

Volleyball Blocking Prediction

Interest: 6/10

Project Description: In volleyball, the serving team suffers from a disadvantage. Since the team that receives the serve has the first opportunity to spike the ball in return, in most cases, the serving side must successfully defend (“dig”) an attack before spiking the ball themselves. Blockers are a crucial part of a team’s defense; they limit the angles at which the attacker can strike the ball and, if they “roof” the opponent, can even win a point directly.

To confuse blockers, setters will disguise until the last moment whether they will set the ball to the outside, middle, opposite, or back-court hitter. If the blockers incorrectly predict which hitter will attack and do not arrive in time, the offense is extremely likely to win the point.

Since the setter is a human, I do not believe the setter’s decision of where they will set the ball is random. This project investigates whether a past decisions, outcomes, and other court factors might predict where the setter of a team receiving the ball is likely to set the ball next.

Possible Features: Here are possible features that may subconsciously affect the setter’s choice. Due to the large number of features, I could not fit my examples into a row format, so I organized the information into columns instead.

1. Offensive outsider hitter taller than outside blocker (binary)	False
2. Offensive middle hitter taller (binary)	True
3. Offensive opposite hitter taller (binary)	True
4. % outside sets thus far this game (real)	0.45
5. % middle sets thus far (real)	0.25
6. % opposite sets thus far (real)	0.20
7. back-court sets thus far (real)	0.10
8. Region of most recent set (categorical)	Outside
9. Region of second most recent set (categorical)	Outside
10. Region of third most recent set (categorical)	Middle
11. Points since last rotation (real)	2
12. Outside hitter’s hitting percentage (real)	0.405
13. Middle hitter’s hitting percentage (real)	0.220
14. Opposite hitter’s hitting percentage (real)	-.050
15. Back-court hitter’s hitting percentage (real)	0.250
16. Last attack resulted in block (binary)	False
17. Last attack resulted in a kill (binary)	True
18. # of blocks by outside blocker (real)	3
19. # of blocks by middle blocker (real)	0
20. # of blocks by opposite blocker (real)	1

21. Is set point (binary)	False
22. Is point after a time out (binary)	False
23. Outside hitter player number (categorical)	13
24. Middle hitter player number (categorical)	12
25. Opposite hitter player number (categorical)	8
26. Back-court hitter player number (categorical)	6
27. Area of defensive libero (categorical)	Left
28. Offensive team's score (real)	23
29. Defensive team's score (real)	24
30. Serving % of upcoming server (real)	0.67
31. Outcome (categorical)	Opposite

Data Collection: Many of the BYU volleyball games are recorded on ESPN. In a given match, the BYU setter might set after receiving the serve about 60 to 75 times. Thus it would be possible, if somewhat time-consuming, to collect a dataset of 1000 data points by hand. For this project, we could train on historical data for the season up to this point, then evaluate our performance on future games that have not yet occurred this season. The advantage of this approach is that we can ensure the accuracy of our own data and collect whichever features we desire. The disadvantage is that we will need to decide which features we will need before data collection.