

They can be serious: tennis umpires make more wrong out calls than in calls

By Richard Alleyne, Science Correspondent

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John McEnroe's famous "you cannot be serious" outburst at Wimbledon ranks as one of the most memorable - and maligned - moments in sporting history.

Tennis study shows John McEnroe was right about line calls - 40pc of the time

But it seems the tennis star may have had a point when he questioned an official who deemed his serve was out.

For scientists studying the accuracy of refereeing calls in tennis have discovered that while errors are rare, line judges are 84 per cent more likely to wrongly deem a ball out than in.

The researchers believe the reason for the discrepancy is to do with the brain not being able to process images the eyes are sending it quickly enough.

They also think their findings could be useful in the modern game where professional tennis players are able to challenge umpires' decisions.

"Our perception lags behind reality," said David Whitney, the neuroscientist behind the research at University of California.

"The visual system has mechanisms that help alleviate this problem of living in the past, but these mechanisms are not perfect and occasionally result in visual illusions - like the misperception of tennis ball location we discovered."

Using modern technology such as Hawk Eye, his team, who published their findings in the journal *Current Biology*, studied more than 4,000 randomly selected Wimbledon tennis points, and uncovered 83 incorrect calls.

Of those, 70 of the errors were wrongly deemed as long.

Neuroscientists believe the reason behind the discrepancy are not the result of poor refereeing but

rather, the errors are due to the way the human brain processes visual information about motion.

"The visual system is sluggish," said Dr Whitney. "It takes a hundred or more milliseconds for us to become aware of an image that strikes our retina."

He said that by the time we perceive an object like a tennis in one location, it will have already changed location.

In particular, he said people consistently mis-perceive moving objects as shifted in the direction of their motion, so that at any moment they appear to be farther along their path than they are.

"On a tennis court, a ball could physically bounce in the court but be called out, or a ball could physically bounce out of the court but be called in," Dr Whitney added.

The new findings suggest, however, that players could maximise their opportunity to challenge calls by focusing on balls that are called "out," since they are more likely to be incorrect.

The report also suggests that every shot in professional tennis should perhaps be reviewed by instant replay. "If that proves prohibitively time-consuming, the rules allowing players to challenge referee judgments should be scrutinised at least, in light of the current findings," he wrote.

"If all else fails," they added, "perhaps professional tennis venues should follow the French, and universalise the clay court," where skid marks on the clay reduce reliance on the referees' motion perception.

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