effectiveness.

Objectives: To determine and compare the effects of rigid and kinesio taping on shoulder rotation motions, posterior shoulder tightness (PST), and posture in overhead athletes.

Conclusions: Kinesio taping may improve and rigid taping may worsen glenohumeral internal rotation and PST in overhead athletes. For increasing total rotation range of motion, kinesio taping is superior to rigid taping. Taping did not affect posture. Short-term kinesio taping in overhead athletes may be useful to improve glenohumeral internal rotation, total rotation range of motion, and PST.

Gulpinar D, Tekeli Ozer S, Yesilyaprak SS. Effects of Rigid and Kinesio Taping on Shoulder Rotation Motions, Posterior Shoulder Tightness, and Posture in Overhead Athletes: A Randomized Controlled Trial. J Sport Rehabil. 2019 Mar 1;28(3):256-265. doi: 10.1123/jsr.2017-0047. Epub 2018 Jul 14. PMID: 28714759.

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BACKGROUND: Little is known about the effects of Kinesio taping and therapeutic exercise on correcting forward head posture.

OBJECTIVE: To compare Kinesio taping versus therapeutic exercise for forward head posture on static posture, dynamic mobility and functional outcomes.

RESULTS: Both taping and exercise groups showed significant improvements in HFD compared with the control group at post-treatment and follow-up. Compared with the control group, the exercise group exhibited significant improvements in the LCA and the side bending AROM at post-treatment.

CONCLUSIONS: Both Kinesio taping and therapeutic exercise improve forward head posture after intervention and a 2-week follow-up. The effectiveness of therapeutic exercise is better than taping.

Shih HS, Chen SS, Cheng SC, Chang HW, Wu PR, Yang JS, Lee YS, Tsou JY. Effects of Kinesio taping and exercise on forward head posture. J Back Musculoskelet Rehabil. 2017;30(4):725-733. doi: 10.3233/BMR-150346. PMID: 28282792.

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POSTURAL ANALYSIS EVALUATION OF A-P AND LATERAL POSTURES

Patient standing in front of a mirror with eyes closed.

- *Head in extension then flexion, then back to where they think its center. Hold for 5 seconds.*

-- Head/ Neck Lateral Translation or Deviation
Main listing usually has symptoms associated with this listing.

-- Head Tilt Right/Left (most common listing you will see)

-- Head Rotation: Right/left (may have symptoms)

-- High Shoulder right/left (lowest on priority list)

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POSTURAL ANALYSIS EVALUATION OF A-P AND LATERAL POSTURES (CONTINUED)

Analyze Lower Torso Posture

- Lateral Hip Translation

(The deviation is toward the high hip side. Pants pocket may appear higher)

- Forward Hip Rotation

(Pocket is rotating forward)

Lateral Posture

- Forward Head Posture of the shoulders and body
- Rounded forward shoulders
- Dowager hump- T1/ T2 area
- Hyperlordosis = increased lumbar curve

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POSTURE CORRECTION / INSTRUMENT PROPRIOCEPTIVE POSTURAL BALANCING

1. Mirror image setup, (opposite posture that the patient presented.)

2. Super stress posture into the opposite pattern (stress posture into passive range of motion.)

3. Stimulate areas of large proprioceptive beds with a high speed, low force instrument or hand.(Lower forces are preferred.)

Ex.) In the upper torso regions, stimulate lightly on skin, anywhere in upper cervical area.

Ex.) For lower torso regions, stimulate iliac crest or SI Joints

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POSTURE CORRECTION / INSTRUMENT PROPRIOCEPTIVE POSTURAL BALANCING (CONTINUED)

4. Stimulate other proprioceptive areas to reinforce cerebellar learning.

   Ex) Shoulder paraspinals, rhomboids, achillies tendon.

5. Adjust posture in standing position if possible or lying down or sitting.

6. Deviations/Translations Cervical/Lumbar

   - Lying down with posture blocks (preferred set up).

7. Always balance posture last.

POSTURE CORRECTION / INSTRUMENT PROPRIOCEPTIVE POSTURAL BALANCING (CONTINUED)

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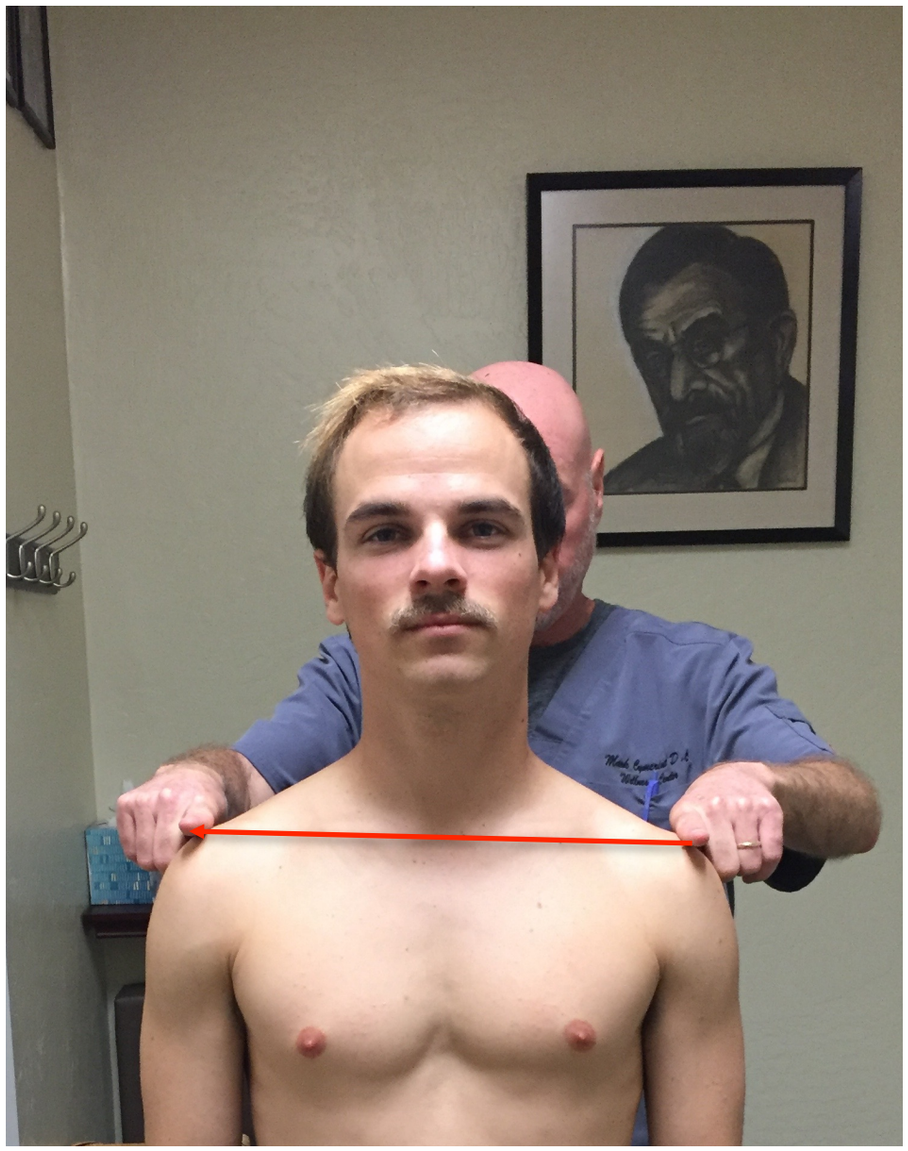
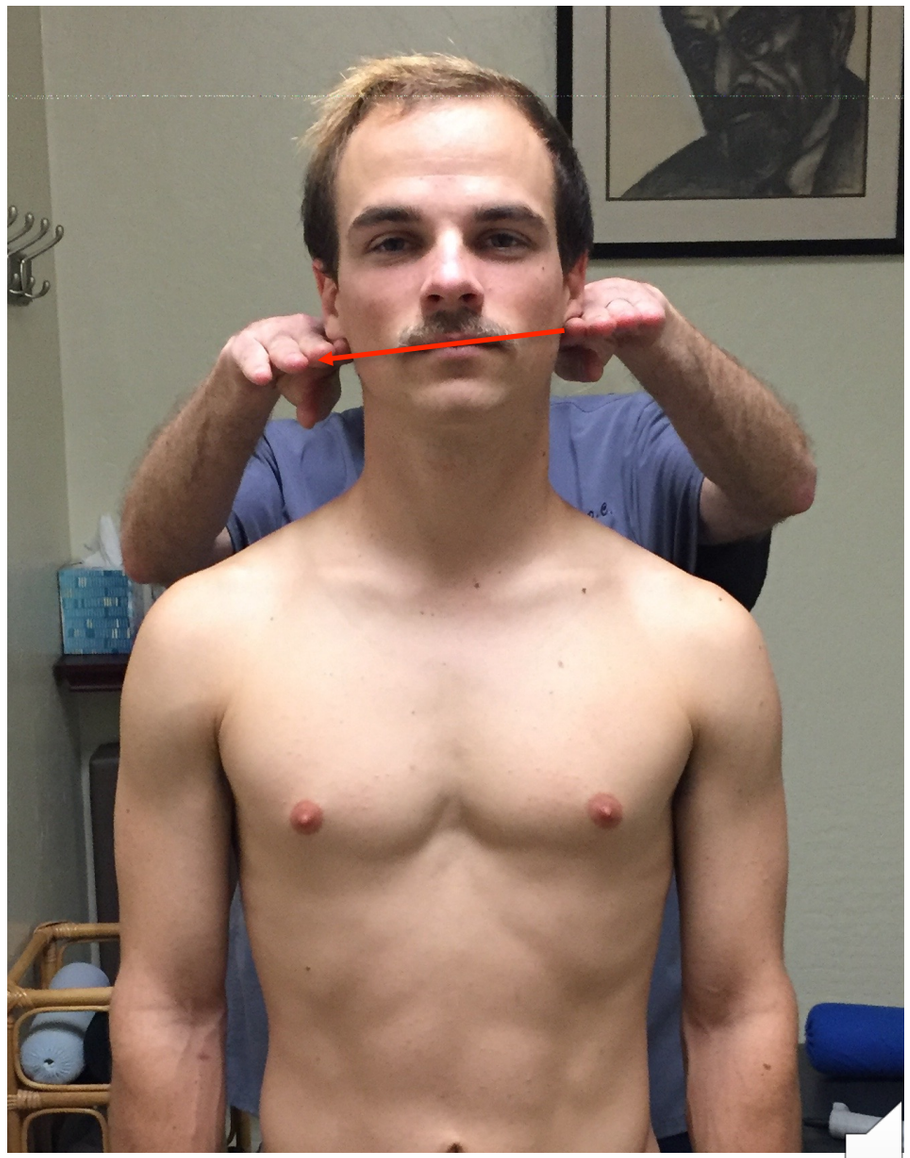
This process is called **Mirror Imaging**. It is also the set up for your posture correction.



Before
Right high
Shoulder



Before
Right head
tilt

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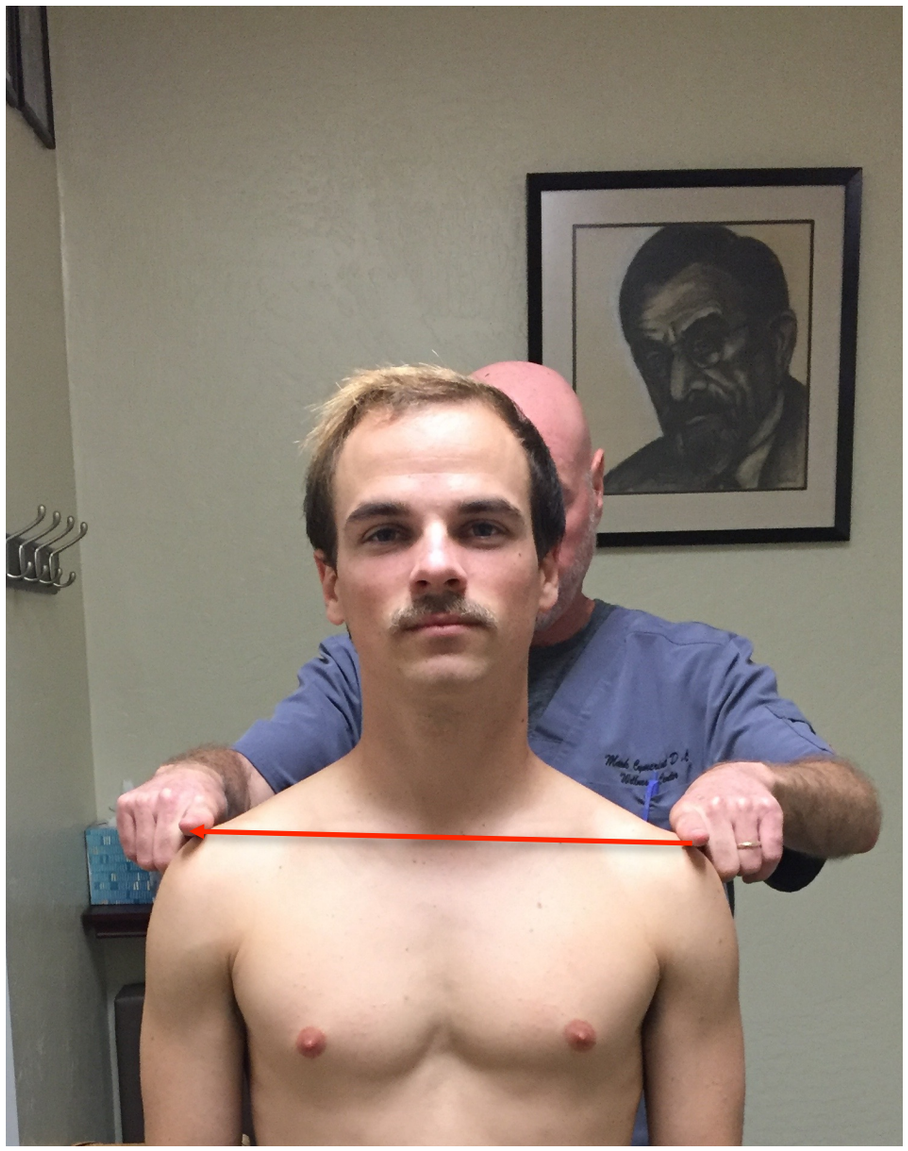

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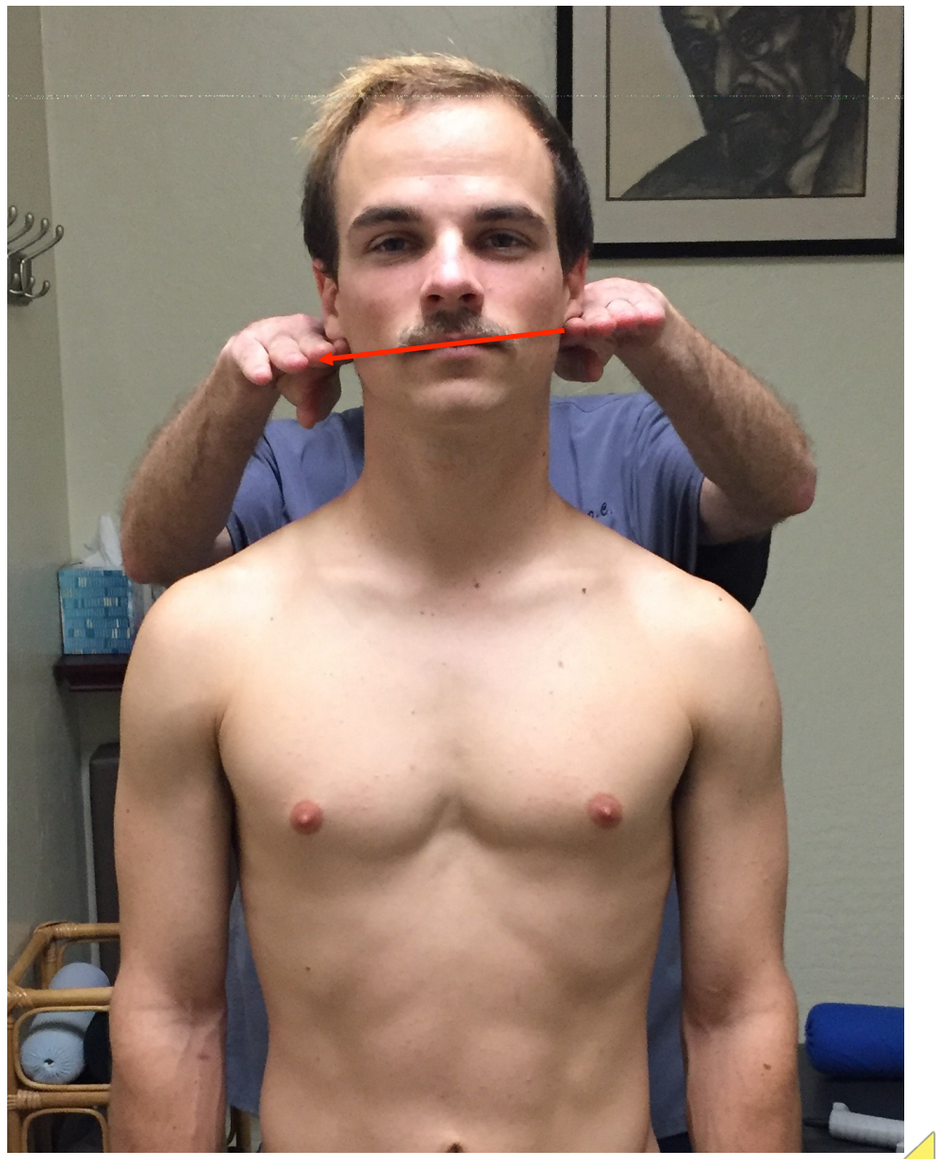


Before
Right head
tilt

POSTURE CORRECTION / INSTRUMENT PROPRIOCEPTIVE POSTURE BALANCING

Place patient in the opposite postural pattern with which they presented.

Right shoulder down

Tilt head to the left

POSTURE CORRECTION / INSTRUMENT PROPRIOCEPTIVE POSTURE BALANCING

Place patient in the opposite postural pattern with which they presented.

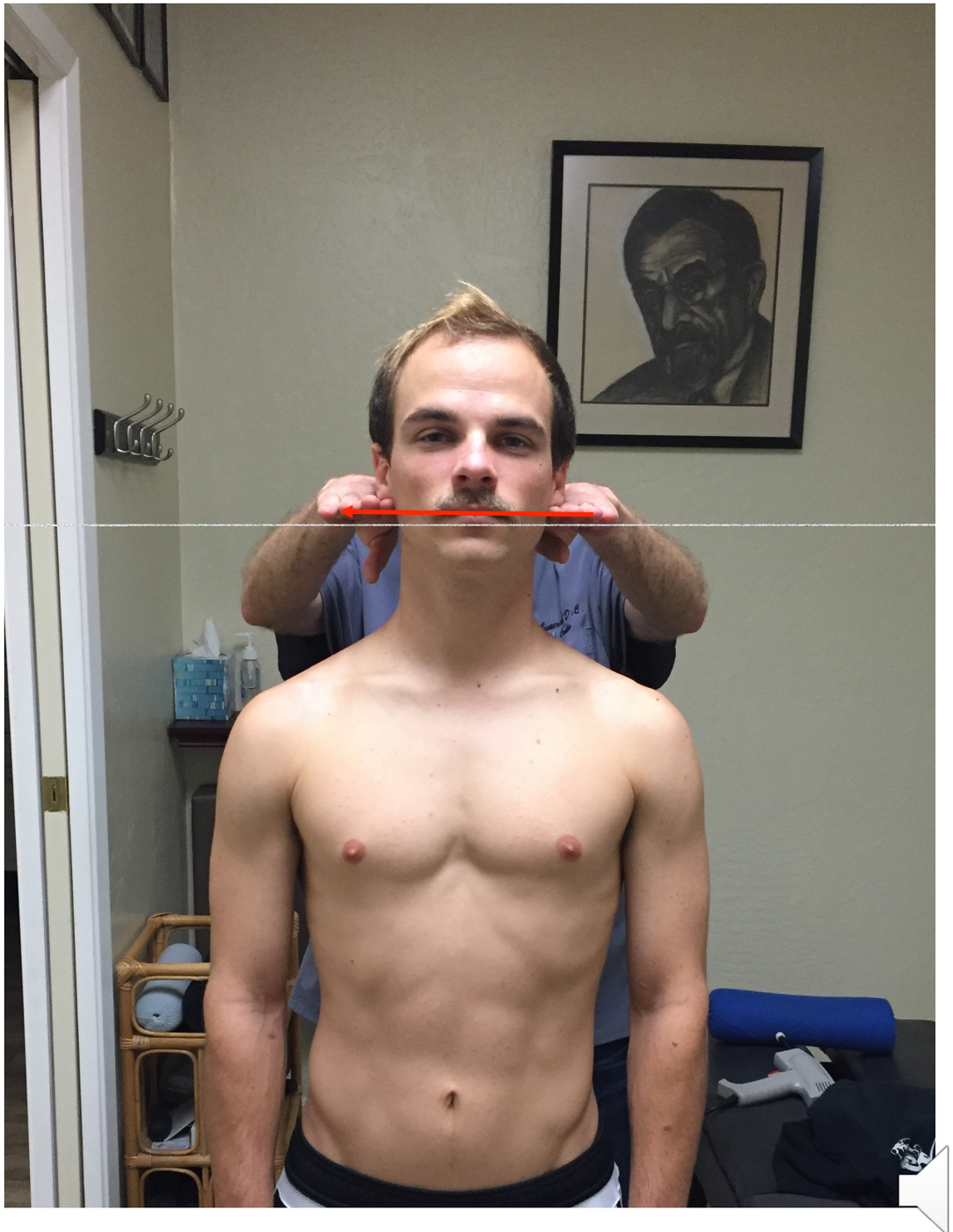
Right shoulder down

Tilt head to the left

After postural balancing.

After Shoulders level

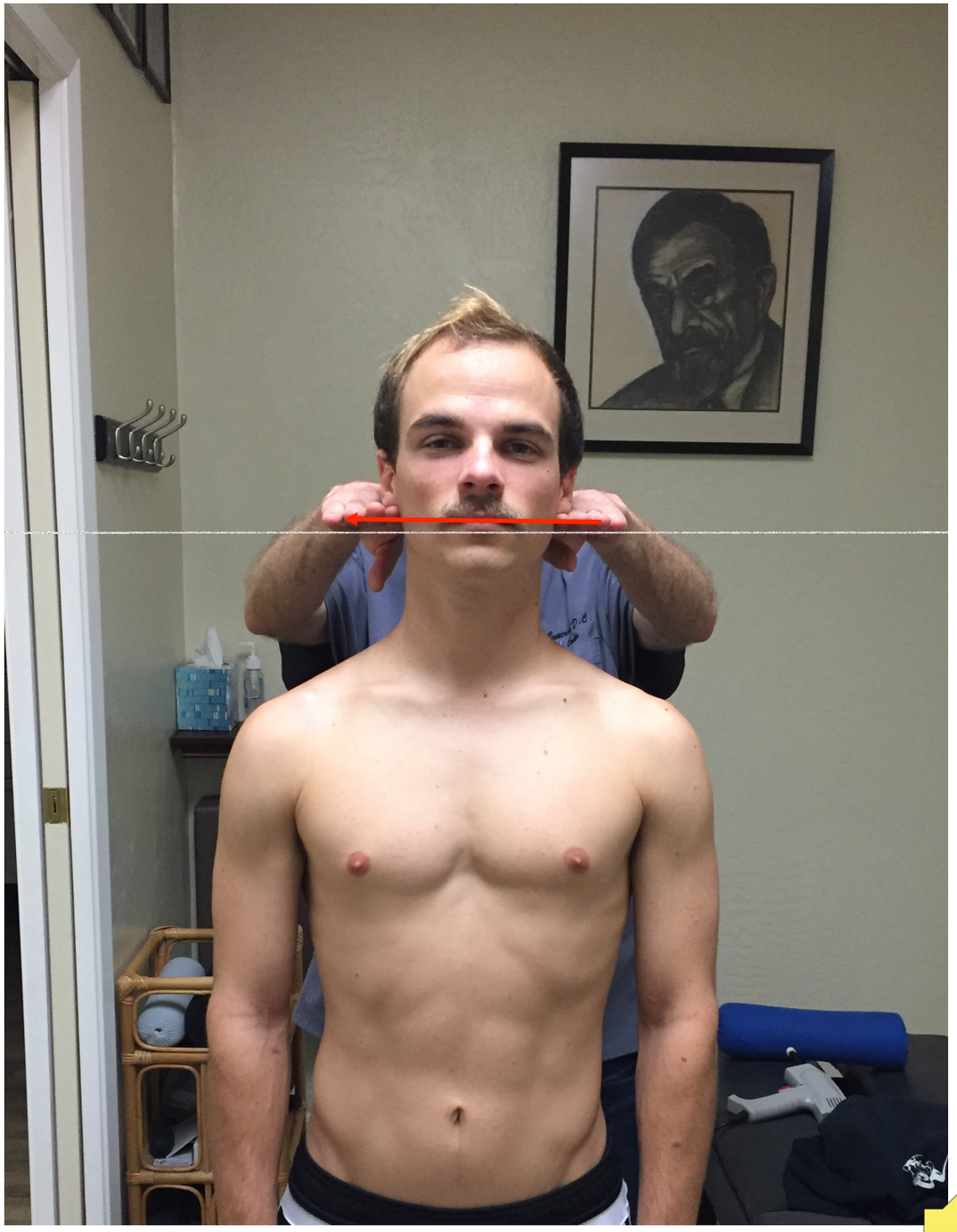
After Head Level



After postural balancing.

After Shoulders level

After Head Level



POSTURAL ANALYSIS / EVALUATION OF LATERAL POSTURE

Patient presented with forward head carriage, rounded-forward shoulders, and slight *Dowager Hump.*

From the position that the patient presented, prior to posture correction:

A. Rotate shoulders all the way back, past neutral
B. Retract head straight back, as far as patient can go.
C. Stimulate with high-speed, low-force instrument areas of largest proprioceptive beds, including upper-cervical region and shoulder paraspinal region.

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Posture Correction/ Instrument Proprioceptive Posture Balancing

POSTURAL CORRECTION / INSTRUMENT PROPRIOCEPTION OF LATERAL POSTURE

With the patient in the opposite/mirror-image posture, the correction includes:

A. Stimulating the upper-cervical region with a high-speed, low-force impulse that would communicate the corrected change through the proprioceptive neurological network and the cerebellum of the brain.

B. In the mirror-image posture, rotate shoulders and head posterior, and stimulate the paraspinal muscles, rhomboids, and even the spinus process at C7-T1.

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HIGH-VELOCITY, LOW-AMPLITUDE SPINAL MANIPULATION TRAINING OF PRESCRIBED FORCES AND THRUST DURATION: A PILOT STUDY.

DATE & JOURNAL: J CHIROPR EDUC. 2019 APR 5

- OBJECTIVE: High-velocity, low-amplitude spinal manipulation (HVLA-SM) may generate different therapeutic effects depending on force and duration characteristics. Variability among clinicians suggests training to target specific thrust duration and force levels is necessary to standardize dosing. This pilot study assessed an HVLA-SM training program using prescribed force and thrust characteristics.

- RESULTS: Error from peak force target, expressed as adjusted mean constant error (standard deviation), went from 107 N at baseline, to 0.2 N immediately after training, and 32 N (53) 8 weeks after training for the 350 N target, and 63 N (148), -6 N (58), and 9 N (87) for the 550 N target. Student median values met thrust duration target, but doctors' were >150 ms immediately after training.

- CONCLUSION: After participation in an HVLA-SM training program, participants more accurately delivered two prescribed peak forces, but accuracy decreased 1 week afterwards. Future HVLA-SM training research should include follow-up of 1 week or more to assess skill retention.

Shannon ZK, Vining RD, Gudavalli MR, Boesch RJ. High-velocity, low-amplitude spinal manipulation training of prescribed forces an thrust duration: A pilot study. J Chiropr Educ. 2020 Oct 1;34(2):107-115. doi: 10.7899/JCE-18-19. PMID: 30951380; PMCID: PMC

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III. ADVANCED CHIROPRACTIC ADJUSTIVE TECHNIQUE

A. OVERVIEW OF CLINICAL POSTURE NEUROLOGY

1. Functional Movement Techniques using kinesiology tape for posture correction.

B. POSTURE ANALYSIS / EVALUATION OF A TO P AND LATERAL POSTURES

Posture Correction/ Instrument Proprioceptive Posture Balancing

Posture & Systemic Health- A review of the medical literature

Forward head posture research in children & Pediatric posture evaluation and correction

A current review of neurology literature including: posture, proprioception & posture, and conditions commonly treated by chiropractic methods.

Posture & Systemic Health:
A review of the medical literature

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- **The cerebellum increased in size in the course of vertebrate evolution. The large size in the human brain coincides with the need for synergy of muscles, especially for the maintenance of the erect posture. - The Human Nervous System: An Anatomical viewpoint. Murray Barr and John Kieman**

- **The cerebellum is responsible for the regulation and control of muscular tone, the coordination of movement, and the control of posture and gait. - Principles of Neurology. Raymond Adams, Maurice Victor, Allan Roper, McGraw-Hill 1997**

- **The cerebellar input originates in proprioceptors and exteroceptors and is conveyed by massive afferent channels like the spinocerebellar, cuneocerebellar and vestibulocerebellar tracts. This input provides raw data about the condition and interrelationships of parts of the skeletomuscular system and of the body as a whole.**

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POSTURE-RELATED DIFFERENCES IN CARDIOVASCULAR FUNCTION BETWEEN YOUNG MEN AND WOMEN: STUDY OF NONINVASIVE HEMODYNAMICS IN RURAL MALAWI

Date & Journal: J Am Heart Assoc . 2022 Mar.

Abstract

Background Cardiovascular risk is higher in men than in women, but little information exists about sex-related differences in cardiovascular function from low-income countries. We compared hemodynamics between sexes in rural Malawi in a cohort followed up since their birth. Methods and Results Supine, seated, and standing hemodynamics were recorded from 251 women and 168 men (mean age, 21 years; body mass index, 21 kg/m^2) using oscillometric brachial waveform analyses (Mobil-O-Graph). The results were adjusted for estimated glomerular filtration rate, and plasma potassium, lipids, and glucose. Men had higher brachial and aortic systolic blood pressure and stroke index regardless of posture (P<0.001), and higher upright but similar supine diastolic blood pressure than women. Regardless of posture, heart rate was lower in men (P<0.001), whereas cardiac index did not differ between sexes. Women presented with lower supine and standing systemic vascular resistance index (P<0.001), whereas supine-to-standing increase in vascular resistance (P=0.012) and decrease in cardiac index (P=0.010) were higher in women. Supine left cardiac work index was similar in both sexes, whereas standing and seated left cardiac work index was higher in men than in women (P<0.001). Conclusions In young Malawian adults, men had higher systolic blood pressure, systemic vascular resistance, and upright cardiac workload, whereas women presented with higher posture-related changes in systemic vascular resistance and cardiac output. These findings show systematic sex-related differences in cardiovascular function in a cohort from a low-income country with high exposure to prenatal and postnatal malnutrition and infectious diseases.

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HEMODYNAMIC RESPONSE TO POSITIVE END-EXPIRATORY PRESSURE AND PRONE POSITION IN COVID-19 ARDS.

Date & Journal: Respir Physiol Neurobiol . 2022 Apr.

Abstract

Background: Use of high positive end-expiratory pressure (PEEP) and prone positioning is common in patients with COVID-19-induced acute respiratory failure. Few data clarify the hemodynamic effects of these interventions in this specific condition. We performed a physiologic study to assess the hemodynamic effects of PEEP and prone position during COVID-19 respiratory failure.

Results: High PEEP improved PaO_2/FiO_2 ratio in all patients (p = 0.004), and significantly decreased pulmonary shunt fraction (p = 0.012), regardless of lung recruitability. PEEP-induced increases in PaO2/FiO2 changes were strictly correlated with shunt fraction reduction (rho=-0.82, p = 0.01). From low to high PEEP, cardiac output decreased by 18 % (p = 0.05) and central venous pressure increased by 17 % (p = 0.015). As compared to supine position with low PEEP, prone positioning significantly decreased pulmonary shunt fraction (p = 0.03), increased PaO_2/FiO_2 (p = 0.03) and mixed venous oxygen saturation (p = 0.016), without affecting cardiac output. PaO_2/FiO_2 was improved by prone position also when compared to high PEEP (p = 0.03).

Conclusions: In patients with moderate-to-severe ARDS due to COVID-19, PEEP and prone position improve arterial oxygenation. Changes in cardiac output contribute to the effects of PEEP but not of prone position, which appears the most effective intervention to improve oxygenation with no hemodynamic side effects.

Dell'Anna AM, Carelli S, Cicetti M, Stella C, Bongiovanni F, Natalini D, Tanzarella ES, De Santis P, Bocci MG, De Pascale G, Grieco DL, Antonelli M. Hemodynamic response to positive end-expiratory pressure and prone position in COVID-19 ARDS. Respir Physi

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TRANSDERMAL AURICULAR VAGUS STIMULATION FOR THE TREATMENT OF POSTURAL TACHYCARDIA SYNDROME

Date & Journal: Auton Neurosci . 2021 Dec.

Abstract

Postural Tachycardia Syndrome (POTS) is a chronic disorder characterized by symptoms of orthostatic intolerance such as fatigue, lightheadedness, dizziness, palpitations, dyspnea, chest discomfort and remarkable tachycardia upon standing. Non-invasive transdermal vagal stimulators have been applied for the treatment of epilepsy, anxiety, depression, headache, and chronic pain syndromes. Anti-inflammatory and immunomodulating effects after transdermal vagal stimulation raised interest for applications in other diseases. Patients with sympathetic overactivity, reduced cardiac vagal drive and presence of systemic inflammation like POTS may benefit from tVNS. This article will address crucial methodological aspects of tVNS and provide preliminary results of its acute and chronic use in POTS, with regards to its potential effectiveness on autonomic symptoms reduction and heart rate modulation.

Diedrich A, Urechie V, Shiffer D, Rigo S, Minonzio M, Cairo B, Smith EC, Okamoto LE, Barbic F, Bisoglio A, Porta A, Biaggioni I, Furlan R. Transdermal auricular vagus stimulation for the treatment of postural tachycardia syndrome. Auton Neurosci. 2021 Dec

INVOLVING PATIENTS AND CLINICIANS IN A PILOT RANDOMISED CLINICAL TRIAL OF SPINAL MANUAL THERAPY VERSUS NERVE ROOT INJECTION FOR LUMBAR RADICULOPATHY: PROTOCOL OF A PATIENT AND PUBLIC INVOLVEMENT PROJECT

Date & Journal: BMJ Open . 2022 Apr 25.

Abstract

Introduction: A patient and public involvement (PPI) project will be embedded within the SALuBRITY pilot trial, a two parallel group, double sham controlled, randomised clinical trial. The study aims to compare the effectiveness of spinal manual therapy and corticosteroid nerve root injections, two methods commonly used to treat patients with lumbar radiculopathy. We aim to gather patients' and clinicians' perspectives and involve them in decisions related to the research question and objectives, proposed trial recruitment processes and methods, and proposed outcome measures.

Methods & Analysis: A small group of patients with lived experience of lumbar radiculopathy and primary care clinicians with experience in the treatment of patients with lumbar radiculopathy are involved. An initial kickoff event will prepare and empower the advisors for involvement in the project, followed by semistructured patient group and one-on-one clinician interviews. We will follow the Critical Outcomes of Research Engagement framework for assessing the impact of patient engagement in research. We will summarise and feedback PPI content to the patient and clinician advisors during a member-checking process to ensure accurate interpretation of patient and clinician inputs. Inductive and deductive thematic analysis will be used for the qualitative analysis of the interviews. Two surveys will be completed at different points along the trial to track the advisors' and researchers' experiences over the course of the PPI project. Any modifications to the SALuBRITY trial methods due to PPI inputs will be thoroughly documented and recorded in an impact log.

Ethics and dissemination: The independent research ethics committee of Canton Zurich confirmed that ethical approval for this PPI subproject was not required. PPI results will be disseminated in a peer-reviewed journal and presented at conferences.

Ryf C, Hofstetter L, Clack L, Puhan MA, Hincapié CA. Involving patients and clinicians in a pilot randomised clinical trial of spinal manual therapy versus nerve root injection for lumbar radiculopathy: protocol of a patient and public involvement project

SUBJECTIVE STABILITY PERCEPTION IS RELATED TO POSTURAL ANXIETY IN OLDER SUBJECTS.

DATE & JOURNAL: GAIT POSTURE. 2019 FEB

BACKGROUND:
Under static conditions, the objective and subjective measures of postural stability correlate well. However, age-related changes in postural control and task-related anxiety may modify the relationship between these subjective and objective measures. Ultimately, patients' symptoms represent subjective reports, thus understanding this relationship has clinical implications.

DISCUSSION:
Subjects accurately rate their own instability during dynamic postural challenges, irrespective of age and actual fall risk. However, anxiety may selectively modulate the perception of instability in older subjects. The perception of stability relies upon the integration of sensory afferents but also recruits emotional-cognitive processes, particularly in older individuals. The use of a safety harness has no influence on subjective or objective postural stability.

Castro P, Kaski D, Schieppati M, Furman M, Arshad Q, Bronstein A. Subjective stability perception is related to postural anxiety in older subjects. Gait Posture. 2019 Feb;68:538-544. doi: 10.1016/j.gaitpost.2018.12.043. Epub 2019 Jan 2. PMID: 30634135.

FLEXED POSTURE IN PARKINSON DISEASE: ASSOCIATIONS WITH NON-MOTOR IMPAIRMENTS & ACTIVITY LIMITATIONS.

DATE & JOURNAL: PHYS THER. 2019 MAR 4

BACKGROUND: People with Parkinson disease (PD) are twice as likely to develop flexed truncal posture as the general older population. Little is known about the mechanisms responsible beyond associations with age, axial motor impairments, and disease severity.

OBJECTIVE: The objective was to explore: (1) the associations of the non-motor impairments of PD with flexed posture and (2) the relationships of flexed posture with activity limitations.

CONCLUSIONS: Spinal proprioception and postural fatigue were the only non-motor impairments to make significant contributions to flexed posture. Given the negative influence of flexed posture on upper limb activity and respiratory function, interventions targeting spinal proprioception and postural awareness should be considered for people with PD who may develop flexed posture.

Forsyth AL, Joshi RY, Canning CG, Allen NE, Paul SS. Flexed Posture in Parkinson Disease: Associations With Nonmotor Impairments and Activity Limitations. Phys Ther. 2019 Jul 1;99(7):893-903. doi: 10.1093/ptj/pzz033. PMID: 30830153.

PROPRIOCEPTIVE MUSCLE TENDON STIMULATION REDUCES SYMPTOMS IN PRIMARY ORTHOSTATIC TREMOR

Date & Journal: J Neurol. 2018 July.

INTRODUCTION: Primary orthostatic tremor (OT) is characterized by high-frequency lower limb muscle contractions and a disabling sense of unsteadiness while standing. To date, therapeutic options for OT are limited. Here, we examined the effects of proprioceptive leg muscle stimulation via muscle tendon vibration (MTV) on tremor and balance control in patients with primary OT.

CONCLUSION: Proprioceptive stimulation did not reset tremor frequency consistent with the presumed central origin of OT. However, continuous MTV influenced the emergence of OT symptoms resulting in reduced tremor intensity, improved posture, and a relief from unsteadiness in half of the examined patients. These findings indicate that MTV either directly interferes with the peripheral manifestation of the central oscillatory pattern or prevents proprioceptive afferent feedback from becoming extensively synchronized at the tremor frequency.

Wuehr M, Schlick C, Möhwald K, Schniepp R. Proprioceptive muscle tendon stimulation reduces symptoms in primary orthostatic tremor. J Neurol. 2018 Jul;265(7):1666-1670. doi: 10.1007/s00415-018-8902-z. Epub 2018 May 16. PMID: 29767354.

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4. Huang C, Chang G, Tsai Y, Hwang I. An Increase in Postural Load Facilitates an Anterior Shift of Processing Resources to Frontal Executive Function in a Postural-Suprapostural Task. *Frontiers in Human Neuroscience*. 2016;10. doi:10.3389/fnhum.2016.00420.

FORWARD HEAD POSTURE RESEARCH

COMPARISON OF IMMEDIATE EFFECTS OF SLING-BASED MANUAL THERAPY ON SPECIFIC SPINE LEVELS IN SUBJECTS WITH NECK PAIN AND FORWARD HEAD POSTURE: A RANDOMIZED CLINICAL TRIAL.

DATE & JOURNAL: DISABIL REHABIL . 2020 SEP.

Abstract

Purpose: Forward head posture is identified as the flexion of the lower cervical spine along with the extension of the upper cervical spine, with an overall increase in the cervical curve. This study aimed to compare the immediate effect of upper-cervical level and cervicothoracic junction level manual therapy on head posture, cervical range of motion and muscle activity of the subjects with forward head posture.

Conclusion: Cervicothoracic junction manual therapy improved cervical alignment, cervical mobility (extension, rotation), and muscle recruitment ability in subjects with forward head posture. These observations may partially explain the efficacy of this manual therapy in rehabilitation of individuals with mechanical neck disorder (with forward head posture).
Implications for rehabilitation: Cervicothoracic area manual therapy in subjects with neck pain and forward head posture better improved the muscle recruitment ability than upper cervical area manual therapy during motor tasks.

Kim DH, Kim SY. Comparison of immediate effects of sling-based manual therapy on specific spine levels in subjects with neck pain and forward head posture: a randomized clinical trial. Disabil Rehabil. 2020 Sep;42(19):2735-2742. doi: 10.1080/09638288.2019.1571638. Epub 2019 Feb 13. PMID: 30757926.

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THE EFFECTS OF FORWARD HEAD POSTURE ON EXPIRATORY MUSCLE STRENGTH IN CHRONIC NECK PAIN PATIENTS:A CROSS-SECTIONAL STUDY.

PUBLICATION: TURKISH JOURNAL OF PHYSIOLOGICAL MEDICINAL REHABILITATION. MAY 18, 2020.

Abstract

Objectives: This study aims to investigate the relationship between forward head posture (FHP) and respiratory dysfunctions in patients with chronic neck pain.

Results: There was a negative correlation between the FHPmm with Pe_{max}% (rho: -0.314; p=0.005). A negative correlation was also observed between C7° and Pe_{max}, Pe_{max}%, forced expiratory volume in one sec (FEV1)/forced vital capacity (FVC)%, forced expiratory flow (FEF)25-75%, and FEF75% (rho:-0.245, -0.349, -0.218, -0.214, and -0.259 respectively; p=0.028, 0.002, 0.035, 0.040, and 0.012, respectively). There was a positive correlation between neck disability and VAS scores (rho: 0.424; p<0.001), while there was a negative correlation between neck disability and chest expansion, maximum voluntary ventilation (rho: -0.201 and -0.217, respectively; p=0.049 and 0.046, respectively).

Conclusion: Based on our study results, FHP is associated with expiratory muscle weakness in chronic neck pain patients. To evaluate respiratory dysfunction, chest expansion tests may be useful, although these tests are not specific to muscle weakness. Interventions about FHP and neck pain should focus on the effects of respiratory muscle training.

Solakoğlu Ö, Yalçın P, Dinçer G. The effects of forward head posture on expiratory muscle strength in chronic neck pain patients: A cross-sectional study. Turk J Phys Med Rehabil. 2020 May 18;66(2):161-168. doi: 10.5606/tftrd.2020.3153. PMID: 32760893; PMCID: PMC7401676.

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Solakoğlu Ö, Yalçın P, Dinçer G. The effects of forward head posture on expiratory muscle strength in chronic neck pain patients: A cross-sectional study. Turk J Phys Med Rehabil. 2020 May 18;66(2):161-168. doi: 10.5606/tftrd.2020.3153. PMID: 32760893; PMCID: PMC7401676.

ALLEVIATION OF CHRONIC SPINE PAIN AND HEADACHES BY REDUCING FORWARD HEAD POSTURE AND THORACIC HYPERKYPHOSIS: A CBP® CASE REPORT.

PUBLICATION: JOURNAL OF PHYSIOLOGICAL THERAPY SCIENCES. 2018 AUG.

Purpose: This case presents the reduction of both forward head posture and thoracic hyperkyphosis in a young male with chronic back pain and headaches by a comprehensive posture rehabilitation program as a part of Chiropractic BioPhysics® methods.

Results: After treatment the patient reported dramatic improvement in symptoms as indicated on valid disability questionnaires and substantial improvements in posture.

Conclusion: Posture-related pain and disability is not often addressed in allopathic medicine but substantial posture improvements are achievable in short time periods as this case illustrates. Poor postures in young patients should be corrected to avoid long-term consequences. Radiography as used in spinal rehabilitation is safe and reliable.

Fortner MO, Oakley PA, Harrison DE. Alleviation of chronic spine pain and headaches by reducing forward head posture and thoracic hyperkyphosis: a CBP® case report. J Phys Ther Sci. 2018 Aug;30(8):1117-1123. doi: 10.1589/jpts.30.1117. Epub 2018 Aug 7. PMID: 30154612; PMCID: PMC6110208.

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IMPROVING POSTURE TO REDUCE THE SYMPTOMS OF PARKINSON'S: A CBP® CASE REPORT WITH A 21 MONTH FOLLOW-UP.

PUBLICATION: JOURNAL OF PHYSIOLOGICAL THERAPY SCIENCES. 2019 FEB

Purpose:
To demonstrate the reduction of symptoms related to Parkinson's disease by improvement in posture.

Results:
After 38 treatments over 5 months, the patient had significant improvements in posture alignment as well as gait, balance, hand tremors, low back and knee pains and SF-36 values. A 21 month follow-up revealed the patient had remained essentially well and the initial postural improvements were maintained.

Conclusion: This case demonstrates improvement of various symptoms in a patient with Parkinson's disease. Since poor posture is a long known clinical manifestation of this disorder, it is proposed that the improvement of posture in these patients may lead to improved outcomes. X-ray use in the diagnosis and management in those with spine deformity is safe and not carcinogenic.

Anderson JM, Oakley PA, Harrison DE. Improving posture to reduce the symptoms of Parkinson's: a CBP® case report with a 21 month follow-up. J Phys Ther Sci. 2019 Feb;31(2):153-158. doi: 10.1589/jpts.31.153. Epub 2019 Feb 7. PMID: 30858655; PMCID: PMC6382490.

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NON-SURGICAL RELIEF OF CERVICAL RADICULOPATHY THROUGH REDUCTION OF FORWARD HEAD POSTURE AND RESTORATION OF CERVICAL LORDOSIS: A CASE REPORT.

DATE & JOURNAL: J PHYS THER SCI. 2017 AUG

Purpose:
To present a case demonstrating the relief of cervical radiculopathy following the dramatic reduction of forward head posture and restoration of the cervical lordosis by use of a multi-modal rehabilitation program incorporating cervical extension traction.

Results:
The patient received a multi-modal rehabilitation protocol including mirror image extension exercises, cervical extension traction, and spinal manipulative therapy. After forty treatments over 17 weeks, the patient reported a complete resolution of radiculopathy and significant improvement in neck pain level. Post radiography demonstrated correction of the spine and posture alignment. The patient remained well and maintained corrected posture with limited treatment one year later.

Conclusion:
Our case demonstrates the relief of cervical radiculopathy resulting from the non-surgical correction of forward head posture and cervical kyphosis.

Wickstrom BM, Oakley PA, Harrison DE. Non-surgical relief of cervical radiculopathy through reduction of forward head posture and restoration of cervical lordosis: a case report. J Phys Ther Sci. 2017 Aug;29(8):1472-1474. doi: 10.1589/jpts.29.1472. Epub 2017 Aug 10. PMID: 28878485; PMCID: PMC5574331.

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FORWARD HEAD POSTURE RESEARCH IN CHILDREN

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THE INFLUENCE OF BACKPACK WEIGHT IN SCHOOL CHILDREN: GAIT, MUSCLE ACTIVITY, POSTURE AND STABILITY

ABSTRACT

JOURNAL: ORTHOPADE. 2021 JUN

Background: wearing a school backpack every day may cause postural problems and affect the gait pattern of children and adolescents. the aim of the present study was to analyze the influence of a 4 kg backpack load on the gait pattern and postural sway.

Results: the backpack load, on average 15% of the body weight, led to a slower walking speed, shorter step length and increased double-support phase. increased anterior pelvic and trunk tilt, as well as hip flexion were also observed. furthermore, the muscle activity and postural sway of the children were affected by the increased load.

Conclusions: school backpacks weighing 4 kg caused changes in gait, muscle activity, posture and stability in elementary school children. due to the weight of the backpack, the centre of mass shifted backwards and the children became less stable. during gait, this was compensated by increased anterior pelvic and trunk tilt and increased hip flexion. the activity of the paraspinal muscles was decreased and indicates that the backpack is carried passively. this may cause a negative long-term effect.

Hell AK, Braunschweig L, Grages B, Brunner R, Romkes J. Einfluss des Schulrucksackgewichtes bei Grundschulkindern: Gang, Muskelaktivität, Haltung und Stabilität [The influence of backpack weight in school children: gait, muscle activity, posture and stability]. Orthopade. 2021 Jun;50(6):446-454. German. doi: 10.1007/s00132-020-04047-8. Epub 2020 Dec 9. PMID: 33296024; PMCID:

CHARACTERIZATION OF CERVICAL SPINE IMPAIRMENTS IN CHILDREN AND ADOLESCENTS POST-CONCUSSION.

DATE & JOURNAL: INT J SPORTS PHYS THER. 2019 APRIL

BACKGROUND: PATIENTS WITH CONCUSSION MAY PRESENT WITH CERVICAL SPINE IMPAIRMENTS, THEREFORE ACCURATE CHARACTERIZATION OF CERVICAL POST-CONCUSSION IMPAIRMENTS IS NEEDED TO DEVELOP TARGETED PHYSICAL THERAPY INTERVENTIONS.

PURPOSE: TO CHARACTERIZE THE TYPE, FREQUENCY AND SEVERITY OF CERVICAL IMPAIRMENTS IN CHILDREN AND ADOLESCENTS REFERRED FOR PHYSICAL THERAPY AFTER CONCUSSION.

CONCLUSION: HIGH PREVALENCE OF CERVICAL SPINE IMPAIRMENTS WAS OBSERVED IN THE SUBJECTS INCLUDED IN THIS STUDY WITH MUSCLE TENSION, JOINT MOBILITY, AND MUSCLE STRENGTH BEING MOST COMMONLY AFFECTED. THE CATEGORIES OF IMPAIRMENTS EXAMINED IN THIS COHORT WERE CONSISTENT WITH THE RECOMMENDATIONS OF THE MOST RECENT CLINICAL PRACTICE GUIDELINES FOR NECK PAIN. THIS STUDY PROVIDES PRELIMINARY DATA TO SUPPORT THE FRAMEWORK FOR A CERVICAL SPINE EVALUATION TOOL IN CHILDREN AND ADOLESCENTS FOLLOWING CONCUSSION.

Tiwari D, Goldberg A, Yorke A, Marchetti GF, Alsalaheen B. CHARACTERIZATION OF CERVICAL SPINE IMPAIRMENTS IN CHILDREN AND ADOLESCENTS POST-CONCUSSION. Int J Sports Phys Ther. 2019 Apr;14(2):282-295. PMID: 30997280; PMCID: PMC6449018.

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EFFECT OF DURATION OF SMARTPHONE USE ON MUSCLE FATIGUE AND PAIN CAUSED BY FORWARD HEAD POSTURE IN ADULTS.

Date & Journal: J Phys Ther Sci . 2016 Jun.

- [Purpose] The effect of duration of smartphone use on neck and shoulder muscle fatigue and pain was investigated in adults with forward head posture.

- [Results] There was a significant difference in the degree of fatigue in the left upper trapezius muscles in group 2 and left cervical erector spinae and bilateral upper trapeziuses group 3. There was a significant difference in fatigue in the left upper trapezius in groups 1 and 3. The VAS showed significant differences in all groups before and after the experiment and between groups 1 and 3.

- [Conclusion] Pain and fatigue worsened with longer smartphone use. This study provided data on the proper duration of smartphone use. Correct posture and breaks of at least 20 minutes are recommend when using smartphones.

Kim SY, Koo SJ. Effect of duration of smartphone use on muscle fatigue and pain caused by forward head posture in adults. J Phys Ther Sci. 2016 Jun;28(6):1669-72. doi: 10.1589/jpts.28.1669. Epub 2016 Jun 28. PMID: 27390391; PMCID: PMC4932032.

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MUSCULOSKELETAL DISORDER AND PAIN ASSOCIATED WITH SMARTPHONE USE: A SYSTEMATIC REVIEW OF BIOMECHANICAL EVIDENCE.

DATE & JOURNAL: HONG KONG PHYSIOTHERAPY JOURNAL. 2018 DEC

The number of smartphone users is growing dramatically. Using the smartphone frequently forces the users to adopt an awkward posture leading to an increased risk of musculoskeletal disorders and pain. The objective of this study is to conduct a systematic review of studies that assess the effect of smartphone use on musculoskeletal disorders and pain. A systematic literature search of AMED, CINAHL, PubMed, Proquest, ScienceDirect using specific keywords relating to smartphone, musculoskeletal disorders and pain was conducted. Reference lists of related papers were searched for additional studies. Methodological quality was assessed by two independent reviewers using the modified Downs and Black checklist. From 639 reports identified from electronic databases, 11 were eligible to include in the review. One paper was found from the list of references and added to the review. The quality scores were rated as moderate. The results show that muscle activity of upper trapezius, erector spinae and the neck extensor muscles are increased as well as head flexion angle, head tilt angle and forward head shifting which increased during the smartphone use. Also, smartphone use in a sitting position seems to cause more shift in head-neck angle than in a standing position. Smartphone usage may contribute to musculoskeletal disorders. The findings of the included papers should be interpreted carefully in light of the issues highlighted by the moderate-quality assessment scores.

Eitivipart AC, Viriyarojanakul S, Redhead L. Musculoskeletal disorder and pain associated with smartphone use: A systematic review of biomechanical evidence. Hong Kong Physiother J. 2018 Dec;38(2):77-90. doi: 10.1142/S1013702518300010. Epub 2018 Aug 14. P

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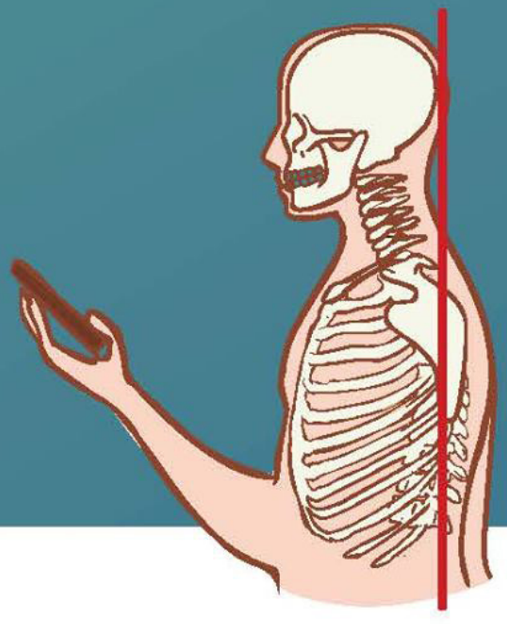
Remember to look up!

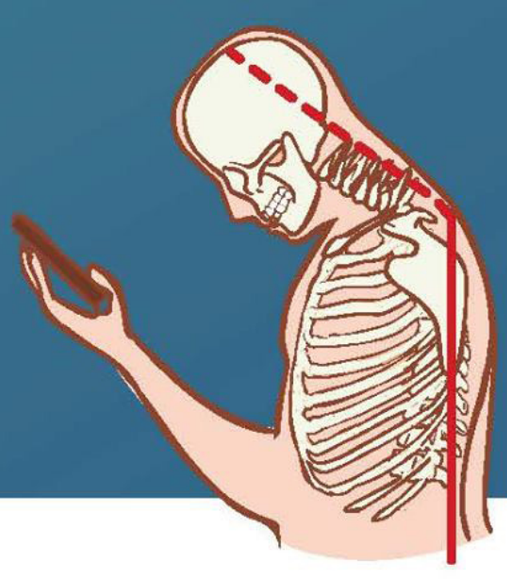


0° degrees
10 - 12 lbs

15° degrees
27 lbs

30° degrees
40 lbs

45° degrees
49 lbs



60° degrees
60 lbs

Combat
Tech-Neck

COMPARISON OF ACTIVE VERSUS PASSIVE SURVEILLANCE ADVERSE EVENT REPORTING IN A PEDIATRIC AMBULATORY CHIROPRACTIC CARE SETTING: A CLUSTER RANDOMISED CONTROLLED TRIAL

Publication: British Medical Journal Open Qual. 2020 Nov.

Abstract

Objectives: This pragmatic, cluster, stratified randomised controlled trial (RCT) compared the quantity and quality of adverse event (AE) reports after chiropractic manual therapy in children less than 14 years of age, using active versus passive surveillance reporting systems.

Results: Ninety-six chiropractors agreed to participate and enrolled in the study: 34 chiropractors in active surveillance with 1894 patient visits from 1179 unique patients and 35 chiropractors in passive surveillance with 1992 patient visits from 1363 unique patients. In the active arm, AEs were reported in 8.8% (n=140, 95% CI 6.72% to 11.18%) of patients/caregivers, compared with 0.1% (n=2, 95% CI 0.02% to 0.53%) in the passive arm (p<0.001). The quality of AE reports was not evaluated because the five AE reports reviewed by the content experts were determined to be of mild severity.

Conclusion: We found that active surveillance resulted in significantly more AE reports than passive surveillance. Further prospective active surveillance research studies should be conducted with children receiving chiropractic manual therapy to understand mechanisms and risk factors for moderate and severe AEs, and to further explore how and when to solicit patient safety information.

Pohlman KA, Carroll L, Tsuyuki RT, Hartling L, Vohra S. Comparison of active versus passive surveillance adverse event reporting in a paediatric ambulatory chiropractic care setting: a cluster randomised controlled trial. BMJ Open Qual. 2020 Nov;9(4):e000

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CHANGE IN YOUNG PEOPLE'S SPINE PAIN FOLLOWING CHIROPRACTIC CARE AT A PUBLICLY FUNDED HEALTHCARE FACILITY IN CANADA

Publication: Complementary Therapeutic Clinical Practice. 2019 May.

Abstract

Background: The presence of spinal pain in young people has been established as a risk factor for spinal pain later in life. Recent clinical practice guidelines recommend spinal manipulation (SM), soft tissue therapy, acupuncture, and other modalities that are common treatments provided by chiropractors, as interventions for spine pain. Less is known specifically on the response to chiropractic management in young people with spinal pain. The purpose of this manuscript was to describe the impact, through pain measures, of a pragmatic course of chiropractic management in young people's spinal pain at a publicly funded healthcare facility for a low-income population.

Results: Young people (defined as 10-24 years of age) demonstrated statistically and clinically significant improvement on the numeric rating scale (NRS) in all four spinal regions following chiropractic management.

Conclusion: The findings of the present study provide evidence that a pragmatic course of chiropractic care, including SM, mobilization, soft tissue therapy, acupuncture, and other modalities within the chiropractic scope of practice are a viable conservative pain management treatment option for young people.

Manansala C, Passmore S, Pohlman K, Toth A, Olin G. Change in young people's spine pain following chiropractic care at a publicly funded healthcare facility in Canada. Complement Ther Clin Pract. 2019 May;35:301-307. doi: 10.1016/j.ctcp.2019.03.013. Epub

PEDIATRIC NATURAL HEALTH PRODUCTS RECOMMENDED BY CHIROPRACTIC AND NATUROPATHIC DOCTORS IN CANADA

Publication: Complementary Therapies in Medicine . 2019 Apr.

Abstract

Objectives: To assess chiropractic (DC) and naturopathic doctors' (ND) pediatric care natural health product (NHP) recommendations.

Results: Of the 421 respondents seeing one or more pediatric patients per week, 172 (41%, 107 DCs, 65 NDs) provided 440 NHP recommendations, categorized as: vitamins and minerals (89 practitioners, 127 recommendations), probiotics (110 practitioners, 110 recommendations), essential fatty acids (EFAs: 72 practitioners, 72 recommendations), homeopathics (56 practitioners, 66 recommendations), botanicals (29 practitioners, 31 recommendations), and other NHPs (33 practitioners, 34 recommendations). Indications for the NHP recommendations were tabulated for NHPs with 10 or more recommendations in any age category: 596 total indications for probiotics, 318 indications for essential fatty acids, 138 indications for vitamin D, and 71 indications for multi-vitamins.

Conclusions: This is the first study documenting the pediatric NHP recommendations of two popular complementary medicine professions. Common NHPs at standard doses are the most frequently recommended products, with use and doses adjusted according to age. High-quality evidence regarding the efficacy, safety, and dosing for NHP use in children is scarce; development of evidence-informed pediatric guidelines is recommended, particularly for the most commonly used and recommended NHPs.

Porcino AJ, Solomonian L, Zylich S, Doucet C, Gluvic B,Vohra S. Pediatric natural health products recommended by chiropractic and naturopathic doctors in Canada. Complement Ther Med. 2019 Apr;43:196-200. doi: 10.1016/j.ctim.2019.02.001. Epub 2019 Feb 4.

INFANT PEDIATRIC POSTURE EVALUATION

(UPSIDE DOWN)

An infant is evaluated posturally by the Doctor of Chiropractic, holding the infant upside down, by their thighs (bilaterally) with the infant facing away from the DC and toward the parent.

Evaluation:

1. Look at infant's head for any:
   a. Head rotation;
   b. Head tilt;
   c. High shoulder;

2. Look at infant's hips:
   a. High hip;
   b. Rotation of hip

POSTURE CORRECTION IN CHILDREN (INFANT)

1. To analyze an infant's posture where the infant cannot hold their head in the upright position on their own:

a) Hold the infant upside down by the thighs, facing the parent. Hold the infant straight in front of you, and watch the direction the head is in. ***ie. Rotation of the head, lateral head tilt. Be aware of shoulder rotation***

b) Once you analyze the relative position of the head and shoulders, you will set up the child for instrument posture correction ***if the child cannot rotate fully in both directions***.

c) In this case *(right)* the infant's head is rotating to the left side, and has a left head tilt.

d) Facing the parent, lay the infant ride-side-down with the parent's arms held outward, and put the infant cervical spine over the wrist of the parent. Also, rotate the left arm and shoulder posterior.

e) <u>Correction:</u> Lightly superstress the infant head over the wrist of the parent, putting the head into the mirror image right head tilt. Gently, on the lowest setting (#1) stimulate the upper cervical area with the infant's head bent over the fulcrum of the parent arm.

f) Re-check posture with infant in upside down position.

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POSTURE CORRECTION IN CHILDREN (INFANT)

II. As you see in the re-checked posture, the infant's head rotation is now rotating to the right side with no restriction or decrease in range of motion. Also, the level of the head and ears is balanced with no head tilt.

POSTURE CORRECTION IN CHILDREN (INFANT)

II. As you see in the re-checked posture, the infant's head rotation is now rotating to the right side with no restriction or decrease in range of motion. Also, the level of the head and ears is balanced with no head tilt.

POSTURE CORRECTION IN CHILDREN (INFANT)

III. OBSERVATIONS:

PATIENT HAD AN IMMEDIATE BOWEL MOVEMENT AFTER LUMBAR SPINE WAS CHECKED, AND PARENT COMMENTED THAT THE BABY WAS EXTREMELY CONSTIPATED PRIOR TO COMING IN.

a) Received phone call at 7:00AM the following day, parent claiming that the infant slept through the night all night long for the very first time since birth.

b) Infants are people too! Don't be afraid to do chiropractic care on an infant. The results sometimes can be amazing!

COMPONENTS OF STANDING POSTURAL CONTROL EVALUATED IN PEDIATRIC BALANCE MEASURES: A SCOPING REVIEW

PUBLICATION: ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION. 2017 OCT.

Abstract

Objective:

To identify measures of standing balance validated in pediatric populations, and to determine the components of postural control captured in each tool.

Conclusions:

Assessing children's balance with valid and comprehensive measures is important for ensuring development of safe mobility and independence with functional tasks. Balance measures validated in pediatric populations to date do not comprehensively assess standing postural control and omit some key components for safe mobility and independence. Existing balance measures, that have been validated in adult populations and address some of the existing gaps in pediatric measures, warrant consideration for validation in children.

Sibley KM, Beauchamp MK, Van Ooteghem K, Paterson M, Wittmeier KD. Components of Standing Postural Control Evaluated in Pediatric Balance Measures: A Scoping Review. Arch Phys Med Rehabil. 2017 Oct;98(10):2066-2078.e4. doi: 10.1016/j.apmr.2017.02.032. Epub 2017 Apr 22. PMID: 28438514.

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To identify measures of standing balance validated in pediatric populations, and to determine the components of postural control captured in each tool.

Conclusions:

Assessing children's balance with valid and comprehensive measures is important for ensuring development of safe mobility and independence with functional tasks. Balance measures validated in pediatric populations to date do not comprehensively assess standing postural control and omit some key components for safe mobility and independence. Existing balance measures, that have been validated in adult populations and address some of the existing gaps in pediatric measures, warrant consideration for validation in children.

Sibley KM, Beauchamp MK, Van Ooteghem K, Paterson M, Wittmeier KD. Components of Standing Postural Control Evaluated in Pediatric Balance Measures: A Scoping Review. Arch Phys Med Rehabil. 2017 Oct;98(10):2066-2078.e4. doi: 10.1016/j.apmr.2017.02.032. Epub 2017 Apr 22. PMID: 28438514.

IV. INTRODUCTION TO DIVERSIFIED MYOFASCIAL RELEASE PROCEDURES

A. INSTRUMENT ASSISTED MUSCLE BALANCING

B. TRIGGER POINT THERAPY RESEARCH

C. FIBROTIC ADHESIONS, MYOSPASMS AND PIRIFORMIS WORK WITH INSTRUMENTS IN COMPETITIVE ATHLETES

INSTRUMENT ASSISTED MUSCLE BALANCING

(ADJUNCTIVE THERAPY TO WORK ON THE MUSCULATURE & POSTURE)

Massage is a great adjunctive therapy to use for preparatory readiness of muscle tissues prior to hands on treatment. Reminders:

- Only use on large muscle groups, NEVER over bony process or in the cervical spine. Not near hair or on bare skin. (Only over material or towel.)
- T1- L5 in the paraspinal muscle region, gluteal region and around shoulder musculature region.
- May go slightly deeper on extremely muscular athletes.
- ONLY use for 4 seconds on one spot, then move location.
- Entire treatment lasts between 1 and 2 minutes.
- Go Light & be careful.

INSTRUMENT ASSISTED MUSCLE BALANCING

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INSTRUMENT ASSISTED MUSCLE BALANCING

(VIDEO DEMONSTRATION)

FIBROTIC ADHESIONS, MYOSPASMS & PIRIFORMIS WORK WITH INSTRUMENTS IN COMPETITIVE ATHLETES

MYOFASCIAL RELEASE

(DONE BY HANDS ONLY)

- During therapy, find the myofascial area that feels stiff and fixed instead of elastic and movable under light manual pressure.

- Manually apply pressure and stretching will help loosen up restricted movement, leading to reduced pain.

- Insurance will only cover HANDS ONLY myofascial therapy work. No instrument work will be covered.

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EFFECT OF EXAMS PERIOD ON PREVALENCE OF MYOFASCIAL TRIGGER POINTS AND HEAD POSTURE IN UNDERGRADUATE STUDENTS: REPEATED MEASUREMENTS STUDY.

J Bodyw Mov Ther . 2017 Jan.

BACKGROUND:

Myofascial Trigger points (MTrPs) may be caused or aggravated by many factors, such as mental stress associated with exams and impaired posture.

CONCLUSIONS:

Physical therapy students show greater prevalence of MTrPs during exams. The authors recommend implementing preventative programs towards the examination period.

Kalichman L, Bulanov N, Friedman A. Effect of exams period on prevalence of Myofascial Trigger points and head posture in undergraduate students: Repeated measurements study. J Bodyw Mov Ther. 2017 Jan;21(1):11-18. doi: 10.1016/j.jbmt.2016.04.003. Epub 2016 Apr 7. PMID: 28167166.

MYOFASCIAL TRIGGER POINT THERAPY: WHAT IS IT?

- Myofascial pain results from muscle injury or repetitive strain.
- When stressed or injured, muscles from trigger points, like contracted knots that cause pain & tightness
- Common cause of pain
- When these points are pressed on, muscles fibers shorten, and cause referred pain

Reference: http://www.myofascialtherapy.org/myofascial-therapy/index.html

RESEARCH ON TRIGGER POINTS

- Patients evaluated in one pain management center were found to have a myofascial component to their pain in 95% of cases

  (Gerwin RD. A study of 96 subjects examined for both fibromyalgia and myofascial pain. J Musculoskeletal Pain 1995; 3 (suppl. 1):121-5.).

- There is increasing awareness that active myofascial trigger points often play a role in the symptoms of patients with tension headaches

  (Fernandez-de-Las-Penas C, onso-Blanco C, Cuadrado ML, Gerwin RD, Pareja JA. Myofascial trigger points and their relationship to headache clinical parameters in chronic tension-type headache. Headache 2006; 46(8):1264-72.).

- Low back pain, neck pain

  (Fernandez-de-Las-Penas C, onso-Blanco C, Miangolarra JC. Myofascial trigger points in subjects presenting with mechanical neck pain: A blinded, controlled study. Man Ther 2006;).

- Temporomandibular pain, forearm and hand pain, postural pain

  (Treaster D, Marras WS, Burr D, Sheedy JE, Hart D. Myofascial trigger point development from visual and postural stressors during computer work. J Electromyogr Kinesiol 2005;), pelvic/urogenital pain syndromes.

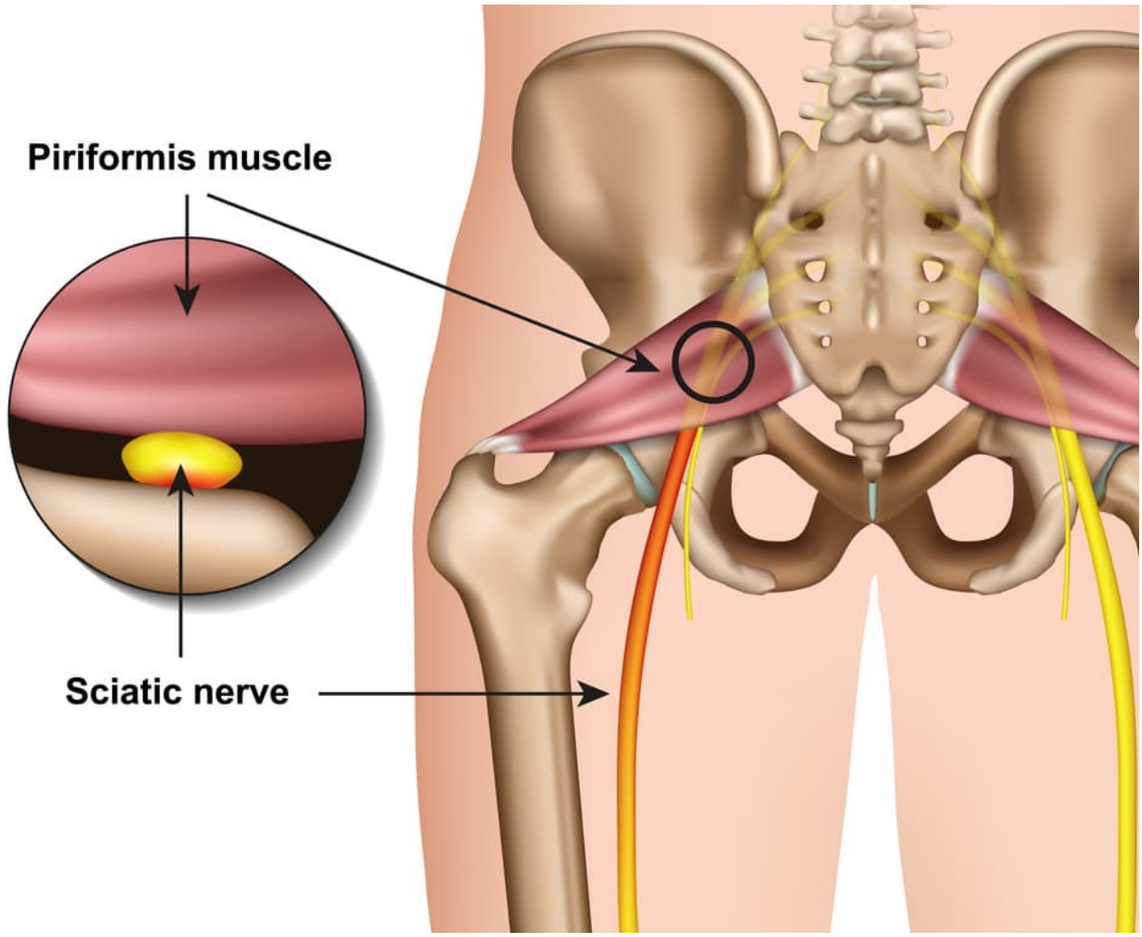
TREATMENT OF MYOFASCIAL TRIGGER POINTS

- Take a full medical and pain history
- Ergonomics of your work station and other regular activities.
- Assess and make suggestions to improve the quality of your sleep
- Make nutritional recommendations
- Choose an appropriate exercise/movement program
- Learn some self-treatment, self management and self care to assist you to treat your condition and your trigger points.

Reference: http://www.myofascialtherapy.org/myofascial-therapy/index.html

PIRIFORMIS SYNDROME

The piriformis syndrome is a condition in which the piriformis muscle irritates the sciatic nerve, causing pain in the buttocks, and referring pain along the entire course of the sciatic nerve.



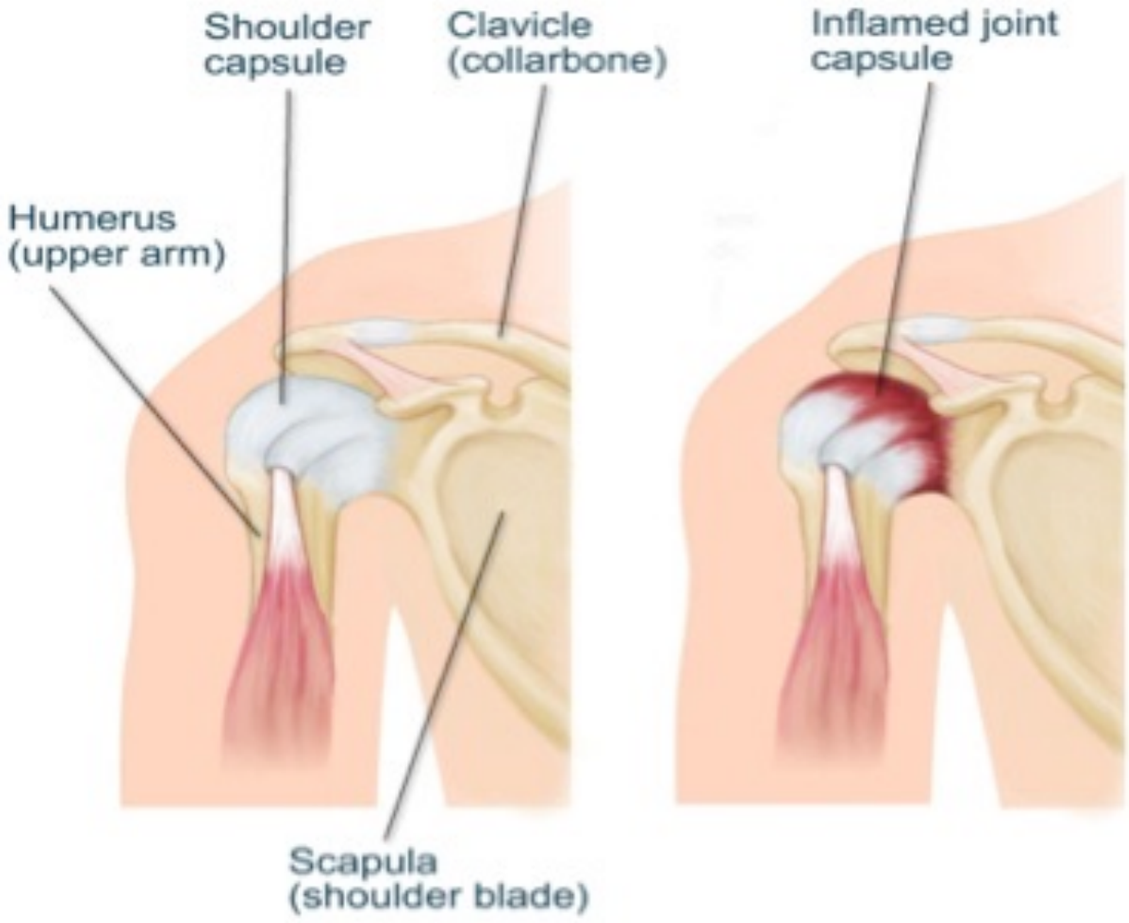
Patients usually complain of deep buttock pain which is made worse by sitting, stairs, or squats. The piriformis muscle assists in abduction and laterally rotating the thigh. Stretching the muscle often duplicates the pain.

Anatomically, the piriformis muscle lies deep to the gluteal muscles. It originates from the sacral spine and attaches to the greater trochanter. The sciatic nerve usually passes underneath the piriformis muscle, but in 15% of the population it travels through the muscle. Any acute or chronic injury with inflammation irritates the sciatic nerve . Piriformis syndrome is diagnosed by symptoms from the physical exam.

Once diagnosed, the treatment will include progressive piriformis stretching starting with four seconds of sustained stretch or up to 60sec. sustained stretch using your hands.

Frozen Shoulder Syndrome

Shoulder range of motion is locked up. Common in pitchers, quarterbacks, and sports that use a dominant arm.



Treatment:

- Dig Myofascial trigger points
- Put patient through full range of motion while working on specific trigger points
- May use electric massagers to loosen muscles prior to hands-on work

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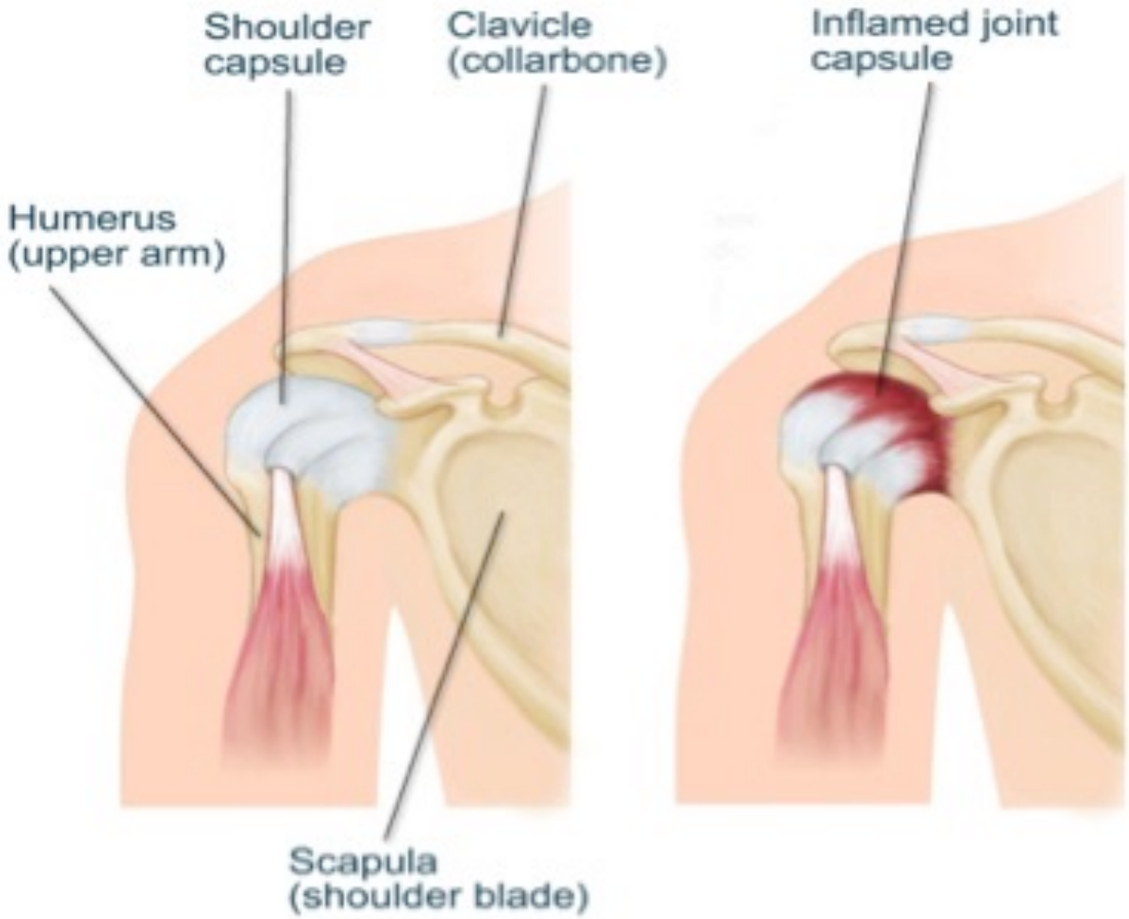

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A CRITICAL OVERVIEW OF THE CURRENT MYOFASCIAL PAIN LITERATURE - OCTOBER 2017

J Bodyw Mov Ther . 2017 Oct.

Abstract

In this overview of the myofascial pain literature, we have included several original contributions ranging from a study by Bowen and colleagues of trigger points in horses to the introduction of a new clinical entity of "laryngeal muscle myofascial pain syndrome in dysphonic patients." Minerbi and colleagues described for the first time the referred pain patterns of the longus colli muscle, while Casale and associates studied the spinal modulatory action of dry needling or acupuncture stimulation. Many dry needling articles are included in this overview with several recent outcome studies. Slowly, there is increasing scientific support for using dry needling for a variety of conditions. Several researchers explored specific aspects of dry needling, such as needle placements, whether eliciting a local twitch response is desired, and the role of psychological factors in post-needling soreness. Contributions originated in Australia, Belgium, Brazil, Canada, China, Germany, Greece, India, Israel, Italy, Korea, Portugal, Spain, Switzerland, Turkey, the UK, and the USA.

Dommerholt J, Finnegan M, Hooks T, Chou LW. A critical overview of the current myofascial pain literature - October 2017. J Bodyw Mov Ther. 2017 Oct;21(4):902-913. doi: 10.1016/j.jbmt.2017.08.002. Epub 2017 Aug 18. PMID: 29037647.

EXAMPLES SOME OF MY PREVIOUS PROFESSIONAL PATIENTS


Rams
84
LOS ANGELES RAMS
JULY 27
FAMILY AND FRIENDS TENT

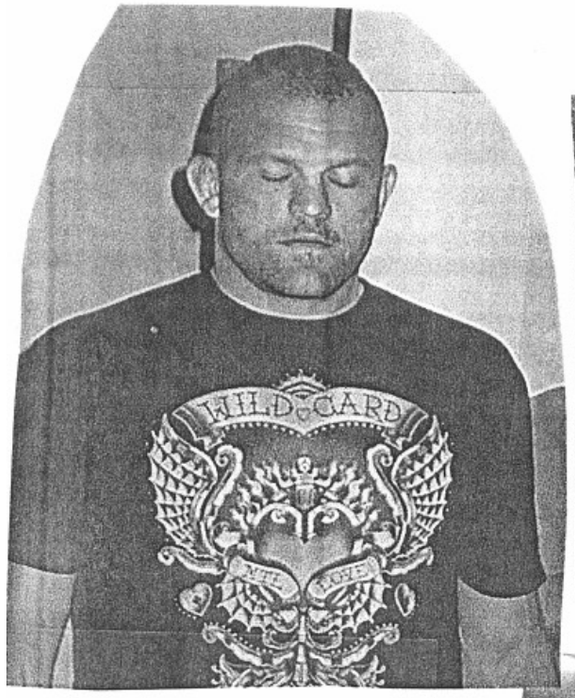

Rams
LOS ANGELES RAMS

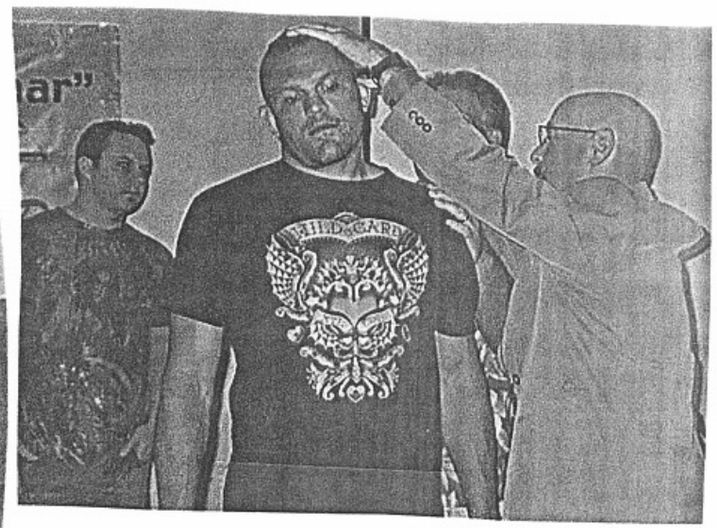

Rams
54
LOS ANGELES RAMS
LOS ANGELES RAMS

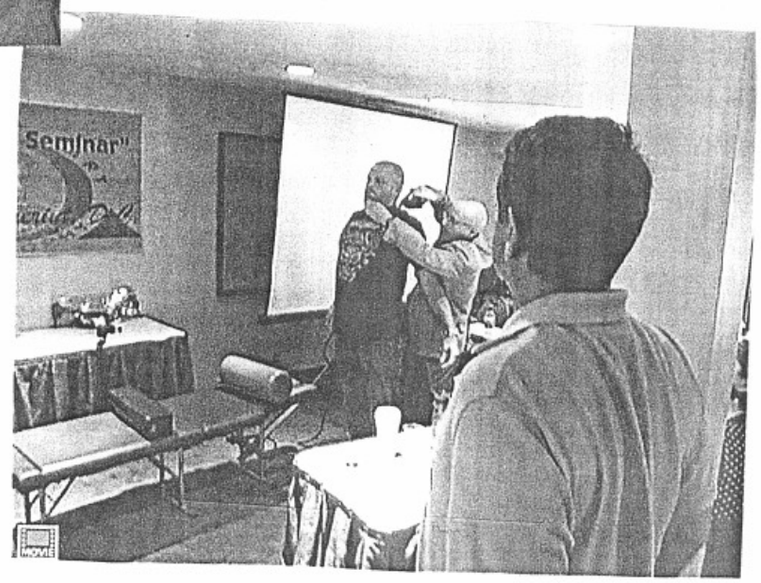

RAMS
Rams


LOS ANGELES RAMS
LOS ANGELES RAMS
American Airlines

THE "ICEMAN" CHUCK LIDDELL GETS HIS POSTURE CORRECTED BY MARK CYMERINT D.C. IN AUGUST 2008.







HISTORY OF CHIROPRACTIC IN PROFESSIONAL SPORTS | 1920 - 2022

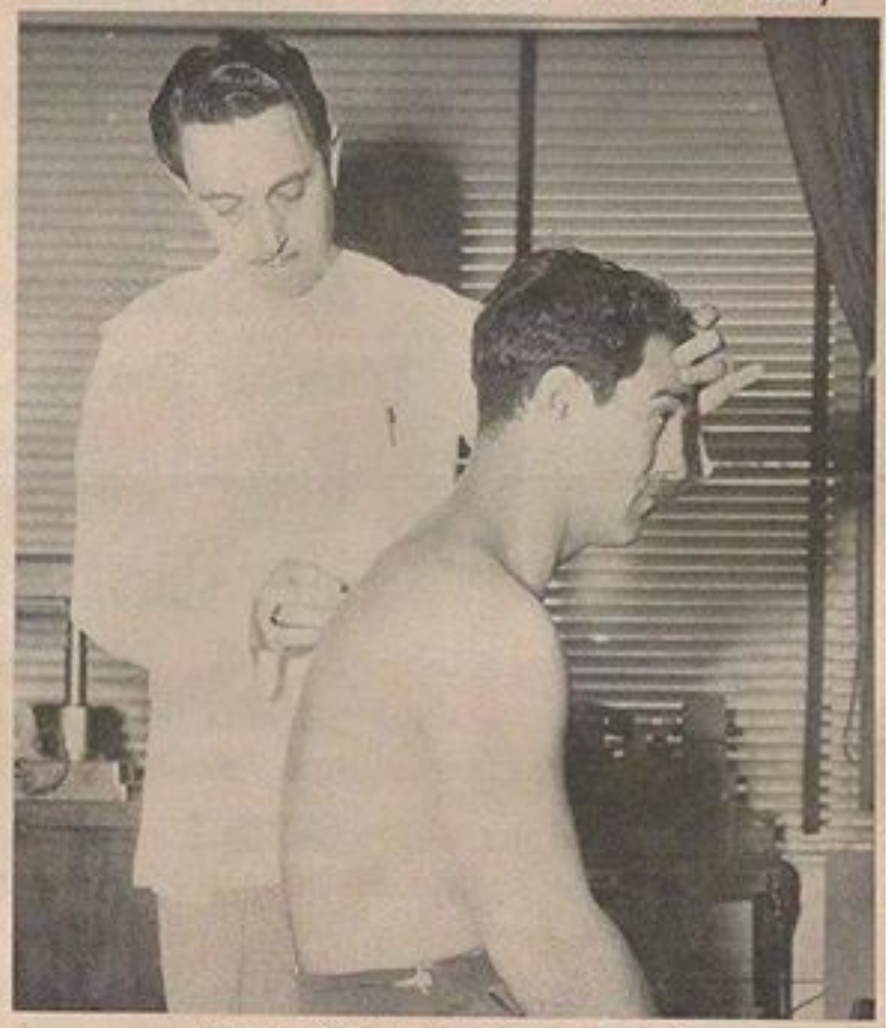
ROCKY MARCIANO, HEAVYWEIGHT BOXING CHAMPION, RELIES ON CHIROPRACTIC

The obvious aspiration of every prizefighter is to attain the top spot in his particular class. To reach this goal, perfect physical fitness is a must. Immediate responsive reflexes, coordination, and stamina are the result of proper training, good habits, a well-balanced diet, and last but certainly not least, a spine free from nerve interference as the result of bony encroachment.

Rocky Marciano, world's heavyweight champ, exemplifies near perfect physical fitness. This, no doubt, is attributive to his willingness to take all measures necessary to keep him in the optimum of health. He does not smoke or drink and shuns devitalized and demineralized foods. The fact that the "Rock" receives his periodic adjustment indicates that he appreciates the efficacy of Chiropractic as one of the most important factors in the maintenance of health.

E. J. CREALESE, D.C.

From "Chiropractic Institute News of New York."



Heavyweight Champion Rocky Marciano and Chiropractor Edward J. Crealese of Brockton, Mass.

THE AMERICAN LEAGUE BASE BALL CLUB
OF NEW YORK, INC.

13

No. 4571 NEW YORK, May 31st, 1939 19

PAY TO THE ORDER OF Erle V. Painter $330.00

YANKEES $330 and 00 cts DOLLARS

TO THE MANUFACTURERS TRUST COMPANY
YORKVILLE BANK OFFICE
1541 THIRD AVENUE
NEW YORK

1-30

PRESIDENT

Chiropractic Helps Babe Ruth and Other Yankees Keep in Perfect Physical Condition

EVERY baseball fan will of course immediately recognize "Babe" Ruth in the picture reproduced above. But the gentleman at the extreme left, in the process of applying a bandage, is not so well known to the general public. In Chiropractic circles, however, he is quite as prominent as is the Bambino in the baseball world.

We present, Erle V. Painter, D. C., trainer of the New York Yankees, and the man largely responsible for the excellent physical condition of this fine team. By applying the principles of modern Chiropractic, in treating Ruth, Dr. Painter has amazed the wiseacres of the diamond, who years ago opined that "The Babe" was definitely "out of the running." The results he has accomplished with other members of the team have been almost equally remarkable.

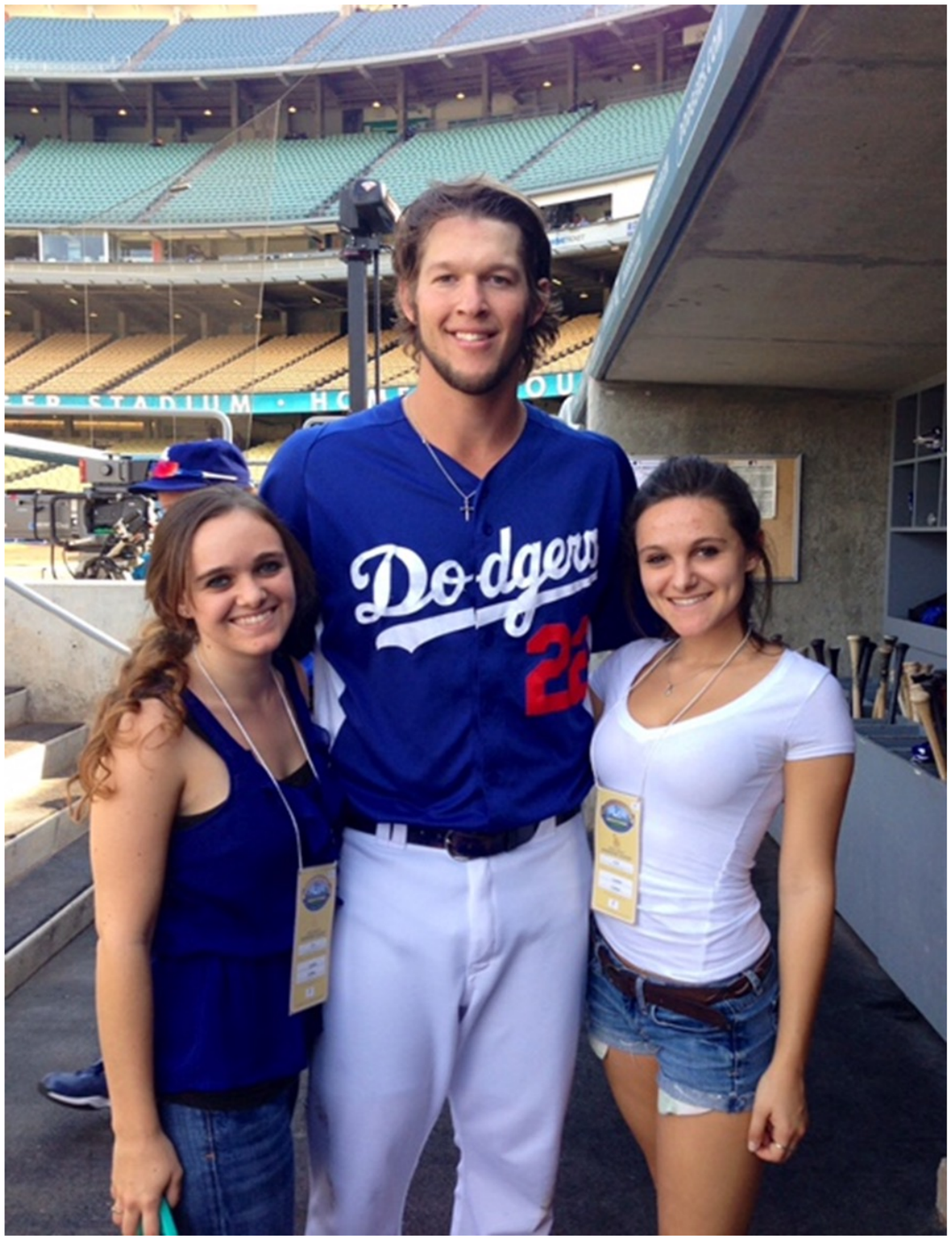
Although he never clouts one over the fence, or aids in a sensational double play, Erle Painter is generally recognized as one of the most valuable men on the Yankee pay roll.

Dr. Painter is one of a growing group of enlightened Chiropractors who place much stress upon preventive counsel. As a general practitioner, he has devoted much time to teaching patients how to relax and rest; what to eat; how to walk correctly; the proper posture to maintain, and other essentials of health conservation. He conceives the Chiropractor's duty to embrace not only the correct adjustment of the spine, but also to educate the patient in maintaining a high standard of health. And this creed is heartily endorsed by Chiropractors of high standing throughout the country.

REGGAE/ POP ARTIST ANUHEA GETTING ADJUSTED

REGGAE/ POP ARTIST MATISYAHU GETTING ADJUSTED

DODGERS GETTING ADJUSTED


Do-dgers


Dodgers
8
NEW ERA


THE SKELETAL SYSTEM


Dodgers


THE SKELETAL SYSTEM

PRO SURFERS GETTING ADJUSTED

PRO SURFERS GETTING ADJUSTED

CURRENT REVIEW OF NEUROLOGY LITERATURE INCLUDING: POSTURE, PROPRIOCEPTION, AND CONDITIONS COMMONLY TREATED BY CHIROPRACTIC METHODS

CURRENT REVIEW OF NEUROLOGY LITERATURE INCLUDING: POSTURE, PROPRIOCEPTION, AND CONDITIONS COMMONLY TREATED BY CHIROPRACTIC METHODS

CONTRASTING ACTION AND POSTURE CODING WITH HIERARCHICAL DEEP NEURAL NETWORK MODELS OF PROPRIOCEPTION

Date & Journal: Elife. 2023 May 31

Abstract

Biological motor control is versatile, efficient, and depends on proprioceptive feedback. Muscles are flexible and undergo continuous changes, requiring distributed adaptive control mechanisms that continuously account for the body's state. The canonical role of proprioception is representing the body state. We hypothesize that the proprioceptive system could also be critical for high-level tasks such as action recognition. To test this theory, we pursued a task-driven modeling approach, which allowed us to isolate the study of proprioception. We generated a large synthetic dataset of human arm trajectories tracing characters of the Latin alphabet in 3D space, together with muscle activities obtained from a musculoskeletal model and model-based muscle spindle activity. Next, we compared two classes of tasks: trajectory decoding and action recognition, which allowed us to train hierarchical models to decode either the position and velocity of the end-effector of one's posture or the character (action) identity from the spindle firing patterns. We found that artificial neural networks could robustly solve both tasks, and the networks' units show tuning properties similar to neurons in the primate somatosensory cortex and the brainstem. Remarkably, we found uniformly distributed directional selective units only with the action-recognition-trained models and not the trajectory-decoding-trained models. This suggests that proprioceptive encoding is additionally associated with higher-level functions such as action recognition and therefore provides new, experimentally testable hypotheses of how proprioception aids in adaptive motor control.

Sandbrink KJ, Mamidanna P, Michaelis C, Bethge M, Mathis MW, Mathis A. Contrasting action and posture coding with hierarchical deep neural network models of proprioception. Elife. 2023 May 31;12:e81499. doi: 10.7554/eLife.81499. PMID: 37254843; PMCID: PMC

THE EFFECT OF FOOT POSTURE ON STATIC BALANCE, ANKLE AND KNEE PROPRIOCEPTION IN 18-TO-25 YEAR-OLD FEMALE STUDENT: A CROSS-SECTIONAL STUDY

Date & Journal: BMC Musculoskelet Disord. 2023 Jul 4

Abstract

Background & purpose: Afferent input from the sole affects postural stability. Cutaneous reflexes from the foot are important to posture and gait. Lower-limb afferents alone provide enough information to maintain upright stance and are critical in perceiving postural sway. Altered feedback from propreoceptive receptors alters gait and patterns of muscle activation. The position and posture of the foot and ankle may also play an important role in proprioceptive input. Therefore, the current research aims to compare static balance and ankle and knee proprioception in people with and without flexible flatfeet.

Result: Kruskal-Wallis test showed a significant difference between two groups of flat feet and normal feet in the variables of static balance and position sense of ankle plantarflexion, ankle dorsiflexion, and knee flexion ($p \leq 0.05$). A significant correlation was found between static balance and sense of ankle and knee position in the group with normal feet. The analysis of the regression line also showed that ankle and knee position sense could predict the static balance score in the regular foot group (ankle dorsiflexion position sense 17% ($R2 = 0.17$), ankle plantarflexion position sense 17% ($R2 = 0.17$) and knee flexion position sense 46% ($R2 = 0.46$) explain of changes in static balance).

Discussion & conclusion: Flexible flatfoot soles can cause loss of balance and sense of joint position; therefore, according to this preliminary study, clinicians must be aware and should take into account this possible deficit in the management of these patients.

Ghorbani M, Yaali R, Sadeghi H, Luczak T. The effect of foot posture on static balance, ankle and knee proprioception in 18-to-25-year-old female student: a cross-sectional study. BMC Musculoskelet Disord. 2023 Jul 4;24(1):547. doi: 10.1186/s12891-023-066

EFFECTS OF CHIROPRACTIC CARE ON STRENGTH, BALANCE, AND ENDURANCE IN ACTIVE-DUTY U.S. MILITARY PERSONNEL WITH LOW BACK PAIN: A RANDOMIZED CONTROLLED TRIAL

Date & Journal: J Altern Complement Med. 2020 Jul

Abstract

Objectives: To investigate whether chiropractic care influences strength, balance, and/or endurance in active-duty United States military personnel with low back pain (LBP). Participants were randomly allocated to 4 weeks of chiropractic care or to a wait-list control. Interventions: Chiropractic care consisted of spinal manipulation, education, advice, and reassurance.

Results: Participants had mean age of 30 years (18-40), 17% were female, 33% were non-white, and 86% reported chronic LBP. Mean maximum pulling strength in the chiropractic group increased by 5.08 kgs and decreased by 7.43 kgs in the wait-list group, with a statistically significant difference in mean change between groups ($p = 0.003$). Statistically significant differences in mean change between groups were also observed in trunk muscle endurance (13.9 sec, $p = 0.002$) and balance with eyes closed (0.47 sec, $p = 0.01$), but not in balance with eyes open (1.19 sec, $p = 0.43$). Differences in mean change between groups were statistically significant in favor of chiropractic for LBP-related disability, pain intensity and interference, and fear-avoidance behavior.

Conclusions: Active-duty military personnel receiving chiropractic care exhibited improved strength and endurance, as well as reduced LBP intensity and disability, compared with a wait-list control.

Vining R, Long CR, Minkalis A, Gudavalli MR, Xia T, Walter J, Coulter I, Goertz CM. Effects of Chiropractic Care on Strength, Balance, and Endurance in Active-Duty U.S. Military Personnel with Low Back Pain: A Randomized Controlled Trial. J Altern Complem

FACTORS ASSOCIATED WITH CLINICAL RESPONSES TO SPINAL MANIPULATION IN PATIENTS WITH NON-SPECIFIC THORACIC BACK PAIN: A PROSPECTIVE COHORT STUDY

Date & Journal: Front Pain Res (Lausanne) . 2022 Jan 6.

Abstract

Introduction: The management of musculoskeletal disorders is complex and requires a multidisciplinary approach. Manual therapies, such as spinal manipulative therapy (SMT), are often recommended as an adjunct treatment and appear to have demonstrable effects on pain and short-term disability in several spinal conditions. However, no definitive mechanism that can explain these effects has been identified. Identifying relevant prognostic factors is therefore recommended for people with back pain.

Objective: The main purpose of this study was to identify short-term candidate prognostic factors for clinically significant responses in pain, disability and global perceived change (GPC) following a spinal manipulation treatment in patients with non-specific thoracic back pain.

Results: 107 patients (62 females and 45 males) were recruited. Mean peak force averaged 450.8 N with a mean thrust duration of 134.9 ms. Post-intervention, comfort was associated with pain responder status ($p < 0.05$) and GPC responder status ($p < 0.05$), while expectation of disability improvement was associated with GPC responder status ($p < 0.05$). At follow-up, comfort and expectation of pain improvement were associated with responder GPC status ($p < 0.05$). No association was found between responder pain, disability or GPC status and biomechanical parameters of SMT at any time point.

Pasquier M, Young JJ, Lardon A, Descarreaux M. Factors Associated With Clinical Responses to Spinal Manipulation in Patients With Non-specific Thoracic Back Pain: A Prospective Cohort Study. Front Pain Res (Lausanne). 2022 Jan 6;2:742119. doi: 10.3389/fpa

DEVELOPMENT OF A MANNEQUIN LAB FOR CLINICAL TRAINING IN A CHIROPRACTIC PROGRAM

Date & Journal: J Chiropr Educ . 2022 Mar 31.

Abstract

Objective: Faced with COVID-19 safety protocols that severely limited the ability to conduct chiropractic technique instruction in the usual manner, our university invested the resources to develop a new mannequin lab for hands-on training, which would help supplement the loss of person-to-person contact.

Results: Mannequins were produced in 7 weeks, and space was built out for a special lab. Faculty members are developing classroom procedures to introduce the mannequin to students, phase in the skills from static and motion palpation, and practice thrust performance.

Conclusion: The production run was successful, and the resulting equipment, well-received by students and faculty. In addition to helping teach manual skills, the lab serves as a platform for educational research to test the efficacy of mannequin-based training protocols. With the pressure sensors on known locations along the spine, future research may be able to test the ability of students to identify and contact specific target locations for adjustive thrusts.

Owens EF, Dever LL, Hosek RS, Russell BS, Dc SS. Development of a mannequin lab for clinical training in a chiropractic program. J Chiropr Educ. 2022 Mar 31. doi: 10.7899/JCE-21-10. Epub ahead of print. PMID: 35394042.

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VESTIBULAR DEFICITS IN DEAFNESS: CLINICAL PRESENTATION, ANIMAL MODELING, AND TREATMENT SOLUTIONS

Date & Journal: Front Neurol . 2022 Apr 4.

Abstract

The inner ear is responsible for both hearing and balance. These functions are dependent on the correct functioning of mechanosensitive hair cells, which convert sound- and motion-induced stimuli into electrical signals conveyed to the brain. During evolution of the inner ear, the major changes occurred in the hearing organ, whereas the structure of the vestibular organs remained constant in all vertebrates over the same period. Vestibular deficits are highly prevalent in humans, due to multiple intersecting causes: genetics, environmental factors, ototoxic drugs, infections and aging. Studies of deafness genes associated with balance deficits and their corresponding animal models have shed light on the development and function of these two sensory systems. Bilateral vestibular deficits often impair individual postural control, gaze stabilization, locomotion and spatial orientation. The resulting dizziness, vertigo, and/or falls (frequent in elderly populations) greatly affect patient quality of life. In the absence of treatment, prosthetic devices, such as vestibular implants, providing information about the direction, amplitude and velocity of body movements, are being developed and have given promising results in animal models and humans. Novel methods and techniques have led to major progress in gene therapies targeting the inner ear (gene supplementation and gene editing), 3D inner ear organoids and reprograming protocols for generating hair cell-like cells. These rapid advances in multiscale approaches covering basic research, clinical diagnostics and therapies are fostering interdisciplinary research to develop personalized treatments for vestibular disorders.

Maudoux A, Vitry S, El-Amraoui A. Vestibular Deficits in Deafness: Clinical Presentation, Animal Modeling, and Treatment Solutions. Front Neurol. 2022 Apr 4;13:816534. doi: 10.3389/fneur.2022.816534. PMID: 35444606; PMCID: PMC9013928.

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NEUROANATOMY, EXTRAPYRAMIDAL SYSTEM

Date & Journal: StatPearls Publishing; 2022 Jan. 2021 Oct 30.

Excerpt

The extrapyramidal system (EPS) is an anatomical concept first developed by Johann Prus in 1898 when he discovered that the disturbance in pyramidal tracts failed to prevent the epileptic activities. Prus postulated that, apart from pyramidal tracts, there must be alternative pathways, called the "extrapyramidal tracts," that "delivered epileptic activity" from the cerebral cortex to the spinal cord. Clinically, the term “extrapyramidal” was thus adopted to distinguish between the clinical effects produced by damage involving the basal ganglia and those of damage to the classic “pyramidal” pathway. Despite this distinction, however, there are important anatomical and functional relationships between the two systems.

The EPS serves an essential function in maintaining posture and regulating involuntary motor functions. In particular, the EPS provides:

- Postural tone adjustment
- Preparation of predisposing tonic attitudes for involuntary movements
- Performing movements that make voluntary movements more natural and correct
- Control of automatic modifications of tone and movements
- Control of the reflexes that accompany the responses to affective and attentive situations (reactions)
- Control of the movements originally voluntary then become automatic through exercise and learning (e.g., in writing)
- Inhibition of involuntary movements (hyperkinesias), which are particularly evident in extrapyramidal diseases.

The EPS, therefore, controls the automatic activities but also influences voluntary motility through a tonic function. These regulation mechanisms involve the processing of centers located in multiple brain regions, such as parts of the cerebral cortex, the cerebellum, thalamus, reticular substance, and several basal ganglia. The term basal ganglia or basal nuclei is referred to as a group of subcortical nuclei. Among these nuclei, the caudate nucleus and the putamen nuclei, which together constitute the neostriatum, plus the substantia nigra (SN), red nucleus (RN), the subthalamic nucleus of Luys, and the black substance compose the nuclei of the EPS. From all these centers, numerous subcortical tracts, or the extrapyramidal tracts, stem out and terminate in the spinal cord. However, the majority of tracts travels through the basal ganglia. Thus, anatomically, the EPS can be defined as a set of nuclei and fiber tracts that received projections from the cerebral cortex and sent projections to the brainstem and spinal cord and, functionally, works as a complex motor-modulation system.

(Cont’d…)

Lee J, Muzio MR. Neuroanatomy, Extrapyramidal System. 2021 Oct 30. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan–. PMID: 32119429.

AGE-RELATED CHANGES TO VESTIBULAR HEAVE AND PITCH PERCEPTION AND ASSOCIATIONS WITH POSTURAL CONTROL

Date & Journal: Sci Rep . 2022 Apr 19.

Abstract

Falls are a common cause of injury in older adults (OAs), and age-related declines across the sensory systems are associated with increased falls risk. The vestibular system is particularly important for maintaining balance and supporting safe mobility, and aging has been associated with declines in vestibular end-organ functioning. However, few studies have examined potential age-related differences in vestibular perceptual sensitivities or their association with postural stability. Here we used an adaptive-staircase procedure to measure detection and discrimination thresholds in 19 healthy OAs and 18 healthy younger adults (YAs), by presenting participants with passive heave (linear up-and-down translations) and pitch (forward-backward tilt rotations) movements on a motion-platform in the dark. We also examined participants' postural stability under various standing-balance conditions. Associations among these postural measures and vestibular perceptual thresholds were further examined. Ultimately, OAs showed larger heave and pitch detection thresholds compared to YAs, and larger perceptual thresholds were associated with greater postural sway, but only in OAs. Overall, these results suggest that vestibular perceptual sensitivity declines with older age and that such declines are associated with poorer postural stability. Future studies could consider the potential applicability of these results in the development of screening tools for falls prevention in OAs.

Gabriel GA, Harris LR, Gnanasegaram JJ, Cushing SL, Gordon KA, Haycock BC, Campos JL. Age-related changes to vestibular heave and pitch perception and associations with postural control. Sci Rep. 2022 Apr 19;12(1):6426. doi: 10.1038/s41598-022-09807-4. PM

EFFECTS OF EXPERIMENTALLY INDUCED CERVICAL SPINE MOBILITY ALTERATION ON THE POSTURAL ORGANISATION OF GAIT INITIATION

Date & Journal: Sci Rep . 2022 Apr 11.

Abstract

Gait initiation (GI), the transient period between quiet standing and locomotion, is a functional task classically used in the literature to investigate postural control. This study aimed to investigate the influence of an experimentally-induced alteration of cervical spine mobility (CSM) on GI postural organisation. Fifteen healthy young adults initiated gait on a force-plate in (1) two test conditions, where participants wore a neck orthosis that passively simulated low and high levels of CSM alteration; (2) one control condition, where participants wore no orthosis; and (3) one placebo condition, where participants wore a cervical bandage that did not limit CSM. Centre-of-pressure and centre-of-mass kinematics were computed based on force-plate recordings according to Newton's second law. Main results showed that anticipatory postural adjustments amplitude (peak backward centre-of-pressure shift and forward centre-of-mass velocity at toe-off) and motor performance (step length and forward centre-of-mass velocity at foot-contact) were altered under the condition of high CSM restriction. These effects of CSM restriction may reflect the implementation of a more cautious strategy directed to attenuate head-in-space destabilisation and ease postural control. It follows that clinicians should be aware that the prescription of a rigid neck orthosis to posturo-deficient patients could exacerbate pre-existing GI deficits.

Delafontaine A, Vialleron T, Diakhaté DG, Fourcade P, Yiou E. Effects of experimentally induced cervical spine mobility alteration on the postural organisation of gait initiation. Sci Rep. 2022 Apr 11;12(1):6055. doi: 10.1038/s41598-022-10101-6. PMID: 354

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LASER LIGHT SOURCES FOR PHOTOBIOMODULATION: THE ROLE OF POWER AND BEAM CHARACTERIZATION IN TREATMENT ACCURACY AND RELIABILITY

Date & Journal: PLoS One . 2022 Mar 30.

Abstract

Purpose: Daily clinical use of therapeutic light sources can lead to changes in light emission stability with potentially significant consequences for usage in photomedicine treatment. The aim of this study was to evaluate the average and maximum power and to describe the beam diameter of different low-power laser photobiomodulation devices in clinical use in Brazil.

Results: The analyzed power varied between 2% to 134% of the values declared by the manufacturers. Differences in beam diameter of between 38% and 543% of the nominal values were also observed. It is also noteworthy that even between the same brand and model, differences in diameter were obtained. Finally, differences were observed in the power output after one and three minutes of sequential emission for 830 nm and 904 nm ($p < 0.05$), but not when comparing the difference between wavelengths in factor time.

Conclusion: There is a need for a shared effort on the part of laser manufacturers to improve standardization and consistency of laser output power and beam diameters. At the same time, medical laser operators should also consider development of standardized protocols for maintenance and monitoring equipment performance over time to correct for fluctuations that could ultimately impact on treatment outcomes.

Girasol CE, Braz GA, Bachmann L, Celli J, Guirro RRJ. Laser light sources for photobiomodulation: The role of power and beam characterization in treatment accuracy and reliability. PLoS One. 2022 Mar 30;17(3):e0266193. doi: 10.1371/journal.pone.0266193. P

EFFECT OF PHOTOBIOMODULATION THERAPY ON REDUCING ACUTE PAIN AND INFLAMMATION FOLLOWING SURGICAL REMOVAL OF IMPACTED MANDIBULAR THIRD MOLARS: A RANDOMIZED, SPLIT-MOUTH CLINICAL TRIAL

Date & Journal: Photobiomodul Photomed Laser Surg . 2022 Apr.

Abstract

Objective: This study aimed to compare the effects of photobiomodulation therapy (PBMT) on analgesic and inflammatory reduction with that of ibuprofen following surgical removal of impacted mandibular third molars (IMTMs).

Results: The study sample included 25 patients (average age of 22.88 years) with 50 bilateral symmetrical IMTMs. Pain level was highest at 2 h after surgery in both groups and gradually decreased over time ($p < 0.01$). Swelling and trismus at 48 h were higher than at 24 h ($p < 0.01$). Within the first 48 h postoperatively, pain level, swelling, and trismus were significantly lower in the PBMT group ($p < 0.05$). Postoperative sIgA was also significantly lower in the PBMT group ($p < 0.05$).

Conclusions: In short-term and specific conditions of this study, it was found that PBMT helped promote postoperative pain relief and anti-inflammation after surgical removal of IMTMs. The results suggested that there may be a link between a decrease in salivary sIgA levels and decrease in inflammatory processes after PBMT.

Le HT, Huynh NC, Nguyen-Ho QA, Nguyen TT, Le SH, Nguyen LT. Effect of Photobiomodulation Therapy on Reducing Acute Pain and Inflammation Following Surgical Removal of Impacted Mandibular Third Molars: A Randomized, Split-Mouth Clinical Trial. Photobiomodu

IMPROVEMENTS IN CERVICAL SPINAL CANAL DIAMETER AND NECK DISABILITY FOLLOWING CORRECTION OF CERVICAL LORDOSIS AND CERVICAL SPONDYLOLISTHESES USING CHIROPRACTIC BIOPHYSICS TECHNIQUE: A CASE SERIES.

DATE & JOURNAL: J RADIOL CASE REP . 2020 APR 30

Abstract

Cervical spondylolisthesis indicates instability of the spine and can lead to pain, radiculopathy, myelopathy and vertebral artery stenosis. Currently degenerative cervical spondylolisthesis is a wait-and-watch condition with no treatment guidelines. A literature review and discussion will be provided. 8 females presented with neck pain, disability, and history of motor vehicle collision. Radiographs revealed abnormal cervical alignment, spinal canal narrowing, and spondylolistheses. After 30 sessions of Chiropractic BioPhysics® care over 12 weeks, patients reported improved symptoms and disabilities. Radiographs revealed improvements in cervical alignment, spondylolistheses, and spinal canal diameter. Motor vehicle collision may cause instability and abnormal alignment of the cervical spine leading to cervical spondylolisthesis. Improving spinal alignment may be an effective treatment to reduce vertebral subluxation and cervical spondylolistheses and improve neck disability as a result of improved spinal alignment.

Fedorchuk C, Lightstone DF, Comer RD, Katz E, Wilcox J. Improvements in Cervical Spinal Canal Diameter and Neck Disability Following Correction of Cervical Lordosis and Cervical Spondylolistheses Using Chiropractic BioPhysics Technique: A Case Series. J Radiol Case Rep. 2020 Apr 30;14(4):21-37. doi: 10.3941/jrcr.v14i4.3890. PMID: 33082920; PMCID: PMC7536006.

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BEST PRACTICES FOR CHIROPRACTIC MANAGEMENT OF PATIENTS WITH CHRONIC MUSCULOSKELETAL PAIN: A CLINICAL PRACTICE GUIDELINE.

DATE & JOURNAL: J ALTERN COMPLEMENT MED . 2020 OCT.

Abstract

Objective: To develop an evidence-based clinical practice guideline (CPG) through a broad-based consensus process on best practices for chiropractic management of patients with chronic musculoskeletal (MSK) pain.

Conclusions: These evidence-based recommendations for a variety of conservative treatment approaches to the management of common chronic MSK pain conditions may advance consistency of care, foster collaboration between provider groups, and thereby improve patient outcomes.

Hawk C, Whalen W, Farabaugh RJ, Daniels CJ, Minkalis AL, Taylor DN, Anderson D, Anderson K, Crivelli LS, Cark M, Barlow E, Paris D, Sarnat R, Weeks J. Best Practices for Chiropractic Management of Patients with Chronic Musculoskeletal Pain: A Clinical Practice Guideline. J Altern Complement Med. 2020 Oct;26(10):884-901. doi: 10.1089/acm.2020.0181. Epub 2020 Jul 30. PMID: 32749874; PMCID: PMC7578188.

EFFECT OF CERVICAL MANIPULATION ON VERTEBRAL ARTERY AND CEREBRAL HAEMODYNAMICS IN PATIENTS WITH CHRONIC NECK PAIN: A CROSSOVER RANDOMISED CONTROLLED TRIAL.

DATE & JOURNAL: BMJ OPEN. 2019 MAY 28

- Objective: It is hypothesised that cervical manipulation may increase the risk of cerebrovascular accidents. We aimed to determine whether cervical spine manipulation is associated with changes in vertebral artery and cerebrovascular haemodynamics measured with MRI compared with neutral neck position and maximum neck rotation in patients with chronic neck pain.

- Conclusion: our results are in accordance with previous work, which has shown a decrease in blood flow and velocity in the contralateral vertebral artery with head rotation. This may explain why we also observed a decrease in blood velocity with manipulation because it involves neck rotation. Our work is the first to show that cervical manipulation does not result in brain perfusion changes compared with a neutral neck position or maximal neck rotation. The changes observed were found to not be clinically meaningful and suggests that cervical manipulation may not increase the risk of cerebrovascular events through a haemodynamic mechanism.

Moser N, Mior S, Noseworthy M, Côté P, Wells G, Behr M, Triano J. Effect of cervical manipulation on vertebral artery and cerebral haemodynamics in patients with chronic neck pain: a crossover randomised controlled trial. BMJ Open. 2019 May 28;9(5):e02521

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THE IMPACT OF SPINAL MANIPULATION ON MIGRAINE PAIN AND DISABILITY: A SYSTEMATIC REVIEW AND META-ANALYSIS.

DATE & JOURNAL: HEADACHE. 2019 APR

BACKGROUND:
Several small studies have suggested that spinal manipulation may be an effective treatment for reducing migraine pain and disability. We performed a systematic review and meta-analysis of published randomized clinical trials (RCTs) to evaluate the evidence regarding spinal manipulation as an alternative or integrative therapy in reducing migraine pain and disability.

CONCLUSIONS:
Spinal manipulation may be an effective therapeutic technique to reduce migraine days and pain/intensity. However, given the limitations to studies included in this meta-analysis, we consider these results to be preliminary. Methodologically rigorous, large-scale RCTs are warranted to better inform the evidence base for spinal manipulation as a treatment for migraine.

Rist PM, Hernandez A, Bernstein C, Kowalski M, Osypiuk K, Vining R, Long CR, Goertz C, Song R, Wayne PM. The Impact of Spinal Manipulation on Migraine Pain and Disability: A Systematic Review and Meta-Analysis. Headache. 2019 Apr;59(4):532-542. doi: 10.11

MANIPULATION AND MOBILIZATION FOR TREATING CHRONIC NONSPECIFIC NECK PAIN: A SYSTEMATIC REVIEW AND META-ANALYSIS FOR AN APPROPRIATENESS PANEL.

DATE & JOURNAL: PAIN PHYSICIAN. 2019 MAR

BACKGROUND:
Mobilization and manipulation therapies are widely used by patients with chronic nonspecific neck pain; however, questions remain around efficacy, dosing, and safety, as well as how these approaches compare to other therapies.

OBJECTIVES:
Based on published trials, to determine the efficacy, effectiveness, and safety of various mobilization and manipulation therapies for treatment of chronic nonspecific neck pain.

CONCLUSIONS:
Studies published since January 2000 provide low-moderate quality evidence that various types of manipulation and/or mobilization will reduce pain and improve function for chronic nonspecific neck pain compared to other interventions. It appears that multimodal approaches, in which multiple treatment approaches are integrated, might have the greatest potential impact. The studies comparing to no treatment or sham were mostly testing the effect of a single dose, which may or may not be helpful to inform practice. According to the published trials reviewed, manipulation and mobilization appear safe. However, given the low rate of serious adverse events, other types of studies with much larger sample sizes would be required to fully describe the safety of manipulation and/or mobilization for nonspecific chronic neck pain.

Coulter ID, Crawford C, Vernon H, Hurwitz EL, Khorsan R, Booth MS, Herman PM. Manipulation and Mobilization for Treating Chronic Nonspecific Neck Pain: A Systematic Review and Meta-Analysis for an Appropriateness Panel. Pain Physician. 2019 Mar;22(2):E55-

TREATING 'SLOUCHY' (HYPERKYPHOSIS) POSTURE WITH CHIROPRACTIC BIOPHYSICS®: A CASE REPORT UTILIZING A MULTIMODAL MIRROR IMAGE® REHABILITATION PROGRAM.

DATE & JOURNAL: J PHYS THER SCI. 2017 AUG

- Purpose: To present a case of the non-surgical reduction of 'slouchy' hyperkyphosis posture utilizing the multimodal Chiropractic BioPhysics® rehabilitation program emphasizing the mirror image® concept.

- Results: After 6-months of treatment the patient displayed a total correction of the posterior thoracic translation with a significant reduction in thoracic hyperkyphosis. The dramatic correction of her overall posture and spine alignment corresponded to the significant relief of neck and back pains, headaches and improvement of various other health issues as demonstrated by self-report and SF-36.

- Conclusion: Poor postures corresponding to poor health can be changed for the better with multimodal rehabilitation programs that are now showing consistent postural improvements corresponding with improvements in various health conditions. We suggest that the postural correction of those with various pain symptoms be considered as a first line non-pharmalogical, non-surgical rehabilitation approach for those presenting with poor posture.

Fortner MO, Oakley PA, Harrison DE. Treating 'slouchy' (hyperkyphosis) posture with chiropractic biophysics®: a case report utilizing a multimodal mirror image® rehabilitation program. J Phys Ther Sci. 2017 Aug;29(8):1475-1480. doi: 10.1589/jpts.29.1475.

CORRECTION OF PSEUDOSCOLIOSIS (LATERAL THORACIC TRANSLATION POSTURE) FOR THE TREATMENT OF LOW BACK PAIN: A CBP® CASE REPORT.

DATE & JOURNAL: J PHYS THER SCI. 2018 SEP

- [Purpose] To present the case of a total reduction of pseudoscoliosis spinal deformity in an adult female suffering from recurrent back pains.

- [Results] The patient achieved a complete reduction of the lateral thoracic translation posture (pseudoscoliosis) as indicated on a post-treatment radiograph after 36 total treatments. Most orthopedic tests became normalized and the patients back pains were significantly improved after the correction of posture, but only slight improvements after the initial 12 sessions of manipulative therapy only.

- [Conclusion] Pseudoscoliosis is structurally reducible by use of CBP® mirror image® lateral translation traction methods and exercises and led to the resolution of back pains in this case. The diagnosis of pseudoscoliosis as opposed to true scoliosis is very important and likely underdiagnosed in common practice. Upright radiographic imaging is essential to differentiate these two spinal disorders and offers no harm to the patient. Comprehensive assessment including routine use of x-ray is recommended to differentiate between spinal disorders.

Henshaw M, Oakley PA, Harrison DE. Correction of pseudoscoliosis (lateral thoracic translation posture) for the treatment of low back pain: a CBP® case report. J Phys Ther Sci. 2018 Sep;30(9):1202-1205. doi: 10.1589/jpts.30.1202. Epub 2018 Sep 4. PMID: 30

ALLEVIATION OF PAIN AND DISABILITY IN A POST-SURGICAL C4-C7 TOTAL FUSION PATIENT AFTER REDUCING A LATERAL HEAD TRANSLATION (SIDE SHIFT) POSTURE: A CBP® CASE REPORT WITH A 14 YEAR FOLLOW-UP.

DATE & JOURNAL: J PHYS THER SCI. 2018 JUL

Background:
This case describes the long-term successful outcome in a chronic neck pain patient given Chiropractic Biophysics® treatment 14 years previously, and following surgical fusion of C4-C7 as performed 6.5 years prior to initial presentation.

Conclusion:
This case illustrates what has previously been suggested in the literature, that lateral head translation postures can be overlooked and undiagnosed and these postures may play a significant role in the production of neck pain, headaches, and related disability.

Oakley PA, Harrison DE. Alleviation of pain and disability in a post-surgical C4-C7 total fusion patient after reducing a lateral head translation (side shift) posture: a CBP® case report with a 14 year follow-up. J Phys Ther Sci. 2018 Jul;30(7):952-957. doi: 10.1589/jpts.30.952. Epub 2018 Jul 3. PMID: 30034105; PMCID: PMC6047960.

Thank you, Docs!

A brief evaluation survey will be emailed to you in the coming days.
Please fill out the evaluation ASAP & press “submit”.

Hope you enjoyed the seminar and I thank you for your continued support!
We really appreciate all of you!

Mark Cymerint D.C. | TriadSeminars

Email:
TriadSeminars@gmail.com

Office:
(949) 707-5785

Website:
TriadSeminars.com

Instagram:
@OrganiccsAbsolutelyPure

Facebook:
TriadSeminars

Podcast:
DrMCOrganiccsHealthPodcast