David Alciatore ("Dr. Dave") **ILLUSTRATED PRINCIPLES**

"Draw Shot Primer – *Part V: How to achieve good draw action*"

***Note**: Supporting narrated video (NV) demonstrations, high-speed video (HSV) clips, and technical proofs (TP) can be accessed and viewed online at www.engr.colostate.edu/pool. The reference numbers used in the article (e.g., **NV 2.2**) help you locate the resources on the website. If you have a slow or inconvenient Internet connection, you might want to view the resources offline using a CD-ROM. See the website for details.*

This is the fifth article in a series dealing with draw shot principles and techniques. In the last four months, we explored some of the basic physics of draw shots, compared various aiming systems for predicting the path of the cue ball, looked in detail into the trisect aiming system, and studied some real examples where all of this knowledge can pay off in game situations. Unfortunately, if you don't have a consistent and accurate stroke that enables you to achieve good draw action, most of this information will be of little use to you. That's why I decided to dedicate this month's article to ideas for how to diagnose problems and make improvements to your draw stroke technique. This information will be especially useful for beginner and intermediate players; but even experienced players should periodically spend time diagnosing and correcting potential deficiencies in their games by revisiting the fundamentals.

Before I begin, I want to make it clear that any discussion of fundamentals and recommended practices for good draw technique (or any other pool skill) can be controversial. Even experienced instructors and authors disagree quite a bit on what are "best practices." Therefore, you should take all recommendations in this article with a grain of salt and read some of the comments from others in the online discussion threads mentioned below. That way you will be aware of the perspectives of others.

Below, I've done my best to summarize what I and many others think are **suggested "best practices" for a good draw stroke**:

1. Make sure the **cue tip** is well prepared (shaped and textured) and chalked. A tip of dime radius will enable better action than a tip of nickel (or bigger) radius. If the tip surface is hardened and doesn't hold chalk very well, use a roughening or pricking tool to give it some texture. When applying chalk, be sure to apply it to the outer portions of the tip that make contact with the cue ball.

2. For more draw action, hit the cue ball **farther below center**, but not so far as to cause a miscue. In my October, 2005 article, I showed that the amount you should hit below center for maximum draw is about half the ball radius (i.e., the contact point between the cue tip and ball can be half way down from the center of the ball). The red circle on an Elephant Practice cue ball (which is used in many of the NV and HSV video clips on my website) indicates this limit clearly on the ball. Also, the edge of the colored stripe on a striped ball (balls 9-15) happens to be at the half-radius point, so you can use a striped ball in practice to help you gage how low you can strike the cue ball. I'll look at this stuff more in a future article when we look at what is called "tips of English."

3. For more draw action, hit the cue ball **harder** (i.e., generate more cue stick speed).

4. Make sure your **aim** is true and your stroke is straight. The aim concerns not only the aiming line for the cue ball, but also the desired contact point (below center) on the cue ball. Especially when using a large cue tip offset to apply significant draw action, contact point accuracy is very important to prevent a miscue.

Other advice:

a. Concerning items 2 and 3 above, in general, hit the cue ball lower and softer vs. higher and harder (especially for short distances to the object ball). When the object ball is far away, you have no choice but to hit the cue ball low AND hard (to prevent excessive skid and achieve good draw).

b. Things that help many people achieve 3 and 4 above are:

- Keep your grip relaxed during the entire stroke. If you tense up your hand during the stroke, this will adversely affect your contact point accuracy. This is especially important for power draw shots, where you need significant draw action (e.g., see **NV A.10**). Players sometimes tend to tense up in the effort to achieve more power, but this can be detrimental to your results. Some people also recommend keeping your wrist relaxed, and even "flicking" it to achieve more power, but this can also lead to inconsistency.

- Follow through more than normal and **try to** accelerate through the ball. I have bolded "**try to**," because theoretically and strictly, it is impossible to actually accelerate through the ball because when the cue stick hits the cue ball it must slow some (i.e., decelerate), regardless of how hard you try to accelerate. However, by maintaining a mental image of trying to accelerate through the ball, it might help you accelerate smoothly and generate more stick speed.

c. Practice (with an instructor, friend, and/or video camera watching) to make sure you are doing 2, 3, and 4 well. Then practice a lot more.

In addition to the recommendations above, you should also ensure that your general stroke fundamentals are solid. Here is an example set of **suggested "best practices"** you might consider if you are having trouble with **stroke consistency or accuracy**:

1. When in your stance, the cue stick should be **set** in the desired aiming line direction with the cue tip at the desired cue ball contact point (with only a small gap between the cue tip and ball). It helps to have a low stance, with your head close to and over the cue stick, to visualize your aim. Your forearm should be vertical (hanging straight down) at cue ball contact. You should hold the cue stick at the cue ball while making small adjustments and verifying both the aiming line and your contact point.

2. Take several continuous (pause-less) **warm-up** strokes to ensure that you are relaxed and settled and that your aim will remain true during motion. Some people recommend getting a feel for the desired stroke speed during the warm-up strokes, but the value of this is debatable. Move your eye gaze between the cue ball and the object ball during all warm-up strokes to verify the aiming line and cue ball contact point.

3. **Pause** (i.e., set again) at the cue ball on your last warm-up stroke and verify the aiming line and cue ball contact point. If any adjustments are required, make the changes and repeat step 2. At the end of this step, your eyes should be focused on the cue ball contact point.

4. Smoothly and slowly **pull back** the cue stick, **pause** at the end of your backstroke, and move your eye gaze to the object ball (or more specifically, the ghost-ball target [see **NV 3.1**]). A deliberate pause at the end of your backstroke (i.e., before your final forward stroke) helps give your eyes time to focus on your target before your final stroke. Alternatively, you can shift your eye gaze from the cue ball to the object ball at the end of step 3, before the final backstroke. Even if you do this, you should still consider pausing

at the end of the final backstroke to prevent you from rushing the transition to the forward stroke.

5. With your eye gaze completely focused on the ghost-ball target, smoothly **accelerate** to impact, and **follow through**, keeping everything still except below your elbow. The deliberate pause at the end of your backstroke (see step 4) might help you create a smoother transition to your forward stroke. Allison Fisher is an excellent model for this. She has a noticeable and consistent pause before her final forward stroke. Concerning the importance of follow-through, it has no direct effect on the cue ball, because the tip stays in contact with the cue ball only for an instant (e.g., see **HSV A.38**). However, if there is no follow-through, then you are probably somehow constraining your stroke and you will probably not achieve good draw action with consistency and accuracy.

6. **Freeze** after your stroke, keeping your body, head, and cue stick down well after impact.

7. If the shot is missed, immediately try to **diagnose** what went wrong (e.g., check your follow-through direction for stroke steer [see **NV 2.6**] or unintentional elbow drop, check your grip pressure to make sure you didn't tense up, decide if squirt or throw was not adequately accounted for if English was used, etc.).

A detailed acronym one can use to summarize this list is **SWPPPGAFFD** (pronounced "swap-gaffed"): **set, warm-up, pause, pull-back, pause, gaze, accelerate, follow-through, freeze, diagnose**. I know this acronym is a bit ridiculous in length, especially if you hope to remember what all of the letters mean; so if you want something simpler, use **SPFF** (**set, pause, finish, freeze**), which is taught by many BCA-certified instructors. This acronym is a lot snappier and easier to remember.

Some of the "best practices" and recommendations above are illustrated and demonstrated in **NV 2.2**, **2.5**, **3.1, 3.2**, and **3.3**; but I have to admit, when I shot those videos several years ago, I was not a great model for solid fundamentals. Believe me, I have received numerous e-mails over the years from people pointing out some of the technique flaws apparent in some of my online clips. If I ever find some spare time (yeah ... right!), I hope to re-shoot and improve some of the clips to set a better example. I now try to live by all of the "best practices" presented above. My game certainly improved when I started doing so. An experience that helped me become more aware of the importance of some of the fundamentals was a visit to Cue Tech in Dallas. Randy Goettlicher (the "godfather" of SPFF) was gracious enough to invite me to sit in (and participate in) one of his Pool School courses last summer so I could experience his teaching approach. I was very impressed with his operation and I learned at lot from the instructors there (Randy, Leslie Rogers, Carl Oswald, and others), and I made some good friends along the way. Thanks again, Randy!


normal video

NV 2.2 – Close-up of the grip during a good stroke
NV 2.5 – A good stroke
NV 2.6 – Steering follow-through
NV 3.1 – Practicing contact point and ghost ball visualization
NV 3.2 – Using the cue stick to help visualize the impact and aiming lines
NV 3.3 – Addressing the ball and taking your stance
NV A.10 – Power draw for run-out position


high-speed video

HSV A.38 – Draw shot with large offset, light grip, good follow-through, fast speed, and about 7 feet of draw

Some of the controversial questions that often come up concerning stroke fundamentals are:

- Should you have a deliberate pause at the end of your final backstroke?

- Should you not drop your elbow before and/or after cue ball contact?
- Is a closed bridge better than an open bridge for draw shots?
- Should your dominant eye be directly above the cue stick?

If you are curious to read different opinions on these matters, check out the links under "stroke," "bridge," and "aiming" in the "Online Discussion Thread Summary" section of my website. There, you can find over 400 postings dealing with elbow drop and SPFF alone! Maybe you'll even want to add your own two-cents worth to the discussion. But don't say I didn't warn you ... sometimes the discussion and debate can get quite heated.

An important reminder concerning any "best practices" or recommendations is: In the end, you need to be comfortable and use whatever works best for you as an individual. This is where practice drills and time with an experienced instructor can pay off. With disciplined practice and quality feedback, you can identify and eliminate potential flaws in your fundaments and take corrective action. Change can often be uncomfortable at first, but try to keep your mind open to tweaking your technique, especially if changes are recommended by an experienced instructor. But in the end, if doing something "not recommended" helps you be more consistent and accurate, then that's what you should do. Always remember, the only things that really matter for a good draw shot are the cue tip contact point on the cue ball and the cue stick speed at impact. The farther below center you contact the ball (without miscue), and the faster the cue stick speed at impact, the more draw you will get on the cue ball.

So, if you have solid fundamentals and follow recommended "best practices," and you are still unhappy with the consistency, accuracy, and/or power of your draw stroke, how do you get better? Drum roll, please ... the answer is ... Practice, Practice, Practice (no big surprise here). The most efficient way to practice almost any technique is to use well-designed drills. In the "Student and Instructor Resources" section of my website, I have a link to some excellent drills Bob Jewett has available online. He uses the phrase "Progressive Practice" to describe the drills. Bob first wrote about them in his December, 1992 BD article. (FYI, I have a link to Bob's articles at the bottom of the "Instructional Articles" section of my website, where you can also find all of my past articles). As with all well designed drills, the Progressive Practice drills start simple to build confidence with successful and comfortable execution. Then, by design, the drills automatically adjust the difficulty level to match your current level of ability. The drills therefore provide an easy way to measure your level of ability. Also, the challenge the drills present can be fun. In next month's article, I will present another example drill you can use to diagnose potential flaws in your draw stroke and measure your progress as you improve with practice.

I hope you are enjoying my series of articles on draw shot physics, aiming, and technique. I hope you have been able to put some of the information to good use in your game. After looking at a recommended practice drill next month, I'll conclude the series by looking at "tips of English" and how it is used (and sometimes misused) to describe various amounts of draw.

Good luck with your game,
Dr. Dave

PS:

- If you want to refer back to any of my previous articles and resources, you can access them online at *www.engr.colostate.edu/pool*.

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