

## Neuroplasticity

How exercising the brain helps it to grow and repair

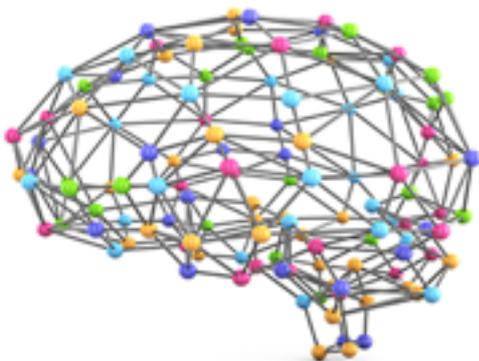
Prior to 20 years ago the brain was thought to be rigid in many respects. The saying, 'You can't teach an old dog new tricks' is an example of this thinking. Now, our folk saying should be, 'Use it or lose it'!



Neuroplasticity is advocating that the brain is capable of change during and after childhood, on into maturity, and even old age. This discovery has big implications for teaching, psychology, psychiatry and rehabilitative medicine. To know that a disorder can be helped by rewiring the brain of a dyslexic student or a child with ADHD can be life changing.

The theory in short is that changes can be made to the brain by strengthening the neural pathways. This can be achieved through new experiences gained by doing certain activities and, it is within our control.

## The scientific explanation of neuroplasticity



Neuroplasticity is the brain's natural ability to reorganise itself by forming new neural pathways and connections throughout life from childhood to old age. Neuroplasticity allows the nerve cells (neurons) in the brain to adjust their workings in response to new situations or changes in their environment to compensate for disease and injury.

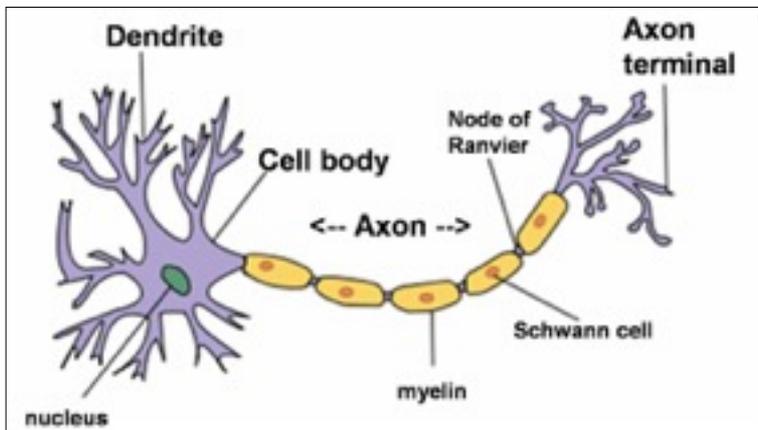


Diagram of a neuron: the message is sent from the nucleus (green dot on the left) down the axon (the yellow cable).

Brain reorganisation occurs by forming new neural pathways to bring about a needed function. Axons are the pathway for the messages to travel.

In neuroplasticity, mechanisms occur such as 'axonal sprouting', where undamaged axons grow new nerve endings to

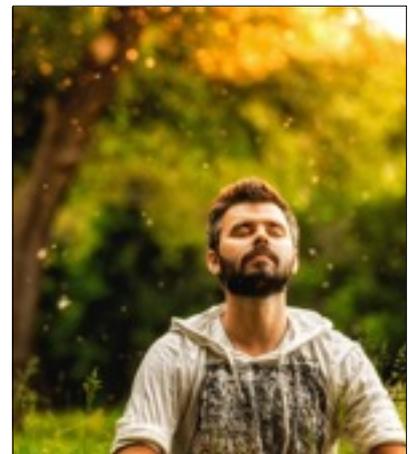
reconnect neurons whose links were severed or impaired. It also means undamaged axons can also grow nerve endings to connect with other undamaged nerve cells.

For example, if damage is done in one hemisphere of the brain the other undamaged hemisphere may take over some of its functions. This is achieved by stimulating the neurons through activity. **By doing certain activities, the brain compensates for damage by forming new communications between intact neurons.**

The effect of neuroplasticity can sometimes also contribute to impairment. For example, the brain may rewire and try to compensate for someone who is deaf and so they may suffer a ringing (tinnitus) in the ears where the brain cells are starved for sound. Correct stimulation is needed for the neurons to form beneficial connections.

The approach to deep seated behavioural, cognitive and emotional problems with the new science of neuroplasticity has now taken a fundamental paradigm shift when treating these problems. These breakthroughs show that it is possible to re-set our happiness meter, train the mind to break cycles of depression, regain the use of limbs disabled by stroke and reverse old age related changes in the brain.

New connections can happen in hours, perhaps moments with brain exercises. It appears that there are a number of neuroplasticity exercises we can use to make new neuron connections either by way of technological or contemplative traditions.

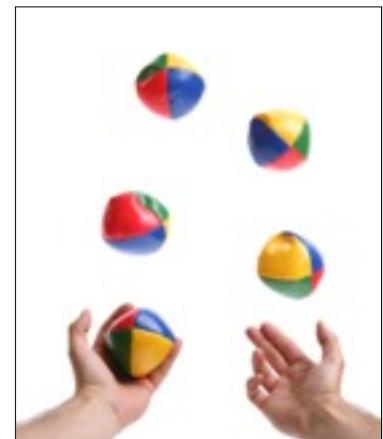


## Brain training

Brain exercises for neuroplasticity need to challenge different functional systems in order to maximize the potential for change in the brain. For best changes, brain exercises should be hard work so your brain is challenged, making your brain adapt, and giving new connections between neurons.

By using the correct activities, brain function can be enhanced and improved. It is estimated we only use around 10% of our total brain capacity but we can increase this to around 50% by using simple activities known as neuroplasticity exercises. We can stimulate our minds, enhance attention span, increase levels of working memory and speed up the brain's processing power.

You can exercise the brain by doing 3D puzzles or by going online and finding neuroplasticity exercises to do. Studies have shown that learning to dance, juggle, do crosswords and other challenging activities can use the brain's natural plasticity to make positive changes.



**BEWARE: Not all games are effective for training the brain into creating new pathways. Make sure you get assistance from a professional before spending time on exercises.**

Also important to remember is that the exercises need to be consistent and repetitive, over a significant period. Although some change may be noticed in a few hours, it won't be sustained unless it's repeated over 8 - 12 weeks. After that time, the new neural pathway is well established.

## Meditation in brain training

Meditation can be used to retrain our brains as it has the power to filter out distractions so that we can focus on the changes we want. Although meditation is found in many of the world's religions, it is not exclusive to a religious belief.

The ancient tradition of meditation simply involves being intentional about thought. We tend to rush through our day and don't appreciate the need to 'think about thinking'.

Meditation involves the synchronisation of the two hemispheres or sides of the brain. There are a variety of ways to meditate, including gentle music and a natural setting, although anywhere quiet is suitable. With practice, a person can meditate in a busy area and tune out distractions.



Sleeping headphones are designed for comfort.

To aid with insomnia, meditation can be useful when using specially prepared sounds and music, that takes the listener into alpha brain wave patterns of a pre-sleep state. Then down to a theta pattern of memory, dreams and deep meditation and then takes our brain down to delta wave patterns of dreamless sleep and the collective unconsciousness.

Meditation on a regular basis can alter our moods, clear up emotional problems and produce a calmer more relaxed state by synchronising the hemispheres of the brain. The Einsteins and De Vincis of this world have minds that work in this manner. They utilise more of the brain's capacity and employ whole brain thinking.

**Meditation therefore, maximises the brain's capacity to do its job and is an important foundation for approaching neuroplastic exercises.**

## Conclusion

Neuroplasticity is a new science that has great potential to help with social, psychiatric, personal, emotional and educational problems by recognising the brain is a plastic (changeable) organ that can be retrained, grown and repaired. Practising meditation is more than just calming, it enables the brain to be more ready to make changes. Using the right type of exercises repeatedly will enable the brain to grow new pathways, bypassing damage and changing behaviour positively.



### CONTACT DETAILS

We provide tutoring and teacher training related to neuroplasticity, among other services. Please contact us for more details or to arrange a no obligation meeting



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