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## Movement Strategies for Moderate to Severe Involved Students

Evidence based strategies  
to foster functional mobility.

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### Objectives

1. Discuss how to promote motor learning for individuals even at the teen years
  2. Discuss or demonstrate a systematic procedure to track motor improvements
  3. Demonstrate at least two ways that the MOVE Program can be infused into an individual's typical day (home, school, day program, work)
  4. Demonstrate/discuss how equipment is used in the MOVE Program
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### Traditional Tools of the Trade

- NDT
  - PNF
  - PROM/Stretching
  - Gait training with proper foot placement
  - Variety of Modalities
  - Constraint – Induced Movement
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## Current Concepts

- Task-oriented, Activity-based Intervention
  - ICF classification system
  - Dynamic Systems Theory
  - Motor Learning
    - Neuroplasticity
    - *Practice, Practice, Practice*
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## Effective Intervention

A growing body of scientific data strongly suggests that activity-based strategies are one of the keys to unlocking the potential for functional recovery.

Damiano, 2006

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## Task-Oriented Intervention

Motor skills acquired during activity-based intervention transfer to functional daily activities.

Ketelaar M, 2001  
 Valvano, 2004  
 van der Putten, 2005  
 Apache, 2005

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## ICF - International Classification System

Aims of ICF:

1. Provide a scientific basis for understanding and studying health and health-related states, outcomes, determinants and changes in health status and functioning.
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## ICF - International Classification System

Aims of ICF:

2. Establish a common language for describing health and health-related states in order to improve communication between different users, such as health care workers, researchers, policy-makers and the public, including people with disabilities.

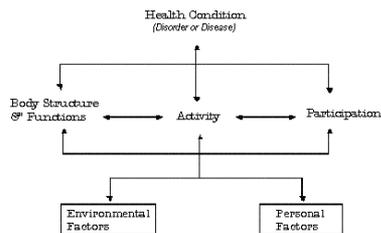
## ICF - International Classification System

Aims of ICF:

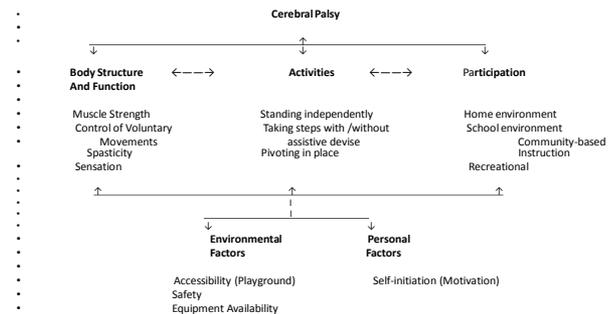
3. Permit comparison of data across countries, health care disciplines, services and time.
4. Provide a systematic coding scheme for health information systems.

who.int/en/

### ICF diagram



### Transfer Training



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Motor control results from the interaction of the individual, the environment and the task.

Shumway-Cook, Woollacott, 2007

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## Neuroplasticity

The capacity of the nervous system for adaptation or regeneration after trauma.

Mosby's Medical Dictionary, 8th edition.  
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## Neuroplasticity

- Neural plasticity describes a primary way to change the capabilities of the central nervous system - *through learning*.
  - To effectively change neural and cortical organization, task practice should be consistent, repetitive and problem-solving.
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## Practice Practice Practice Practice Practice

“Clearly, more learning will occur if there are more practice trials, all other things being equal. Perhaps we do not need to say any more about the amount of practice than this: in structuring the practice session, the number of practice attempts should be maximized.”

Schmidt & Lee, 2005

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## Dynamic Systems Theory DST

“Functionally-based interventions grounded in DST perspectives which focus on enhancing problem solving and improving skill acquisition, have become more prominent. These approaches...emphasize the learning of purposeful tasks and not the quality of movements used to achieve them.”

Levac, 2009

## Motor Learning

Motor skills do not emerge because of other factors – such as neural maturation, passively imposed movements, or the integration of primitive reflexes.

Thomson, 2005



## Motor Learning

“One of the most interesting theories in recent times has developed out of research in various areas showing what, at a certain level, appears rather obvious – that **people learn through practice.**”

Carr and Shepherd, 1987

Carr and Shepherd, 2011

## Motor learning is...

- the acquisition of new skills with practice



## Individuals with multiple impairments

Compelling evidence...suggests that the following interventions improve function at the activities level: ...context-focused therapy, goal-directed/functional training...

If an activities-level outcome is sought, top-down learning interventions...must be applied.

Novak, 2013

## MOVE<sup>®</sup> is:

A philosophy and belief system based on independence, dignity and inclusive, quality life-styles for individuals with physical disabilities.

## M.O.V.E.<sup>®</sup> Program

Mobility Opportunities Via Education<sup>®</sup>/Experience

From toddlers

Into adulthood



Whinnery, 2007  
Barnes, 2002



Whinnery, 2011

## MOVE<sup>®</sup> is:

A six step program that allows you to track progress and plan reasonable and achievable goals based on data.

Bidabe, 2003  
Bidabe, 2009  
Whinnery, 2009

## Six Steps of MOVE<sup>®</sup>

- Step One      Testing
- Step Two     Setting Goals
- Step Three    Planning Activities/  
Task Analysis
- Step Four     Measuring Prompts
- Step Five     Reducing Prompts
- Step Six      Teaching the Skills

**MOVE<sup>®</sup>**  
Top-Down Motor Milestone Test<sup>®</sup>

**SUMMARY OF TEST RESULTS**

DATE #1    9/2005  
DATE #2    2/2006  
DATE #3    9/2006  
DATE #4    2/2007

NAME Student A

1. Fill in squares representing the current skill levels.  
2. Fill in all squares to the right of the current skill levels.  
3. Circle skills to be addressed next.

	GRAD LEVEL		LEVEL I			LEVEL II			LEVEL III	
	A.1	B.1	A.2	A.3	B.3	A.4	A.5	A.6	A.7	
A. MAINTAINS A SITTING POSITION										
B. MOVES WHILE SITTING										
C. STANDS										
D. TRANSITIONS FROM SITTING TO STANDING										
E. TRANSITIONS FROM STANDING TO SITTING										
F. PIVOTS WHILE STANDING										
G. WALKS FORWARD										
H. TRANSITIONS FROM STANDING TO WALKING										
I. TRANSITIONS FROM WALKING TO STANDING										
J. WALKS BACKWARD										
K. TURNS WHILE WALKING										
L. WALKS UP STEPS										
M. WALKS DOWN STEPS										
N. WALKS ON UNEVEN GROUND										
O. WALKS UP SLOPES										
P. WALKS DOWN SLOPES										

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## Prompts Show Progress

Decreasing:

- from one level to a lower level - i.e. moving from “Full Physical” to “Partial Physical”
- from “support” to “balance”
- a prompt on equipment - i.e. taking off the thoracic prompt on a Pacer
- from two people to one during a transition OR
- increasing the angle on the Support Station

## Prompts Show Progress

- If there is a prompt reduction in sitting, check to see if this carries over to standing or walking.
- Example:  
Student now realigns trunk 45 degrees in sitting.  
This could mean that standing balance has now improved from support to balance.

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## Prompts Show Progress

- When you do a prompt plan, this can show progress
- Remember to look at each type of prompt individually, not just as “prompts”
- Prompt is NOT necessarily just part of a piece of equipment

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## Equipment used in MOVE®

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## MOVE is:

based on high expectations  
for the individual.

Bidabe, 2001

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## Equipment used in MOVE®

- Household items:
    - couches, sinks, tables, counters, chairs
  - School:
    - sinks, tables, counters, chairs
  - In the community:
    - picnic tables, benches,
    - handicapped stalls in public restrooms
  - Medical/specialty equipment:
    - walkers, standers, lifts
-

### Sturdy everyday items



chairs/couches

### Everyday items- tables/counters



### Everyday items- bathroom



### Everyday items- outdoors



### Adaptive Chairs



Rifton  
Activity Chair



Leckey



Juni Chair

Paleg, 2015

### Assistive Walking Devices



Rollator Walker



Rifton  
Pacer



Kaye Walker



Pony Gait Trainer



Meywalk

### Mobile Standers



Mulholland  
Wheelabout



Davis Made  
Standing Dani



Rifton  
Dynamic Stander

Paleg, 2013

### Rifton SoloLift/TRAM



## Rifton Support Station



## MOVE® is NOT equipment.

- MOVE uses equipment as prompts (supports) to help a student be more independent in a given activity.
- Equipment may always be necessary for some students.

## What does MOVE look like?

Home: Individual is involved in...

- Activities of daily living (washing hands/ hanging up coat)
- Age appropriate activities (eating at the dining room table with family)
- Social activity (watching TV in regular chair)
- Chores
- Visiting relatives

## Introducing Parents to MOVE

Teach the parents the six steps of MOVE.  
Helping parents understand MOVE empowers them.

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## What does MOVE look like?

School: Learner is involved in

- Activities of daily living (washing hands/hanging up coat)
  - Age appropriate activities (painting a mural/bowling)
  - Social activity (music with real instruments)
  - Classroom jobs
  - Community-based instruction
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## Can now be.... vertical




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## Where does MOVE happen?

Everywhere:

- Home - living/dining/bed/bath rooms
  - School – classroom/gym/music/cafeteria/bathroom
  - Community – playgrounds/stores/museums/public bathroom
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## Remember - Documentation

- The MOVE Program allows PTs to show small increments of progress through the TDMMT and/or decreasing prompts
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**MOVE™**  
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A. MAINTAINS A SITTING POSITION										
B. MOVES WHILE SITTING	B.1	B.2	B.3	B.4	B.5	B.6	B.8	B.9	B.10	B.11
C. STANDS	C.1		C.2			C.3			C.4	C.6
D. TRANSITIONS FROM SITTING TO STANDING	D.1	D.2	D.3	D.4		D.5			D.6	D.7
E. TRANSITIONS FROM STANDING TO SITTING	E.1	E.2	E.3	E.4		E.5			E.6	E.7
F. PIVOTS WHILE STANDING	F.1		F.2			F.3			F.4	F.6
G. WALKS FORWARD	G.1	G.2	G.3			G.4	G.5			G.6
H. TRANSITIONS FROM STANDING TO WALKING	H.1		H.2			H.3				H.6
I. TRANSITIONS FROM WALKING TO STANDING	I.1		I.2			I.3				I.6
J. WALKS BACKWARD	J.1		J.2			J.3				J.6
K. TURNS WHILE WALKING	K.1	K.2	K.3	K.4		K.5			K.6	K.8
L. WALKS UP STEPS	L.1		L.2			L.3	G.6			
M. WALKS DOWN STEPS	M.1		M.2			M.3	G.6			
N. WALKS ON UNEVEN GROUND	N.1		N.2			N.3	G.6			
O. WALKS UP SLOPES	O.1		O.2			O.3	G.6			
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## Is our role as therapists changing?

- No longer the medical model in schools/adult day programs with direct services, more consults written on IEP/ISP/IFSP

## Is our role as therapists changing?

- PT is a member of a collaborative team
- Provide instructions to staff/parents/caretakers for consistent practice that is incorporated into the individual's daily routine

## Discussion

Any questions...



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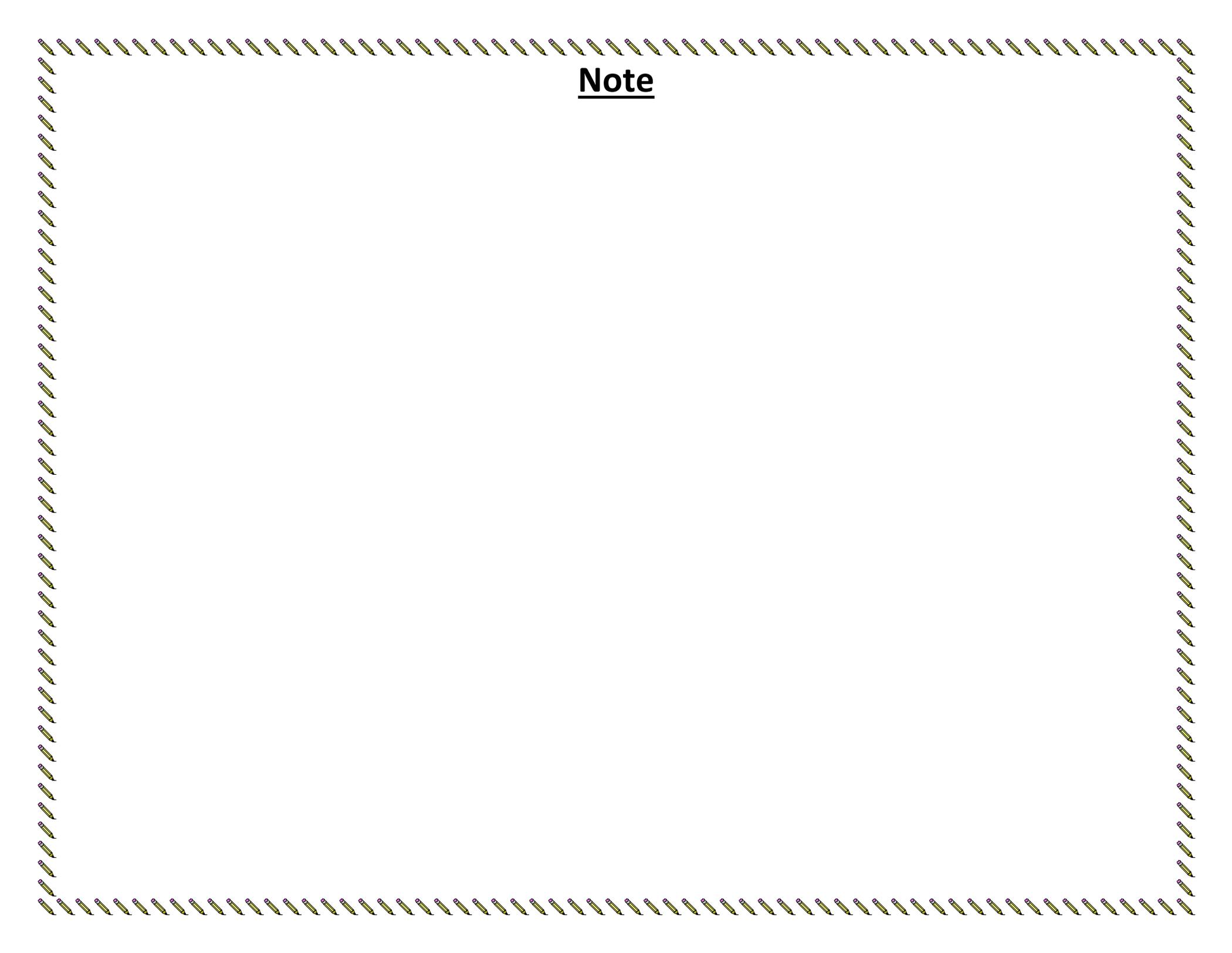
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