*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.*

Does the size and shape of the cue tip really matter much? The short answer is No. Although, for applying spin, a smaller-diameter shaft and rounder tip are generally recommended. Now let's look at the details, all of which are covered in online video **NV L.54**.

First, as shown in the video, there is no significant difference among typical pool cue shaft sizes in the 10-13 mm range. Although, for solid maple shafts and some carbon fiber shafts, a larger diameter will result in more cue ball (CB) deflection and will have a stiffer hit. But these things are mostly a matter of personal preference. If you use a closed bridge, you might have a shaft diameter preference, but it really makes no difference with an open bridge.

As shown in **Image 1**, one factor related to both tip size and shape is shoulder height, which is related to tip life. With a rounder tip, the shoulder is smaller (see "a"). As the tip wears down, the shoulder size shrinks. If the tip is too round on a large-diameter shaft, there might not be any shoulder at all (see "b"). A flatter tip on a larger diameter shaft will have the largest shoulder and the longest tip life (see "c").

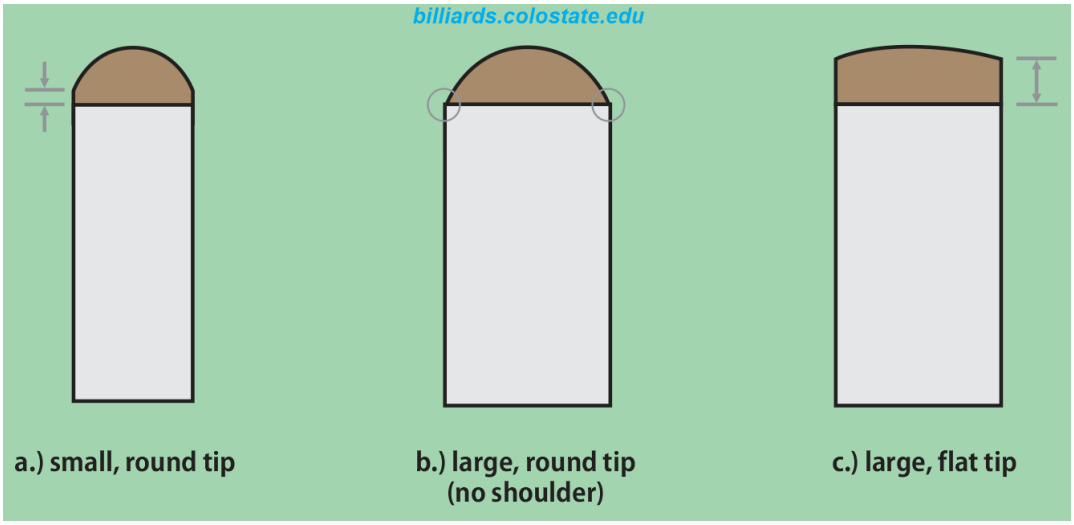

Image 1 Tip shoulder effects

As shown in **Image 2**, one possible problem with a large-diameter shaft is limited backspin potential. The shaft on the left is smaller than the one on the right, and both tips are about as low as they can go relative to the table. The tip contact point on the CB is higher for the larger shaft; so for this tip shape, the larger shaft cannot apply as much backspin as the smaller shaft.

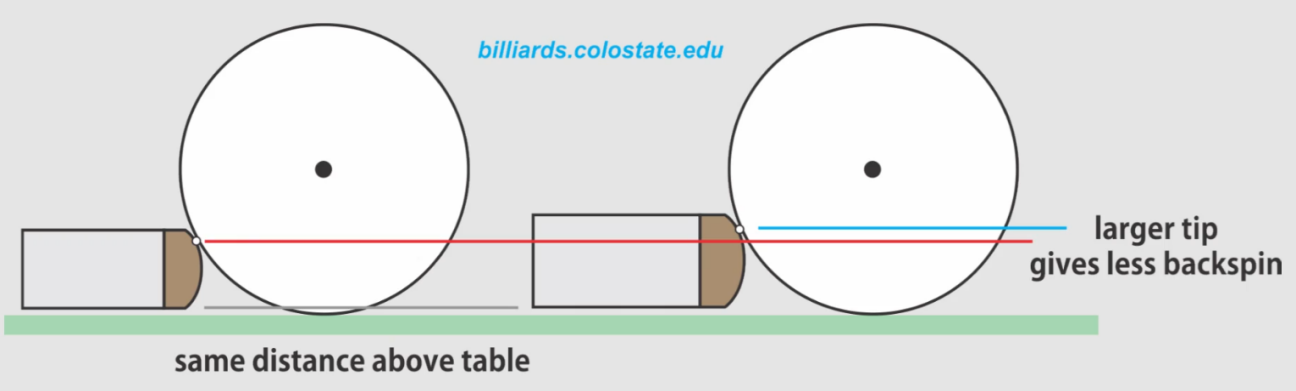

Image 2 Limited backspin with large diameter

Some people judge the amount of spin applied by visualizing “tips” or “half tips” of cue displacement from center-ball. Obviously, as illustrated in the video, if you move a large-diameter shaft a full tip-width down, the resulting tip contact point will be lower, and the amount of backspin will greater, as compared to doing the same with a small-diameter shaft. So does a larger shaft allow you to put more spin on the ball? No, unless you blindly use “tips of spin” and fail to judge the desired tip contact point correctly.

The difference between a US nickel or dime radius tip is unimportant in a practical sense. **Image 3** shows a comparison of nickel (blue circle) and dime (red circle) tip shapes for three different cue offsets from center. For an extreme comparison, also shown is a theoretical “round” tip (black circle) where the tip radius is the same as the shaft radius, which is at the limit of what is possible. Look at where the red and blue lines cross the CB surface, defining the tip contact point for the dime and nickel tip shapes. Notice how close together the contact points are for the nickel and dime shapes for each tip offset. At the largest tip offset, giving maximum spin, you can clearly see a difference, but it is very small. This makes it clear that there really isn’t any important difference between a nickel and dime shape tip, despite what many people might think.

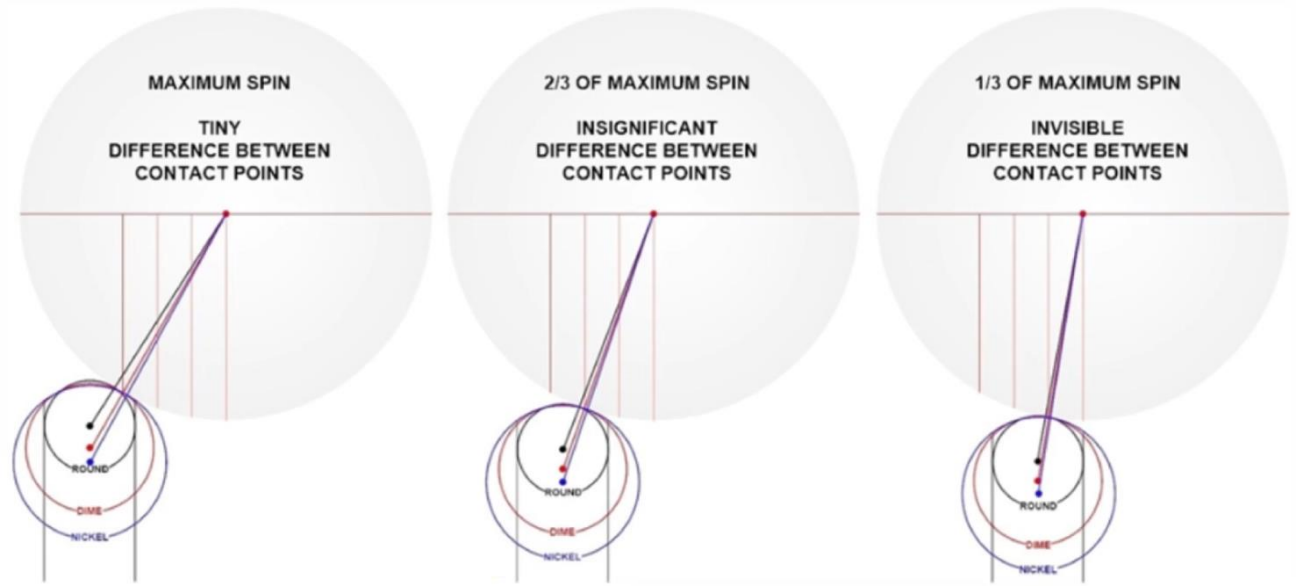

Image 3 Contact point comparison

Image 4 compares tips of different roundness on shafts of the same size for a given tip offset from center. The rounder tip obviously creates more spin than a flatter tip for this cue position, but the differences in tip roundness are very large in this comparison. So does this mean a rounder tip can apply more spin? No, but it can do so with less cue offset from center. As shown in the video, a flatter tip can apply the same amount of

spin, but with a different cue position, assuming the tip is round enough (see more below). A flatter tip is better if you want to limit the amount of unintentional spin that can be applied; for example, to reduce possible CB deflection due to slight cue alignment errors. With a flatter tip, the tip contact point will be closer to the center of the CB for a given tip offset from center.

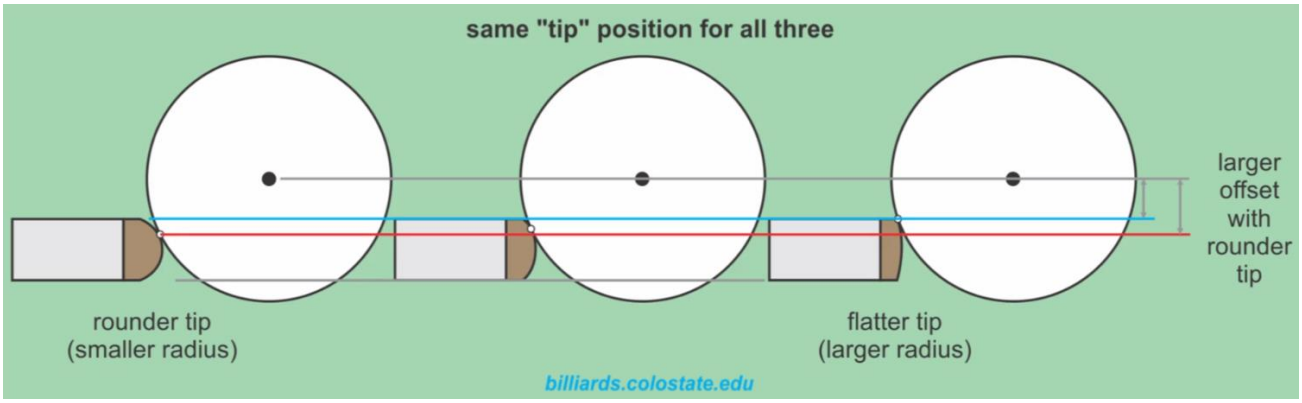

Image 4 Tip roundness comparison

The tip must be rounded to allow a full range of spins. With a large offset, if the tip is too flat, it will contact the CB on the outer edge on the tip. This will not give reliable contact, and a miscue will be more likely. As shown in **Image 5**, to prevent tip edge contact, the diameter of the shaft needs to be big enough based on the shape of the tip. The image shows the minimum required shaft diameter, for each tip shape, to span the full range of spins. To prevent tip edge contact, a tip needs to be rounded to a radius less than the shaft width. So a 9mm shaft needs a tip radius less than 9mm (a dime or rounder), and a 12mm shaft needs a tip radius less than 12mm (a quarter or rounder).

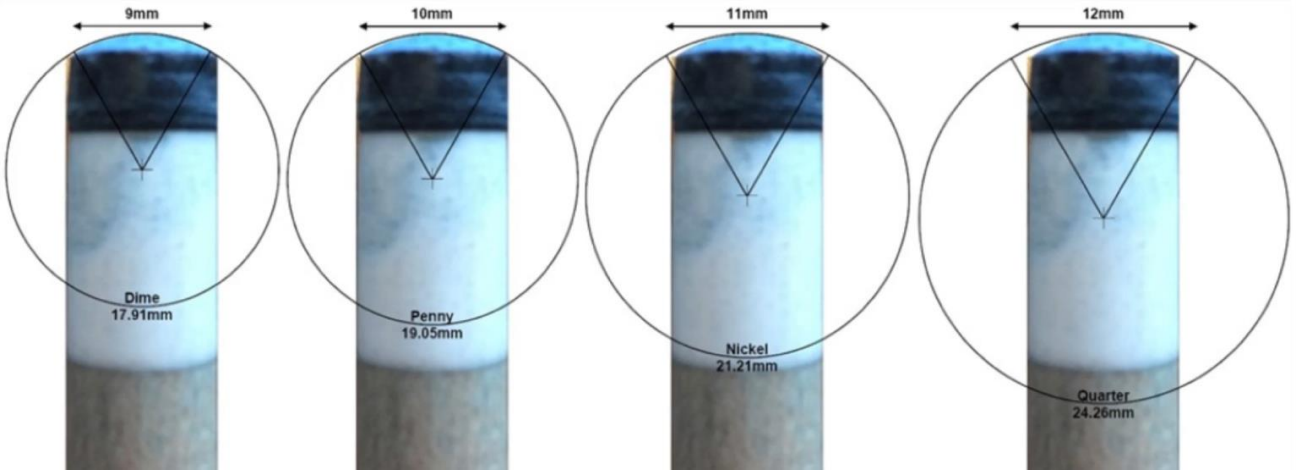

Image 5 Minimum shaft diameter required

The main point of this column is to show that shaft size and tip shape really don't make much difference, except at the extremes of very round or very flat tips on very large-diameter shafts. A nickel shape tip on any common shaft size between 11 and 13mm is acceptable. Although, if you have a very small-diameter shaft (less than 11mm), the tip should be rounded to a dime shape. The tip on a large-diameter shaft can be flatter, which will limit unintentional spin; but if the shaft is too large or if the tip is too flat, contact with the edge of the tip will be more likely, and the amount of backspin possible will be limited. I hope you found the information helpful. Just remember: Size and shape are not important.

Good luck with your game,
Dr. Dave


normal video

NV L.54 – Cue Tip Size And Shape Effects

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****.*