

Understanding Your Ears

**Hearing damage from noise lasts forever.
Good news. You can protect your hearing.**

How Hearing Works

Your ears have 3 parts:

1. **Outer ear:** the part we can see, like the earlobe and ear canal.
2. **Middle ear:** it includes the eardrum and tiny bones that pass along sound vibrations.
3. **Inner ear:** includes the snail shaped cochlea and the balance organs.

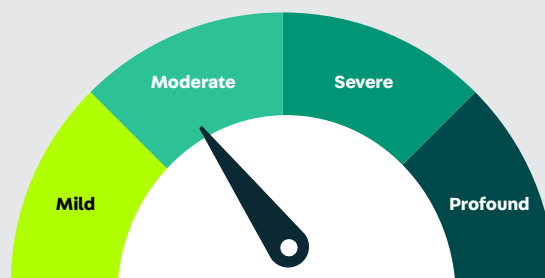
The Hearing Process

- Sound waves enter the outer ear and reach the eardrum.
- The eardrum vibrates and sends it to 3 tiny bones in the middle ear.
- These bones amplify the sound vibrations and then send them to the cochlea.
- Inside the cochlea, fluid ripples and moves hair cells.
- Hair cells turn the vibrations into electrical signals
- Nerves carry signals to the brain, turning them into sounds you know.

Why Take Care of Your Hearing

Your hearing is precious but can be easily be hurt by loud noises. Also, how often you're around loud noises can matter too. It can cause noise-induced hearing loss.

Degrees of Hearing Loss



Mild

It's like your TV volume is low. You hear most sounds, but quiet ones are hard to pick up, like a whisper across the room.

Moderate

Now imagine your TV volume is very low. When someone talks normally, it's like they're whispering or even silent to you, especially in a noisy place.

Severe

It's like your TV is on its lowest volume. You might only hear loud sounds, like a drum or a car horn, but everything else is almost silent.

Profound

It's like your TV volume is off. You can't hear speech, just the loudest noises, like thunder or a maybe nothing at all.

Noise-Induced Hearing Loss Might Hurt:

- **Social life** – difficulty communicating.
- **Mental health** – confidence, self-esteem, depression, anxiety.
- **School and work** – less opportunities.
- **Your safety** – accidents can happen when you experience hearing loss.

Noise -induced hearing loss can be avoided.



Your hearing is precious but can be easily be hurt by loud noises. Also, how often you're around loud noises can matter too.

Keep it safe.

Volume/not too loud
Distance/not too close
Time/not too long

**Listen Smart
and keep
your ears safe.**

Understanding Noise

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What Is Noise?

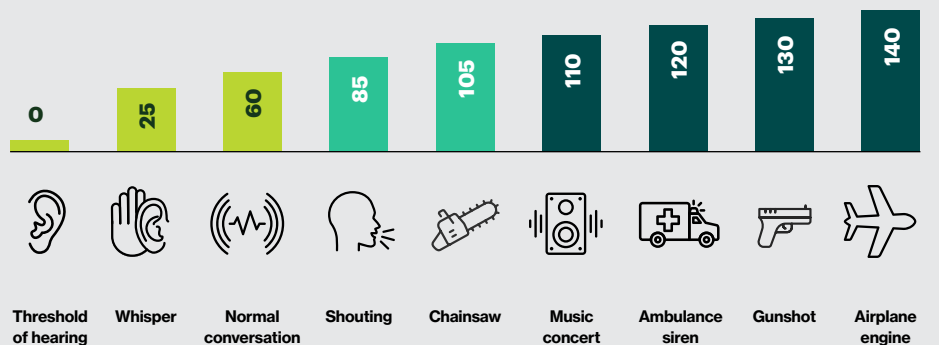
Noise can be considered any unwanted sounds—it can be like a wave crashing dangerously onto the shore.

- **Sound Waves:** These are vibrations that our ears pick up, like the waves in the ocean.
- **Amplitude:** It's how big or small the waves are—bigger waves mean louder sounds.
- **Intensity & Decibels:** Intensity measures the amount of energy carried by sound waves in units called decibels (dB). Like how ocean waves vary in size and strength.
- **Loudness:** Loudness is how we perceive sound. It's subjective and can vary between people. Like intensity, it's measured in decibels (dBA).



Loud noises can hurt your ears and damage your hearing permanently. This is called Noise-Induced Hearing Loss. This can build up over time, so protect your ears with safe habits now.

Decibel sound examples (dBA)



How Loud Is Too Loud?

Decibels (dBA) measure sound logarithmically. Each increase in dB signifies a much stronger sound.

For every 10 decibel increase, the intensity of sound shoots up by a factor of 10 each time.

- 10 dBA is 10 times more intense (0 x 10)
- 20 dBA is 100 times more intense (10 x 10)
- 30 dBA is 1000 times more intense (10 x 10 x 10), and it keeps going up.

Sounds can get louder fast and can hurt your ears if you listen for too long.

Danger zone: Sounds over 85 dBA can hurt your ears over time.

Here's a quick guide to how long you can listen to different sound levels without protection.

- 85 dBA for at least a few hours up to 8 hours – think playing video games with loud sounds
- 100 dBA for at least 15 minutes – imagine blasting music with the volume on high, using a chainsaw without hearing protection, and food processors.
- 110 dBA for at least 1-2 minutes – like being at a loud music concert

If sound reach 120 dBA, your ears might start hurting. It's best to protect your ears before it gets that loud because you could cause permanent damage.

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Understanding Safe listening

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How to Protect Your Hearing

1. Avoid or Limit Noise Exposure.
2. Lower the Volume.
3. Give Your Ears Breaks.
4. Move to a Quiet Spot.
5. Protect Your Ears With Earplugs or Earmuffs.
6. Choose Quieter Devices.
7. Consider Headphones Not Earbuds.
8. Use a Sound Monitor App On Your Phone. Habitually check noise levels during noisy tasks or before buying new equipment.
9. Get Regular Ear Health Checks.

Play it Safe with 80/90. Keep it at 80% volume for up to 90 minutes at a time.

Sharing is Caring. Tell your friends and family how to keep their ears safe too.



You can also use noise-cancelling headphones to reduce noise. But remember, still listening at high volumes for too long on these can damage your hearing.

Safeguarding Your Ears

To keep your ears safe, don't spend too much time around loud noises or avoid entirely. If you can't do this, wear ear protection—it's like wearing a helmet for your ears.

Noise-induced hearing loss can be avoided.

Types Of Protection

- **Ear plugs:** Tiny plugs that fit snugly into your ear canal. Easy to always carry a pair
- **Ear muffs:** like big headphones that cover your ears completely
- **Canal caps:** small caps that cover the entrance of your ear canals held in place by a headband

How to Pick Protection

1. How Much Noise to Reduce. Try to reduce it below 85 dBA to stay safe. Look for numbers on protection that tells how much it reduces.
2. How Long You Will Be Exposed. Earmuffs can be easier to take on and off than ear plugs.
3. Choose Something Comfortable.

Signs of Hearing Loss



Trouble following conversations or hearing voices clearly



Needing to turn up volumes on devices or ask people to speak louder



Ear pain or ringing (tinnitus)



Hearing sounds as muffled or distorted



Difficulty hearing higher voices or high-pitched sounds



Feeling dizzy or unbalanced



Pressure in the ear

Seek help if you are worried.

It's important to catch problems early. Talk to your parents or your GP.

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