

Motor planning - Praxis

What is motor planning?

Motor planning is also referred to as Praxis. Many children have challenges with motor planning. It is a skill that helps children **plan, sequence, organise** and **execute** new or unfamiliar actions or motor skills. It is how the brain figures out *what to do, how to do it* and in *what order*.

Children use motor planning everyday in daily living activities. Some examples include: climbing onto a swing, getting dressed, packing a school bag, building with Lego or learning a new skill. Motor planning involves both motor skills and executive functions, or cognitive skills. Children with motor planning challenges can have difficulty organising actions, initiating tasks, or adapting movements.

Motor planning has 4 parts:

- **Ideation (What to do)**- The ability to formulate an idea of an action or goal. This could be doing something new and unique (e.g. a new drawing) or mirroring an idea inspired by something or someone else (e.g. an idea to learn to ride a bike after watching others).
- **Planning and sequencing (How to do it and in what order)** - The appropriate body awareness to understand the body's position in space and the ability to organise the body in a coordinated way. It also includes figuring out the steps required and the correct order of movements to achieve the goal.
- **Execution (Doing it)**- Combining the correct sequence of steps in the task to carry out the movement in a coordinated way. This involves understanding and initiating each movement accurately and at the right time.
- **Feedback and Adaptation (Reflecting on how it went)**- Ability to problem-solve and overcome challenges, for example trying things a different way (Balhorn, 2023).

Even what may seem like simple daily tasks require complex motor planning. Here are two examples which help to highlight the many steps involved in a task and the many places where challenges can arise.



Examples of motor planning in daily tasks

Cutting with scissors includes various steps:

1. Positioning the body at the table.
2. Holding the scissors correctly. Thumb in the small loop, index and middle fingers in the bottom loop.
3. Holding the paper with the helper hand.
4. Opening and closing the scissors smoothly.
5. Bringing the scissors to the paper.
6. Cutting the edge of the paper.
7. Cutting forward (usually along a line).
8. Rotating and repositioning the paper to follow curves and corners.
9. Finishing the cut and releasing the paper.



Putting on a t-shirt requires:

- Orienting the shirt correctly. Identifying front/back, top/bottom.
- Holding the shirt at the bottom hem.
- Creating a wide opening at the bottom.
- Placing the head through the shirt and out the neck hole.
- Pulling the shirt down over the shoulders.
- Inserting one arm into the correct sleeve.
- Inserting the other arm into the correct sleeve.
- Adjusting the shirt for comfort.



Why is motor planning important?

Motor planning is important as it is the underlying skill to complete any and all tasks, with the cognitive process of *what* and *how*.

What?

The *what* in motor planning relates to **what the goal of the movement is.**

For example, what movements are required to complete my homework? Kick this ball? Cut paper using scissors? Brush my teeth? *What do I need to do* to complete this task? This requires attention, decision-making and following multi-step instructions/rules of the task.

How?

The *how* in motor planning relates to **how do I move and coordinate my body to achieve the task goal.**

For example, *how do I* pull my shirt on while getting my head through the hole at the top? *How do I* climb this ladder without falling? *How do I* write my name on this line? The *how* requires an understanding of the sequences of actions required to complete a task and their correct order.

Essentially motor planning is *knowing what to do and being able to do it.*

Motor planning is important as it supports independence in everyday tasks with the ability to adapt to change, coordinate movements and make movements accurate and purposeful. Motor planning skill development supports increased independence in daily activities by supporting a goal to become an action. For example:

- Self-care: dressing, packing a bag, brushing teeth, using the toilet, washing hands etc.
- Play: climbing, ball games, pretend play, riding a bike etc.
- School tasks: Handwriting, cutting, organising materials etc.



Signs of challenges with motor planning

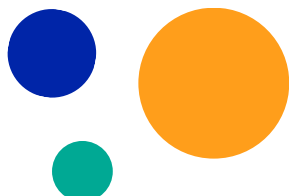
Children with motor planning difficulties often:

- Avoid new or unfamiliar tasks
- Need many repetitions to learn a new skill or taking longer than peers
- Appear 'clumsy' or uncoordinated, struggling with fine and/or gross motor skills
- May avoid playground or sports activities
- May frequently trip, fall or bump into things
- Struggle to copy actions and follow multi-step routines
- Become easily frustrated
- Struggle to sequence the steps in a task



Providing support and practice of motor planning skills helps children learn new movement skills, follow multi-step routines, engage in playground activities, develop problem-solving abilities, and use their bodies with confidence to be successful in activities.

(Wong et al., 2015).



Supporting children's motor planning

Supporting motor planning skills includes a range of strategies. These include:

Task-orientation -

To improve motor skills, balance, cognitive function and activity performance. Practising meaningful tasks (e.g. catching a ball, dressing, handwriting), breaking tasks down into steps and practicing the sequence, repeating tasks in different environments.

Motor-based strengthening -

Balance activities, core stability and postural control activities, activities to develop timing and rhythm (e.g. jumping patterns, skipping), hand-eye coordination tasks (throwing, catching, aiming).



Process-oriented activities -

Sensory integration activities (e.g. swinging, climbing, deep pressure, tactile play), strengthening tasks, visual-motor activities (e.g. eye-hand coordination, scanning, tracking) and proprioceptive activities (e.g. obstacle courses).

Problem-solving and anticipatory control -

Anticipatory control is the body's ability to predict what to do next. For example, predicting what the next move should be on the obstacle course, planning how to catch a moving ball, coordination to climb safely, practicing "what is the plan for this task".

Repetitive, structured and graded -

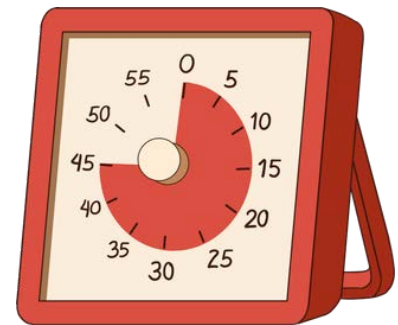
Repeating tasks with small variations, gradually increasing difficulty of activity, using supports integrated to perform activity, providing opportunities for practice and to explore mistakes.

Real-life function -

Through practicing sequences, improving participation, building confidence, supporting tasks and overcoming barriers. All apply to real-life function and increase independence in completing routines and participation in life (Gao et al., 2025).

Visual and cognitive strategies -

Using visual schedules or checklists to break down tasks into steps, providing real-time or video modelling, teaching verbal self-talk strategies (for example, first x, then y) or mnemonics (for example for letter formation such as “down, back up and over the hill” for h).



Activity ideas for home

Mirroring activities -

Have your child copy simple actions e.g clap and stomp, jump and turn, touch head-knees-floor. More complex activities include: Simon says, hokey pokey, hopscotch, yoga, dance and freeze and follow the leader.

Obstacle course -

To promote ideation, have your child use pillows, tunnels, tape and other accessible materials to create an obstacle course and plan out the sequencing of the action required at each step.

Construction play -

This can involve building a Lego set following the instructions, recreating a tower with blocks from a picture.



Pretend play -

Encourage your child to engage in pretend play by taking on different roles (e.g., chef, astronaut, doctor, nurse). While they are playing, prompt them to talk through what they are doing and the steps involved. For example: "First I put the pan on the stove, then I crack the eggs, then I stir." "I'm putting on my space suit, then I climb into the rocket, press the buttons and count down from 10."

Heavy work activities -

To support body awareness and regulation you can try activities like pushing or carrying a laundry basket or heavy box, vacuuming, carrying groceries, using Theraputty or playdough, playing tug-of-war, climbing equipment or monkey bars (Brian, & Taunton, 2018).



References

Balhorn, K. (2023, December 15). *Praxis and motor planning in occupational therapy: Napa center*. NAPA. <https://napacenter.org/praxis-occupational-therapy/>

Brian, A., & Taunton, S. (2018). Effectiveness of motor skill intervention varies based on implementation strategy. *Physical Education and Sport Pedagogy*, 23(2), 222-233. <https://doi.org/10.1080/17408989.2017.1413709>

Gao, J., Yang, Y., Xu, X., Huang, D., Wu, Y., Ren, H., Zhang, A., Ke, X., & Song, W. (2025). Motor-Based Interventions in Children with Developmental Coordination Disorder: A Systematic Review and Meta-analysis of Randomised Controlled Trials. *Sports Medicine - Open*, 11(1), 59. <https://doi.org/10.1186/s40798-025-00833-w>

Wong, A. L., Haith, A. M., & Krakauer, J. W. (2015). Motor Planning. *The Neuroscientist (Baltimore, Md.)*, 21(4), 385-398. <https://doi.org/10.1177/1073858414541484>

We thank Charlotte Rixon, Occupational Therapy Student,
Western Sydney University, for her work in drafting this factsheet.