

Study: perception of hole size influenced by performance

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Jessica K. Witt, an assistant professor of psychological sciences who studies perception in athletes, has found that when golfers play well they are more likely to perceive the hole as being larger. After playing a round of golf, 46 golfers were asked to select the correct hole size based on black circles that ranged in size from 9-13 centimeters. Those who played well selected the larger holes. Credit: Purdue photo/David Umberger

Golfers who play well are more likely to see the hole as larger than their poor-playing counterparts, according to a Purdue University researcher.

"Golfers have said that when they play well the hole looks as big as a bucket or basketball hoop, and when they do not play well they've been quoted as saying the hole looks like a dime or the inside of a donut," said Jessica K. Witt, an assistant professor of psychological sciences who studies perception in athletes. "What athletes say about how they see the hole and how well they play is true. We found golfers who play better judge the hole to be bigger than golfers who did not play as well."

"We know a relationship exists between performance and perception, but we are uncertain how they affect each other. For example, do golfers see the hole as bigger so they putt better? Or if they putt better, does that mean they see the hole as bigger? I believe it is a cyclical relationship, but more studies are needed to clarify if one affects the other."

Witt's findings are published in the June *Psychonomic Bulletin and Review* journal. She co-authored the paper with Sally A. Linkenauger and Jonathan Z. Bakdash, both graduate students at the University of Virginia, and Dennis R. Proffitt, the Commonwealth Professor of Psychology at the University of Virginia.

These findings also are consistent with Witt's earlier work in softball. In 2005 she found a correlation between player batting averages and how they perceived the size of the softball.

Historically, the study of perception in athletes has been limited to how the eye sees and processes incoming information, Witt said.

"There is so much more to perception," she said. "It's an active process because it encompasses aspects of your body and your body's abilities. We're not saying a person's perception is not immune to cognitive influences. Even if you know the hole is a certain size, you can't help but see it is a bigger or smaller. It's showing that perception is not just based on the optical information."

Witt's research team conducted three experiments. In the first, 46 golfers were asked to estimate the size of the hole after they played a round of golf. The diameter of a golf hole is 10.8 centimeters. The golfers selected from a poster one of nine black holes that ranged in size from 9-13 centimeters. Those who selected larger holes were the same players who had better scores on the course that day.

The second and third experiments were conducted in the laboratory and were used to clarify whether performance influence perceived hole size or remembered hole size. In these studies, golfers putted near or far on a traditional putting mat. In one study, they judged the size of hole from memory, and in the other study, the group judged its size while viewing the hole. Participants in both studies who putted closer drew the circle to be bigger than those who putted farther away.

Witt's future studies include determining what visual tricks could help golfers see the hole as larger, possibly leading to better scores. Currently Witt's findings, as well as other research, emphasize that golfers should stay focused on the hole.

"If you look at the hole, the hole is going to remain the center of your vision where there are more receptors. This means you are more likely to see it clearly, which will hopefully help you putt better," she said.

In addition to studying possible visual tricks golfers can use while playing, Witt also plans to follow the same golfers during a golf season to identify if perceived hole size changes for a player of a given handicap as daily performance levels rise and fall.

Source: Purdue University

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