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Improving Handwriting Without Teaching Handwriting: A Model for OT and PT Role Delineation

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Poster presentations:

- Connecticut Occupational Therapy Association Conference, Fairfield, Connecticut, March 2008
- Minnesota Occupational Therapy Association Conference, Minneapolis, Minnesota, November 2005
- American Occupational Therapy Association Annual Conference, Minneapolis, Minnesota, May 2004

Abstract

AOTA and the occupational therapy community have voiced strong concerns about the "perceived encroachment" of other health professions on occupational therapy practice. At the AOTA Representative Assembly meeting June 4–7, 2003, decisive action was taken on scope of practice issues and the need for a strong and consistent definition of the profession. This poster suggests one proactive approach to this problem by presenting a model of OT/PT collaboration which more clearly defines and articulates both therapists' roles in a joint intervention program for a 13-year-old student with a diagnosis of learning disorder and handwriting problems.

The five-month occupational therapy home program consisted of selected graded daily activities to improve and integrate motor and process performance skills within the context of the occupational performance of play and leisure exploration and participation. The physical therapist was asked to evaluate strength, balance, and postural alignment, especially of shoulder girdle and spine, which impacted arm and hand control. The recommended daily physical therapy program consisted of specific exercises to improve the quality and efficiency of physical movements. Consultations to the occupational therapy sessions were also requested, to analyze and refine each functional activity to ensure kinesiological integrity. In addition, both therapists collaborated with the parents and student to plan the seven-month maintenance program, integrating components of both occupational and physical therapy programs into the occupational performance area of activities of daily living, instrumental activities of daily living, play, and leisure, as well as performance patterns of habits and routines.

Evaluation results, activity charts, handwriting samples, and video captures provide examples of occupational profile and performance analyses, including the priorities and targeted outcomes of parents and student. Parents reported satisfaction with improved handwriting, higher grades, better organizational skills, more self-confidence, and willingness to participate in team sports, the student's primary motivation for participating in the intervention program.

Examples of Occupational Profile and Performance Analyses

Preliminary Occupational Therapy Consultation: This 13-year-old 7th grade student was referred for an occupational therapy evaluation by his optometrist, who determined that his handwriting and learning problems in school were motor-based, rather than due to deficits in global visual processing, as indicated by the constellation of his visual-perceptual-motor findings. The first consultation with him and his parents included discussion of his functional problems and possible intervention plans.

Parental Concerns: His parents were both very concerned about his academic and athletic performances, his sensitivity to criticism, and his expressed feelings of failure. They perceived his primary functional problems to be handwriting, eye-hand coordination and sports, organizational skills, and the ability to initiate action, especially in the morning.

Strengths: According to his parents, the student's strengths included good verbal skills, good memory, 3-dimensional visualization, and excellent creative problem-solving strategies.



Physical Therapy Referral: Because of spinal curvature and shoulder girdle instability, probably contributing to fine motor deficits, referral was made for physical therapy evaluation and treatment of gross motor postural control, strength, range of motion, endurance, and coordination.

ICF Model

Both therapy programs followed the model of The International Classification of Functioning, Disability and Health, created by the World Health Organization. For example:

Physical therapy: The student's impairments (imbalance and muscle weakness) contributed to his health condition (diagnosis of learning disorder).

Occupational therapy: The resultant activity limitations (handwriting, eye-hand coordination) restricted participation in major life areas (schoolwork, sports).

Occupational Therapy Models


The performance-based assessment/intervention model was designed primarily as an occupational therapy model, originally following the Uniform Terminology III (AOTA, 1994). The current language of the Occupational Therapy Practice Framework (AOTA, 2002) articulates the profession's focus on assessment and intervention processes that facilitate engagement in occupation to support participation in life. Thus, success in reaching targeted outcomes depends on occupation-centered approaches. For example:




Priorities and Targeted Outcomes

Parents: Their son's improved handwriting, eye-hand coordination, organizational skills

Student: To be better at basketball, to get into college to study architectural engineering

Occupational Therapy Program

<p>Gross Motor Activities: Balancing, Ball Skills, Eye-foot Coordination*, Rocker Board, Rolling, Scooter, Suspended Ball</p>	<p>*Example of Program Plan: Eye-foot Coordination</p> <p>Erasing shapes, drawn from a template on a chalk board by his father, with his foot in a wet sock, during single leg stance with and without support from the porch rail, provide opportunities for postural control,</p>	
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	<p>adaptation, repetition, and generalization of perceptual concepts and motor programs</p>	
<p>Fine Motor Activities: Block Designs, Carbon Paper, Cereal Design, Chalkboard Activities*, Folding, Origami, Punching, Sensory Discrimination, Stick Designs</p>	<p>*Example of Progress Notes: Chalkboard Clock Game</p> <p><i>Response:</i> During the first 2 series (opposed movements toward and away from center) compensatory shoulder movement and excessive pressure was observed.</p> <p><i>Recommendations:</i> The parallel movement series can be started. Parent can speed up directions according to his tolerance, but he should continue to draw slowly. He should remain in one spot, and not shift weight.</p>	
<p>Oculomotor Activities: Flashlight Games, Magnet Maze, Mirror Rotations*, Tracking Lines</p>	<p>*Example of OT/PT Dialogue: Mirror Rotations</p> <p><i>OT:</i> "Look at the eyes and tongue working together!"</p> <p><i>PT:</i> "Do you know which muscles work the tongue? The same that tuck the chin. That's why it coordinates with the eyes, because they are deep neck flexors."</p> <p><i>OT:</i> "Yes, and the change in tongue muscle tone is amazing, in only one month."</p>	 

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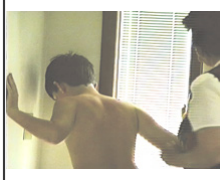
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Physical Therapy Program

Movement	Purpose	Muscle(s) Focus	Session
Leaning Exercise	Activation	Serratus anterior	1
Bending Stretch	Elongation (stretch)	All extensors	1
Cross Stretch	Elongation	Lumbar rotators	2-3
Wall Angels	Activation	Serratus Anterior	2-4

Corner Stretch	Elongation	Pectoralis major & minor	2-5
Spinal Mobilization	Elongation	T12 through L4	3
All Fours Stretch	Elongation	Latissimus dorsi, lumbar extensors	3
Leaning Exercise	Activation	Serratus anterior, gluteii, abdominal obliques	4
Playground: Climbing	Elongation, Activation	Lumbar extensors	4
Playground: Sand	Activation	Intrinsics of the foot	5
Pectoralis Mobilization	Elongation	Pectoralis minor	5
			Photos From left to right: Leaning Exercise Bending Stretch Corner Stretch

Physical Therapy Evaluation Results

	Initial Evaluation	After 5 Months Treatment	After 7 Months Maintenance
Neck	Hyperextension	Normal	Normal
Spine	C-curve to left	Normal	Normal
Shoulders	Winging; Serratus anterior: Grade 3	One pushup without winging; Serratus anterior: grade 4	4 pushups without winging; Serratus anterior: grade 4
Pelvis	Increased lumbar extension, with pain; Abdominals: grade 3	Normal, no pain Abdominals: grade 4	Normal, no Pain Abdominals: grade 5
Hip	Glutei: grade 3	Glutei: grade 3	Glutei: grade 4 (right), grade 5 (left)
Knee	Short hamstrings: Quadriceps: grade 3, with pain	Short hamstrings; Quadriceps: grade 4, no pain	Short hamstrings; Quadriceps: grade 5, no pain
Ankle	Gastrocnemius & dorsiflexors: grade 3	Gastrocnemius & dorsiflexors: grade 4	Gastrocnemius & dorsiflexors: grade 5

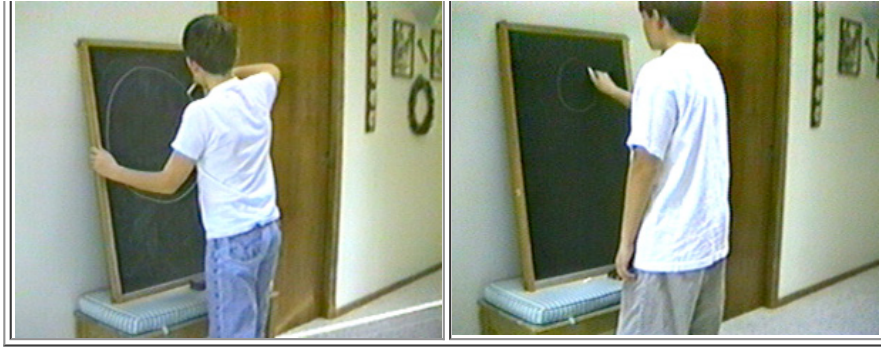
Maintenance Program

Activity	Postural Reminders
<i>Household Chores</i>	
Carrying laundry & groceries	Arms forward, shoulders down & back
Folding laundry	
Mowing lawn	Limit because of asthma
Pushing grocery cart	Shoulders down
Scrubbing floors	On hands & knees

Throwing paper balls in wastebasket & clothes in hamper	Mostly wrist & elbow
Washing windows or walls	Think wall angels
Weeding	Hands & knees, use fist & pinch grasps
<i>Sports & Games</i>	
Card games (especially shuffling)	Forearms on table, feet flat on floor
Ping pong	
Golf	Double straps on bag
Basketball	Wear supportive shoes
Bike riding	Runner's stretch after
Shuffleboard	Shoulders down
Tennis	Wear supportive shoes
Swimming	Especially breast stroke
Climbing rock walls	
Bowling	Use lightweight ball
<i>Playground Activities</i>	
Climbing ladder	Hands & feet
Bear walking up slide	Hands & feet, toes straight, heels down
Crab walking down slide	Hands & feet, supine
Hanging from bar (no swinging)	Arms & legs bent, then drop to ground
Picking up and dropping sand with toes	
Drawing letters in sand	Use hand & foot
Walking on edgings	Heel-toe, slowly
<i>Always think: Shoulders stay still while arms move</i>	

Relationship of Shoulder Integrity and Humeral/Scapular Dissociation to Drawing and Handwriting





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