

## **So what exactly is Neuropsychology?**

There is a long tradition of a close working relationship between the sport of boxing, and the medical profession. It often seems that every time you look at the rules and regulations, the doctors have added something else, almost as if they are out to stifle the game with more tests and scans and the like. So it might come as a surprise to learn that some doctors are looking at even more tests in an area called neuropsychology.

If we look at the medical requirements to date, the idea of neuropsychological tests might make a bit more sense.

The annual physical examination is fairly straightforward, and gives an indication of your general health, with checks on pulse blood pressure, eyesight and so on.

Blood test will determine if you have picked up a viral infection such as hepatitis, which could be a problem if you get cut in a fight, as blood droplets can splash as far as the third row!!

Some regulating bodies have introduced the brain scan, as it will give a picture of the actual inside of the brain itself. The new MRI scans can give minute detail, showing up scars and tears of the brain tissue, as well as clots and old bleeds. The problem with the brain scan is that it will only really show damage once it has occurred. If a boxer has a series of scans over a few years, they can be compared, and the appearance of signs of damage can be seen. By then the damage has been done. The scans cannot really predict who might come to harm, they can just give a snapshot picture of the harm once it has occurred.

This is where neuropsychometric or neuropsychological tests come in, as they might be able to spot signs of impending damage before they show up on scans.

Neuropsychology is in simple terms a study of behaviour, which tries to link what we do, to certain areas of the brain.

The psychologists have figured out that certain bits of the brain are responsible for memory, counting, sense of smell and so on. By looking at brain specimens from boxers who fought 50-100 years ago, they have figured out which bits might get hurt in boxing, and so have devised some simple tests, to monitor the function of the brain relevant to our sport. Some people might be worried that this sort of test will be like a school exam, and only the bright guys will pass. This is not the case. The beauty of these tests is that they can be done every year, and each boxer will act as his own benchmark. Whatever he scores at year one, will be compared with the results he gets over the next few years. The boxer is compared to himself, and no body else.

So what do the tests involve? The field of neuropsychology is vast, and so it is important that the test used are simple, easy to follow and should only take about 20 minutes. Common tests used would involve drawing a figure from memory, or copying down a code using numbers instead of letters. Another involves joining the numbers 1-20 like a dot-to-dot puzzle. The tests may be really simple, but can give a great deal of information about how the brain is working. This is why some doctors think they are the way forward. In a tough sport such as boxing we need to know how the brain is working, not just how it looks on a scan.

The good comparison would be when you go to buy a new car. Would you just look at a photograph and say, " looks fine to me. ...I'll take it " . I hope not ! you would want to take the car out for a drive to see how it handled, check that the brakes and lights , radio and air conditioning were all working...you need to check that it all functions. Each year you will have it checked again to see that it is roadworthy. You wouldn't just take a picture of it . After a few years the mechanic might say,

" it still looks good, but the oil pump is showing a really low pressure, and is about to blow...you must stop driving this car ".

In neuropsychology the doctor would be telling the boxer

" you look good, but the test results are beginning to fall off, you need to stop now"

Neuropsychology is a dynamic assessment of the brain in action, not just a static two-dimensional picture.

Brain scans show the damage once it is done, and beyond repair.

Neuropsychology will hopefully give us plenty of warning that things are beginning to go wrong, allowing us as doctors to advise boxers when to stop. It will help us to stop boxers getting hurt, rather than the scan, which will just show us when the hurt has been done.

The use of these tests is still a little way off. Some studies are already up and running to look at which are the best tests to use. In years to come, if all goes according to plan, each boxer will have a quick 20-minute test repeated every year. This will help us, the doctors, to help you the boxer. It isn't just another test to annoy you; it will be done for sound reasons so that we can really look out for, and look after you.