Current Commentary on Play

• Childhood play is crucial for social, emotional, and cognitive development.

• Imaginative and rambunctious “free play,” as opposed to games or structured activities, is the most essential type.

• Kids and animals that do not play when they are young may grow into anxious, socially maladjusted adults.

• Participation (“children define as having fun, feeling successful, doing things by themselves, and doing and being with others”) is essential to quality of life for children, including those with disabilities.

• Play” is being sneakily redefined. “Most of the activities set up in ‘choice time’ or ‘center time’ [in early-childhood classrooms] and described as play by some teachers, are in fact teacher-directed and involve little or no free play, imagination, or creativity.”

• Younger and older children ought to have the chance to play together. Peter Gray, a psychologist at Boston College, points out that older kids are uniquely able to provide support — often referred to as “scaffolding” — for younger kids in mixed-age play.

Current Commentary on Play

• Play is not just for children. The idea of play is closely related to imagination, inventiveness, and that state of deep absorption that Mihaly Csikszentmihalyi dubbed “flow.”

• The point of play is that it has no point.

• Play is essential for all children’s healthy development and learning across all ages, domains, and cultures.

• Play does the following:
  – Enables children to make sense of their world
  – Develops social and cultural understandings
  – Allows children to express their thoughts and feelings
  – Fosters flexible and divergent thinking
  – Provides opportunities to meet and solve real problems
  – Develops language and literacy skills and concepts

Attributes of Participation

• The child must take part in something or with someone

• The child must feel included or have a sense of inclusion in what they are partaking

• The child must have a choice or control over what they are taking part in

• The child must work toward obtaining a personal or socially meaningful goal or enhancing the quality of life
Principles of Play

- Sensory
- Neuromuscular
- Mental
- All 3

- Repetition
- Exploration
- Imitation

- Interprets
- Reality/Fantasy

- Sequential
- Developmental
- Progression

Definition of Playfulness

- Under Internal Control

- Suspend Reality/ Purposeless

- Process Not Product Is the Reward

- Intrinsically Motivated

- Active Engagement/ Voluntary

- Rule Making and Rule Breaking

Evolution of Play

Developmental Sequence

- **Play for Exploration**
  - Child imposes on object
  - Attentiveness based on responsiveness
  - Self, then use of objects based on relationship to self
  - Conquering gravity expands environmental exploration

- **Symbolic Play**
  - Pretend Play/Ordering Life (things & people)
  - Transforms Reality (time, place, people, objects)
  - 1st in relation to self 2nd outside of self
  - 1st solitary 2nd groups

- **Constructive Play**
  - Involves physical properties of reality with characteristics of play materials
  - Control over environment

- **Rules and Games**
  - Social skills
  - Independence
  - Role in Society

Types of Play

- Practice/ Functional

- Symbolic

- Constructive

- Social Interactions

- Patterns of Physical Interaction

- Cause and Effect

- Games With Rules

- Dramatic

- Sensory-Motor Systems
Evolution of Play

Development of Social Play

- Engagement with Caretakers
- Onlooker Behavior
- Solitary Play
- Parallel Play
- Associative Play
- Cooperative Play

The Development of Emotional & Perceptual Capacities

- Regulation and Interest in the World
- Engaging and Relating
- Intentionality and Two Way Communication
- Social Problem Solving, Mood Regulation and Formation of Sense of Self
- Creating Symbols and Using Words and Ideas
- Emotional Thinking, Logic, and a Sense of Reality
- Multicausal and Triangular Thinking

THE focus of THERAPY: THE ACQUISITION OF SKILLS THAT CAN Be measured

Definition of Skills: sequences of organized actions, which apply strategies proceeding to future goals: expertness in practiced activities showing dexterity, coordination and confidence in functional performances

Rhoda Erhart OTR

THE PROBLEM WITH PLAY and THERAPY

- “In the therapeutic setting, play often becomes a tool used to work towards a goal, despite the fact that the goal – oriented, externally controlled aspects of the therapeutic situation may conflict with the essence of play itself.”
- Inherent in therapy is the intention of a outcome including a change in behavior or performance that can be measured as a “new skill”.
- Occasionally playing is the goal, as a goal it becomes work.
Therapy and Play

- Therapy promotes multi-systemic development
- Entertainment and Distract
- Motivate Participation
- Social and Emotional Development
- Give Purpose to Therapy

Things to consider to make therapy playful

QUESTIONS

- Does the child play/actively engage?
- Does the child have play preferences/self-directed?
- Is the child stuck on a particular scheme? (joyfulness)
- How does the child use schemas, solve difficulties, challenge self, use imagination?
- How does the child interact with others, share, and gain attention?
- How does the child react to a variety of sensory input?
- Does the child initiate creative play and use it for problem solving?
- Is the child motivated to play and make choices?
- How does the child use his body, objects, and others?

What are functional skills?

- Activities or actions that are expected roles or occupations of people
- Function implies “effectiveness”
- Task analysis is the process used to determine each attribute or component of function in a task

Functional Skills for Home – School – Community

**Mobility:** maintaining upright/weight shift transitions on & off, in & out transitions through space

**Self Care:** hygiene
clothing
feeding
 toileting
 tool usage

**Communication:** visual
oral
 gestures

**Leisure Time:** exploratory play
 exercise
 entertainment
FUNCTIONAL AREA
Mobility: maintaining upright/weight shift transitions on & off, in & out transitions through space

• Developmentally Playful Activities
  – Supine Kicking/Hands to Hands/Hands to Feet
  – Prone propping
  – Rolling
  – Pivoting/Bridging/Swimming
  – Transitions Sitting, Quadruped
  – Creeping/Crawling
  – Bear crawling
  – Up and Down Against Objects
  – Climb Stairs Steps
  – Cruising/Stands Alone
  – Walking Forward/Backward/Up Stairs/Down Stairs
  – Experiments With Movement
    + Movement With Objects (pull, push, throw...)
  – Running
  – Jumping
  – Hopping
  – Galloping
  – Skipping

FUNCTIONAL AREA
Self Care: hygiene clothing feeding toileting tool usage

• Developmentally Playful Activities
  – Hand to Mouth
  – Body Exploration
    • Hold/Move/Relocating/Bang, Shake, Transfer,
      Hit, Tear, Place, Bilateral, Unilateral, Manipulate
  – Object Exploration
    • Feel
    • Taste
    • Look
    • Move
    • On and Off
  – Body Imitation
    • Facial, Extremity, Action
  – Object Use
    • Hand As Tool
    • Hand Over Adult
    • Hold and Manipulate Tool
  – Object Imitation
    • Pretend With Animate and Inanimate
      Objects.....Imitate Adult Use

FUNCTIONAL AREA
Communication: visual oral gestures

• Developmentally Playful Activities
  – Feeding: sucking, munching, biting, chewing
  – Experimentation With Food: texture, thickness, firmness/solid, crisp, sticky, combinations
  – Sound Production: bilabial, alveolar, labio – dental, lingual – dental, palatal, back – velar
  – Communicative intent: eye contact, staring, reaching, cooing, facial expressions, babbling, vocal imitation, smiling, laughing, jabbers, real words, jargon
  – Physical Communicative Intent: extraneous extremity activity, directive extremity posturing or movement

FUNCTIONAL AREA
Leisure Time: play exercise entertainment

• Developmentally Playful Activities
  – Manipulation
  – Body Action: with and without objects
  – Complex Object Manipulation: construction, mechanical objects, combining objects to make a product
  – Complex Play: tool use and skilled movement (hop, skip, jump, summersaults...)
  – Games: with and without rules, fine and gross motor
  – Team Games and Organized Sports, Neighborhood Activities, Special Interest Groups, and Hobbies
  – Social Entertainment: movies, dancing, parties, camping......
Multi Systemic Contributions to Function

Interacting systems work together explaining how humans accomplish functional tasks

Musculoskeletal System
- Skeletal Alignment
- Muscle Endurance
- S. Range of Motion/Tissue Elasticity
- Sufficient Strength
- Extraneous Movements

NEUROMOTOR SYSTEM

Function-Skill
- Commanding System
- Comparing System
- Musculoskeletal System
- Musculoskeletal System
- Neuromuscular System
- Environmental System
- Regulating System
- Sensorimotor System

Musculoskeletal System
- Skeletal Alignment
- Muscle Endurance
- S. Range of Motion/Tissue Elasticity
- Sufficient Strength
- Extraneous Movements

Sensory Systems
- Visual System
- Vestibular System
- Proprioceptive System
- Somatosensory System
- Auditory System
- Spatial Orientation
- Environmental Adaptation

Regulating Systems
- Arousal
- State Regulation
- Motor Panning
- Executive Function

Commanding System
- Sensory
- Cognitive
- Emotional Drive
- Environmental System

Comparing System
- Getting Ready
- Having an Intention
- Feedback
- Feed Forward
Assessment of a Function

- Identify a Functional Goal
- Essential Posture and Movement Requirements
- Essential Sensations Generated and Integrated
- Essential Perceptual Strategies Accessed
  - Regulating Mechanisms
  - Commanding Mechanisms
  - Comparing Systems
- Environmental Considerations
- Special Equipment/Playful Opportunities
- Intervention Plan
  - Preparation
  - Simulation
  - Practice
  - Carry Over
  - Infused/Embedded (SCHOOL)

SMART Goals include:

- Who? - Recipient/Family/Caregiver
- Perform? - What Functional Behavior/Skill
- How Well? - Quality/Mastery, Criteria/Measurement
- Under What Conditions? - Context/Setting
- From Where? - Starting Point/Baseline
- How Often?

Application to Practice Context

- LONG TERM GOAL
- SHORT TERM GOAL
- TREATMENT SESSION GOAL
- IEP GOALS
- OBJECTIVES

How can play facilitate function in therapy?

Play offers an opportunity to organize and orchestrate intervention episodes that engage children, facilitating practice and learning.

Stages of Intervention:
- Preparation
- Simulation
- Practice
- Carry Over
- Infused/Embedded

The top down model focuses not on what the child cannot do or what the child should be able to do, but focuses on what the child can do and intervention that emphasizes playful interactions providing opportunities to prepare for and practice functional skills.
Key Considerations

✓ What function/skill is the focus of therapy?
✓ What are the essential multi-systemic requirements to achieve this particular function/skill?
✓ Compare the child’s current systemic strengths and barriers to the essential requirements for performance?
✓ Over the lifetime of a child what are the typical playful activities children engage in as part of gaining competence in this function/skill?
✓ What are the features of the child’s current play?
✓ What are the child’s strengths and barriers to engaging in playful behaviors that will facilitate acquiring new functions?

The Is Engagement

• Novelty: “newness”
• Independent Responses: qualities of action the object/persons exhibits independent of any action by the child
• Responsivity: ease with which a child’s action produces some reaction
• Complexity: challenge to understanding what the object or person offers the child
• Sensory Properties: constant or interactive aspects of objects and people

Theoretical Frameworks to achieve FUNCTIONAL OUTCOMES

Motor Performance Principles

NDT
• Attention to Typical Development of Posture & Movement Control
• Multi System Assessment of Posture & Movement
• Driving Hypothesis of “WHY”
• Impact on Individual Function in Natural Environments
The Neuro-Developmental Treatment Definition

- The NDT/Bobath (Neuro-Developmental Treatment/Bobath) Approach

- NDT is a holistic and interdisciplinary clinical practice model informed by current and evolving research that emphasizes individualized therapeutic handling based on movement analysis for habilitation and rehabilitation of individuals with neurological pathophysiology. Using the ICF model, the therapist applies a problem-solving approach to assess activity and participation to identify and prioritize relevant integrities and impairments as a basis for the establishment of achievable outcomes with clients and caregivers. An in-depth understanding of typical and atypical development, and expertise in analysis of postural control, movement, activity, and participation throughout the lifespan, form the basis for examination, evaluation, and intervention. Therapeutic handling, used during evaluation and intervention, consists of a dynamic reciprocal interaction between the client and therapist for activation of optimal sensorimotor processing, task performance, and skill acquisition for achievement of participation in meaningful activities.


Essential Handling Concepts

- Preparation
- Facilitation/Inhibition
- Simulation
- Function

Preparation: Preparation addresses the critical impairments in any system that must be specifically addressed before an individual is ready to move.

Facilitation and Inhibition: Keeping undesired responses and movements at bay while activating postural readiness, postural anticipation and control, postural accompaniments, and efficient movement components for new motor patterns.

Simulation: Imitate functional goal in a variety of activities that are similar to the functional goal and involve components gained, practice components.

Functional Goal: practice the function

Handling Basics

What is the function, and what are the essential posture and movement components?

Do I have body alignment?

What specific posture or movement is the focus, and am I trying to facilitate?

What are/is my key point(s) of contact?

How should I hold?

How can I direct my pressure to gain an active postural response?

How do I know I have gotten an active response?

Handling Basics

When should I take my hands off?

What if the child moves a way I don’t want, or doesn’t move?

How much should I repeat, or vary what I am doing?

Do I talk to the child…tell them what to do?

How should I position myself and move?

Should I set up the environment to help me….equipment, objects, etc.?

When do I try to have the child try the actual function?
SIGN
Sensory Integration Global Network

• Sensory integration theory proposes that sensory integration is a neurobiological process that organizes sensation from one’s own body and from the environment and makes it possible to use the body effectively within the environment. The spatial and temporal aspects of inputs from different sensory modalities are interpreted, associated, and unified. Sensory integration is information processing...Praxis and perception are both end products of sensory integration... Practic ability includes knowing what to do as well as how to do it.

SIGN
Sensory Integration Global Network

• Principles of Intervention include:
  • Qualified professional ..... family-centered ..... complete assessment and interpretation based on the patterns of sensory integrative dysfunction....
  • Safe environment that includes equipment/activities that rich in vestibular, proprioceptive and tactile sensations and opportunities for praxis.....promote regulation of affect and alertness and provide the basis for attending....
  • Activities that promote optimal postural control in the body, oral-motor, oculomotor areas and bilateral motor control ..... maintaining control while moving through space....
  • Activities that promote praxis including organization of activities and self in time and space... “just-right challenge”..... “Somato-motor adaptive response”....
  • Intrinsic motivation and drive to interact through pleasurable activities ... play....
  • Therapist engenders an atmosphere of trust and respect ... activities are negotiated, not pre-planned....
  • The activities are their own reward and the therapist ensures the child’s success....

Sensory Integration Theory to Practice

✦ Neuroscience literature presents material at the level of processes and neural mechanisms. Therapy literature conveys information at the level of experience or behavior.

✦ Processes vs. Behaviors:
  ✓ Processes are not observed because they occur at the cellular or nervous system level
  ✓ Behavioral manifestations of these processes are observed in sensory integration function and dysfunctional patterns

✦ Functional and dysfunctional sensory integration patterns are related to underlying neurophysiological processes (connectivity & excitability).

✦ There are both peripheral and central regulatory processes involved in sensory integration. SI focuses on remediating lower cortical brain functions (processing tactile, proprioceptive, and vestibular sensory information) ultimately impacting behavior and function
Patterns of Sensory Integrative Dysfunction

Patterns of Responses Related to Sensory Experiences

<table>
<thead>
<tr>
<th>Clusters</th>
<th>Sensory Processing Disorder</th>
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</thead>
<tbody>
<tr>
<td>Miller</td>
<td>Sensory Modulation Disorder</td>
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<td>Sensory Based Motor Disorder</td>
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<td>Sensory Discrimination Disorder</td>
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<th>Ayres</th>
<th>BI and Sequencing</th>
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<td>Visual – Somato Dyspraxia</td>
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<td>Generalized SI Dysfunction</td>
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<th>Mulligan</th>
<th>Average SI and Praxis</th>
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<td>Moderate SI Dysfunction</td>
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<td>Severe SI Dysfunction</td>
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<td>Dyspraxia</td>
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<td>Dyspraxia and Low Average BI Sequencing</td>
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<th>Patterns of Responses</th>
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<td>- Hypersensitive Type</td>
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<td>- Underactive Type</td>
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<td>- Motorically Disorganized Type</td>
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Reebye and Stalker

Regulation Disorder of Sensory Processing

Dunn

- High Threshold
  - Bystander/Seeker
- Low Threshold
  - Sensor/Avoider

Vestibular System

- Maintains muscle tone, in conjunction with muscle proprioceptors.
- Influences posture and equilibrium.
- Impacts sense of gravitational security.
- Influences position in space.
- Facilitates extensors.
- Receptors develop early in utero, in conjunction with cervical nerves supplying neck.
- Stabilizes visual field through compensatory eye movements produced when the head moves.

Somatosensory System

- Exteroception
- Proprioception
- Motor Planning
- Postural Movement Systems
- Conscious Control of Body
Muscle Architecture: muscles specifically structured for posture allowing them to move a specific way...

- **Postural System Muscles**
  - general configuration: bipennate or multipennate
  - angle of pennation: obliquely inserting fibers
  - fiber length: short for control
  - attachments: broad
  - location: proximal, deep, close to joint
  - muscle length: limbs - cross one joint/neck & trunk - cross few joints
  - function: 1) hold body up against gravity 2) preparatory set & counterbalance movements 3) preserve joint integrity
  - action: small range movements and holding

- **Movement System Muscles**
  - general configuration: unipennate, penniform
  - angle of pennation: parallel fibers
  - fiber length: long for motion
  - attachments: narrow and tendinous
  - location: distal, superficial
  - muscle length: limbs - multiarthrodial/neck & limbs - cross many joints
  - function: 1) contribute range and speed to motor acts 2) move extremities in space 3) move from one static position to next
  - action: large range movements and adjustments

---

**Active Postural Responses... Proprioception**

- **Postural System Muscles**
  - Do not let postural muscles collapse
  - Work in a shortened range
  - Slow small resistance over a long period of time
  - Hold or dynamic weight shift in a small range
  - Respond to pressure with slow joint position changes

- **Movement System Muscles**
  - Respond to stretch in a longer to a shorter position
  - Peak tension in a shorter range
  - Light resistance at the end of the range
  - Keep muscles active moving quickly in larger range
  - Respond to lighter touch & quicker joint changes

---

**Surface Somatosensory Sensation**

- **Light Touch:**
  - sensation generally results from stimulation of tactile receptors in the skin
  - anterolateral fibers carrying information from the body to the thalamus & somatosensory cortex with diffuse distribution in the brain, pass through the brain stem and sends collateral fibers to the Reticular Formation for alerting and arousal

- **Pressure:**
  - results from deformation of deeper tissue
  - Dorsal pathways for discriminative touch, pressure, and vibration do not stop in the Reticular Formation as they go to the Brain Stem as they ascend, only on the way down so they are inhibitory

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**Rules to Maximize Proprioception**

**Sensorimotor Homunculus**

- Motor Cortex
- Fingers
- Thumbs
- Neck
- Eye
- Lips
- Jaw
- Tongue
- Throat
- Hip
- Shoulder
- Elbow
- Wrist
- Arm
- Hand
- Right side of body
- Left side of brain represents right side of body
Components of the Visual System

- **Visual Receptive**
  - Oculo motor Control: fixation, pursuit eye movements, saccadic eye movements
  - Visual fields
  - Visual acuity
  - Visual skills: accommodation, binocular vision, convergence/divergence orientation

- **Visual Cognitive**
  - Attention
  - Memory
  - Visual discrimination: recognition, matching, categorization
  - Form perception: constancy, visual closure
  - Visual imagery
  - Spatial perception: position in space, depth perception, topographical scanning

Parallel and Distributed Visual Processing

- Information carried by the geniculo-cortical pathway is segregated into parallel processing channels
  - The “dorsal stream” carries information to the parietal lobe and information of WHERE SOMETHING IS LOCATED
  - The “ventral stream” provides information allowing us to recognize WHAT SOMETHING IS


Therapeutic Strategies

**SENSORY EXPERIENCES BY DESIGN:**
- ✓ Choice of Sensory System
- ✓ Combination of Sensory Systems
- ✓ Intensity of Sensory Input
- ✓ Frequency of Sensory Input
- ✓ Duration of Sensory Input
- ✓ Rhythm of Sensory Input
- ✓ Timing of Sensory Input

**JUST RIGHT CHALLENGE**

**ADAPTIVE RESPONSE:**
Children Gain New Functions through Practice and Learning

**Stages of Learning**
Christine Chapparo PhD OTR

- **Acquisition**: treatment focus is intense consistent practice with structured and clear goals
- **Maintenance**: treatment focus is to fade support (hands, adaptations, environmental set up etc.) and the child sustains
- **Fluency**: treatment focus includes varying the timing and accuracy of the requirements of the activity
- **Generalization**: treatment extends the learning time by slightly varying the practice with novelty
- **Transfer**: the treatment focuses on taking parts of the task and using them in different tasks or environments.

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**Treatment Strategies**
Using Play to Facilitate Function

**Therapeutic Manipulatives**

**Handling: Child & Sensation**
- Knowing what you want to facilitate
- Gaining Alignment
- Where you hold
- How you hold
- Providing a direction of pressure
- Gaining the desired active response
- Repetition/variation
- Emphasizing one or more sensation
- Expected type/time of response

---

**Therapeutic Manipulatives**

**Use Of Self**
- Feelings
- Expectations
- Contact
- Position
- Movement
- Activity level
- Rhythm
- Non verbal communication
- Verbal communication
- Therapeutic surface
- Sensation you generate
Treatment Strategies

Therapeutic Manipulatives

Use of Equipment

- Stable Surface
- Unstable Surface
- Resistance/Support/Limits
- Alternative Uses
- Novelty
- Familiarity
- Substitution
- Qualities
- Sensory Properties
- Motoric Demands
- Cognitive/Perceptual Demands

Managing The Environment

- Physical, visual, auditory space etc.
- Presentation: Structure, Freedom
- Physical Characteristics
  - height
  - weight
  - angle
  - surface texture
  - resistance
  - space
- Location...
  - Management vs. Problem Solving
  - Individual vs. Group
  - Complexity vs. Simplicity
  - Risk vs. Safety
  - Integrating volition/purpose

Use of Practice

Therapeutic Manipulatives

- Stage of Learning
- Frequency of Practice
- Practice Context
- Guidance in Practice
- Variation in Practice
- Type of Practice
- Feedback
- Ensuring Practice Outcomes

Linking Play to Function

...Utilizing NDT and SI Strategies to Facilitate the Development of Functional Skills Through Play

- Activity Adaptation
- Function Participation
- Skill Development + Multi Systemic Abilities
- Create the Potential for a Flow State
- Communicate Playfulness
- Structured Physical Environment
- Novel Introduction of Sensation
- Know and Achieve Desired Motor Response

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