

2020 Revision

Welcome to my first blog of a new decade (arguably!). A very Happy New Daring Year to you all. A year which, as usual, got off to a good start with the PDC World Champs final. Congrats to Peter Wright on a popular and well-deserved victory and also to 3-time champ MvG, gracious as a second time runner-up if no doubt disappointed at only averaging 102.88 (!!!).



Snakebite's win was far from the only story to come out of a memorable tournament which also featured the retirement of all-time-great Raymond van Barneveld, further progress in the PDC careers of Darius Labanauskas, 3-time Lakeside champion Glen Durrant, and the up-and-coming Nathan Aspinall and Luke Humphries (both Glen and Nathan gaining, as shown above, Premier League spots). Three young Team Unicorn stars, Dimitri van den Bergh, Jeffrey de Zwaan, and Chris Dobey, also did well. None of their exploits, though, quite matched those of Fallon Sherrock.

Fallon was not only was the first woman to win a match in the tournament (against another young Team Unicorn player, Ted Evetts, who deserves much credit for the way he dealt with both defeat and an understandably biased crowd), but then double-underlined that result by defeating 11th seed Mensur Suljovic before finally losing to Chris Dobey in a high-quality encounter. She averaged over 90 in all three matches and looked like she enjoyed every minute of them. This tournament has surely done more for women's darts than anything else this millennium.

Fallon's inclusion in the World Series of Darts and as a Challenger in the Premier League event in Nottingham offers a further showcase for her ability and will hopefully lead to more opportunity for female darters to test themselves against male pros. In that context, the names of such usual suspects as Aileen de Graaf, Deta Hedman, Lisa Ashton, Paula Jacklin, Anastasia Dobromyslova, etc, come to mind, but perhaps even more does that of "Baby Shark" Mikuru Suzuki, who was only one leg away from beating Fallon to that maiden female (maiden maiden?) World Champs victory.

OK, enough World Champs, now to the main subject of this blog, the idea for which came from festive season TV unashamedly re-running classics like "It's A Wonderful Life" and "Dinner For One" (surprise Europeans – most Britons haven't heard of it!). Well, I thought, if TV, why not me?

This is my 122nd UniBlog, but only the 15th on this website's homepage "UniBoffin Blogs" link, the first 107 no longer being so available. Even if they were, much of their content would be now out-of-date news and Q&A items. The darts science in them remains fully relevant, however, which is why 8 of my 15 latest blogs, culminating in "Accur8", summarise some of the key topics.

Even so, I reckon some "golden oldie" blogs still merit a revisit. Hence, somewhat influenced by me recently seeing the Freddie Mercury "Bohemian Rhapsody" biopic, here goes with a slightly edited re-run of a UniBlog from July 2014. Entitled "Little High, Little Low", its relevance is to choosing dart weight. Apologies if you remember it, otherwise enjoy, hope you rate it Magnifico!



Had you been standing under the leaning tower of Pisa sometime in 1589, popular (if almost certainly untrue) legend says you could have been in some danger. I'm now going to discuss what relevance that factoid has to darts (and Queen lyrics!).

The reason for your postulated peril is that, had you opened your eyes and looked up to the skies, you might have seen a cannonball dropped by Galileo Galilei (no, not "Galileo Galileo") plummeting in your direction (very, very frightening, no doubt). Not because he was trying to kill a man, you understand, but in his efforts to prove Aristotle and his classical cronies wrong in thinking that heavy objects fall faster than light ones.



Of course Aristotle wasn't entirely wrong because common experience is that heavy objects do fall faster than light ones. But we now know that's only because of air resistance. Eliminate that, say by dropping a hammer and a feather in the near vacuum of the Moon, as did Apollo 15 astronaut David Scott, or minimise it by dropping objects which are very heavy compared to their drag, as supposedly did Galileo, and the truth emerges. Gravity accelerates objects at a rate which doesn't depend on their mass.



The basic point is that, like Galileo's apocryphal cannonballs, different weights of dart will drop at pretty much the same rate because they are all heavy compared to their drag. At normal throw speeds, a typical drag force on a dart flying straight may be less than 0.2gms, increasing to maybe 0.3gms when it's at 10 degrees of yaw. Even the latter figure means that, over the distance to the board, drag would only reduce the speed of a, say, 30gm dart by around half a percent, which means it won't have that much effect on where it hits the board.

Imagine that a 30gm tungsten dart and a 15gm brass one of the same size and configuration are both thrown at treble 20. The doubled effect of drag on the lighter dart will minutely increase its flight time, giving gravity fractionally longer to act and causing perhaps a 2mm lower impact for a typical throw speed. This is over 300 times smaller than the common gravity drop experienced by both darts, for which the player has had to compensate using the upward angle of their throw.

Not only is 2mm such a small amount that even a professional would be hard put to notice it, the above example is extreme in that the two darts are very different weights and yet the same size, which wouldn't be the case were both tungsten darts. Moreover, we have ignored the potentially much greater effect that the different weight might have had on both how they were thrown and the consequences of their subsequent yawing behaviour.

So the upshot of all this is that a lighter dart might go either a little high or a little low compared to a heavier one, the greater drag effect being negligible compared to other throw variables. Some players may even find they have a tendency to throw heavier darts faster and hence find they go higher, but that's a matter of personal throw ergonomics, not trajectory dynamics.

Now it's time for me to get right outta here!

