Session 2: Analyzing & Correcting Posture & Body Alignment™

Course: Health Risk Profiles and Fitness Assessment Techniques

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Lecture Objectives:

1. Incorporate a **Complete Posture and Body Alignment Assessment Program™** into your organization's current health and exercise testing program for your members and potential clients.
2. Key Assessment in the design of your clients exercise program & prescription.
3. Understand how to present all this Posture and Body Alignment "STUFF" to your client in a logical manner.
4. Identify and describe the anatomy and line of gravity to overall standing posture. (Static and Dynamic)
5. Learn to implement the **Four Points of Posture™** for ADL and Corrective Exercise Movements for your CLIENTS and YOURSELVES.

Certificate of Excellence

The Definition of Posture

- **Definition of Posture:** position or attitude of the body or bodily parts that requires minimum muscular energy to maintain mechanically efficient function of the joints with musculoskeletal balance
- **What is Good Posture?**
- Posture/Body Alignment that prevents injury
- Meets the demands made upon it throughout a lifetime
- Different Postures vs. Different Activities

Source :Photos from the Scoliosis Research Society Website

Why A Posture and Body Alignment Assessment Program™?

- Critical to assess body alignment, design exercise prescription, & continued client evaluation
- Shows your knowledge, skill level, and concern
- Clients will “Appreciate Your Ability” to correct postural deviations
- They will refer friends and family members to you and your company.
- Great marketing tool to get your message out: advertising materials and publications

Posture modification depends on:

1. **Clients' patience and effort to change**
2. **Trainers Education, Experience (Practice), & Philosophy/Methodology**
3. **Trainers Role & Goal: Provide Instruction, Guidance, Patience, & Constant Feedback**
4. **PFT's can become experts in postural analysis and develop skills to guide clients toward that achievable goal**

SIGNIFICANCE OF POSTURE

- **Definition of Posture:** position or attitude of the body or bodily parts that requires muscular energy to maintain mechanically efficient function of the joints with musculoskeletal balance

- **What is Good Posture?**
- Posture/Body Alignment that prevents injury
- Meets the demands made upon it throughout a lifetime
- Different Postures vs. Different Activities

THREE POSTURE QUESTIONS

- 1. Can we reverse bad posture for the young and old?
  - Develop Muscular balance
  - Establish proper body alignment
  - Develop better neural & kinesthetic awareness
  - Provide constant feedback and Guidance

Prolonged postural strain = injuries

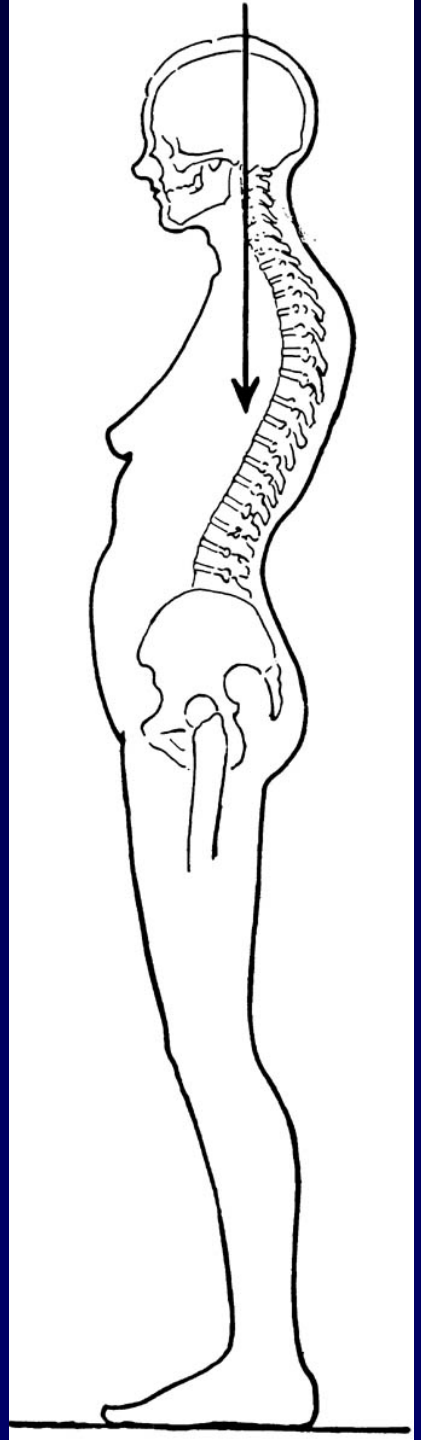
1. Ligaments can permanently stretch
2. Cartilages can be damaged due to abnormal friction
3. Disc injuries
4. Neurological/Innervation problems and damage; Ex. headaches, numbness
5. Arthritic changes in weight-bearing joints
6. Muscle imbalances-tight muscle structures

Factors Leading to Postural Deviations

1. Genetics, Evolutionary, & Hereditary
2. Aging process
3. Job related
4. Height
5. Psychological Aspect-Emotional-Confidence, Joy, Depression, Fear, Mood
6. Anatomy Women
7. Pregnancy
8. Culture
9. “Fatigue posture” = Energy Cost & Metabolic economy

Alignment of Body Segments

- “Good posture”
- Weight-bearing segments balanced vertically
- Cervical, thoracic, lumbar, sacral/coccyx
- Maintenance of 4 Natural Curves
- Three Key Postural Divisions- Upper/Core/Lower
- Each Division has 3 Defined Postural Quadrants: Anterior, Lateral, & Posterior



Postural Divisions and Quadrants™

Definition of Postural Divisions and Quadrants™:

Recognizing and defining specific regions (locations/areas), joints, and musculoskeletal structures that are essential in evaluating and correcting posture and body alignment. There are (3) Three key Postural Divisions (Upper, Core, and Lower Divisions) divided into (3) Three Quadrants each for the (Upper and Core) and (4) Four Quadrants for (Lower).

Dividing the human body into divisions and quadrants provides the instructor with a guide of how exercise programs can be created and developed and simplified to assist individual clients. Clients benefit by the ease required to follow directions and provide instant feedback to exercise movements that will correct posture and body alignment problems.

Upper Postural Division™

Upper Division- Range or Area covered; External Occipital Protuberance and Mastoid Process (Upper) to 8th Rib (Lower); these upper division muscle groups will effect an individuals posture and body alignment if the structures are not balanced due to muscle shortneing/lengthening/injury/trauma etc…. Each individual muscle structure if properly balanced achieve correct positioning and alignment on the skeletal system with long-term improvements in posture. **NOTE:** Muscle Structures (found in brackets) may originate in one Quadrant and may insert in another Quadrant.

Three Defined Postural Quadrants:

1. **Anterior:** Pectoralis Major, Pectoralis Minor, Coracobrachialis, Biceps, Subclavius, (Sternocleidomastoid), (Scalenes), (Anterior Deltoid), (Subscapularis), (Latissimus Dorsi), (Teres Major), (Serratus Anterior)

2. **Lateral:** Middle Deltoid, (Upper Trapezius), (Sternocleidomastoid), (Anterior Deltoid), (Posterior Deltoid), (Supraspinatus),

3. **Posterior:** (Upper)-Middle-Lower Trapezius, Levator Scapula, Rhomboids-Major-Minor, Infraspinatus, Teres Minor, Triceps, (Scalenes), (Latissimus Dorsi), (Teres Major), (Supraspinatus), (Subscapularis), (Serratus Anterior), and (Posterior Deltoid)

Core Postural Division™

Core Division- Range or Area covered; the range covered is the vertebrae (lumbar-Sacral- Complex) and pelvic area; Note: with Diaphragm, area covered can reach to the Xiphoid process of Sternum.

Three Defined Muscular Quadrants:

1. **Anterior:** Rectus Abdominis, (External Oblique), (Internal Oblique), (Transverse Abdominis), (Diaphragm),

2. **Lateral:** (External Oblique), (Internal Oblique), (Transverse Abdominis), (Diaphragm),

3. **Posterior:** Erector Spinae, Lumbar Portion-Multifidus, Quadratus Lumborum, (Internal Oblique), (Transverse Abdominis), (Diaphragm),

Lower Postural Division™

Lower Division- Range or Area covered; T12 (Upper) to Upper Portion Tibia/Fibula (Lower).

Three Defined Muscular Quadrants:

1. Anterior: Quadriceps Group, (Gluteus Minimus), (Psoas Major and Iliacus), (Sartorius), (Pectineus), (Adductor Longus), (Adductor Brevis), (Adductor Magnus), (Gracilis), (Semitendinosus),

2. Lateral: Tensor Fasciae Latae-TFL, (Gluteus Medius), (Biceps Femoris),

3. Medial: (Sartorius), (Gracilis),

4. Posterior: Gluteus Maximus-(lateral via attachment to IT), 6 Deep Lateral Rotators, Semimembranosus, (Gluteus Medius), (Gluteus Minimus), (Psoas Major and Iliacus), (Pectineus), (Adductor Longus), (Adductor Brevis), (Adductor Magnus), (Biceps Femoris), (Semitendinosus),

Postural Stability

- **Center of Gravity (CG) & line of gravity does not remain motionless – Dynamic and Static**
- **Posture and CG constantly changing**
- **Training posture in magnitude, direction, and pattern**
- **Proprioceptors are responsible to maintain posture**

What is the time frame to correct postural deviations?

- 1 day, 1 week, 2 weeks, 4 weeks, months?
- Transitional Period – Injury Free

What methods are there to solve the problem of poor posture?

- **Exercise Methods- Static to Dynamic**
- **Non-exercise or Cognitive methods**
- **Four Points of Posture™ Program**
    1. Stand tall
    2. Hold chest high
    3. Pencil between shoulder blades
    4. Contract abdominal muscles

Exercise Methods

- Stretches for the chest, back, shoulders, hip flexors, hip extensors, knee flexors, etc…
- Pre-Inter-Post-Stretches
- **Corrective Exercise Movements**
- Upper trapezius-shoulder shrugs
- Middle trapezius & rhomboids-retraction exercises, seated row or cable row
- Latissimus dorsi-Frontal pulldown
- Chest-seated chest press
- Deltoids-lateral raise
- Biceps-bicep curl
- Triceps-triceps extension
- Abdominal-crunches
- Squat (static and dynamic)

Non-Exercise Methods

- **Address Sitting, Standing, and Moving**

1. Implement the **Four Points of Posture™**
2. Week 1: 3X's per day, brkfst, Lunch, & Dinner
3. Week 2: 6X's per day, in-between/Main meals
4. Week 3: Every hour of the day "awake"
5. Week 4: Every 30 minutes of the day "awake"

Importance of Developing Good Posture At Any Age

1. Structurally-reduced pressure on vertebral column, reduced stress on ligaments/Cartilage, & back muscles
2. Better muscular balance
3. Tight & constricted muscles
4. Better gait
5. Better Sports performance
6. Possible reduced headaches
7. Confidence- Ability to see the world around you

Assessment of Client's Posture

- Use standing posture as a base, guide, & evaluation point for a client. Incorporate Posture and Body Alignment Grid™.
- GOAL for Personal Fitness Trainers (PFT) and Fitness Staff
- Thinking of Exercise prescription and plan of implementation during Assessment.

Postural Screening Program

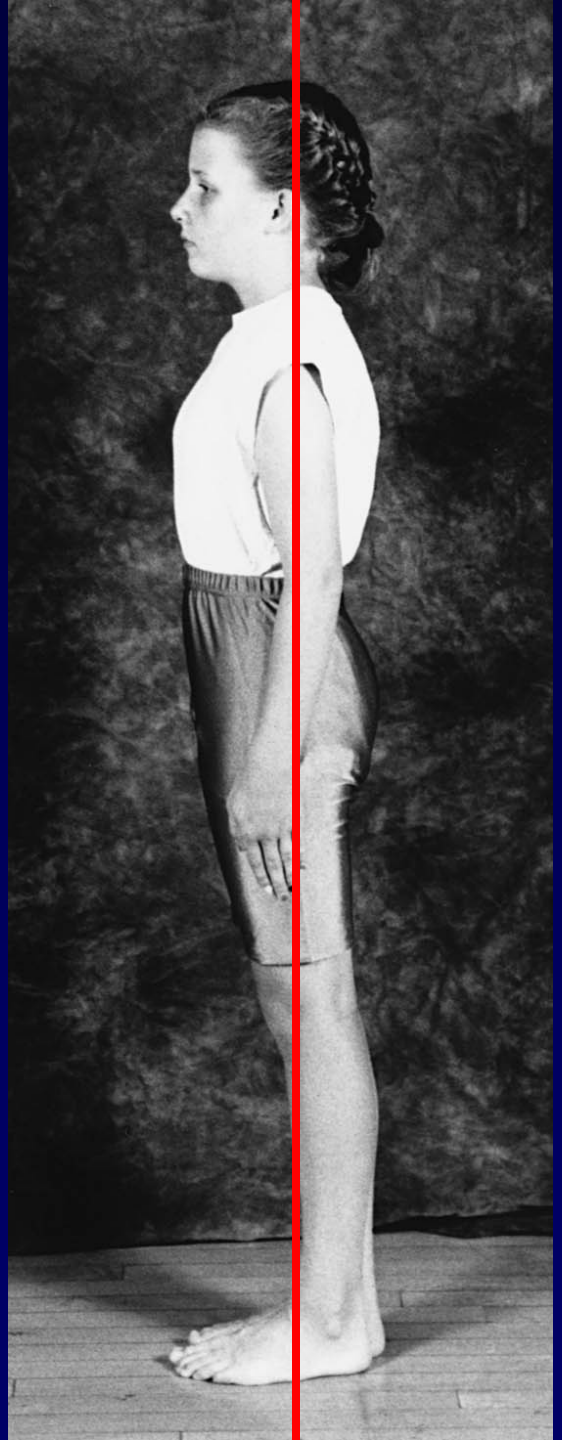
1. Subject should wear minimal clothing & No Shoes
2. Try to avoid describing the details and importance of posture and alignment at this time. You want the client to maintain their relaxed normal posture.
3. Evaluation of client posture: Body Alignment Analysis (Check-Off Sheet) and Photographs (before & after & continuous) w/ Digital Camera
4. Anterior, Posterior, and Lateral pictures/observation points
5. Draw landmarks
6. Use a plumb line
7. Assess with the **Posture and Body Alignment Grid and Spinal Mouse Device**

POSTURAL SCREENING

An optimal standing posture

Line of gravity falls:

- Through the External Auditory meatus
- Passes through acromion
- Continues through S2
- Slightly posterior to hip jt.
- Anterior to midline of knee joint & posterior to patella
- Anterior to lateral malleolus



Postural Analysis

- **Anterior Frontal Plane (Student Facing You)**
  - Head is erect, neither tilted to the left nor right
  - Chin pointed toward floor
  - Both Shoulders are the same height (Christmas Tree Look)
  - AC & SC Joint
  - Muscles of the shoulder girdle to observe
  - Notice Muscle Fiber direction
    - Deltoids-Anterior & Medial
    - Trapezius
    - Chest
    - Biceps
  - Tips of middle fingers even when arms are extended toward floor
  - Arms extend naturally or are bent at elbow joint
  - Abdominal area is symmetrical
  - Two Hip bones same height above the floor (Lateral Pelvic Tilt)
  - Kneecaps are same height and appear to be facing forward
  - The feet are turned outward at an angle of about 10 degrees

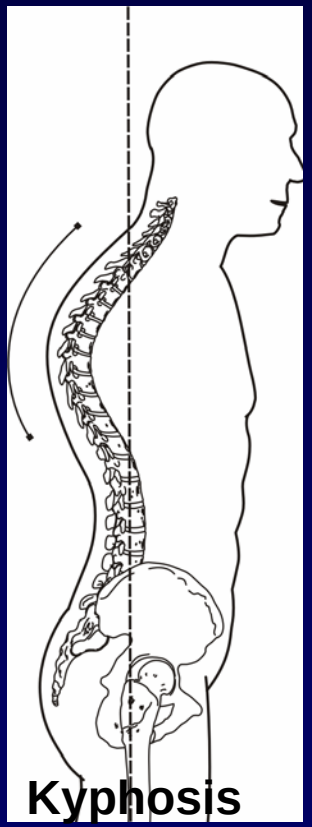
Posterior Frontal Plane

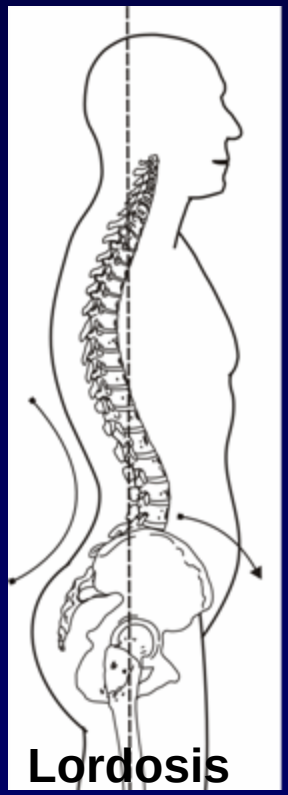
- Reconfirm all the observation taken from anterior plane as possible
- Abducted or Adducted scapulae
- Are shoulder blades same height
- The spinal prominences of vertebral column (spinous process) are they in a vertical straight line. Scoliosis
- Muscles of the shoulder girdle to observe
- Trapezius
- Posterior Deltoid
- Latissimus Dorsi
- Triceps

Lateral Plane

- Head position is upright, the chin is neither pulled back or jutting out.
- The shoulders are held upright.
- Centered Shoulder vs. Rounded Shoulder
- Deltoids-Anterior, Middle, Posterior
- Arm position-Elbow & Hand, (internal, external, or forward Hand Position)
- Curvature of lower back is gentle, rather than severely arched: Kyphosis-exaggerated convex thoracic curve or Lordosis-Swayback-exaggerated concave lumbar curve
- Kypholordosis-Show Picture
- Pelvic (posterior/anterior tilt) & Abdominal area
- The Lower part of the legs are aligned with the thighs, and knees are not hyperextend

Subject 1: Age 12 Years- (Pictures taken at First Assessment before Exercise Program Begins)



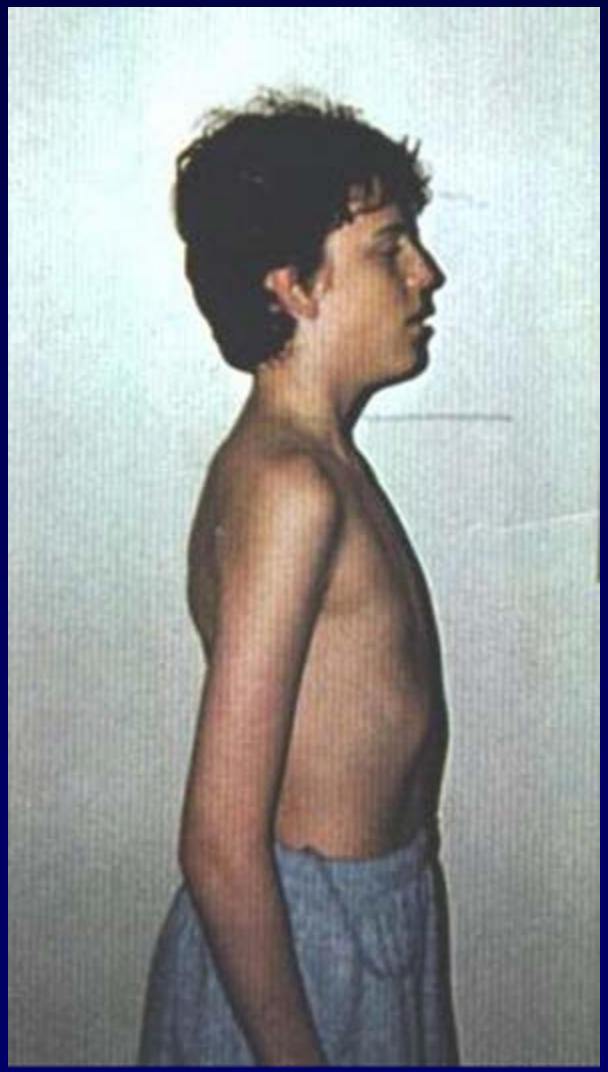


NOTE: The 12-year old has a combination of Kyphosis and Lordosis.

Subject 1: Age 12 Years- (Pictures taken at First Assessment before Exercise Program Begins)

What stands out in this anterior photo?

Subject 1 (AFTER)
3 Weeks into Program or
7 (1hr.) Individual Sessions Have Taken Place



Subject 1 (BEFORE/AFTER)
3 Weeks into Program or 7 (1hr.) Sessions

PRINCIPLES APPLIED TO POSTURE

1. Angles of inclination in the trunk and in the pelvic girdle are within “normal” limits
2. In order to be stable, the line of gravity with the base of support will be close to the geometric center of the base.
3. Good standing posture is a position of extension of the weight-bearing joints.

PRINCIPLES APPLIED TO POSTURE

4. Good posture would seem to be a position that requires energy expenditure to maintain proper body alignment
5. Good posture, in repose and in activity, permits mechanically efficient function of the joints
6. Good posture, both static and dynamic, requires muscle activity

PRINCIPLES APPLIED TO POSTURE

7. Good posture, both static and dynamic, requires sufficient flexibility in the structure of the weight-bearing joints to permit good alignment without interference or strain
8. Good posture requires good condition
   – neuromuscular control & reflexes
9. Adjustments in posture can be made more efficiently through better kinesthetic awareness of postures they assume and of the degree of tension in their muscles

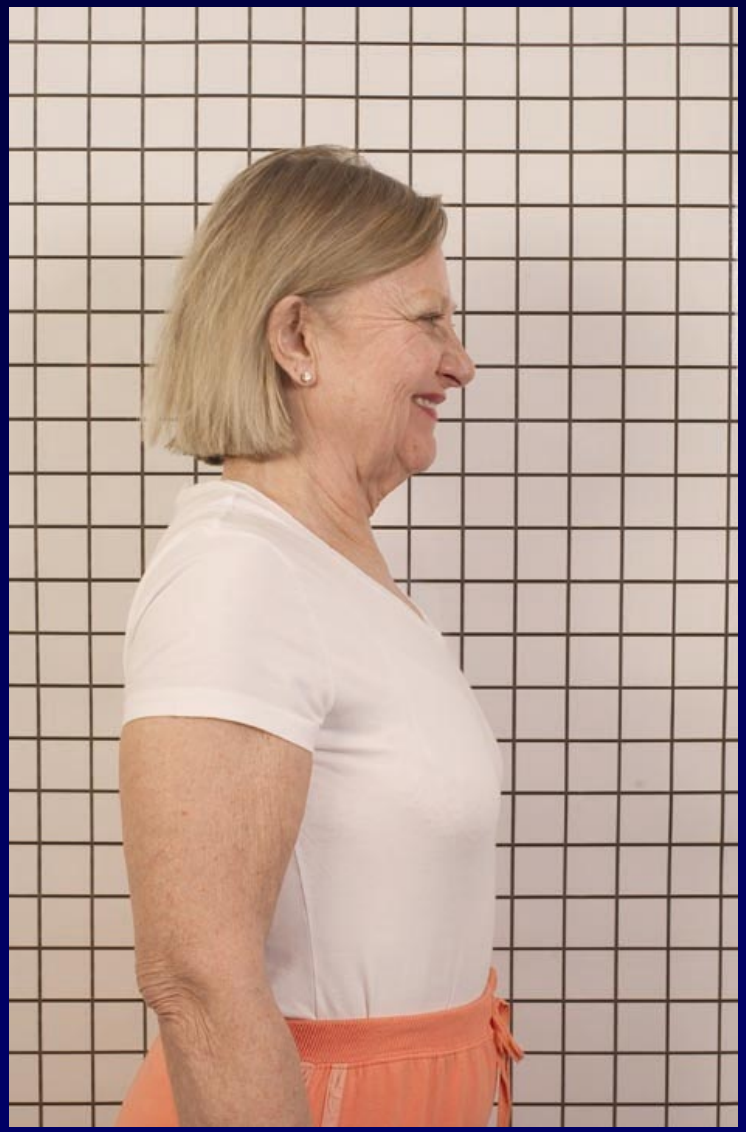
PRINCIPLES APPLIED TO POSTURE

10. Good posture, both static and dynamic, is favorable, or at least not detrimental, to organic function
11. The characteristics of normal posture change with age
12. In the last analysis, both static and dynamic posture of any individual should be judged on the basis of how well it meets the demands made upon it throughout a lifetime

Subject 2

Subject 2 (BEFORE/AFTER)

Subject 2 (BEFORE/AFTER)



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