



Free-Throw Performance Under Pressure in Collegiate Basketball

Department of Psychological Sciences

Samantha Wane, Camryn May, Mike Raphaeli and Nadav Goldschmied

Background

- Free throw shots (FTS) are unique in basketball because of their controlled nature, as the shots are launched from the same distance, while the shooters are unguarded.
- Navarro et al. (2009) found that trailing teams fouled more towards the end of the game.
- In high pressure situations when the scores are tied, performance success deteriorates as shown in archery and other sports (Buccioli & Castagnetti, 2020).

Current research

- We set out to explore the frequency and success of FTS in collegiate basketball players within the last minute of the game, as it pertains to FTS performance when the shooting team is leading, tied, or trailing.

Methods

- We used archival data from the National Collegiate Athletic Association extracted from (https://github.com/benz730/mczakooR_data) for the 2007-2008 through 2019-2020 seasons of games broadcasted on ESPN.
- We analyzed a total of 48,057 FTS in the last minute (excluding one-shot attempts or a third FTS in sequence), when the score difference between the teams was ± 3 points.

Results

- Similar to Navarro et al. (2009), as the game approached its end, more fouls were committed, thus more FTS were executed (see Figure 1).

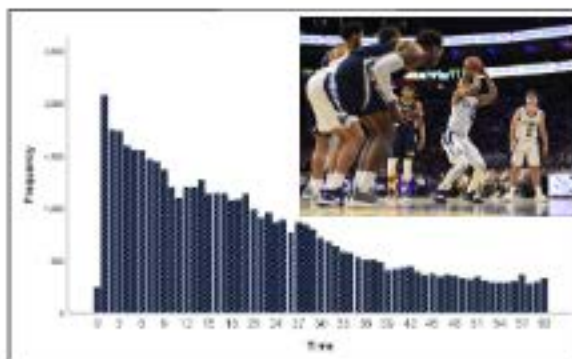


Figure 1: The frequency of FTS in the remaining 60 seconds of close NCAA games (2007-2020).

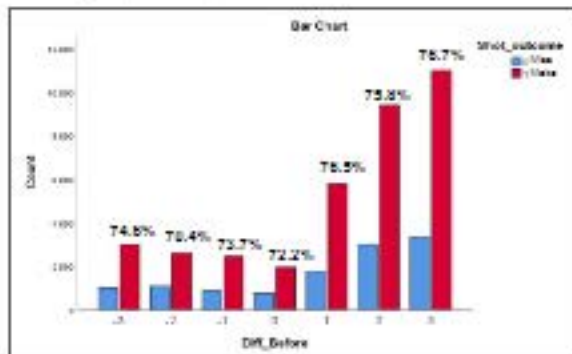


Figure 2: FTS performance in NCAA games within the last minute when the preceding score is ± 3 .

Results (cont'd)

- Overall, high performing FTS shooters performed similarly well under pressure times, $\chi^2(48,057) = .229$, $p < .001$.
- FTS performance was better when the shooting team was leading, rather than trailing or tied, $\chi^2(6, N = 48,057) = 90.281$, $p < .0001$, $\eta^2 = .043$ (see Figure 2).

Discussion

- Shooters with a higher seasonal FTS average are more likely to make the shot when the game is on the line.
- As close NCAA games near their end, fouling and FTS occur more frequently because trailing teams foul more with the aim of the leading team missing the FTS in an attempt to regain possession of the ball.
- Yet, the results show that free-throw shooters whose teams were ahead in the game ultimately performed better than those whose teams were tied or trailing. Under these circumstances, players may possess a "psychological cushion", as the outcome of the game does not solely depend on their successful execution.
- In light of the findings, coaches should consider if fouling when behind to force FTS is a winning strategy based on time, score, and performer.

References

- Buccioli, A., Castagnetti, A. (2020). Choking under pressure in archery. *Journal of Behavioral and Experimental Economics*, 89, 1-13.
- Navarro, R. M., Lorenzo, A., Gomez, M. A., & Sampaio, J. (2009). Analysis of critical moments in the league ACB 2007-08. *Revista de Psicologia del Deporte*, 18(3), 391-395.