

Horse racing: Scientists say secret of success is the pack

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By tucking in cleverly behind the leaders, the horse uses "aerodynamic drafting" to its advantage, they said.

By coasting along behind the front horses, which are battling wind resistance, it saves energy for the final dash.

Jockeys, like long-distance runners and Formula 1 racing drivers, have

always known about drafting, also called "covering up" in the racehorse business.

But this is the first time its importance has been pinpointed in data and measured, the paper's authors say. The work could one day develop into a tool for racing fans, they believe.

"When measured over the entire race, the [average speed](#) of a horse goes up the more time it spends tucked in behind other horses," Andrew Spence of the Structure and Motion Laboratory at Britain's Royal Veterinary College told AFP.

"If you convert that difference in speed into how the horse finishes, it can amount to a gain of three to four places. You don't get any money unless you finish within the first five, so basically it's a big deal."

Spence and colleagues had access to a statistical [gold mine](#): data garnered by a British company, TurfTrax Racing, which places a radio-frequency chip in the horse's saddle, enabling the animal's position to be triangulated at any point in a race.

The team had access to more than 4,500 races staged at 10 British racecourses from 2005 to 2007.

On average, horse races are decided in the last 500 metres (550 yards), give or take 200m (yards) depending on whether the race is longer or shorter, the study said.

At this break point, the speed of competitors diverges as the horses muster the strength to the finishing line.

But contrary to popular perception, the final sprint in fact sees a [slowdown](#) rather than an acceleration, for the horses are tiring.

The horses that win, says the study, are in fact those that slow the least over the last stretch.

Conserving energy through drafting is what counts, according to the study.

By reducing aerodynamic drag by 13 percent, a horse can notch up an additional two percent gain in the average speed for the whole race.

Two percent may not sound much but it amounts to the difference between first place and fifth, according to the analysis.

"For a horse that drafts for 75 percent of a race, this effect is worth three to four finish places," it said.

The study defined drafting as being when a horse was roughly one horselength (2.5 metres) behind a rival and was within 10 degrees either side of its line of running.

Spence added a word of caution, saying that what the scientists had found was a statistical link. Drafting does indeed offer an advantage but only if horse and rider use it properly.

"You have to be nicely tucked in but tucked in a way that still leaves you with a shot at getting clear," he said. "You have to manage not getting stuck in the pack."

Top French jockey Olivier Peslier, who has over 1,000 wins to his credit, told AFP he doubted whether the study would help experienced riders, who already knew of the benefits of drafting and had to use instincts at high speed in positioning the horse.

But Spence believes the work could one day lead to a useful tool for

punters who want to analyse performance.

"Maybe you could come up with profiles of jockeys, and say, 'this jockey is really good at drafting,' because some jockeys are really good at tucking their way in and threading their way through nicely."

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