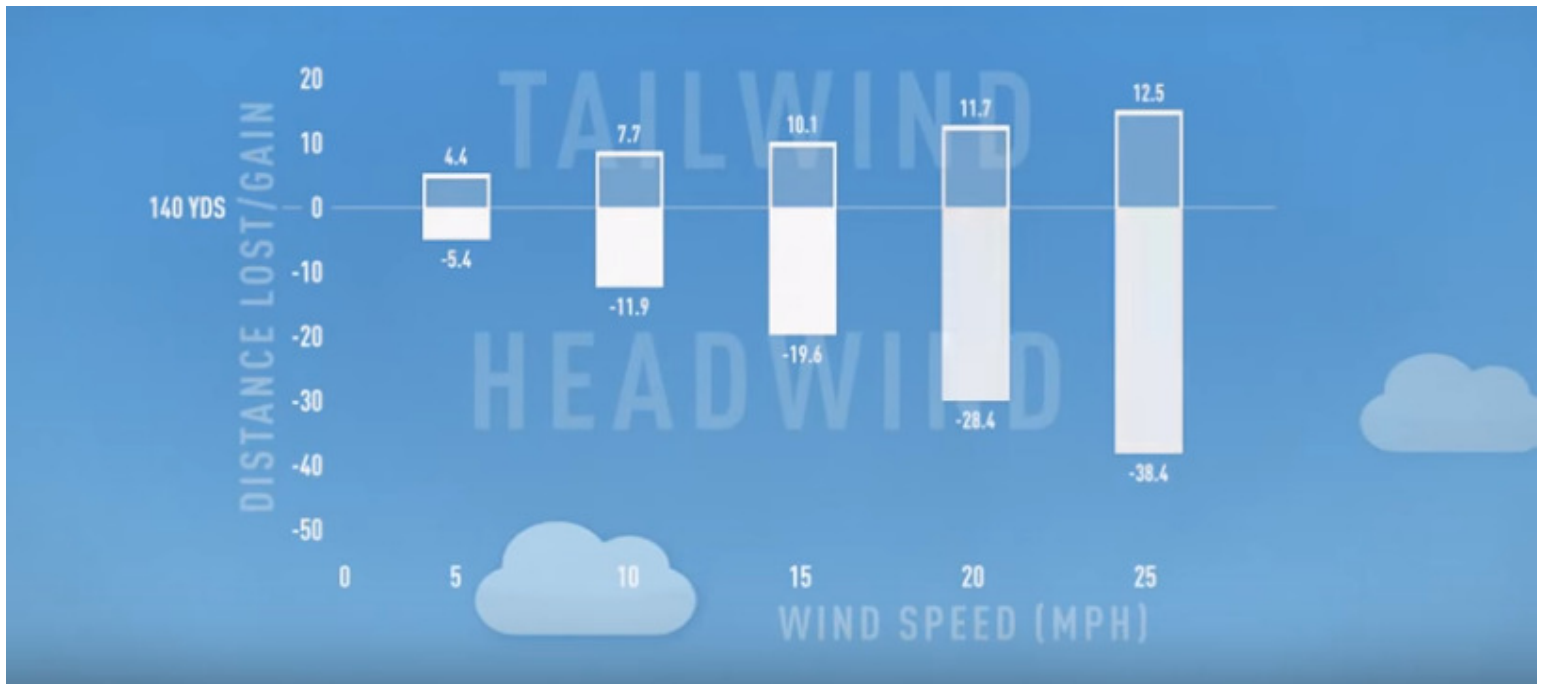


Playing in the Wind

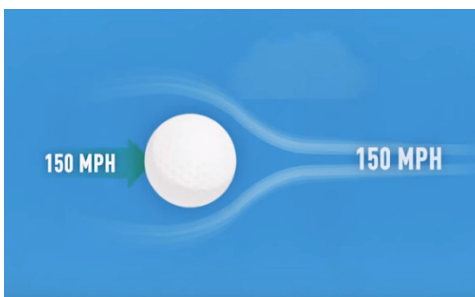
Headwind versus Tailwind

With Fall here and Winter approaching in many places, windy conditions tend to be more prevalent. Playing in the wind makes shooting lower scores harder partly due to judging how much the wind will affect any given shot. Did you know that a head wind can hurt the ball more than a tailwind can help? The amount can be even more than double at higher wind speeds. Please see the picture below, from TrackMan data that illustrates the differing amounts of help or hurt depending on wind speeds.



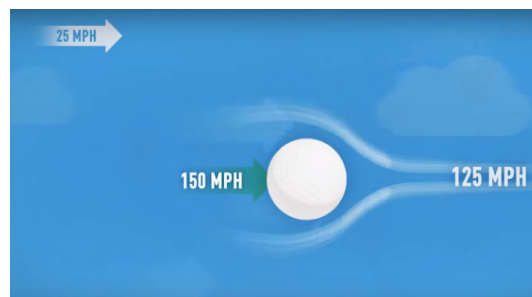
When hitting into a headwind, your shots carry shorter, fly higher and come down at a steeper landing angle due to the extra lift and drag the headwind causes. Under calm conditions, the air is moving into the ball at the same speed the ball is traveling.

Calm Conditions



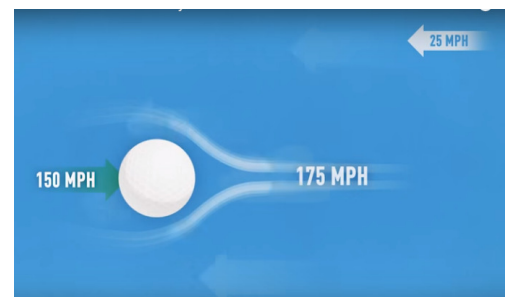
Same

Tailwind



Less Airflow

Headwind



More Airflow

When there is a tailwind, the wind speed subtracts from the airflow. When there is a headwind, the wind speed adds to the airflow. The greater the speed of the headwind, the more lift and drag is produced. The higher airflow into the ball causes more lift (what makes the ball rise) and more drag (what slows the ball down) causing the ball to

balloon into the air. It's a common misconception that the ball spins more when hit into the wind. It's actually the added lift when hit into the airflow that gives this false impression. However, more spin is the enemy when hitting into the wind as more spin creates more lift and more drag and a resultant ballooning ball flight that winds up short of the target.

Instead of swinging harder into the wind, usually resulting in more club head speed and more spin, use a club with less loft which will help you reduce the spin and optimize the flight of the ball into the wind. The opposite is true with a tailwind. If you hit a shot with too little spin when downwind, the ball will drop out of the sky too soon and fall short of the target. Remember, a tailwind will produce shots that carry longer, fly lower and roll more once they land due to decrease amount of lift on the ball. Your best bet downwind is to launch the ball higher so that it will fly higher, carry longer and land more softly.

The relationship between the lift and drag do not behave linearly, and that is why a headwind hurts more than a tailwind helps.

Now that you know how the relationship between headwinds and tailwinds affects the golf ball, here is a general tip for calculating how many yards to add or subtract on a given shot. Throw up a few pieces of grass and pay attention to how far away from you the grass lands.



For a tailwind, add 2 yards of extra distance to how far your shot will go for each yard that the wind blows the grass toward the target. For a headwind, subtract 4 yards of carry for each yard the wind blows the grass away from the target. This general rule will help you estimate which club to use when playing into a headwind or when playing downwind.

I hope the information contained in this newsletter helps you play better golf. For more information or if you have a question or suggestion for future newsletters, please visit my website at www.daleabraham.com or send an email to swingmd@yahoo.com.