A Look at Posture and Scoliosis- Flexibility and Function with the Special Needs Population
Michelle Lindsey  PT, CPT, MBA

• To comply with professional boards/associations standards, I declare that I do not have any financial relationship in any amount, occurring in the last 12 months with a commercial interest whose products or services are discussed in my presentation.

CROSS COUNTRY EDUCATION
WWW.CROSSCOUNTRYEDUCATION.COM
Fill out and turn in for CE credit

Session Evaluation Form

EVALUATION FORM INSTRUCTIONS:
1. You MUST provide your name and registration number on each form that you fill out.
2. Please fill out one evaluation form for each session that you attend.
3. For sessions with multiple speakers, please fill out an evaluation form for each speaker.
4. Please provide both the session number AND the speaker number.

MARKING INSTRUCTIONS
- Use a No. 2 pencil or a blue or black ink pen only.
- Do not use pens with ink that soaks through paper.
- Make solid marks that fill the response completely.
- Make no stray marks on this form.

FIRST NAME

LAST NAME

REGISTRATION NUMBER

SPEAKER NUMBER 273
SESSION NUMBER 409

The presenter demonstrated content expertise:
The content presented met the session’s objectives:
Objective 1
Objective 2
Objective 3
Objective 4
Objective 5
Objective 6
A Look at Posture and Scoliosis- Flexibility and Function with the Special Needs Population
Objectives

Discuss ways in which scoliosis and poor posture affects our muscles, range of motion, and functional abilities

Identify major components of spinal structure by defining spinal terminology related to scoliosis when writing evaluations and learn how scoliosis is screened for and measured in order to consider the best possible therapeutic treatment plan

Identify how to facilitate better body alignment, body awareness, and improved function with proper cues and positioning
How does It FEEL to be out of Normal Anatomical Alignment and unable to perform functional activities?

• How Does It FEEL to be in pain and unable to communicate that you need help moving and getting rid of the pain?

• Is a tonal issue really just a postural issue?

• Are you seeing the world differently than most by the way you are holding your body?

• Are poor postural habits related to some sensory imbalance, i.e., vision, hearing, etc.?
Runners VS. the Clients We See
The Systems Model

• This model is what most therapists, clinicians/families would benefit from
• It allows us to look deeper into the cause of the problem without immediately making an assumption or judgment
Systems Model

General Adaptation Syndrome (GAS)

Fear Anger Rage Violence (FARV)

Olfaction

Emotion

Motivation/declarative memory

Visceral Support Systems: Lungs, Heart, circulatory, etc.

Visceral

Cognitive

Motor

Motor Programs (Plasticity & constraints; degrees of freedom)

Environmental context & restraints

CNS Components: sensory, processing and programming output

Learning Types and Styles

Sensory

Perceptual

Sensory Memory S.T./Intermit./L.T.

Retrieval new/old

Motor Programs

Musculoskeletal

Sensory Perceptual

S.T./Intermit./L.T.

Retrieval new/old

Motor Programs (Plasticity & constraints degrees of freedom)

(Jurgen Jora, 1991)
Systems Model and Posture

- Visual impairments and postural changes
- Psychological problems and postural changes
- Auditory impairments and posture
- Physical problems and posture i.e. heart, coldness
- Fear or Anger and postural changes
There is a complex functional relationship of the muscles and the joints.

Poor posturing is linked to the following:

- Painful conditions of the extremities
- Balance disorders
- Poor endurance
- Decreased Eyesight
- Behavioral changes
- Headaches
- TMJ
THE SPINE

- Vertebrae- 7 cervical, 12 thoracic, 5 lumbar
- Disks-vertebrae in the spinal column are separated from each other by small cushions of cartilage known as intervertebral disks-shock absorbers
- Inside each disk is the nucleus pulposus surrounded by tough fibrous ring called the annulus fibrosis - 80% of disk is water
- The disks rely on nearby blood vessels to keep them nourished
- Processes- bony projections located on each vertebrae in the spine-the spinous and transverse processes attach to muscles in back allows spine to twist or bend
- Zygopophysial joints or z joints- form the joints between vertebrae themselves
- Spinal canal- encloses the spinal cord (central trunk of nerves that connects the brain with the rest of the body)
- Spinal nerves exit through holes in these bony vertebrae known as intrrvertebral foramen
- Problems with spine –herniated discs, facet joint arthritis, spinal stenosis

About Aadam- Scoliosis
Lehmann- www.scoliosis-assoc.org
New Research

- First gene related to idiopathic scoliosis was found in a study published in 2007 - variations in gene CHD7
- A new bone morphogenetic protein BMP – helping to achieve spinal fusion with more success and less complications
- Vertical Expandable Prosthetic Titanium Rib (VEPTR) expansion thoracoplasty for thoracic insufficiency

» Wang- BMP Improves Spinal Fusion results
» About Adam- Scoliosis
» Scoliosis Research Society-2009
Studies

  Conclusion- marked asymmetry was seen in the transverse plane, denoted as a
torsional offset of the upper trunk in relation to the symmetrically rotating pelvis
Screening programs can help to prevent many painful postural syndromes-
Began in 1940 mandatory in most state

- ADAMS TEST – misses 15% of scoliosis patients
- RISSER TEST-determines end of growth -looking at growth plate 0,1,2,3,4,or 5
  5= fusion  3=75% excursion
- MOVEMENT TESTS-patient walks on toes, then the heels, and then jumps up and down on one foot
- LEG LENGTH TEST
- Neuromuscular impairment- reflexes, sensations, muscle function
- Pain
- Radicular pain
- History of bowel and bladder
- Respiratory issues
- Scoliometer-measures distortions of the pelvis- apex- highest point of the curve

About Adam- Scoliosis
Clinical evaluation

- Horizontal plane- rotation of shoulders, rotation of thorax, rotation of pelvis
- Tilt in pelvis
- Frontal Plane-tilt of the shoulders, tilt of the thorax and tilt of the pelvis
- Prominence- levels and values
- Pain
- Scapula deformity
- Clinical Flat Back
- Rib asymmetry
- Heel lifts

Look for:
- A tilted head that does not line up with shoulders
- A protruding shoulder blade
- An uneven neckline
- Leaning more to one side than the other
- One hip or shoulder that is higher than the other
Decision to Treat or Wait

- Monitor the curve if less than 20 degrees
- Curves greater than 25 degrees or those that progress while being monitored may require treatment
- The older the child the less likely it is the curve will progress
- Girls have higher risk than boys
- Thoracic curves progress more than thoracolumbar
- Children in poor health may suffer more from stressful scoliosis than other children
Radiographic examination

X-rays- in standing-gravity of spine- PA and lateral views reveals degree and severity of curve, determines whether skeletal growth has reached maturity, differentiates between structural and nonstructural

MRI’s – identify spinal cord and brain stem abnormalities, helpful in planning fusion levels, will show degenerative disc disease

Ero and Blessey- Adult Scoliosis: Evaluation and Treatment
Classification of Scoliosis

• Nonstructural scoliosis - curve does not twist, side to side curve
• Structural scoliosis
• Idiopathic (70 – 80 % of all cases) possible bone malformation, asymmetric muscle weakness
• Congenital
• Neuromuscular
  – Poliomyelitis
  – Cerebral palsy
  – Syringomyelia
  – Muscular dystrophy
  – Amyotonia congenital
  – Frederick's ataxia
• Neurofibromatosis
• Mesenchymal disorders
  – Marfan’s syndrome
  – Rheumatoid arthritis
  – Osteogenesis imperfects
  – Certain dwarves
• Trauma
  – Fractures
  – Irradiation
  – surgery

(Michael Richardson, 2000)
Congenital Scoliosis

- Caused by inborn spinal deformities that may result in absent fused vertebrae
- Kidney problems—especially one kidney usually coincide with problem
- Evident age 2 or at ages 8-13 as the spine begins to grow quickly
- Early surgical treatment before age 5 may be important
- Bracing is rarely used for either type of congenital curves
Nonstructural Scoliosis

- Unequal leg length
- Muscle spasms
Idiopathic Scoliosis

Classified based on age presentation

- Juvenile: Up to 3 years old
- Adolescent: Ten years old through teen years
- Infantile: Up to 3 years old
Idiopathic Scoliosis-Possible Causes

- Dietary issues—calcium is lacking causing softening of the bones
- Nerve and muscle abnormalities
- Central mechanisms of the ear
- Fluid around the spinal cord flows asymmetrically (Cedars-Sinai Institute for Spinal Disorders- Los Angeles)
- Abnormalities in collagen—high level of enzymes in the disks, enzymes repair and remodel collagen
- High arches

About Adam- Scoliosis
Pashman-Scoliosis-Frequently Asked Questions
Scoliosis Facts

- 80% of cases are idiopathic
- Most of the curves are right thoracic between T-4 and T-12
- The incidence of adult scoliosis is estimated to be between 4% to 8%
- Scoliosis in adults may be a result of adolescent idiopathic scoliosis or arise in adult life secondary to osteoporosis, osteomalacia, spinal stenosis and degenerative changes

- Spirometric pulmonary tests are usually unaffected in the idiopathic scoliosis patients until the curve exceeds 60 to 65 degrees and the mortality is unaffected until the curve exceeds 90 to 100 degrees
- Respiratory distress is greater in the neuromuscular group of patients
- Pain is the most common reason for patients to seek medical treatment
- Affects 2-3 percent of population
- Commonly diagnosed in children 10-15 years, 10 percent have some degree of scoliosis, less than 1 percent actually need treatment
- Location of structural curve is defined by the location of apical vertebra
- May be evident in Young athletes- 2-24 percent (loosening of joints, delay in puberty onset, uneven load on spine, stresses on growing spine)

Schommer- National Scoliosis Foundation
Ero and Blessey- Adult Scoliosis: Evaluation and Treatment
About Adam-Scoliosis
Scoliosis

- Lateral curvature of the spine
- Etiology, severity, age of onset, and progression vary
- Usually develops in childhood
- Can cause structural abnormalities of the pelvis, vertebrae, and thoracic cage
- Can occur in the cervical, thoracic or lumbar regions of the spine
- If untreated and undetected, can cause severe deformity, drastically affecting appearance, and possible shorten life expectancy
- Early identification and treatment are key to prevention of severe deformity

(Carolyn Kisner, 1990)
Scoliosis

- Scoliosis greater than 25 degrees has been reported in about 1.5/1000 persons
- 60% of curvatures in rapidly growing prepubertal children will progress
- If neglected, can progress dramatically, creating significant physical deformity and even cardiopulmonary problems
- Special braces, electrical stimulation surgery or any combination are used to currently treat
Structural Scoliosis

• Irreversible lateral curvature of the spine with fixed rotation of the vertebrae
  – Vertebral bodies rotate toward the convex side of the curve
  – Spinous processes rotate away from the convex side
  – Curve increases, amount of rotation increases
• A rib hump occurs on the convex side of the curve caused by the rotation of the vertebrae and the rib cage
  – Compression of the ribs on the concave side
  – Separation of the ribs on the convex side
  – Prominence of the ribs and scapula posteriorly on the convex side
As Scoliosis Progresses

- The vertebrae and spinous processes around the major curve rotate toward the concavity of the curve.
- On concave side, the ribs are close together – on convex side the ribs are widely spread.
Severity of Scoliosis

• Severity of the lateral curve determines the rotation of the vertebrae more severe = greater rotation

• Severity of the curve, the greater the impact and secondary changes in the cardiopulmonary systems
  – Decreased vital capacity and total lung capacity
  – Hypertrophy of the right ventricle and atrium from pulmonary hypertension
Facts About Scoliosis

• *Think – severe scoliosis can lead to contractures and severe body deformity
• Our body is a connective chain of muscles
• With scoliosis, the spine will rotate causing the muscles to shorten and tighten
• This will in turn change posture and body alignment causing other muscles in other parts of the body to shorten or get tight
• Legs may be windswept – always classify windswept to where knees are pointing (ex. knees are pointing to the right, state legs are windswept right)
Nonstructural (functional) Scoliosis

• Correction of the lateral curve is possible by
  – Forward or side bending
  – Positional changes and alignment
  – Muscle contraction

• Characterized by
  – Asymmetric shoulder level
  – Prominence of the scapula on the side of the convexity
  – Protrusion of the hip on one side
  – Pelvic obliquity
  – Increased lumbar lordosis
Classification of Scoliosis

• S-Curve – most common curve seen in idiopathic scoliosis
  – Right thoracic left lumbar curve
  – Structural changes in the vertebrae of the major curve

• Description of curves – direction of the curve identified by the convexity (ex. right thoracic scoliosis = convexity of the curve on client’s right concavity on the client’s left)

• Apex of curve – vertebra that is the greatest distance from the midline of the spine = apical vertebra
Classification of Scoliosis

- The Cobb method of measurement of scoliosis.
- Line drawn perpendicular to the upper margin of the vertebra that inclines most toward the concavity.
Classification of Severity of the Curvature

– **Mild scoliosis**
  - Curves of less than 20 degrees

– **Moderate scoliosis**
  - Curves from 20 to 40 or 50 degrees
  - Associated with early structural changes in the vertebrae and rib cage

– **Severe scoliosis**
  - Curves of 40 to 50 degrees or greater
  - Involves significant rotational deformity of the vertebrae and ribs
  - Curves of 40 degrees or more can cause pain and degenerative joint disease (DJD) of the spine
  - Curves of 60 to 70 degrees or more can cause significant cardiopulmonary changes and decreased life expectancy

*(Carolyn Kiser, 1990)*
Treatment of Scoliosis

• Correction of curves greater than 40 or 50 degrees are usually corrected by surgical intervention
• Electrical stimulation of the trunk muscles on the convex side of the curve have recently become treatments that are used for mild and moderate scoliosis
• Bracing, traction, and exercise are other methods that have shown to benefit individuals with scoliosis

(Carolyn Kisner, 19900)
BRACING and Research

- Clinical research presented during the last ten years shows
  1. Bracing is the only proven non-surgical method of potentially successful treatment of adolescent idiopathic scoliosis
  2. Bracing is most effective for curves between 20 and 40 degrees in growing children with Risser signs of 0, 1, 2 or 3
  3. Bracing should apply forces to the spine such that significant curve correction (30%) occurs in the brace
  4. Brace wearing time should be approximately 20 hours plus per day for maximum benefit
  5. The brace program should continue with intensity until growth has ceased as indicated by no further height increase and a Risser 4 status

- Any current statements about the effects of brace compliance on outcome of treatment are purely speculative

- For optimal performance, bracing needs to be started early (>25 degrees and progressive) and must reduce the curves and maintain curve reduction (>50 percent) throughout the duration of wear

- Role of bracing for idiopathic scoliosis is to arrest curve progression and yield a post brace curve that is of magnitude that will not progress as an adult

Winter- www.scoliosis-assoc.org

Gavin-www.scoliosis-assoc.org
SOSORT

Society of the International Society on Scoliosis 
Orthopedic and rehabilitation Treatment

- The studies reveal that among participating SOSORT specialists there continues to be a strongly held and conflicting if not a contentious opinion regarding brace design and treatment.

- All agree that bracing should unload the growth plates of the apical vertebral bodies on the concavity

- Many clinicians seem to fit braces empirically rather than using “curve – specific” biomechanical 3D models

- Rigo, Weiss, Grivas, Maruyama, Kotwicki, and SOSORT members- 
SOSORT Consensus paper on Brace Action: TLSO Biomechanics of Correction
WHAT BRACES ARE ON THE MARKET

The Milwaukee Brace- first modern brace designed for scoliosis -1975-Wisconsin
- cervico-thoraco-lumbo-sacral-orthosis
- Prescribed for curves high in the spine
- Everything works together to keep the body straight and to prevent progression of the curve while the patient is growing

TLSO Braces- low profile –made of plastic and are contoured to conform to patient’s body

Boston Brace- Boston-1970
works by applying three-point pressure to the curve to prevent its progression
Forces lumbar area to flex, which pushes in the abdomen and flattens the posterior lumbar curve- pads place pressure on the curve and relief voids are located opposite the areas of pressure

• Charleston Bending Brace- 1979- worn at night –is molded to conform to the patient’s body while he or she is bent towards the convexity of the curve- over correcting the curve during 8 hours the brace is worn-recommended for curves of 20-35 degrees with the apex of the curve below the level of the shoulder blade-studies show no evidence of improved compliance the potential for a patient to wear a part time brace, especially while sleeping, rather than the usual full- time 22-23 hour regimen

• SPINCOR-next slide

Bracing for Adolescent Idiopathic scoliosis-National Scoliosis Foundation-www.scoliosis.org
Types of Braces for Scoliosis- www.iscoliosis.com
SPINECOR Brace

- First and only truly dynamic brace, which provides a progressive correction of idiopathic scoliosis
- Preserves normal body movement and growth and allows normal activities of daily living
- Can be worn under clothes
- Shown to be effective at 2 year follow up with 450 plus patient pool- 7% of those patients maintained their stabilization of correction, which far exceeds rigid bracing
- X-rays done every six months on clients
- Uses adjustable bands and a cotton vest that allows flexibility

- Designed by pediatric orthopedic surgeons- in Quebec Canada over the last 20 years
- Shown to be as effective or if not more as rigid braces in curves between 20 and 50 degrees
- Fitted on anyone over 5 years old
- FDA approved and is covered for reimbursement by most insurance companies
- Don’t need to be referred to orthotist can see chiropractor for fitting
- Used for adults to help improve posture and decrease pain
- “Due to the elastic nature of the brace, there is a struggle between the patients interpretation of normal posture and where the brace wants to keep the patients correct posture. This struggle promotes activation of the muscular system to keep it strong, it promotes neuromuscular re-education of the patient’s posture and it stresses the osseous system helping to stop the progression of bone deformity. This allows the patient to finish with a neuromuscular skeletal system that is retained and strong to allow the patient to maintain the correction”
Drawbacks of TLSO Braces

- Don’t provide a lot of flexibility
- Hot to wear
- Hard to Hide under clothing
- Produce atrophy of spinal muscles
- Result in the spine returning back to the pre-treatment state and beyond

- Flattens ribs
- Doesn’t help well with breathing- reduce lung capacity by 20 percent
- Cause, mild, temporary changes in kidney function

Correct Scoliosis- SpineCOR- www.correctscoliosis.com
About Adam- Scoliosis
Surgery

- Based on Medical Criteria includes the degree of curvature, the skeletal maturity of the patient, and the progression of the curvature.
- Can be corrected to 40% of the original size.
- Surgical goal: Stabilize the spine and produce a fused spine that leaves the patient balanced.
- For Adults: To stop progression and to improve quality of life without pain.

Pashman-Scoliosis Frequently Asked Questions
Surgical Approaches

- **Posterior Approach**
  - Opening back of patient
  - Harrington Rod Surgery
  - Advantages: fewer complications, good correction, fusion rates are good
  - Disadvantages: crankshaft phenomenon

- **Anterior Approach**
  - Performs operation through chest wall
  - Incision in the chest, deflates the lung, and removes a rib to reach the spine
  - Advantage: low risk for lower-back injury
  - Disadvantage: Poor lung function
  - Hardware problems

- About Adam-Scoliosis
Surgical Treatment in Adult Scoliosis

Surgery recommended for the following:

1. Curvatures over 50 degrees with persistent pain
2. Curvatures over 60 degrees- surgery is almost always recommended
3. Progressive mid and low back curve or low back curve with persistent pain
4. Reduced heart and lung function- not severe lung function or heart failure

- Prefer to operate on adults under 50 years
- Adults at higher risk than children for nerve damage, complications like pneumonia, infection, poor wound healing, and persistent pain

Spinal Instrumentation

• Serves three purposes:
  1. Provides a stable, rigid column that encourages bones to fuse after spinal-fusion surgery
  2. Redirects stresses over wider area
  3. Restores spine to its proper alignment

• Harrington Rods - simplest instrumentation to install - achieves 50 percent correction - loss of 10-25 percent of correction over time
• Cotrel-Dubousset instrumentation is the most complex and risky
• Patients after surgery remain in body casts for about six months, and then wear a brace for another three to six months while the bone fusion solidifies
• Bone is removed from the hip and placed along side the area to be fused
• Crankshaft phenomenon - is a continued growth in the anterior front of the spine after a posterior fusion is performed in a young growing patient
Complications of all Procedures

- Bleeding
- Postoperative pain
- Infection
- Nerve damage
- Lung Function
- Disk Degeneration
- Gallstones
- Intestinal obstruction

About Adam - Scoliosis
Spine Problems in Previously Treated Scoliosis Patients

- Spinal Fusion Disease
- Disk Degeneration and low back pain
- Height loss- growth takes place in long bones
- Lumbar flatback
- Rotational trunk shift
Therapeutic Treatment Plan

• GOALS

Greater FUNCTION
  Independence
  Safety
Life Expectancy
Diminished Pain
Better Breathing
SCHROTH METHOD

- In a typical scoliotic curve- back musculature pulls lower ribs so that the lumbar abdominal region rotates laterally, downwards, and backwards
- Schroth method aims to reverse all the abdominal curvatures- addressing all three planes-sagittal, frontal, and transverse- "three dimensional" therapy
- Addresses the patients’ pelvis position, spinal elongation, and on derotation in all three planes
- Focuses on strengthening exercises tailored to the individual patient, breathing exercises, focuses on vertebral derotation, and increasing the patient’s vital capacity
- Deviations of the trunk to the side or backwards can only develop if the corresponding supportive muscles give way and become elongated
- Treatment must improve posture so that the body can regain its original vertical axis- This can happen by developing and training the corresponding muscle groups responsible for upright posture
- To restore muscular balance, those muscles that have grown longer must be shortened and those that have become shorter must be lengthened

- 1930 developed by Katherine Schroth
- Schroth increases vital capacity
- Reduces abnormal curves by over 30% and increases lung capacity

- Shevchuk-The Schroth Method
Physical Therapy

- Decrease Pain
- Improve the patients’ strength, flexibility, and Fitness
- Education on posture-practicing in front of mirror
  - PT usually begins 3 months after surgery or when the fusion starts to consolidate
  - After 12 months if fusion heals normal activities can start up again
- When the spine is curved, other parts of the body compensate in order to keep the head straight and the eyes-exercises should work on locating areas that are compromised and compensating and build up these muscles

Brady-www.scoliosis-assoc.org
The brain is calling to the muscles to move – similar to a telephone conversation between the brain and muscles.

All of a sudden there is a disconnection whether the cord was cut or a signal dropped.

Since this disconnection has occurred, the muscles aren’t able to move – however, with certain advances in medicine and unique techniques – we can learn to help the muscles and brain reconnect – visual, verbal, and tactile cuing will be of the utmost importance in this process of regeneration.
Types of Cuing

• Verbal meaning – constantly giving the brain verbal instruction to move
• Visual – having client constantly look at the muscle while performing the movement as extra input.
• Tactile – touching the muscle in such a way to get it to fire more
Types of Cuing
Handling the Client

- Our bodies reflect postural habits, physical demands, and injuries
- Our bodies adjust to problems
- Improper body alignment can cause progressive damage to muscles, bones, joints, and nerves
- Problems that are neglected can affect more body parts and increase pain
- To provide effective therapeutic intervention, body symmetry and functional mechanics must be considered

(Michele Nicosia, 2004)
Handling the Client

• Key points
  – Voice – low / soft / gentle
  – Hands – soft / gentle
  – Therapists have natural tendency toward heavy-handedness

(Candice Strack, 2000)
Palpation

• Similar to principles designed by Cranial Sacral therapy
• Lighter forces produce better results when using Cranial Sacral Therapy
• Palpation – the art of using touch to examine the body
  – Explore structures beneath the skin
  – Body fluids can be sensed
  – Motion of one bone in relation to another

(Candice Strack, 2000)
Palpation

• Heavy palpatory force results in tightening of muscles and initiates pain reflexes and body defends against palpator’s hands more. Provides more information about defense mechanisms than underlying condition.

• Nonintrusive palpation permits examination without evoking resistance
  – Allows the client and therapist to experience “melding”
  – Allows the therapist to absorb information through the practitioner’s hand
  – Therapist accept any information that is received
  – Accept your experience as true
  – Goal of palpation – unobtrusive
  – Therapist must use lightest force possible in for palpation and treatment

(Candice Strack, 2000)
Handling the Client

• When placing hands on client palpation should be similar to

  – The force needed to raise a nickel with one finger

  – The force used when you comfortably place pressure on closed eye-lids

(Candice Strack, 2000)
Positioning

- Thorough evaluations start with the feet and end with the head considering alignment and body mechanics
- Pelvic obliquities produce knee and hip stresses
  - Functional scoliosis
  - Paraspinal muscle imbalance
  - Stress headaches

(Michele Nicosia, 2004)
Positioning

– Weak abdominal muscles, pelvic obliquities, and sacroiliac dysfunctions contribute to multiple painful conditions such as osteoarthritis

– Dysfunctional mechanics cause wear and tear and improper alignment

– Prolonged sitting ->forward head and shoulders, tight cervical thoracic muscles

(Michele Nicosia, 2004)
Types of Equipment
Positioning

• Information needed prior to equipment use
  – Diagnosis
  – Orthopedic information
  – Muscle tone
  – Abnormal patterns
  – Contractures or potential deformities
  – Asymmetry
  – Sensory abnormalities
  – Purpose of position or equipment
  – Consistency of treatment goals with purpose of position or equipment

(Donna Cech, 1993)
Guidelines for Positioning

• Guideline for position
  1. Posture is number 1 – always make sure head, shoulders, hips, knees, and feet are in correct alignment – should be able to draw a straight line from these points
  2. If the client has scoliosis, one side shortened, position in sideline to opposite side of tight side
     *Example – right side tight – position in left sideline to open right side – work on opening curve, manual stretching
  3. Position and allow client to experience a functional activity while in this position
  4. Use pillows, sandbags, etc. to get body in proper alignment
Guidelines for Positioning

5. Make sure arms are in front of body and hands are weight bearing

6. Try to get tight hands to open using towel rolls or pipe cleaners

7. Break up tonal patterns *Example – increased extensor tone in legs – position supine with legs over bolster

8. Incorporate range of motion, acupressure, and sensory integration while positioned

9. Positions can include
   - Supine
   - Prone
   - Sideline
   - Standing
   - Supine – knees flexed over bolster
   - Hands/knees over bolster
   - New positioning equipment available
   - Now made
     - Adaptable
     - Can clean
     - Comfortable
     - Many parts to create different positions depending on clients disability
Guidelines for Positioning

10 Also think functional movement
   – Positioning equipment
   – Scooter board
   – Rolling doughnut
   – Rocking chair

11 No more than 45 – 60 minutes in one position. Check client regularly – too long will lead to fatigue/pressure build up
Benefits of Good Positioning

12 Will improve breathing

- Benefits of breathing
  - Releases stress/tension – relaxed breathing – diaphragmic breathing
  - Builds energy and endurance
  - Contributes to emotional mastery
  - Prevents and heals physical problems
  - Contributes to graceful aging
  - Manage pain
  - Enhance mental concentration and physical performance
  - *Breathing is the path to the most essential of human experience leading to love

(Gary Hendricks, 1995)
Positioning
Benefits of Good Positioning

• Each position provides the same sort of benefit
  *Example – **SUPINE** – work on midline orientation
Benefits of Good Positioning

• Side-lying
  – If client has tight right side because of scoliosis, position them in left side-lying position to open right side
Benefits of Good Positioning

• Prone benefits
  – Promote shoulder girdle stability
  – Trunk extension
  – Good head control
  – Can stretch hamstrings
  – Weight bearing through arms
  – Able to extend neck
Handling the Client

• Standing - will discuss benefits later
Benefits of Good Positioning

• Sitting – fitting a wheelchair
  – Entire length of the femur should be supported up to ½ inch behind the knee
  – Seat belt should be at a 45° angle to the chair – promotes hip flexion and a slight anterior tilt
  – Feet must be supported and the ankles kept in a neutral or a dorsiflexion position
  – Arms should have opportunity for support and weight bearing provided by lap tray
  – Position as upright and symmetrical as possible
  – Chair tilt may be added to help with poor head control
  – *Always make sure client is seated correctly prior to making any other adjustments in wheelchair – always use lap tray
HOW TO KEEP THESE POSITIONING PROGRAMS RUNNING SMOOTHLY

- Visual Aids
- Take pictures before and after correction
- Use the number and color system
- Make charts to record data and keep data posted on wall
- Continual Staff training
Incorporating positioning into assessment and treatment

- Make sure you always place client prior to working with them in good anatomical alignment
- Remember positioning prior to function
- Watch and record if you change position will greater functionality occur
CONCLUSION


Bibliography


Bibliography

18 Napolean, Christina. Doctor of Naprapathy. Phoenix, AZ.
Bibliography


BIBLIOGRAPHY


8. Crankshaft Phenomena. Scoliosis and Spine Associates. 212 East 69th St. New York, NY 10021 Tel: (212) 737-5540 Fax (212) 737-1369
www.scoliosisassociates.com/subject.php?pn=crankshaft-phenomena

www.dcmsonline.org/jax-medicine/1999journals/june1999/scoliosis.htm


12. Janovsky, Julie. Watch their backs: Signs of scoliosis in adolescence are clear if parents keep an eye out. Scottsdale Tribune east Valley Life D1. April3, 2007. jjanovsky@aztrib.com


www.ncbi.nlm.nih.gov/pubmed/18597882


www.infusebonegraft.com/omp_bmp.html


22. Pivonka Family Chiropractic. 1355 South Higley Rd., Suite #102, Higley, AZ 85236. Phone (480) 892-0022, Fax (480) 892 5509. Interview.


26. Scoliosis Association, INC. An international support and information organization.
   800-800-0669 www.scoliosis-assoc.org
29. Scoliosis Research Society (SRS). Thoracic Insufficiency Syndrome. VEPTR
   Expansion Thoracoplasty for Thoracic Insufficiency.
   www.srs.org/professionals/education/tis/veptr.php
30. Scoliosis Specialists. West:888-5058850 Midwest:800-516-6272 Southeast:877-297-
   0901 Northeast:800-516-6272. www.scoliosisspecialsts.com/
   www.schrothmethod.com/studies.html
32. Sosort consensus paper on brace action: TLSO biomechanics of correction
   (investigating the rationale for force vector selection).
33. Spinal Instrumentation.
   www.healthatoz.com/healthatoz/Atoz/common/standard/transform.jsp?requestURI=/
   http://health.nytimes.com/health/guides/disease/scoliosis/treatment-for-adult-
   scoliosis.html
35. Types of Braces for Scoliosis. www.iscoliosis.com/articles.html
36. Vergara, M, Page, A, Sancho, JL, Analysis of lumbar flexion in sitting posture:
   Location of lumbar vertebrae with relation to easily identifiable skin marks,
   International Journal of Industrial Ergonomics, Volume 36, Issue 11, November 2006,
   Pages 937-942


Michelle Lindsey, PT

Rising Star Therapy Specialists LLC

10613 North 23rd Street
Phoenix, Arizona 85028
risingstartherapy@earthlink.net

Michelle 602-531-6306  Fax- 602-955-9332
Michelle Lindsey, PT, MBA, CPT is a physical therapist and the owner of Rising Star Therapy Specialist, LLC. Michelle Lindsey received her undergraduate degree in Kinesiology at Indiana University. She then attended The Finch University of Health Sciences: Chicago Medical School in Chicago, Illinois where she received her bachelor’s degree in Physical Therapy. She also received her Masters in Business Administration Health Care Management at University of Phoenix. Michelle has been practicing physical therapy for twelve years. Michelle also has experience in many facets of the fitness profession. She was a competitive gold medal figure skater for 16 years, an elite marathon runner where she was in the 1997 United States Maccabiah Open Track and Field Team, a triathlete, a professional speed skater and has also competed as a figure model in many competitions. She has received a special recognition award from the United States Tennis Association in 2001 for coaching and directing a team for the Special Olympics. Additionally Michelle has delivered many in-services to school; day programs, group homes, and state operate services on the topic she will be speaking about.

Michelle views her clients as unique individuals with varied skills and abilities. Her goal is to encourage them to develop to their fullest potential in a comfortable, compassionate, and respectful environment that promotes and maintains their health, fitness, and quality of life. By putting faith in her client’s abilities, she strives to help them believe in themselves, inspires them to extend beyond their best efforts, and teaches them how to remain motivated and focused. She stresses these and other key lessons to ensure that her clients have a lifetime of success and happiness.