

Are footballers rational? It all depends on what their goals are (no pun intended). We will not be talking here about behavior outside the field, as it's not entirely clear what norms of rationality one should use in this case (as George Best put it: "I spent a lot of money on booze, birds and fast cars. The rest I just squandered."). However, when playing, footballers seem to have a very clear incentive: winning the game. After all, the indecent salaries of many professional footballers depend on their team winning as many games as possible. Nowhere is the situation as clear-cut as in penalty kicks. The kicker must put the ball into the nets while the goalkeeper must stop him from achieving his goal, period. Surely, the combination of huge stakes and intensive training should produce optimal behavior on both sides of a penalty kick. This is what [Michael Bar-Eli](#) and his colleagues have tried to find out in research reported [here](#).



*Fabien Barthez being rational (or not).*

After having watched hundreds of games (or hundreds of penalty kicks at least), the team was able to compute what was the best strategy, both for the goalkeeper and for the kicker. Let's start with the goalkeeper. He has basically three choices: staying where he is, in the center, or diving to the left or to the right. In the sample of penalty kicks analyzed, his chances of stopping the ball were one out of three if he stayed put (very good odds indeed!), and below 15% if he chose to dive right or left. Is this how goalkeepers behave? Not at all. Even though the best bet is to stay in the center, the goalkeepers only did that in 6% of the penalty kicks. How is such an apparently irrational behavior to be explained?

According to the authors, who have conducted interviews of several goalkeepers, the explanation is to be found in the "action bias". Goalkeepers feel a pressure to act because they would feel guiltier missing a ball while staying in the center than missing it while trying to do something. From the perspective of someone watching the game, this is not surprising: everybody knows that stopping a penalty kick is very hard, so we would not think ill of a goalkeeper who fails while powerfully throwing himself to the side, whereas we are likely to think that one who hasn't budged didn't put much of an effort. If this is right, then the goalkeeper's behavior may very well be optimal, not in terms of stopping the ball, but in terms of avoiding blame from his coach, teammates, or other spectators.

What of the penalty kickers? Are they more 'rational' in their choices than the goalies? According to the observation of the Bar-Eli team, the optimal behavior for a penalty kicker is to target the upper third of the goal. In the sample they analyzed, not a single kick in this part of the goal was stopped, as compared to 30% in the central third and 57% in the lower third. So, do the kickers consistently aim at the higher third? No. Why? Because the way of failing varies, and seems to be more important

than the actual rate of failure. When the kicker targets the lower third, most failures will come from the goalkeeper having stopped the ball, an 'honorable' defeat, brought about by the goalie's skills. On the other hand, when the kick is aimed at the upper third, most failures will come from kicks that miss the goal altogether. In such cases, the kicker only has himself to blame. And everybody else only has the kicker to blame. In this light, it makes sense that the kickers should act in a way that is going to minimize reproach rather than only the chances of missing.

In the end, I think that the behavior of the footballers in this case is quite rational. As long as no one knows about this study that is, because if these results were to become widely known, then goalkeepers who do not move and kickers who miss the goal might not be blamed anymore. But then their behavior would be likely to change and to align itself with these new norms.

Bar-Eli M, Azar OH, Lurie Y. (2009) (Ir)rationality in action: do soccer players and goalkeepers fail to learn how to best perform during a penalty kick? *Prog Brain Res.* 2009;174:97-108.