

The New York Times

EDITORS' NOTE: THIS SECTION SHOULD NOT BE READ BY GROWN-UPS

YOUR

BEST YEAR

EVER

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THE (SCIENTIFIC!) SECRETS OF SLEDDING

BY CHELSEA LEU • ILLUSTRATION BY R. FRESSON

UNDER THE RIGHT conditions, snow-covered hills are natural roller coasters. But if you want to zoom downhill as fast as possible, it helps to know a little bit of physics. "There are several sources of resistance keeping you from going down blindingly fast," says James Lever, a research engineer who has designed sleds to haul supplies for research stations in Antarctica. They include the rubbing of the snow against your sled, which is called friction, and the force of the air pushing against you as you travel downhill, which is called drag. Reducing these forces — and sledding faster — depends on how cold it is that day, how recently the snow fell, what the sled is made of and even the way you sit. So put on your warmest winter jacket and use these scientific tips for the best snow day ever.

1. CHOOSE THE RIGHT SLED

Circular sleds, like saucers and inflatable inner tubes, are superfun when you want to spin down a hillside. But it's harder to control your direction in those types of sleds, and that reduces speed. If speed is your goal, get a sled that has a front and a back — something that points down a hill, like a rectangular sled. Find a bigger sled too. It'll do a better job of spreading out your weight, which is great for sliding over snow without sinking in. This way, you avoid getting stuck. If you can, choose a hard, plastic sled, which is more slippery than a wooden one.

3. PICK YOUR ROUTE

Identify a path down the hill that doesn't have any trees nearby. And don't forget to think about the landing. Sleds can reach speeds of 20 miles per hour, so make sure your route down ends in a long flat area at the bottom, without any obstacles, so you have space to glide to a safe stop. You can also find or make a big pile of soft snow to stop yourself.

4. MAKE A TRACK

If you're sledding in freshly fallen snow, chances are you won't go very fast the first few times. That's because the sled uses energy to press down the fluffy snow in your way, which reduces the amount of energy it has to move forward. "It's like walking on sand," Lever says. "It's harder to walk when the sand moves under your feet than if it's pounded flat." To create a track, round up a few friends to go down the chosen route one after the other. The repeated pressure will pack the snow together and carve out a slippery track perfect for fast, exciting sledding on the next round.

2. GO OUT ON THE PERFECT DAY

Not all snowy days are created equal when it comes to sledding. The texture of snow depends in part on the temperature. Usually, a day between 20 and 30 degrees will be cold enough that snow won't melt, but warm enough that you can pack it into tight clumps, says Emily Asenath-Smith, who studies the material properties of snow and ice. And that's good for sledding. "If the snow is nice and hard-packed," Lever says, "it doesn't move underneath the sled, and that reduces resistance." A good rule of thumb: "If you can make a good snowball, you've got snow that will pack down really quickly as people sled on it."

5. GET INTO POSITION

Once you've created a track and figured out a safe place to stop, you're ready for the fun part: sliding down the hill as fast as you can. When you're flying down the hill, lean back and make yourself as small as possible, the same way Olympic bobsledders and lugers do. "They're minimizing their air drag," Lever says, and you can, too. Just don't lean back all the way — you want to be able to see where you're going. Wheeeee!

