"Is LD Better?"

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*Supporting narrated video (NV) demonstrations, high-speed video (HSV) clips, technical proofs (TP), and all past articles are available online at **billiards.colostate.edu**. Reference numbers used in the articles help you locate the resources on the website.*

In a recent YouTube video (**NV L.11**), I demonstrated a simple procedure anybody can use to easily and accurately test and compare any pool cue shafts for cue ball (CB) deflection (see **Image 1**). I also tested a collection of shafts, including large CB deflection solid maple and low CB deflection carbon fiber. The results revealed some interesting facts and trends. But is a low-deflection or LD shaft better? I answer this question in a follow-up video (**NV L.12**), which I summarize here.

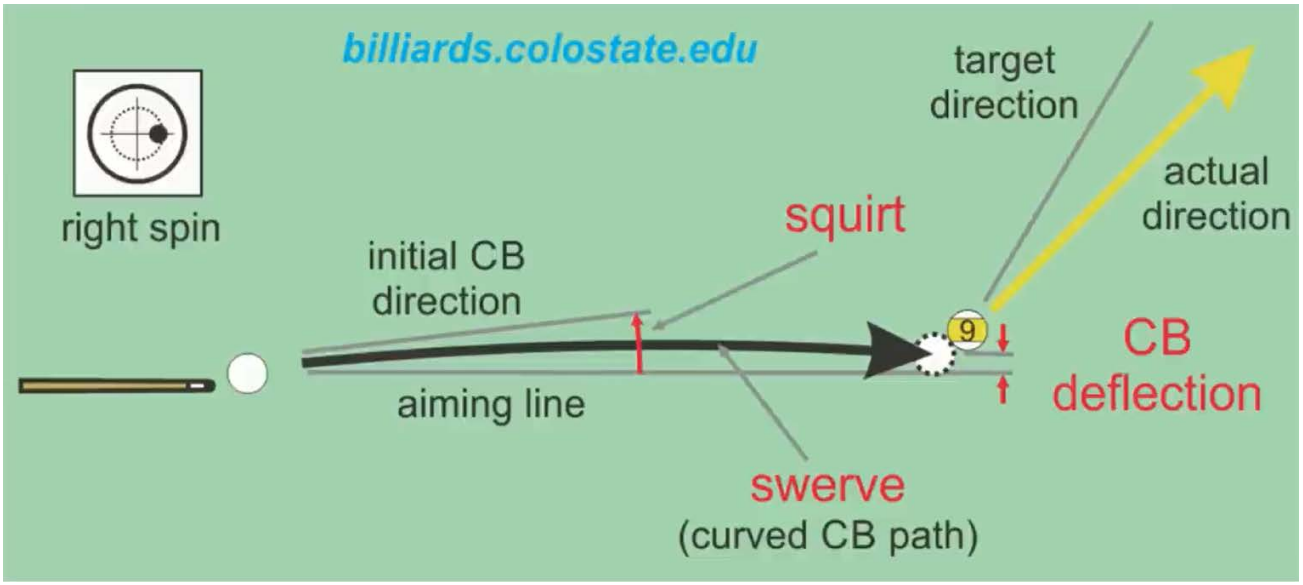

Image 1 CB deflection

When using sidespin with an LD shaft, the amount the CB squirts offline is less than with average pool cues. In other words, with an LD shaft, the CB heads straighter when using sidespin. On the "**LD shaft**" resource page at ***billiards.colostate.edu***, I document everything known about LD shafts. Below, I summarize the important advantages and disadvantages, which are backed up by supporting links on the resource page.

So, what advantages do LD shafts offer? First, with less CB deflection, you are less likely to miss short shots with small amounts of spin into big pockets, even if you don't compensate your aim for CB deflection. In the video, I use the shot in **Image 2** for many demonstrations. The goal is to pocket the 13 and get shape for the 8 anywhere above the indicated line. For example, as I demonstrate in the video, if you do a parallel shift relative to an accurate center-ball line of aim using an LD shaft, you can easily make the shot with no compensation for CB deflection. However, with a non-LD solid maple shaft, you will miss the shot with the same aim, speed, and spin. As I demonstrate in the video, with more spin, I still make the shot with the LD shaft and parallel aim, but only because the pocket is large. With the non-LD shaft, I miss the shot badly with the uncompensated parallel-shift aim. But even with an LD shaft, with enough spin and shot speed, this shot is miss-able. But if you know how to compensate your aim for CB deflection for shots of different amounts of spin, speed, and distance, you can be accurate with any cue.

Image 2 Example shot

Two advantages of an LD shaft, whether or not you are good at compensating your aim for CB deflection, are:

- less aim compensation is required.
- with less compensation, there will be less chance for error in your judgement.

For more information, see the "**LD shaft**" resource page at ***billiards.colostate.edu***.

In online video **NV L.12**, I demonstrate how different lines of aim are required for different amounts of speed and spin, using both outside and inside english. I do this for the shot in Image 2 by showing many ways to pocket the 13 and get shape on the 8. The spin and CB path you choose might depend on personal preference or other balls that might be on the table, blocking some path options. Watch the video to see how different the lines of aims are over the wide range of shot types. Anybody who thinks you don't need to adjust your aim when using sidespin, even with one of the lowest CB deflection cues on the market, is delusional. And with a non-LD shaft, even more aim correction is required.

As I have presented in previous columns, a simple approach for certain shafts and shots is called back-hand english or BHE (see **Image 3**). We know that if you aim straight with left spin, the CB squirts to the right (see Image 3a). But with the correct bridge length, if you aim center ball and then pivot the cue to apply the amount of spin you want (see Image 3b), the pivot aim correction will cancel squirt, making the CB go in the desired direction (see Image 3c). If your cue has the correct amount of CB deflection for your chosen bridge length, you can use BHE to find the correct lines of aim for shots of certain speeds and distances.

In online video **NV L.12**, I show an example where, if using a long bridge length with my Predator Revo, a BHE pivot gives me an accurate line of aim. Using a non-LD shaft for the same shot, a shorter bridge length is required to be accurate with the BHE pivot. For a power break, it is advantageous to have a break cue with a natural pivot length matched to your preferred break bridge length. That way, as illustrated in **Image 4**, with an accurate center-ball aim, you will get a square hit even if your stroke is crooked. See the "**natural pivot length**" resource page at ***billiards.colostate.edu*** for more information and demonstrations for how to find the natural pivot length of a shaft.

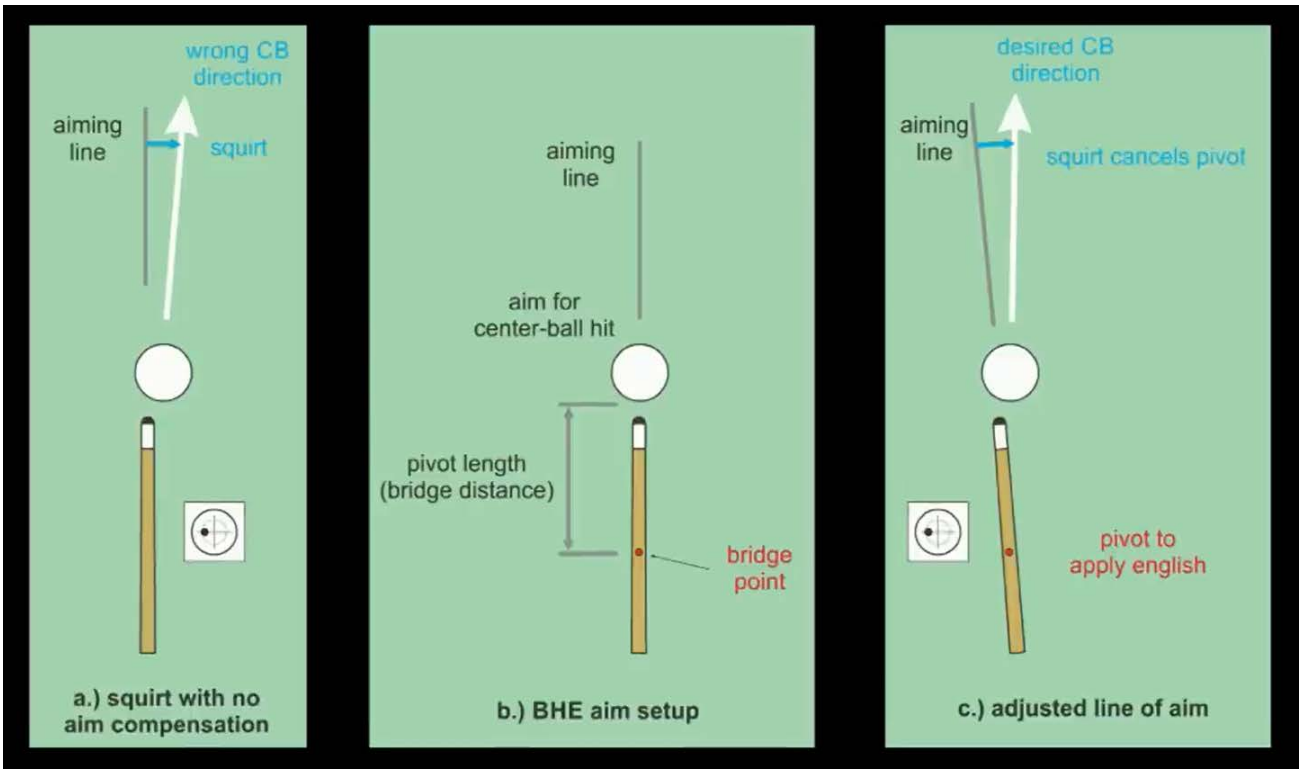

Image 3 Backhand english (BHE)

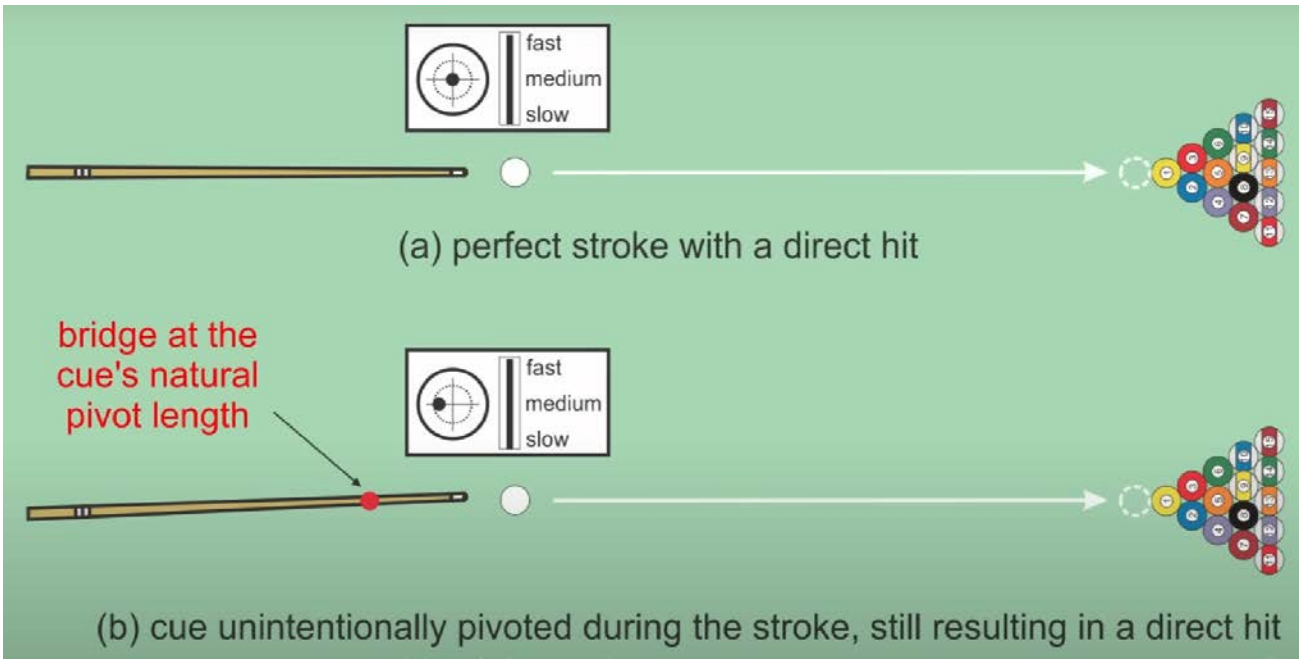

Image 4 Backhand english (BHE)

The problem with attempting to use BHE on every shot with your playing cue is: It won't work over a wide range of shot speeds or distances. Online video NV L.12 demonstrates a good way to experience and learn about this effect. Place a donut in the center of the pocket opening, and then try to shoot the CB into the center of the pocket with maximum spin using BHE for shots of different distances and speeds. As demonstrated in the video, you can get BHE to work for all shots if you use different bridge lengths based on shot distance and speed. However, judging the different bridge lengths required is difficult. And it is not a good practice to use a

different bridge length on every shot anyway. And sometimes we need a shorter or longer length to clear an obstacle ball or reach a shot.

A much better approach to aiming is the System for Aiming with Sidespin (SAWS). SAWS allows you to use a comfortable and consistent bridge length, and it provides the correct line of aim for shots of any speed and distance. As documented and demonstrated on the "**SAWS**" resource page at ***billiards.colostate.edu***, SAWS uses combinations of BHE and front-hand english or FHE to give you the correct line of aim. See the "**back and front hand english**" resource page if you want to learn more about FHE, and see the SAWS resource page to learn how to aim effectively over a wide range of sidespin shots.

So is an LD shaft better? The answer is: It depends on the person. In general, an LD shaft does offer slight advantages, per the info on the "**LD shaft**" resource page at ***billiards.colostate.edu***. But an LD shaft might not be the best choice for everybody. If you are accustomed to compensating your aim when using sidespin with a non-LD shaft, it might be difficult to adjust to an LD shaft. However, a good player can play well with any cue if they spend time to learn how CB deflection varies with the amount and type of spin and shot speed and distance, especially if using SAWS. As mentioned earlier, it does help to use a break cue with a natural pivot length matched to your preferred break bridge length. Again, check out all the mentioned online resource pages for more information and help.

Enjoy the resources, and good luck with your game from Dr. Dave!


normal video

NV L.11 – CUE TESTING for Cue Ball Deflection, And PREDATOR REVO Carbon Fiber Shaft SIZE EFFECTS
NV L.12 – Is a Cue with Less Squirt or Cue Ball Deflection Better?

PS:

- I know other authors and I tend to use lots of terminology, and I know not all readers are totally familiar with these terms. If you ever come across a word or phrase you do not fully understand, please refer to the online glossary at ***billiards.colostate.edu***.

Dr. Dave is a PBIA Master Instructor, Dean of the Billiard University, and author of the book: The Illustrated Principles of Pool and Billiards and numerous instructional DVD series, all available at: ***DrDaveBilliards.com****.*