

A research of effectiveness of lobs in tennis

Motivation for the research

According to the advisor of the soft tennis club, "players who can use lobs*1 well are strong,". We wanted to verify whether this is true. Therefore, We collected data related to lobs from match videos of the inter-high school tennis competition (semifinals and finals of them from 2016 to 2018) to investigate the association between lobs and wins and losses.

Examination(1)

Hypothesis

The number of lobs a doubles pair hits during a match directly affects winning and losing.

Research Methods

Compare the total number of lobs hit by each pair in a game and compare it to their wins and losses.

Results

Of the pairs that had a large number of lobs, about **78% (7/9)** were winners. (Table 1)

Table 1: Number of lobs by the winning and losing teams in a match (colored in red are the one with more)

Match	1	2	3	4	5	6	7	8	9
Number of lobs by winning team	5	6	16	45	18	12	10	13	11
Number of lobs by losing team	9	2	13	26	9	10	20	9	10

* 1 A **lob** is hitting the ball high and deep into the opponent's court.
* 2 A **volley** is a shot in which the ball is struck before it bounces on the ground.

What effect is Lob having on the match?

Examination(2)-1

Hypothesis

Since the lob is hit into the back of the opponent's court, it moves the opponent's hitting point away from the net, and giving his team's vanguard more time and more opportunities to get involved in the play.

Research methods

Examine the correlation between the number of lobs of both teams calculated in (1) and the total number of Volleys*2 hit by the own forwards of both teams during a match.

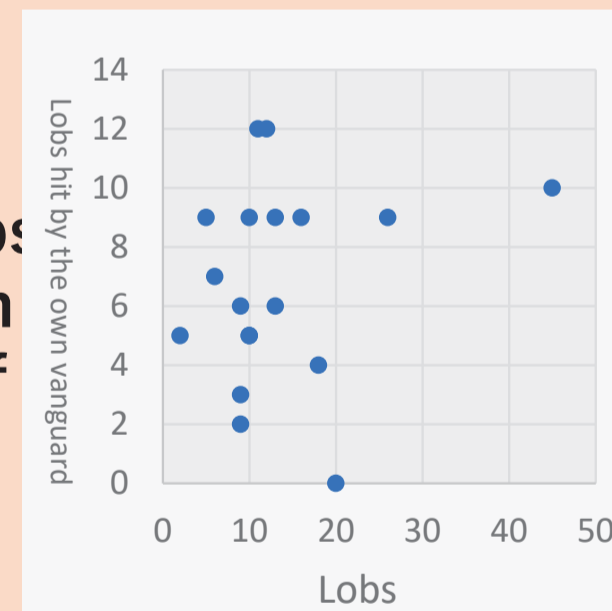


Fig. 1. Number of lobs and total number of volleys hit by both teams' own vanguards

Results

Correlation coefficient:
0.187
(Almost no correlation)

Examination(2)-2

Hypothesis

It turned out that it doesn't affect the vanguard of its own team, but it may affect the vanguard of the other team.

Research Methods

Examine the correlation between the number of lobs of both teams calculated in (1) and the total number of volleys hit by the opposing vanguard of each teams during a match.

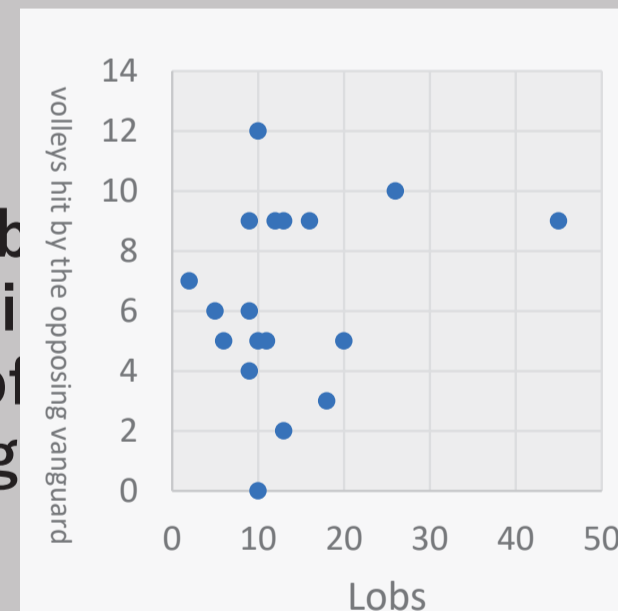


Fig. 2. Number of lobs and total number of volleys hit by both teams' opposing vanguards

Results

Correlation coefficient:
0.245
(Weak positive correlation)

Examination(2)-3

Hypothesis

As mentioned in Hypothesis 2.1, it is easier for the own vanguard to score with volleys.

Research Methods

The "total number of volleys hit" used in (2)-1 is now changed to "total number of volleys scored".

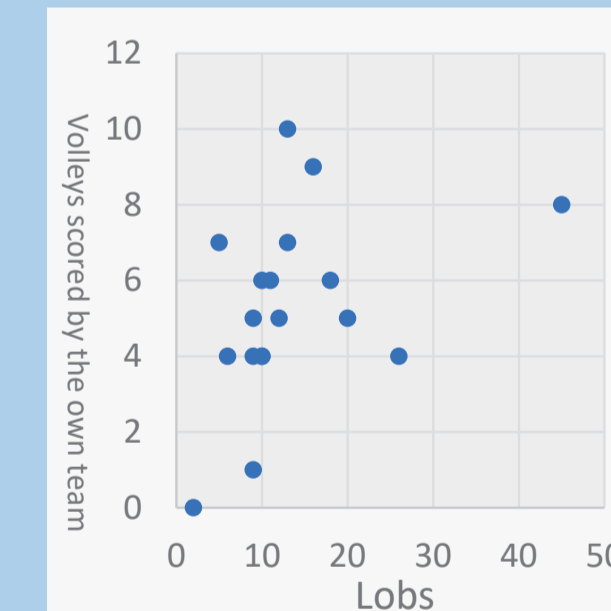


Fig. 3. Number of lobs and total number of volleys scored by both teams' own vanguards

Results

Correlation coefficient
0.401
(Positive correlation)

Examination(2)-4

Hypothesis

Since there was a correlation with the own vanguard, the enemy vanguard is also affected.

Research Methods

The "total number of volleys hit" used in (2)-2 is now changed to "total number of volleys scored".

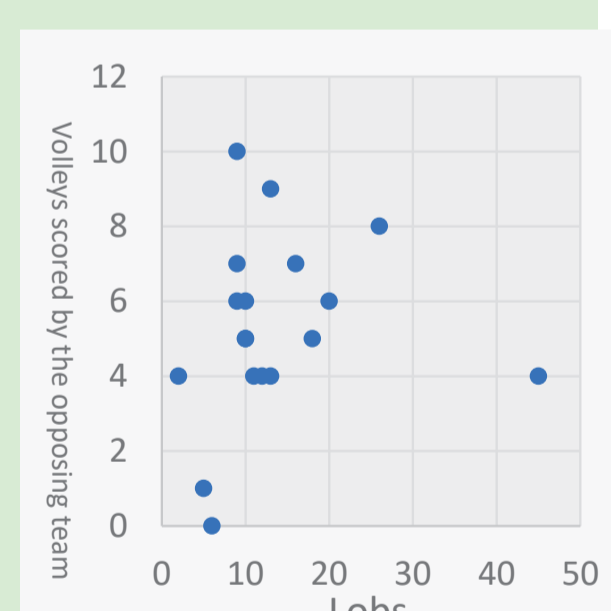


Fig. 4. Number of lobs and total number of volleys scored by both teams' opposing vanguards

Results

Correlation coefficient
0.155
(Almost no correlation)

Discussions

- From the results of (2)-1 and (2)-2, the lob is considered to be unrelated to the touch of the vanguard in both own and opponent.
- From the results of (2)-3 and (2)-4 the lob is considered to affect the score in the vanguard of its own and opponent.

Players who can use their lobs well are strong players in the sense that **they can support the own vanguard in scoring.**

Prospects

The Judging criteria for correlation coefficient was ambiguous. Therefore, we would like to re-examine the significance after learning the knowledge of the assaying. In addition, since we were only able to verify the results for boys, we would like to increase the number of samples and verify the results for girls as well.

References and Citations

The data of Inter-high school tennis competition (semifinals and finals) (2016-2018)

"インハイTV" (https://www.youtube.com/channel/UCqEZpXu06_UEH1k4ENfMAQQ)

*1 Lob [Wikipedia] ([https://en.wikipedia.org/wiki/Lob_\(tennis\)](https://en.wikipedia.org/wiki/Lob_(tennis))) (checked in 2021.2.24)

*2 volley [Wikipedia] ([https://en.wikipedia.org/wiki/Volley_\(tennis\)](https://en.wikipedia.org/wiki/Volley_(tennis))) (checked in 2021.2.24)

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