

# Our Ears and Types of Hearing Loss



## The 3 Main Parts of The Human Ear:

### 1. Outer Ear

The **pinna** brings sound into the **ear canal** where they hit and vibrate the ear drum.

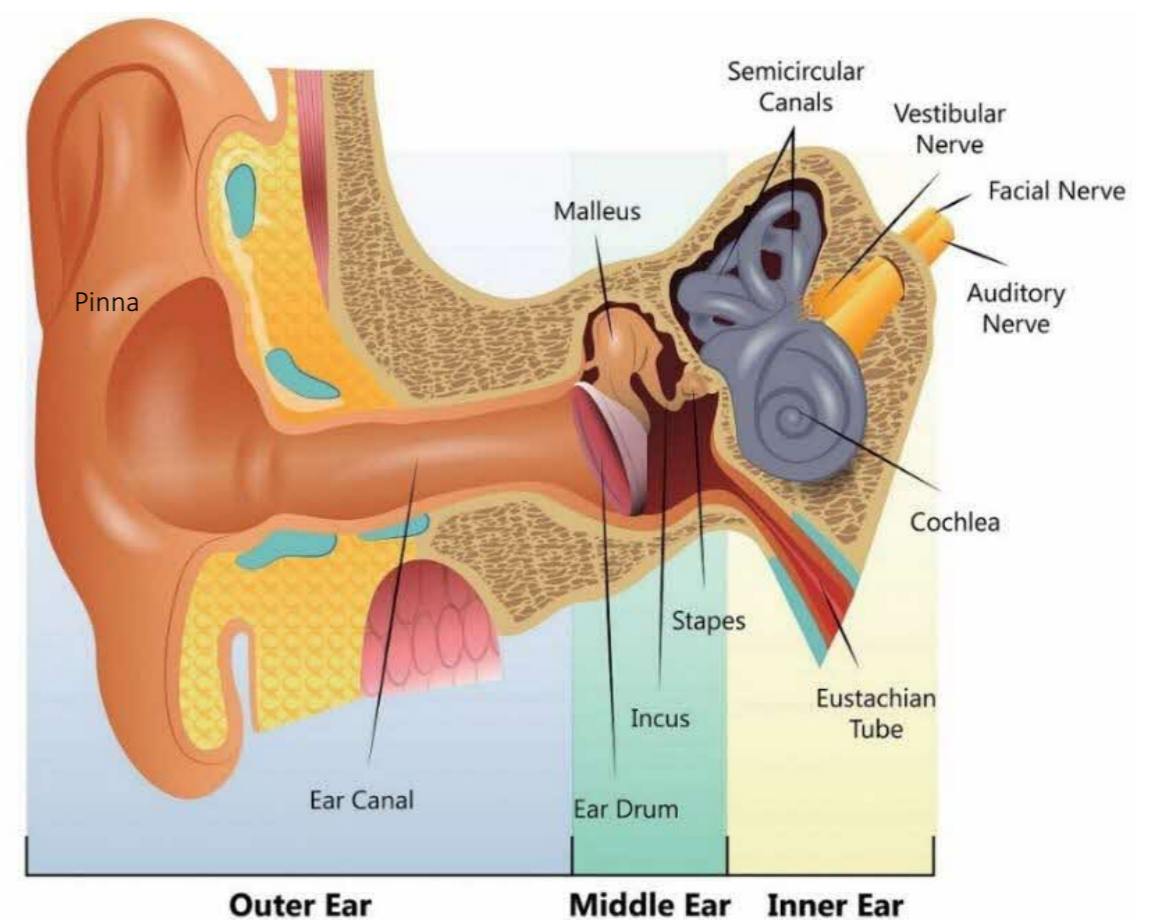
### 2. Middle Ear

The 3 tiny bones (malleus, incus and stapes), also known as the **ossicles**, pick up the vibrations from the **ear drum**, amplify them, and send them to the cochlea.

### 3. Inner Ear

Tiny hair cells inside the **cochlea** convert the vibrations into electric signals, which are then sent to the brain through the **hearing nerve**. This makes up our **hearing system**.

The **semi-circular canals** in the inner ear respond to head rotations. Electrical signals are sent to the brain through the **vestibular nerve**. This makes up our **balance system**.



## The 3 Main Types of Hearing Loss:

| Conductive Hearing Loss  | Sensorineural Hearing Loss   | Mixed Hearing Loss   |
|--|--|--|
| <ul style="list-style-type: none"> <li>This happens when sound travelling through the outer and middle ear is unable to fully enter the inner ear</li> <li>Causes: excessive ear wax, damage to the ear drum or ossicles, fluid in the middle ear, infection in the outer or middle ear</li> </ul> | <ul style="list-style-type: none"> <li>This happens when the inner ear is unable to convert sound into electric signals to be sent by the hearing nerve to the brain</li> <li>Causes: ageing, prolonged loud noise exposure, infection and disease in the inner ear, ototoxic medications, congenital or hereditary abnormalities</li> </ul> | <ul style="list-style-type: none"> <li>This happens when components of conductive and sensorineural hearing loss are both present</li> </ul> |



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# 我们的耳朵与听力失聪的类型



## 人耳主要的3个部分:

### 1. 外耳

耳廓将收集的声波导入外耳道，并引起耳膜的振动。

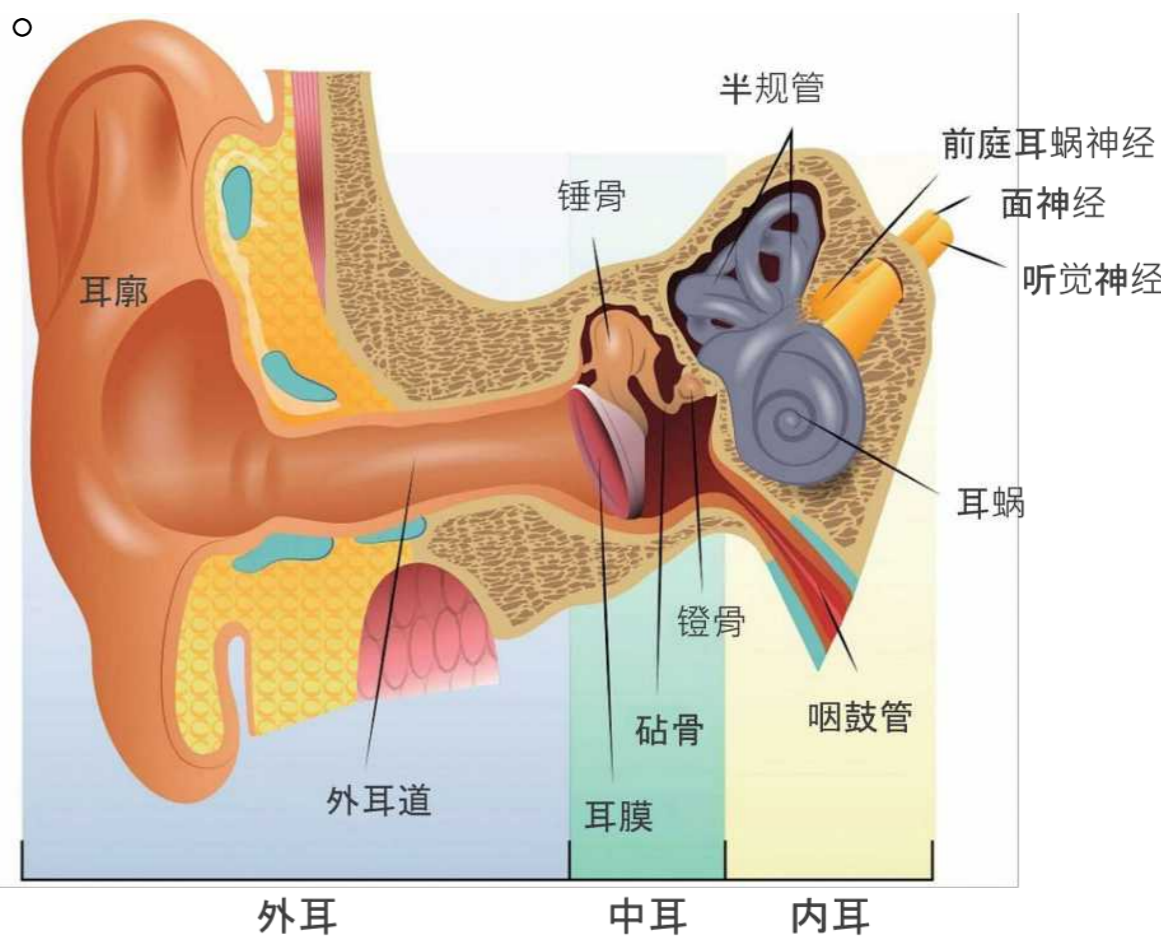
### 2. 中耳

三个听小骨(锤骨，砧骨及镫骨)接收经由耳膜振动所引起的声波，扩大后传入耳蜗。

### 3. 内耳

耳蜗的毛细胞将振动力转化为电信号，并通过听觉神经传送至大脑。这形成了听力系统。

内耳中的半规管对头部旋转动作产生反应，信号通过前庭耳蜗神经传送至大脑。这形成了平衡系统。



## 听力失聪的类型主要分成 3 种:

| 传导性失聪   | 感音神经性失聪   | 混合性失聪  |
|---|---|--|
| <ul style="list-style-type: none"> <li>当外耳或中耳有问题，导致声音无法完整的传入内耳</li> <li>病因: 耳垢堵塞，耳膜或听小骨受损，中耳积液，外耳或中耳感染</li> </ul> | <ul style="list-style-type: none"> <li>当内耳无法完整的将声波转化为电信号，通过听觉神经传送至大脑</li> <li>病因: 老年性失聪，噪音性失聪，内耳感染或病症，耳毒性药物，先天或遗传性异常</li> </ul> | <ul style="list-style-type: none"> <li>当传导和感音神经结构同时存在异常</li> </ul> |



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