

# Understanding The Senses

## Auditory System: Hearing



The auditory system helps us hear, interpret and make sense of sounds in our environment. Learn how sound is processed, common signs of issues, and ways to support the auditory system.

## OVERVIEW

# The Auditory System

The Auditory System includes hearing as well as the ability to interpret and make sense of the sounds heard from the world around us.

### It allows us to:

- Detect and then locate sound, specifically speech sounds, music and environmental sounds
- Filter relevant sounds from background noise — focus on one voice in a noisy room
- Interpret the meaning, pattern and sequence of what we hear Support spatial awareness — knowing where we are in our environment through sound
- Contribute to communication, language development, rhythm and timing

The auditory system works in close partnership with the vestibular system, movement and sound processing are closely linked.

It plays an important role in communication, language development, learning, and social interactions.



# AUDITORY PROCESSING

## How We Process Sound

Sound is processed in several ways, each supporting different aspects of daily communication and learning:

- **Sound Localisation:** The brain uses the differences in sound arrival times and intensities at each ear to determine the location of a sound source in space
- **Auditory Discrimination:** This involves the ability to distinguish between different sounds, such as differentiating between similar speech sounds like 'b' and 'd'
- **Auditory Pattern Recognition:** The brain can recognize patterns in sound sequences, which is crucial for understanding speech, music, and other complex auditory stimuli
- **Temporal Processing:** This refers to the brain's ability to perceive the timing of sounds and detect rapid changes in sound frequencies
- **Auditory Figure-Ground Discrimination:** This skill involves separating a target sound from background noise. It's essential for focusing on a specific sound while ignoring other competing sounds



# WHAT TO LOOK FOR

## Common Signs of Differences with Auditory Processing

### Common signs of differences with auditory modulation:

- Responds strongly to loud or sudden sounds, low frequency sounds such as lawn mowers, hand dryers, thunder, car engines
- Uncomfortable or overwhelmed with sounds, covering ears, moving away from sound, difficulty focussing, crying or other signs of distress
- Struggles to filter out background noises, affecting the ability to focus on specific sounds or conversations.
- Enjoys making sounds, humming, tapping, singing or vocalisations

### Common signs of differences with auditory discrimination:

- Appears not to hear sounds or responds inconsistently to name or instructions
- Appears lost or confused in noisy environments
- Difficulty articulating sounds correctly,
- Misinterprets sounds and / or words, bat vs pat
- Finds it tricky to follow 2-3 step instructions
- May contribute to delays in speech and language development.

If you have concerns, speak with an Audiologist about a hearing tested and an Occupational Therapist about auditory processing.

## PRACTICAL TIPS

# Ways to Support the Auditory System

**Ways to support auditory modulation, reducing overwhelm from sound:**

- Reduce unnecessary background noise, turn off music, radio, TV
- Provide quiet space at home where your child can go to take a break from sound
- Provide warning before loud or sudden sounds, 'I'm starting the blender'
- Trial ear defenders / noise diminishing headphones for short periods

**Ways to support auditory discrimination:**

- Sing songs, nursery rhymes and rhyming games, builds auditory pattern recognition
- Read aloud with clear, expressive voice, building sound-meaning connections
- Reduce competing noise when giving instructions, pause the TV, get their attention first
- Use simple sentences, perhaps including visual cues, pointing
- Add visual supports alongside verbal instructions, visual routines, labels with photos/images.

