

# The Fundamentals of Putting

## Episode 4 – Spin and Launch

The effective loft of the putter at impact and the vertical putter path angle through impact determine the launch angle and the spin of the ball. On fast greens a flat launch angle of the ball and initial top spin are preferred, to avoid skidding. Skidding is supposed to introduce errors in ball direction, in contrast a rolling ball is keeping the direction better. The factors influencing launch and spin are static loft of the putter, shaft lean at impact, vertical putter path at impact and ball position.

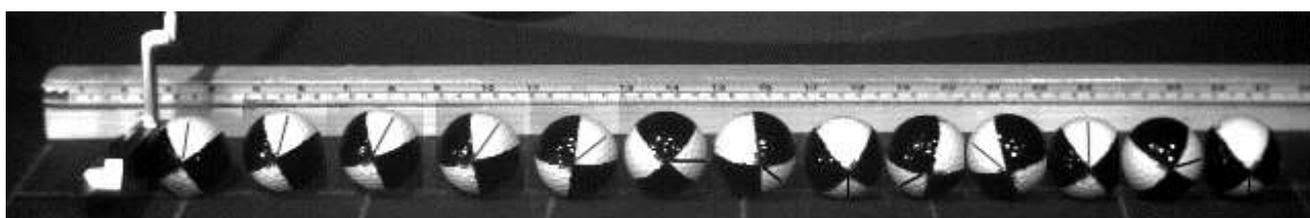
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### Basics

#### *Loft and Launch*

The effective loft is determining the launch angle of the ball to about 85%, similar to the effect of face angle onto ball direction. The ball will always start roughly vertical to the putter face. The effective loft applied to the ball is defined by the static loft of the putter and the shaft lean at impact. For neutral shaft lean the effective loft is equal to the static loft. If the shaft at impact is leaning forward (forward press) then the putter face will be delofted. If the shaft is leaning backwards, then the effective loft increases accordingly.

High speed video shows that on fast greens (stimp >10) a launch angle of about 2 degrees seems to be enough for proper launch of the ball. As a consequence putter manufacturers started to reduce the standard putter loft to 2 degrees (YES, Rife). If the effective loft is too high, either the putter loft can be reduced, or the shaft can be delofted by using forward press, which should already be done in the setup position.



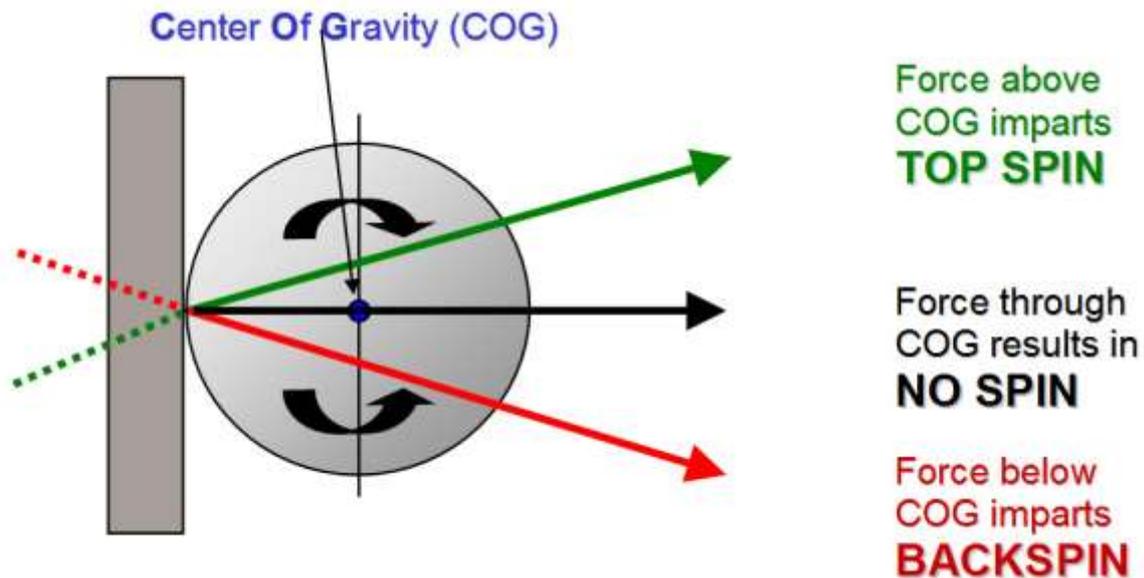
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Science+Motion, V9.15

#### *Rise and Spin*

The spin loft represents the difference between the vertical putter path angle (“rise angle”) and the effective loft. If the spin loft is different from zero, then the force vector is not going through the center of the ball which will create some amount of initial ball spin.

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- Positive spin loft: force vector below the center applies backspin
- Neutral spin loft: force vector through the center applies no spin
- Negative spin loft: force vector above the center applies topspin

Please note that the maximum amount of initial topspin which can be applied to the ball with a putter is only about 28% of the true roll spin.

## *Grooves*

Recently some putter manufacturers came up with grooved putter faces which are supposed to grab the dimples of the ball during the up-movement of the putter to apply topspin to the ball. However, as described above the spin of the ball is not a consequence of friction between the putter face and the ball. Consequently, direct effects of the grooves onto the spin of the ball are virtually impossible. Grooved putters only result in more topspin if the static loft on these putters is reduced.

## **Frequent errors and consequences**

### *Too much effective loft - Steep launch*

Many amateurs play too much effective loft. They often have a ball position left in the stance, but the hands are in the center of their body. Accordingly the shaft is leaning backwards which adds loft to impact. Loft can also be added if the wrists break through impact. The consequences of increased effective loft are steeper launch and backspin of the ball. Steeper loft will result in jumping of the ball and backspin will result in more skidding, both effects which are not very helpful on fast greens.

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## *Flat rise angle - Backspin*

If the vertical putter path angle is too flat, then the spin loft tends to be positive which applies backspin to the ball. The higher the spin loft, the more backspin will occur. Flat rise angle is often a consequence of a low left shoulder, which is also typical for the cross handed grip. For the conventional grip the left shoulder is more tilted upwards resulting in the low point of the swing right of the ball. If the left shoulder is low then the low point is also more left of the ball resulting in flat rise angle.

## *Negative effective loft - Hitting into the ground*

Some amount of launch angle is necessary to properly lift the ball from the small depression where it lies in. The recommended launch angle is between 2 degrees on fast greens and 3-4 degrees on slow greens. If the forward press is too much than the effective loft can be zero or even negative. For low or negative effective loft the ball will not start properly or will be even hit downwards into the ground which will create direction and distance errors.

## **How to improve launch angle and ball spin**

### *Fitting*

Depending on the characteristics of the putting stroke it can also make sense to directly fit the static loft of the putter. If the effective loft and spin are not correct, but the player does not want to change ball position or shaft lean, the putter can be chosen accordingly to match the static loft to the needs. The standard loft on a putter is about 3 degrees. Some brands have more loft (Scotty Cameron normally 4 degrees) or less loft (YES and Rife 2 degrees). The best solution would be a custom fit putter which is fitted to the player's preferences in all aspects: Length, loft, lie, grip size, head design, head balance and weight.



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## *Neutral shaft/ deloft at setup*

The static loft on the putter face is only matching the effective loft if the shaft angle at impact is neutral and is not leaning back or forward. Many players position the ball slightly left of the middle of their stance, but do not accordingly adjust their hand position to the left. If the ball position is left, then the shaft should also point to the left of the body center. This can be tested with a setup in front of the edge of a large mirror, or a second person is standing in front of the golfer and checks the angle of the shaft to be vertical. In this position, the shaft normally will point to the left of the neck. If the putter should be de-lofted to reduce the launch angle on fast greens, then the shaft should lean more to the left. This position should then always be checked during setup.

## *Adjust ball position*

The ball position is influencing both effective loft and the rise angle. Moving the ball left in your stance without moving the hands is adding approximately one degree per inch both for dynamic loft and rise angle (more launch, same spin loft). By moving the ball position left and at the same time also moving the hand position left only the rise angle will increase which results in less spin loft with slightly more topspin. Accordingly, moving the ball to the right results in less rise and increased spin loft with more backspin. It should be noticed that changing the lateral ball position in the stance can also influence the direction of the ball, depending on the amount of face rotation around impact. A ball position which is more left will tend to close the putter face at impact making the ball go more left.

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We hope you also enjoyed our fourth episode of 'The Fundamentals of Putting' and could give you some ideas on how to improve your training.

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