

A photograph of a person's hands and feet in a spa setting. The hands are resting on the feet, which are also resting on a light-colored surface. There are white candles, a white flower, and a brown object in the background. The overall tone is warm and relaxing.

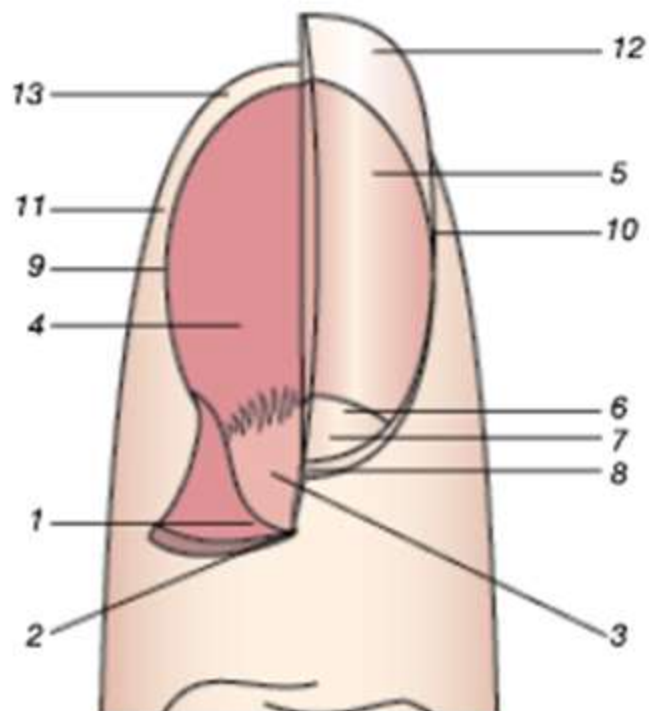
EXPLORE //

*What do you consider  
to be the most  
important  
part of the nail?*

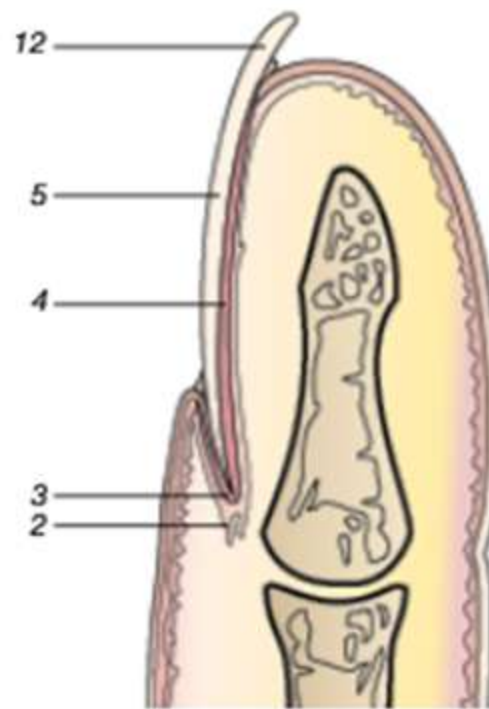
205<sup>BT</sup>.4 NAIL THEORY

# STRUCTURE OF THE NAIL

Like the hair, the nail is an appendage of the skin. The technical name for the nail is onyx (**ON**-iks). The study of the structure and growth of the nails is called onychology (on-ih-**KOL**-o-gee).



Top View, Cutaway of Finger



Side View, Cross-Section of Finger

The best way to understand the structure of a nail is to look at a detailed diagram.

1. The **mantle** (proximal nail fold) is the pocket-like structure that holds the root and matrix.
2. The **nail matrix** is the active tissue that generates cells, which harden as they move outward to form the nail plate.
3. The **nail root** is attached to the matrix at the base of the nail, under the skin and inside the mantle.
4. The **nail bed** is the area of the nail on which the nail body rests. Nerves and blood vessels found here supply nourishment.
5. The **nail plate** (nail body) is the visible nail area from the nail root to the free edge. Made of layers, no nerves or blood vessels can be found here.
6. The **lunula** is the half-moon shape at the base of the nail, which is the visible part of the matrix and appears lighter.
7. The **eponychium** (ep-o-**NIK**-ee-um) is the live tissue at the base of the nail.
8. The **cuticle** is the overlapping dead tissue that is loose and pliable around the nail.
9. The **nail grooves** are the tracks on either side of the nail that the nail moves on as it grows.
10. The **sidewalls** are the folds of skin on either side of the nail groove.
11. The **perionychium** (**PER**-i-o-nik-ee-um) is the living tissue that overlies the nail plate on the sides of the nail.
12. The **free edge** is the part of the nail that extends beyond the finger or toe and protects the tips of the fingers and toes.
13. The **hyponychium** (hi-poh-**NIK**-ee-um) is the living tissue underneath the free edge of the nail.

# FUNCTION OF THE NAIL

There are three main functions of the nail:

- » To provide protection for the nail bed and through the nail plate
- » To enhance the fingertips' sensitivity
- » To assist the fingers when picking up small objects

In addition to the primary functions of the nail, you can also distinguish a lot from the natural nail plate, for example, body conditions or diseases and general hydration.

For a healthy nail, the general appearance of the nail should be firm and pink in colour. The underlying surface of the nail plate comprises of grooves along the length of the nail. It is the grooves along the entire surface that help the nail plate to attach to the nail bed. The transversal (extending across) shape of the plate is determined by the shape of the underlying bone.



## INDUSTRY CONNECTION

### A Change in Nails

As a beauty therapist, clients will turn to you for advice if they see a change in their nails. You will recognise when it is something you can help your client overcome or when it would be more beneficial for them to seek the help of a medical professional.



## GROWTH OF THE NAIL

Like the hair, the nail is made of hard keratin. Although nail protein is much harder than the protein of hair, its growth is similar to the growth of hair.

Nail growth originates from the matrix, located in the mantle. The matrix contains lymph, blood vessels and nerves that create cells, which are pushed outward from the nail root. These cells keratinise (harden) and become fully hardened by the time they reach the eponychium. These hardened cells form the nail plate that curves on the sides and travels in the nail grooves. The rate of cell production in the matrix determines the thinness or thickness of the nail plate.

Nail growth facts:

- » Average fingernail growth rate is 0.3 cm per month for adults.
- » Younger people's nails grow at a faster rate because general cell reproduction happens at a faster rate. As one ages, the growth of nails slows.
- » Nail growth is faster in the summer than the winter.
- » Under normal circumstances, it takes 4–6 months, on average, for a new fingernail to thoroughly replace itself.
- » Nail growth is affected by nutrition, health and/or disease.
- » Middle fingernails typically grow the fastest, while thumbnails grow the slowest.
- » Nails grow faster on the hand that you favour using most, i.e. right-handed or left-handed.
- » Toenails grow slower than fingernails but are harder and thicker than fingernails.
- » It takes 12–18 months on average for a new toenail to thoroughly replace itself.

Injuries to the nail can result in shape distortions or nail discolouration. Most nail injuries are minor, and resulting distortions and/or discolouration are temporary. Permanent distortions can occur when:

- » A nail is lost due to trauma and, without the protection of the nail plate, the nail bed or matrix is injured.
- » A nail is lost through disease or infection. The regrown nail, in these circumstances, is often distorted in shape.



### DISCOVER MORE

Research additional interesting facts beyond the ones listed on this page about the nail, such as:

- » Men's nails grow faster than women's.
- » What happens to nail growth during pregnancy?
- » What does finger length have to do with nail length?



Knowing the basic structure, function and growth of the nail gives you the basics for performing nail services in the future.

## NATURAL NAIL SHAPES

Natural nails can grow in different shapes. Oval nails, in which the free edge is rounded and the nails form an oval shape, are the desired or ideal natural nail shape. This shape is especially complimentary to shorter, wider fingers and hands.

Other nail shapes will vary the treatment required for the natural nail and any nail enhancements applied.

- » **Ski jump/spoon** – The nail curves up and grows outwards at the free edge.
- » **Fan** – The nail grows outwards at the free edge, creating a fan like shape.
- » **Claw/hook** – The nail grows downwards in a hook-like shape.
- » **Bitten nails** – Nails are short in appearance and can often have torn cuticles and sidewalls. While technically not a natural nail shape, clients who bite their nails may present a variety of nail shapes for you to work with.



For more information on natural nail shapes and filing of the nails, you can visit the lesson on *Natural Nail Theory* for more information.



## LESSONS LEARNED

- » The structure of the nail includes the mantle (proximal nail fold), nail matrix, nail root, nail bed, nail plate, lunula, eponychium, cuticle, nail grooves, sidewalls, perionychium, free edge and hyponychium.
- » The function of the nail is:
  - » To provide protection for the nail bed and through the nail plate
  - » To enhance the fingertips' sensitivity
  - » To assist the fingers when picking up small objects
- » The growth of the nail originates from the matrix, located in the mantle. Nails grow at 0.3 cm per month for adults. Injuries to the nail can result in shape distortions or nail discolouration.
- » Nail shapes, other than oval, that may vary treatment are:
  - » Ski jump/spoon
  - » Bitten nails
  - » Fan
  - » Claw/hook

