



## WAYNE GRETZKY

### What role does skilled perception play in sport performance?

**A**lthough generally acknowledged as one of the greatest hockey players of all time, Wayne Gretzky was considered a mere mortal in terms of many hockey skills, such as skating, shooting, and stick handling. What many people believe set Gretzky apart from other professionals was his uncanny ability to read a play as it was developing—to know not only where each of his own teammates and the players of the other team were on the ice at any one time but to be able to predict where they would be in the future.

The ability to gather, process, and understand a large amount of information in a very short period of time is commonly referred to as skilled perception, and many believe that Wayne Gretzky was one of the best ever at doing that in hockey. Instead of seeing individual players on the ice, Gretzky probably saw, and could predict, the formation, dissolution, and reformation of patterns—spatial and temporal relationships among the players, the officials, and the dimensions of the playing surface.

Gretzky's ability to understand a vast amount of information in a very brief period of time is not peculiar to hockey players. Highly skilled perception is a requirement in many team sports, such as when a defensive middle linebacker in North American football must read an offensive play. The very best linebackers see the movements of the players on the field not as individuals but rather as components of a larger puzzle that is set in motion. They perceive pattern flows of information.

Research that provides clues about how Gretzky and other athletes use their exceptional perceptual skills was developed from a rather unlikely origin: the study of people who play the game of chess! Consider this experiment: You are sitting in front of a table on which a partially played game of chess sits beneath a cover. You cannot see the chess pieces until the experimenter uncovers the board, at which time you are given five seconds to study the layout and positioning of the pieces. After five seconds, the board is covered again and you are asked to re-create the board using a second chess set. How do you think you would do?

Unless you are an expert chess player (a chess master), your results would probably be similar to those found by DeGroot and, later, by Chase and Simon. You would probably remember some of the pieces and their locations on the board, but certainly not all of them. But if, in fact, you actually were a chess master, your performance would be quite different; you would probably

remember most if not all of the pieces and their locations on the board. Because chess has logic, structure, and rules, the dynamics of game play take on patterns that have a certain predictability, if not similarity and familiarity, to the chess master. Remembering the layout of a partially played chess board after a brief glimpse is not so much a task of recalling the individual pieces. Rather, recall is more a task of remembering the patterns of or relationships among the pieces and perhaps being able to re-create how the play must have evolved for the pieces to be where they are at that point in the game.

But these researchers took their work one important step further. Let's say that you were to do the experiment again and see the board with the same number of pieces for another five seconds. This time, however, the pieces on the board do not represent the middle of a game, but rather, are randomly dispersed around the board, with no obvious gamelike structure to them. Because you are remembering the individual pieces and their locations, you can probably re-create the board as well as before. In the absence of a recognizable pattern to the array, however, the chess master is at a loss to understand the relationships among the individual pieces. The master will be forced to process each piece individually, rather than as part of a collective pattern, and his re-creation of this random board will likely be no better than yours.

It is not a big stretch to consider how chess, hockey, and football might have a common basis in terms of perception. All contain multiple players who change positions over a restricted playing area according to logic, structure, and rules that are specific to the game. Only the most highly skilled in their game, such as Wayne Gretzky, have developed the capability to understand the intricate dynamics of game flow and can do so in very brief periods of time with amazing precision. For Gretzky, being highly skilled at the motor components of hockey likely represented only a small part of his amazing talent.

### ***SELF-DIRECTED LEARNING ACTIVITIES***

1. Define *skilled perception* in your own words.
2. Pick another sport (other than hockey or American football) and describe the perceptual attributes that are required to attain a very high level of playing skill.
3. Describe the nature of perceptual expertise required to become skilled in the performance of a video game. How is the nature of this type of perceptual skill similar to or different from the sport skill that you described in question 2?
4. Find two people, one who is skilled at the game of chess and one who is not (but who is familiar with the game), and replicate the basic conditions of the Chase and Simon study. How do your results compare with theirs?

## NOTES

- The play of Gretzky and some musings about his skills were captured nicely in Peter Gzowski's book:

Gzowski, P. (1981). *The game of our lives*. Toronto: McClellan & Stewart.

## SUGGESTED READINGS

Chase, W.G., & Simon, H.A. (1973). Perception in chess. *Cognitive Psychology*, 4, 55-81.

DeGroot, A.D. (1946). *Thought and choice in chess*. The Hague: Mouton.

Schmidt, R.A., & Lee, T.D. (2011). Human information processing. In *Motor control and learning: A behavioral emphasis* (5th ed., pp. 57-96). Champaign, IL: Human Kinetics.

Starkes, J.L., & Ericsson, K.A. (2003). (Eds.). *Expert performance in sport: Advances in research on sport expertise*. Champaign, IL: Human Kinetics.