What is motor planning?

It’s actually a component of praxis although the terms are often used interchangeably.

Praxis:

the ability to conceive of, organize, and carry out a sequence of unfamiliar actions. (Ayres 1973)

…the instinctive “know how’ when approaching a novel motor task.

a largely cortical process that is highly dependent on subcortical processes such as sensory discrimination, body scheme/body awareness, and the ability to produce feed forward responses. May-Benson, T. (2004).

the neurological process by which cognition directs motor action; motor or action planning is that intermediary process which bridges ideation and motor execution to enable adaptive interactions with the physical world. (Ayres, 1985)

Components of Praxis – involves 3 basic processes

1. Ideation – generating an idea of how to move - cognitive component, allows one to associate previous experiences with what’s being presented now
2. Motor Planning/Organization/motor sequencing– determine a plan, what action needs to be done 1st, 2nd, 3rd…
3. Execution/motor coordination/feedback/adaptability – the actual performance of the motor act, coordinating 2 or more actions simultaneously, ability to make precise motor responses and changes
Motor Planning

For our purposes we’ll use this definition: The ability to order, plan, sequence and execute a series of intentional motor actions.

The ability to figure out how to do something you’ve never done before

Requires conscious attention

We use motor planning to learn new things until those activities become skills and no longer require planning

The more a child touches and explores objects, the more he learns to move his body in different ways, the better his motor planning. (Kranowitz, 1998)

Needed for gross and fine motor control

What’s needed:

- Body Scheme
- Body Awareness in Space
- Bilateral Integration
- Projected Action Sequence – actions that require timing and movement through space

Body Scheme

Awareness of body – internal map – neural memories

Developed through sensory awareness particularly through tactile and proprioceptive systems

Unconscious awareness of individual body parts and how the body parts relate to one another and to the surrounding environment

Signs of Difficulty: (not all inclusive)

Unable to identify where they’ve been touched if not looking

Difficulty moving if not using eyes

Difficulty with perception of limbs in relation to body – may knock things over

Trouble with “back” space – doesn’t look for things behind them or out of sight

Won’t play in dark
May always touch things to know where they are

Difficulty imitating – facial expressions, body movements, follow the leader

Difficulty with tool use

**TX considerations**

---

**Awareness of Body in Space**

Take body scheme and move through space

Addition of vestibular system

Signs of Difficulty: (not all inclusive)

- Bumps into things as they move around
- Stumble and fall
- Difficulty moving body in/out, over/under and thought environment
- Difficulty getting head or body low enough to crawl under obstacle
- Difficulty with timing

**TX considerations**
**Bilateral Integration/Coordination – proprioceptive and vestibular systems (p 46)**

The ability to use both sides of your body in a coordinated way – they can work together to do the same task or they can work simultaneously at different tasks to complete the action.

Requires good vestibular and proprioceptive processing

Need to be able cross the midline of their body

Develop handedness

Reflex integration

**Signs of Difficulty: (not all inclusive)**

- Associated reactions persist - tongue out, mouth movements during effort; opposite hand moves while performing task.
- Difficulty clapping hands
- Poor weight shifting
- Doesn’t develop hand dominance
- Trouble crawling, running, jumping, pumping swing
- Unable to stabilize paper when writing

**TX considerations**
Projected Action Sequences

Anticipation of future events in the environment and the ability to adjust actions to meet those conditions

Need good visual, proprioceptive and vestibular processing

Involve timing and movement through space

Involves feedforward and feedback mechanism as well as bilateral coordination

Signs of Difficulty:  (not all inclusive)

- May be able to kick a ball that’s not moving, but unable to kick it if it’s moving
- Trouble catching or throwing
- Difficulty hitting target
- Difficulty readying the body – to jump down, to catch a ball
- Difficulty modulating the force of limb movements
- Difficulty stabilizing posture while doing skilled movement
- Runs into objects

TX considerations
References


Therapyfunzone.com
Skillbuildersonline.com
ot-mom-learning-activities.com

