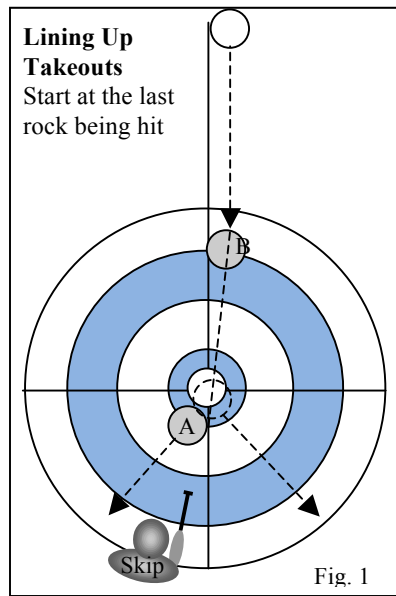


## Introduction

One of the most exciting aspects of curling is found in the hitting or tapping game. Ends can easily dissolve but with the right angles, turn a steal of one, into a game ending triple for the win. Skips seem to innately understand the angles of hitting, tapping, splits, double takeouts and whether to throw an in-turn or out-turn. Skips and thirds also seem to have a language of their own when talking in the house. This article will use this vernacular (sections **Talk Like a Pro** and **Glossary**) to reveal, for all curlers, the secrets of angles.

Angles, with respect to hitting rocks in curling, are the imaginary lines that a skip or vice draws to line up shots. The most accurate way to describe this process is with physics, but don't worry we are not getting into Newton's laws of motion or vectors. If you have ever lawn bowled, bocce balled, played billiards or shot some pool you are well on your way to understanding angles.



**Note: for all the shots you are the skip, so visualize lining-up the shots from the back of the house (See Fig. 1)**

## Lining-up Takeouts

(Single, Double and Triple Takeouts)

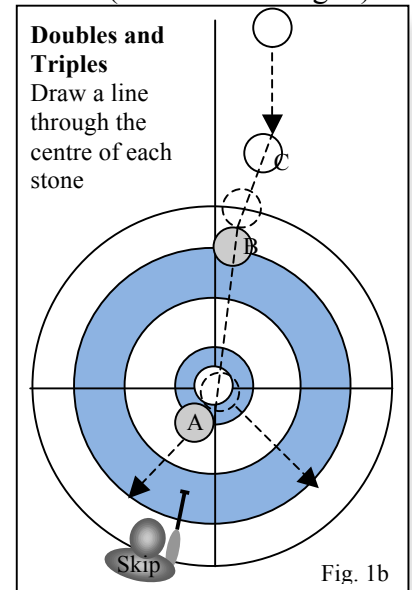
When lining-up any of the hits you will start with the last rock being hit. In Figure 1, the skip is lining-up a double.

**Here is the secret;** the skip will start at stone "A" and draw a line through the centre of the second stone "B" to the outside edge. It is at this point where you want to make contact with the delivered stone. Remember

that if you want to remove "A", then your start point is not in the centre of "A" but on the outside edge, therefore you only hit 1/2 a rock (As shown in Fig. 1).

## Doubles and Triples

When lining-up triples (Fig. 1b) the same method is used. Start at the edge of stone "A" go through the middle of stone "B" to the outer edge. Then from that edge go through the middle of stone "C". On the outer edge of stone "C" will be the contact point for the delivered stone.

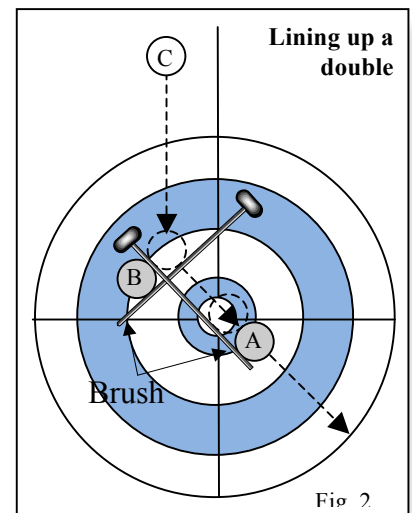


## Lining-up Flat Double Takeouts

Using brooms is an excellent way to line up a flat double in practice; it is against the rules to do this in a game. The goal of this shot is to remove stones "B" and "A" and sticking stone "C" on the button.

## Here is the secret

Use two brushes to layout where you want to hit the stones (Fig. 2). The two brushes should form a 90° angle on the first rock being hit ("B"). Then place stone "C" at that intersection to determine the contact point for the double. When in practice remove the brushes and try to make the double.



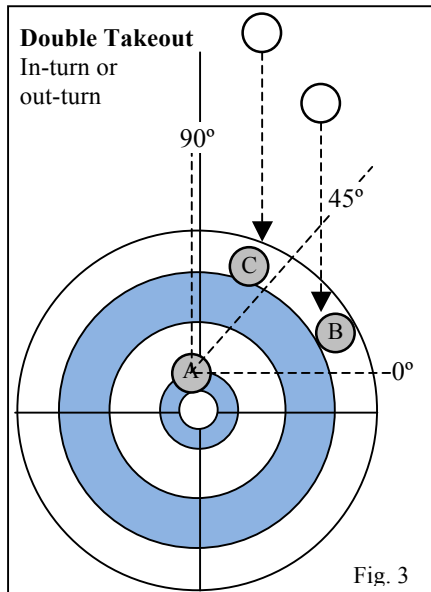
## Double Takeouts – Steep and Flat Angles

The goal of this shot is to make a double takeout and stick around in the house with the shooter (delivered stone).

## Here is the secret

Firstly, divide the top quadrant of the rings with a 45° angle (See Fig. 3).

- If the initial stone is between 0° – 45° (stone “B”), then hit the stone in the inside. This is called a **flat angle**.
- If the initial stone is between 45° – 90° (stone “C”), then hit stone on the outside. This is called a **steep angle**.



**When to use the in-turn or out-turn**

Many curlers often wonder whether to use the in-turn (clockwise) or out-turn (counter-clockwise) for takeouts. Keep in mind that we are assuming that there are no other rocks in play and the ice is true. Many

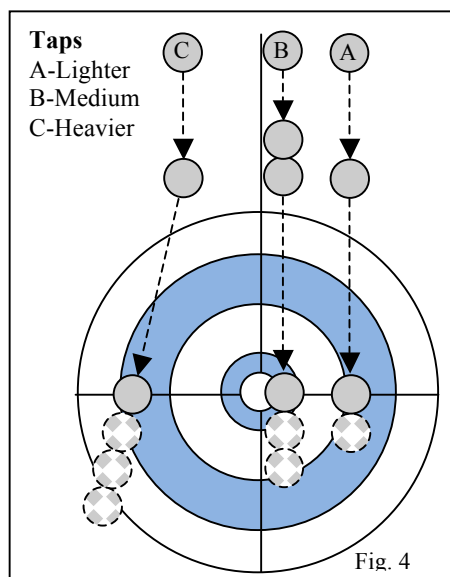
experienced curlers will generally hit from the outside-in. They choose this path because rocks run straighter outside- in. As well, these curlers would prefer to throw a hit on very straight ice. They can hit the broom consistently, but the curl of the ice is out of their control. Conversely, they enjoy swingy ice for their draw game.

**Tap or Raise Weights**

The most common mistake for novice curlers is to throw a raise or a tap too heavy. This generally results in promoting the rock too far or missing the promoting rock altogether.

**Here is the secret**

In Figure 4 there are three shots,



each using a different weight to promote a rock to the tee line. The delivered stone will be thrown with tee line weight plus required rock lengths as explained below.

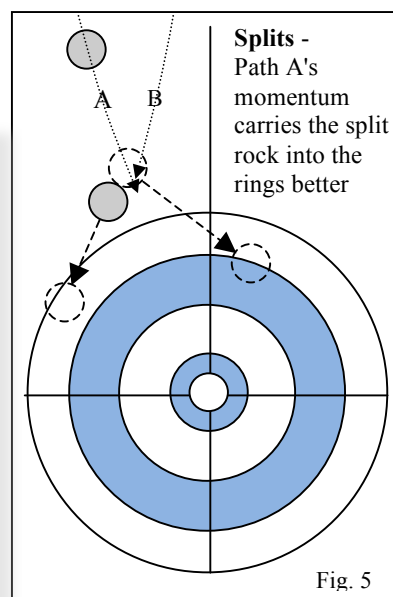
- In shot “A”, when tapping the nose of a stone, you only need to throw tee line weight plus one rock’s length more (add a bit more weight for heavier ice).
- In shot “B”, when tapping the nose of a stone and the nose of a second stone, you need to throw tee line weight plus the weight of two stones to promote the rock to the tee line
- In shot “C”, a rock is being promoted on an angle. As the angles increase, so too does the amount of weight. Since the promoted rock, in scenario “C”, is on an angle you must add more weight. Figure 4 illustrates that the length of three extra stones is needed to promote the stone to the tee line (delivered stone weight is back eight to back line).

**Splits**

This type of shot is generally made near the latter stages of an end or on skip’s last rock. The goal of this shot is to promote your own stone and the delivered stone onto the rings to score two points.

When making splits the turn (clockwise or counter-clockwise rotation) has a unique influence on the success of the shot, unlike heavier shots such as takeouts or peels.

**Here is the secret** Understanding the momentum of



the stone and its path is critical in making this shot consistently. Since the delivered stone is being thrown with tee line to back line weight, the path of the stone may curl two to three feet (depending on ice conditions).

- In Figure 5, the path and momentum of stone “B” is travelling inside-out and will be more difficult to keep the promoting rock in

the rings. The promoted rock will travel more to the left (away from centre line).

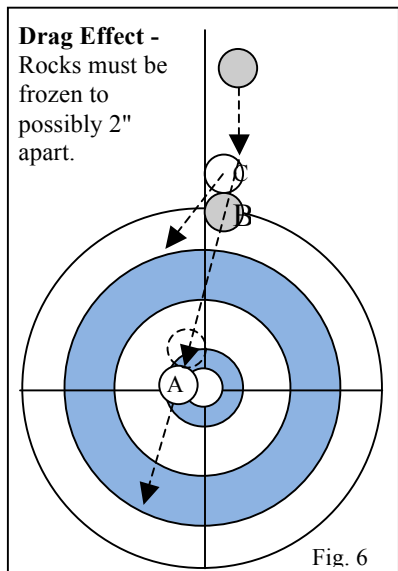
- While the path and momentum of stone “A” will direct the promoting rock more to the right (centre line) and provide more tolerance for making this shot.

### Drag Effect

This is one of the more interesting shots in curling. The goal in this shot is to hit stone “C” and “B” and nose hit “A” to take a point for the dark stones (Fig 6).

### Critical Distance

When introducing this concept to curlers they tend to think that stone “C” must be hit on the left side. This would be true if the rocks were more than 2” apart, but they are not. The distance between stone “B” and “C” is critical for this to work.



### Here is the secret

Rocks that are frozen together will experience the drag effect, where two rocks move together as one. As the distance between the stones increase there will be less drag effect. There is speculation as to that distance, but from experience once you have more than 2” between the rocks there is little or no drag effect.

### Lining-up the Shot

Lining-up this shot is similar to lining-up a regular run back. The trick is to pretend that stone “C” is not there. We do this because the frozen rocks act as one. The skip will draw a line from stone “A” through the centre of stone “B” (and here is the hint) continue past stone “C” to its outer edge. This will be the contact point for the delivered stone.

**Note:** there is a point at which this will not work. If you hit stone “C” too far on either side of centre, there will not be enough energy transferred to stone “B” to make the shot.

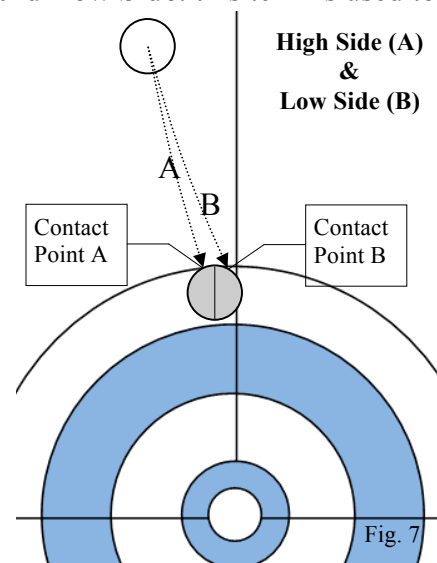
### In-turn or Out-turn?

Some argue that the turn has little effect on making this shot, but if we think about the section on **Splits**, the momentum and path of a rock will have some impact on the direction of stone “B” therefore the in-turn (clockwise rotation) would be a better choice in this example. Also, as reviewed in **Double Takeouts**, experienced curlers will play the straighter side, which again is the in-turn (clockwise).

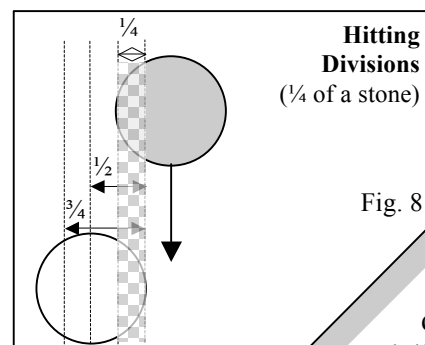
### Talk Like a Pro

**High Side and Low Side:** this term is used to indicate

which side of centre the stone is to be hit. In Figure 7, the delivered stone has a counter-clockwise rotation. If the dark stone is hit on the left side of centre (contact point A), then it is hitting the high side. If the dark stone is hit on the right side of centre (contact point B), then it is hitting the low side.



**Amount of rock to hit:** Skips will often indicate to the shooter how much of the stone should be hit in order to make the shot. S/he will indicate how much overlap there must be, between the delivered stone and the stone to be removed.



For example the skip calls out “You need to hit a quarter of the stone, high side, with normal takeout weight”... this means, a quarter of the delivered stone must hit a

quarter or the stone to be removed.

Figure 8 illustrates how a rock can be divided, to clearly indicate how much of the stone must be hit.

Some other calls may be: nose hit,  $\frac{3}{4}$  of a stone and  $\frac{1}{2}$  of a stone.

**Drills**  
Two drills that will focus on the secrets of angles and tap weights are the **Short Game** and **Las Vegas**.



### Short Game

A drill that is used for reinforcing angles with junior curlers as well as adults is “Shorts” or “Short Game”. This game is played from the hack to the near house and you use all sixteen rocks. For safety you must wear two grippers (no sliding required) and do not use brooms.

- Number of players: 2, 4 or 8
- Alternate shots just like curling
- You must declare your hack and hack foot prior to your first shot (and keep this for the entire game). Hack choice gives you an advantage during a game, in order to stretch further to the left or right.
- The rock must cross the backline or contact a rock in play (just like the hog line) to remain in play
- You cannot remove rocks from play, except on skip’s last shot (both teams).
- Remember to use your angles



### Las Vegas

(Developed by Bill Tschirhart, National Development Coach, CCA: published in Sweep! Curling Magazine and ICING.org)

This is a drill used to develop tap or raise weights. The term “raise” in poker gives this drill its name, Las Vegas.

You can play one-on-one or as teams. The goal of this game is to raise your colour stones into the rings. No takeouts. The game can be a gamble, as novice players can accidentally raise their opponents rocks into the rings.

- Line up 8 rocks, alternating colour, across the sheet in

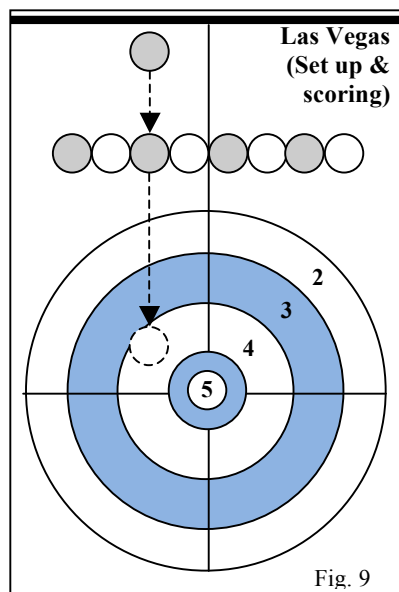


Fig. 9

between the hog line and the top of the house (See Fig. 9). The closer the rocks are to the house the easier they are to promote.

- You can add scoring, because we all know that curlers are competitive, the 12’ is worth 2, the 8’ is worth 3, the 4’ foot is worth 4 and the button is worth 5 points. You can vary the point structure and you can add raise takeouts to challenge more experienced curlers.

## Glossary

- **Delivered Stone or Shooter:** a stone that is set in motion or delivered during an end.
- **Drag Effect:** the reaction of hitting two frozen rocks, which act as one rock, and the resultant angle travels in the direction of initial contact.
- **Flat Angle:** when the two stones being hit are closer to parallel with the tee line (See Fig. 3).
- **High Side:** the contact point on a hit stone, relative to its centre, that is closer to the path of curl (See Fig. 7).
- **Hit  $\frac{1}{4}$  of a Stone:** indicate how much overlap there must be between the delivered stone and the stone to be removed (See Fig. 8).
- **Low Side:** the contact point on a hit stone, relative to its centre, that is further away from the path of curl (See Fig. 7).
- **Nose Hit:** occurs when one rock hits another rock directly in line and the delivered stone (or stone in motion) remains in place after contact.
- **Shot Stone:** is the stone closest to the button.
- **Split:** is an attempt to place two stones on the rings in one shot, the delivered stone and a stone close to the house. This is generally attempted on the skips last stone to take two instead of blanking.
- **Steep Angle:** when the two stones being hit are closer to parallel with the centre line (See Fig. 3).
- **Tap or Raise:** promoting a stone with the delivered stone.