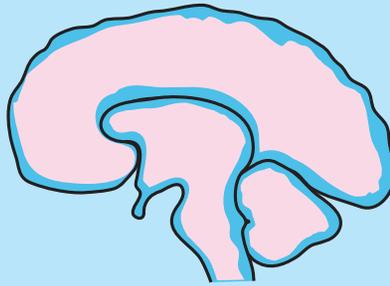


The activities in this family guide are adapted from actual experiments conducted on Everest in 2007 by Dr. Mike Grocott, Dr. Denny Levett and the rest of the Caudwell Xtreme Everest team. Their goal: to save lives in the intensive care units where they work, through a better understanding of how the body reacts to low oxygen levels. On January 8, 2009, the *New England Journal of Medicine* published "Arterial Blood Gases and Oxygen Content in Climbers on Mt. Everest." The scientists measured the lowest human blood oxygen level ever recorded. For more information, visit [xtreme-everest.co.uk](http://xtreme-everest.co.uk). For updates on the scientists' research or more family guides from this series, email [jboxer@slsc.org](mailto:jboxer@slsc.org). And don't miss *Return to Everest*, a giant screen film from MacGillivray Freeman coming in 2012.

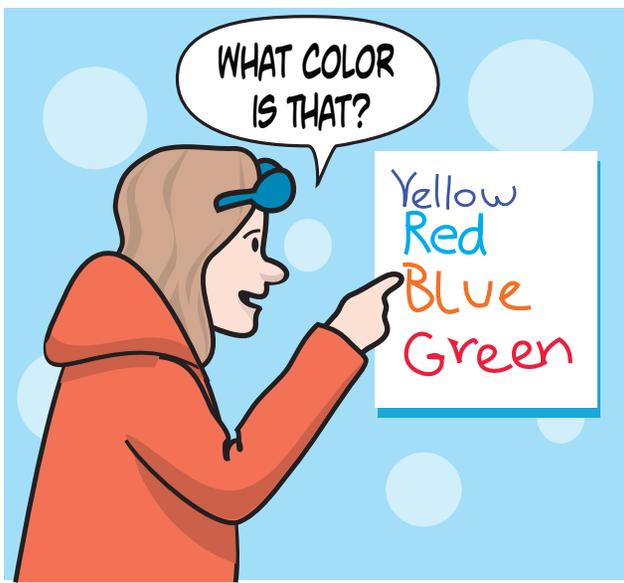
written by Jennifer Boxer  
illustrated by Dennis Smith



### What tests can we do to see how fast your brain is working?

Xtreme Everest scientists are testing their hypothesis that when your brain gets less oxygen it doesn't work as well. They want to see how different people's brain function changes in different ways. They did the same tests that you did, first in their lab and then on top of the mountain, to see if people got worse. (They did get worse. A lot worse.) Since your brain has plenty of oxygen, you can practice and get better at the tests each time because the more you do them, the better your brain is at remembering how to do them. You store the information in your short and then long term memory. If you were on Everest, you might not be able to get better, even with practice.





**You will need:**

a partner, paper, pencil, crayons

- First take the crayons and write a list of colors on the paper. But, use the wrong color crayon for each word you write. For example, if you write “red,” don’t use the red crayon, use the green one or something else.
- Take your list of colors to your partner and ask him or her to tell you what each color is – not to read the words, to tell you the colors. Keep track of how many mistakes he or she makes.
- If he or she does the same test again, is the result better?
- Now it’s your turn. Have your partner test your brain function and compare results.
- What do you think is happening inside your brain when you practice? If you took the same test again next week, how do you think you would do?



**You will need:**

a partner, paper, pencil, stopwatch

- Set the stopwatch for 60 seconds and ask your partner how many words she or he can think of that begin with a certain letter – any letter is fine. You should both agree on the letter, though. No fair picking something like “X” just to make it extra hard.
- Record the results. Try again a few minutes later and see if there is a difference.
- Now it’s your turn. Have your partner test your brain function and compare results. You should use a different letter for your turn, so that you have to think up new words on your own.
- Lack of oxygen makes this task a lot harder for the people on Everest. Try the test again, but with a distraction of some kind. Play the radio loudly or talk while your partner’s trying to think of the words. Do the results change?



**You will need:**

a partner, paper, pencil, children’s puzzle less than 20 pieces, stopwatch

- Set the stopwatch and see how fast your partner can do the children’s puzzle, once and then again.
- How does the time change on the second try? Why do you think that happens?
- Now it’s your turn. Have your partner test your brain function and compare results.
- If you were a scientist, what would you do to make sure your results are accurate?
- Over 200 volunteers did this test on Everest. If your whole family or your whole class at school did the puzzle, what do you think you would find?