

Sensory Retraining in the Hand Following Nerve Repair

What happens after an injured nerve is repaired?

After a nerve injury, there can be a loss of feeling in your hand. After a nerve is repaired, it takes several months for it to regrow, and it does so at a rate of 1mm per day.

Why is sensory retraining necessary?

With regular and structured training guided by your therapist, you can learn to understand the new “language” of your hand. Without retraining, touch might feel strange. Sensory retraining is important to maximize the function of your hand. There are two phases of recovery:

Phase 1: After nerve repair, areas of your hand will feel numb, and this phase can last several months. It is very important to **look at your hand when using it, to prevent further injury (e.g. burns and cuts)**.

Phase 2: As the nerve regrows, the feeling in your hand will start to return, and initially this feeling will be altered. It will take practice to understand/interpret what your hand is touching.

You may experience hypersensitivity in your hand, which you must try to gradually reduce prior to starting your training exercises. Several options include placing a soft material over the hypersensitive skin and then touching, rubbing, and tapping the area with your other hand, or using a vibrating electric toothbrush over the area. Please speak with your hand therapist, or see additional handouts, to progress in a way that is appropriate for you.

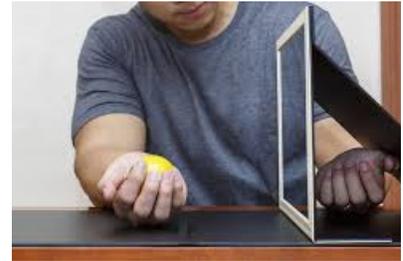
How to do sensory retraining

The treatment process is called “sensory retraining.” **Each training session is 5–10 minutes and should be done several times per day.** These exercises should be done in a quiet and comfortable place where you can concentrate on the feeling in your hand.

Sensory Relearning in Phase 1

In this phase, parts of the hand are without feeling. The exercises are directed at trying to imagine how the hand normally feels. This keeps the areas of the brain that would normally sense feelings “open.” The following are some examples of exercises:

- Think about how things would normally feel in your hand.
- Think about the temperature, hardness/softness, shape, surface and structure of everyday objects.
- Touch the injured fingers with the same fingers on the other hand and imagine how it would normally feel.
- Ask someone else to touch the fingers that have no feeling at the same time as touching the same fingers on the normal hand while you watch. Imagine how it would normally feel.
- Use a mirror to create an illusion that your injured hand is now “normal.” Hold objects in your normal hand in various positions while looking at the reflection in the mirror. Think about how the object would normally feel and the posture of the reflected hand.



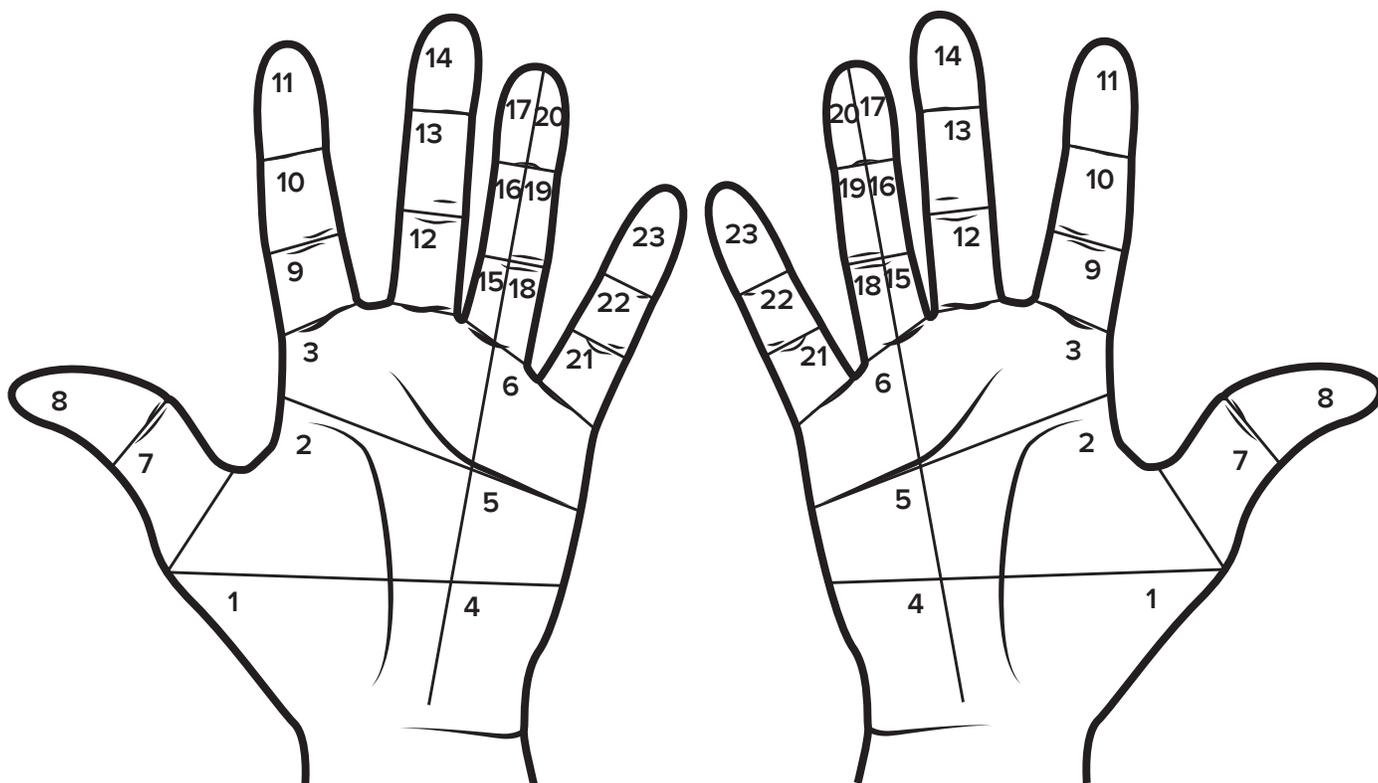
Sensory Retraining in Phase 2

In this phase, the nerves have started to regrow, and you will gradually begin to feel your hand again. Training at this stage will help the brain to understand the “new language.” There are two things to work on, and exercises for each:

1. Knowing where on your hand you are feeling touch
2. Understanding what you are touching (identifying the object)

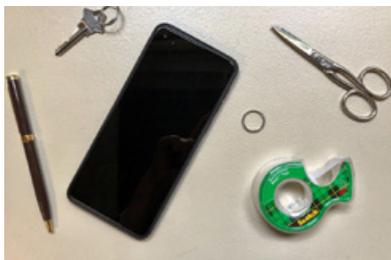
1. Knowing where you are touching

- With your eyes open, touch your skin in one of the areas marked in the hand template with a blunt object (e.g. a pen). Concentrate on **WHERE** you are touching and **WHERE** you are feeling it. Start in an area with normal feeling, and progress to areas with less feeling. Compare this feeling to an area where you have normal sensation, e.g. the corresponding area on the normal hand.
- When that seems easy, close your eyes and repeat the exercise.
- Work on a few areas first, until you are sure that you can localize the touch correctly. Then repeat the exercise using different objects (e.g. paper clip, cotton ball, piece of fabric) in the same areas.
- You can ask someone else to do the same thing to you. See if you can correctly state where and what you feel without looking. Use the template to help.



2. Understanding what you are touching

- Start with your eyes open. Place several objects in front of you, and feel each one. Focus on the size, shape, texture and weight of each object. Now close your eyes and see if you can identify them with your hand, without looking.
- Place a few objects in a bag or pocket and try to identify them. Repeat several times per day, e.g. every time you reach for your keys.
- Try to use all of your senses. For example, when eating a piece of fruit, think of the taste, the smell, the sound and the colour when you handle it (a “tactile meal”).



Your therapist will help to guide this retraining process, and will help to monitor how your hand sensation and function are progressing. Remember that recovery after nerve repair takes a long time. With active use of your hand, and with training exercises, improvements can continue to be seen for several years after the injury.

If you have any questions, speak with your therapist.

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