Rewire your brain

Understanding neuroplasticity can give your playing a new lease of life says Niall O'Riordan

It is never too late – and now scientific research can support this. During most of the 20th century the general consensus among neuroscientists was that brain structure was relatively immutable after a critical period during early childhood. You can never teach an old dog new tricks, so to speak – but perhaps it is precisely beliefs such as this that have kept us stuck in the first place.

I've heard so many times the variations on the same theme: "if you don't have a good technique by the age of eighteen you can forget about being a professional flute player". But what a depressing and limiting belief this is. Our profession is full of urban myths, ones that we unfortunately choose to believe. With the right strategy, hard work and dedication, however, everything is possible: Raffaele Trevisani, the great Italian virtuoso only began playing the flute at the age of 20.

Neuroplasticity is a term which refers to the ability of the brain and nervous system to change structurally and functionally as a result of input from the environment. Pioneering experiments in neuroplasticity reveal that the human brain is capable not only of altering its structure but also of generating new neurons, even into old age. When we learn something new, neurons in the brain connect together, creating neural pathways. The skills we have developed in playing the flute are wired in the brain, both the good and the bad habits. Our nervous system is continually revising these neural patterns every time we play. We are just like a giant computer, and how we programme this amazing computer of ours is absolutely vital. Recent research in neuroscience, behavioural science, systems theory and learning has made it clear that many of the strategies employed in the Feldenkrais Method® have a sound foundation. Moshé Feldenkrais often described his method as 'learning to learn'.

Why not try and explore some of these ideas?

Slow practice is definitely effective, but I think we could really revise and refine this approach. Mindless slow practice will only re-imprint whatever unhelpful habits you're doing in the first place. When practising, our goal is to programme new neural patterns in the brain that are efficient. Think of it like this: imagine these pathways are like paths running through a forest, and the more each one is used, the deeper and more distinct it gets. One aspect of neuroplasticity is to develop new paths, but, naturally, this takes time, sensitivity and awareness.

When practising, our goal must be to programme new and more efficient neural patterns in the brain

So how can we practice effectively, to develop the "good" pathways through the forest of our learning? The following strategies inspired by Moshé Feldenkrais can be incorporated into learning difficult passage work or, in fact, into any daily scales or studies.

Take your time

Give yourself time to assimilate what you're doing. We all fall into the trap, thinking "there is so much to do and so little time". Don't be too goal orientated, this takes away from the learning process. Instead, be more concerned with the process. Be present in your awareness. You will find while working like this, speed spontaneously occurs anyway. Allow this to happen rather than forcing it. In his *Awareness through Movement* lessons Feldenkrais spoke about looking for the pleasant sensation; I think we can do the same.

Efficiency of any sort is achieved by weeding out and eliminating parasitic and unnecessary effort. Be inquisitive about how you are using your whole body. These parasitic efforts we make only get in the way. How are you balanced? How are you organising your chest, ribs and head? If you're curious whether some effort you are making is necessary or not, a good strategy is to do it more. This will bring it more into your field of awareness and provide

Continued on page 28

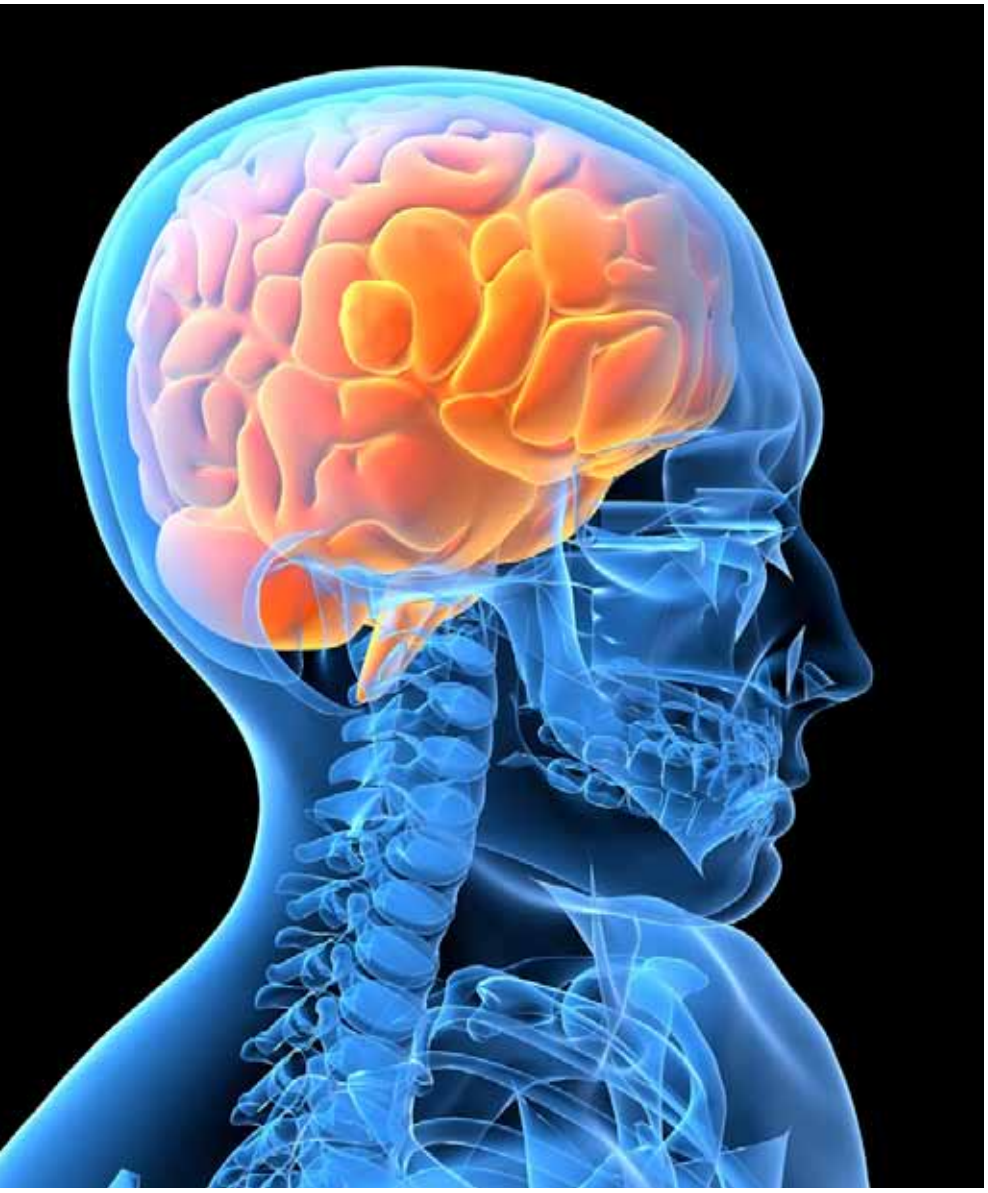
you with more choice. Allow yourself the time necessary to assimilate the essential, and to reject the unintended and unnecessary. For more ideas on how to do this, Kenny Werner describes searching out a way of playing that feels effortless in his book, *Effortless Mastery: Liberating the Master Musician Within.*

Take regular rests

Work intensively with short rests. They don't have to be long – five to 15 seconds will suffice. Sit, or even lie, on the floor and do nothing; it is during this time that your brain will begin to assimilate the new learning. If you're practising as described above, you will be using a lot of concentration, perhaps more than you have done in the past. As babies we process more learning than at any other time in our life – and babies rest a lot.

Micro-movements

The beginning of any movement provides valuable insight into how we are using our body. Unnecessary effort will often creep in right from the start.



Micro-movements are movements that are so small they would not be perceivable by an observer. With your fingers on the keys mentally finger through the passage using these micro-movements and sense what is happening in your whole body.

Imagination

There are many scientific studies that prove the act of imagining a particular movement stimulates areas of the brain which are associated with that movement. This is an area I think we can explore much more. Neural pathways can be generated by pure mental activity. One particular study even proves that the act of imagining alone can increase muscle size. Merely thinking about playing leads to measurable physical change in the brain's motor cortex.

With your flute in your hands imagine making finger movements. Doing this may lead you to make micro-movements, as described above, and this is fine. Some of you might notice an internal sense of how your body organises itself for what you're doing; this is good, so be very inquisitive about this. This approach, however, is more difficult than it seems – take your time and don't strain. While imagining, take note of what aspects of the passage felt clear in your imagination and what parts were unclear. Is there is a correlation between the difficulties you find while imagining and actually playing? The areas that are unclear take time moving from note to note in your internal kinaesthetic sense.

Differentiation

Separate the aspects of what you are doing. A good example is when we practice with just the fingers alone. Explore by separating the action of blowing from the finger movements. Experiment by blowing across your finger while being sensitive to the

support and pressure needed for the passage you're working on. Quite often a perceived finger problem is actually an embouchure and air issue. In a recent issue of FLUTE Patricia Morris described a very useful approach, which is especially effective while working with the fingerings in the third register. Without blowing, make the finger movements required for the passage you're working on, moving and focusing only on the left-hand, and keeping the right hand still. Do the same for the other hand before putting everything back together. It can be a bit of a brain twister, but persist and you will reap the rewards.

Enjoy the certain knowledge that you are far more capable of achieving new levels of mastery than you think you are. Science proves that change is always possible, so strive for more, wherever you are on your journey!

More from Niall at www.naillflute.com

Your brain is malleable! (photo:: Jordan Lejuwaan)