

Beyond 90/90/90; Supporting and Developing Seating and Mobility systems for Task Engagement and Task Performance

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I. Introduction

1. Definition of Seating:
 - a. a range of postures, situationally specific, task defined, and individually preferred,
 - b. a treatment technique
2. Seating for Task Engagement and Performance in a sensate body
 - a. Visual Convergence
 - b. Weight bearing
 - c. Relationship to object and focus on lesson
3. Seating as a human characteristic, homo sapien on planet earth
4. Seating as a part of human endeavor
5. Seating and Intention; intention brings attention

II. Sensory Integration; "self initiated, self modulated and self controlled" (J. Ayres)

1. The Body's processing systems
 - a. Tactile processing, body is "resting"
 - b. Vestibular processing, the body is "active"
2. Kinesthetic and Proprioceptive Sense
3. Coordinated Visual Sense
4. Motor Planning, what is this really?

III. Physiological Process of movement; Not "Physics!"

ALWAYS based on body's need to SURVIVE and PROTECT itself. Moving within its sensory systems, primarily utilizing the tactile system and the vestibular system.

1. Initiation of motor acts, new patterns vs. automatic ones
2. Transitional patterns, a precursor to isolation of movement
3. Equilibrium reactions and postural security (a personal relationship to gravitational forces) are developed through active/dynamic and independent movement, & are dulled by lack of movement.
4. Impact of independent mobility & cognitive exploration & understanding
5. Stability, is an active "holding on"
6. Consistency in process of movement is based on sensory information and repetition
7. Importance of routines, for predictable anticipation of motor acts
8. Importance of novelty, for consistency development
9. Repetition of act. vs. repetition of activity
10. Isolated patterns develop through functional demand and use (cognitive and emotional), NOT from "motor" or "visual-motor" practice.
11. The task defines the motor act, NOT the ACCESS method.

IV. Motor/Muscle Tone, varies with diagnostic category

1. Cerebral palsy, quadraplegia, hemiplegia, diplegia
 - a. Spasticity, Athetosis, mixed
 - b. Dystonia, Ataxia
 - c. Rigidity
2. Hypotonicity vs. hypertonicity: really tactile processing vs. vestibular processing or "a non-weight bearing" pelvis
3. Other Central Nervous system disorders
4. Progressive disabling diseases
 - e.g. Spinal Muscular Atrophy, m. dystrophy, arthrogyryposis, osteogenesis imperfecta
5. Traumatic Brain injury

V. Seating for Postural Management; what we do to "manage" a child's body, imposed seating

1. Safe, passive Transport

2. Being fed by another person, swallowing
3. Body stillness, relaxation is necessary
4. Primarily demands use of the tactile system, Tactile processing
5. Needed when body is to be receptive

VI. Seating For Postural Control, what is needed for the child to control her body, situationally specific

1. Independent control of movement
2. Pelvic stability (mobility) is critical
3. Using weight bearing, especially pelvic and lower extremity
4. Primarily demands use of the vestibular system, Vestibular processing
5. Needed when body is to be active

VII. Learning Styles and Learning Theory

1. Mastery of adaptation, development of mastery
2. Assimilation, Accommodation, Construction, & Conservation
3. Auditory, Visual, & Combo
4. Cognitive conscious, Limbic emotional
5. Interest driven, curious, talents
6. Assumption of Competence
7. Development is NOT hierarchical, but multi-levelled, simultaneously functioning and changing & maintaining
8. We are all "learning disabled" or have "sensory processing problems" at any given time, as we all have sensory impairment & sensory disorganization
9. Lack of experience, enhanced anxiety
10. Speed of learning based on task, and all above and is individual
11. Different tasks have different demands

VIII Motor Learning occurs (and can be supported) by paying special attention to these issues:

- 1.. Individual must be able to visualize themselves in activity, as competent (a mental rehearsal)
2. While acting (performing activity), the adult cannot verbally coach or prompt
3. When activity completed, no "good job" but rather report exact observation of what actually occurred. If a "correction" is needed, make it a suggestion, before another attempt

4. Presume intention, (don't look for "consistency" of actions), but interest and prolonged engagement
5. Do not ask child "are you ready?" Make statements: "it's time to begin" "I know you are ready because I can see you are. . . ."

Generalization is never as easy as behaviorists would like us to believe, if a motor task is a process, only the process approach can reassure us, e.g. a joystick does not mean it will work in every situation & the converse of this is true also: a switch used for momentary acts will NOT be confused as the same switch for a continued action task, the TASK defines the motor act, NOT the ACCESS method.

IX. A Definition of Access

1. How an individual is able to manage an activity of interest with intention, Independently
2. How to manage a particular machine at a particular time for a specific activity which will produce an output (vocal or printed)

X. Old Paradigms we need to leave behind

1. Figuring out ACCESS first, before involvement in activity
2. Finding the OPTIMAL site (this is an adult paradigm of assessment developed for those who had skills, now have injury or degeneration)

XI. New Paradigms we need to embrace

1. Access is the last, not the first
2. Child must know activity
 - a. The machine, how it works
 - b. The software, the machine controls, the real activity
 - c. How a method of access works, by seeing it work first
 - d. Beginning, middle and end of activity
 - e. Repeating the activity in frequency, rather than in length of time
3. In children, switch sites develop, and the number of them can increase
4. Scanning can lead to direct selection (2 switch, 3 switch, Head mouse)
5. Direct selection and scanning can both be used, simultaneously and task specifically

XII. Old Paradigms we need to leave behind

1. Seating for function is to be restrictive, controlling the body
2. The seating the child comes to school in, is the "right" seating for activity

3. If only the student could hold up her head then we could work
4. The student wants to use her hands

XIII. New Paradigms we need to embrace

1. Seating must allow for task participation and performance
2. Seating must provide pelvic weight bearing for visual convergence
3. Seating must be situationally specific, task specific and change
4. For hands to work, for heads to work, the pelvis must be weight bearing

XIV. Old Paradigms we need to leave behind

1. Consistent switch site/s exist and are to be "found" in assessment before AAC/AT device assessment can occur
2. Single switch scanning is where to start, it's the simplest
3. "Hand over hand" helps the child to learn to use her hands

XV. New Paradigms we need to embrace

1. Access sites (body sites) develop from interest, intention, and experience
 - with activity, not in isolation
2. Consistency is not what is needed; interest, intention and attention are needed
3. The activity must be known, with the beginning, middle and end obvious
4. Repetition of the activity will bring anticipation of motor use and support its accuracy
5. Motor learning requires: no verbal prompts, a mental rehearsal, and specific feedback at activity's end
6. The switch is not the activity
7. Electronic (zero pressure) switches vs. mechanical switches for AAC, computer, mobility (automaticity and transparency)
8. Don't use automatic scanning first, 2 switches are needed, or step scanning
9. Set up activity for student to join, supporting postural control to the activity itself, and its anticipation
10. Activities need to build, to be interesting, and complex
11. Mistakes will be made, expected, and encouraged
12. Alternative access must be used by others to support the "mental rehearsal" and/or "visualization"
13. Work for short periods, frequent breaks, support knowledge of beginning, middle, and end of activity
14. Increase numbers of activity, to support a larger repertoire of

experience and control

15. Expect real "access" to be "revealed" rather than "taught"
16. The activity must be known, and contain success and challenge, risk and reward

XVI. Understanding CP/Tone Problems

1. Tone Management/Relaxation
2. Use and Knowledge of Body Postures
3. Sensory Integration inexperience
4. "Primitive" Reflexes and their use
5. Opisthotonic Reaction/Startle Reflex
6. Obligatory Reflexes/Extensor spasm
7. Spasticity, Athetosis, Ataxia, Dystonia, Mixed

XVII. Shared Struggles with Real Students

XX. Other issues to follow

- A. Stable placement (of access & seating) easier to learn, than constant changing
- B. Training position may not even be best therapeutically initially
- C. Success means person can initiate movement, and can release independently
- D. Combining with other learning, e.g. communication aid
 1. Teaching Modes, using visual display
 2. Head control and its limits and advantages
 3. Using different methods/different activities & combining them
 4. Developing competence