

Know Your Angles

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Slope angle should be one of the first things that comes to mind when traveling in the backcountry. It is a primary factor in every avalanche. Avalanches happen when four ingredients are present: a slab, a weak layer, a trigger and a slope angle steep enough to slide, generally between 25-45 degrees. Not all slopes are steep enough to avalanche and some are too steep to regularly form slabs. Recognizing what slopes are safe to ride and what slopes are prone to avalanching is an important part of making safe backcountry decisions.

The best way to answer the poignant question of “can this slope slide” is to know the angles of the slopes you are riding. The most common slope angles on which avalanches occur is between 36-38 degrees, though it is important to note that not all avalanches start on slopes with these precise angles. If a gentle slope of 25 degrees or less is connected to a larger, steeper slope it is still possible to trigger a slide from below without ever getting on the steepest part of the slope. This is known as remote triggering and is a common way that riders get into avalanches in the backcountry, especially in avalanche run out zones. When traveling in terrain that requires the crossing of avalanche paths it is imperative to cross one at a time and always keep a watchful eye on one another.

A large problem with prime avalanche slope angles is they are highly enticing to ride. This presents a challenge in judgment to all who ride in avalanche terrain. Even if travelling on slopes that are statistically less likely to slide, 30 degrees or less, riders may still be at risk. This brings up a pressing question of how to effectively assess slope angle. The easiest way to assess slope angle is to use a small tool called an inclinometer. These useful devices can be found online or at local backcountry touring stores and can be purchased for \$20 to \$40.

Although a basic inclinometer can measure a slope angle with a small amount of error, they do pose a few problems. The main one is that you have to venture onto the slope to get an accurate reading. One technique to overcome this issue is to measure angles on small slopes that appear to have a similar aspect and angle as the slope you plan to ride. After practicing with an inclinometer for a season or two, one can learn to make an educated guess as to whether the slope is prime avalanche terrain or not. This is not an accurate practice, but can help give a seat of the pants sense of slope angle without venturing onto an avalanche prone slope.

A key problem of assessing slope angle is that most slopes have varying degrees of steepness. It is critical for riders to assess slope angle frequently, even if just mentally. Areas that are convex, where slope angles go from low to high in a short distance or steep sections near ridgelines are high probability zones for triggering avalanches. It is vital to assess the entire slope since even the smallest slide is hazardous.

Practicing with an inclinometer frequently and knowing what slopes angles are prone to avalanching is a great way to reduce your exposure to avalanche terrain.



