

The ultimate way to play ultimate: Exploring performance indicators in European ultimate frisbee games.

Emma Boom | Monday 14th of July 2025



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Literature review

- Performance indicators:
 - Attempted scores
 - Score efficiency
 - Disc possession
 - Passing accuracy



Literature review

- Performance indicators:
 - Attempted scores
 - Score efficiency
 - Disc possession
 - Passing accuracy
- Lam et al. (2021)¹ study
 - Forced turnovers
 - Unforced turnovers
 - Total turnovers



¹ Lam, H., Kolbinger, O., Lames, M., & Russomanno, T. G. (2021). State transition modeling in ultimate frisbee: adaptation of a promising method for performance analysis in invasion sports. *Frontiers in Psychology*, 12, 664511.

What performance indicators are the most predictive of success in European ultimate frisbee games?



Methods

- Designing metrics
- Extracting data from games



Designing metrics

1. Attempted scores
2. Score efficiency
3. Disc possession
4. Passing accuracy
5. Forced turnovers
6. Unforced turnovers
7. Total turnovers



Designing metrics

1. Attempted scores
2. Score efficiency
3. Disc possession
4. Passing accuracy
5. Forced turnovers
6. Unforced turnovers
7. Total turnovers
8. Number of subs
9. Early wins
10. Possession efficiency
11. Passing rate
12. Possession duration



Methods

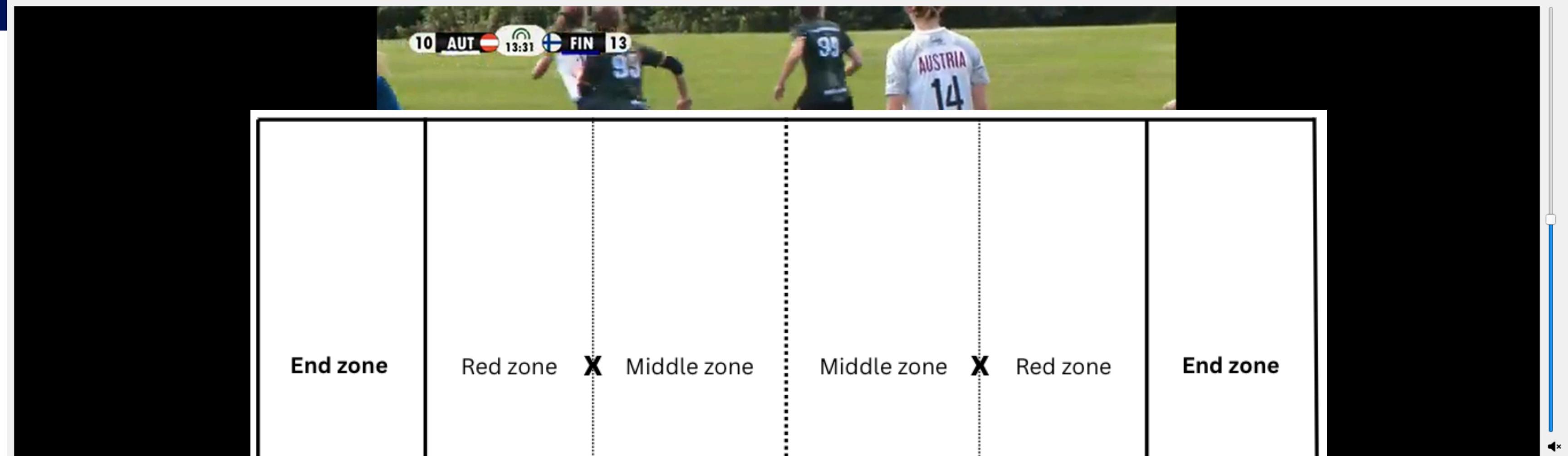
- Designing metrics
- Extracting data from games



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Player #1 (5_Austria_Finland_Mixed)



Ethogram

Key	Code	Type
1	a	Successful_pass
2	s	Score
3	g	Time_on_offense...
4	f	Scoring_attempt
5	j	Forced_turnover
6	k	Unforced_turno...
7	z	First half
8	x	Second half

X = brick mark

NO LOCAL SUBJECT

Observed behaviors: Time_on_offense_teamA (), Second_half ()

665	01:32:38.167	166745	Time_on_offense_teamB	START	
666	01:32:50.200	167106	Successful_pass	RZ_Def	
667	01:32:54.867	167246	Successful_pass	RZ_Def	



Subjects



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Ex

What makes a winner?

What performance indicators are the most predictive of success in European ultimate frisbee games?



What makes a winner?

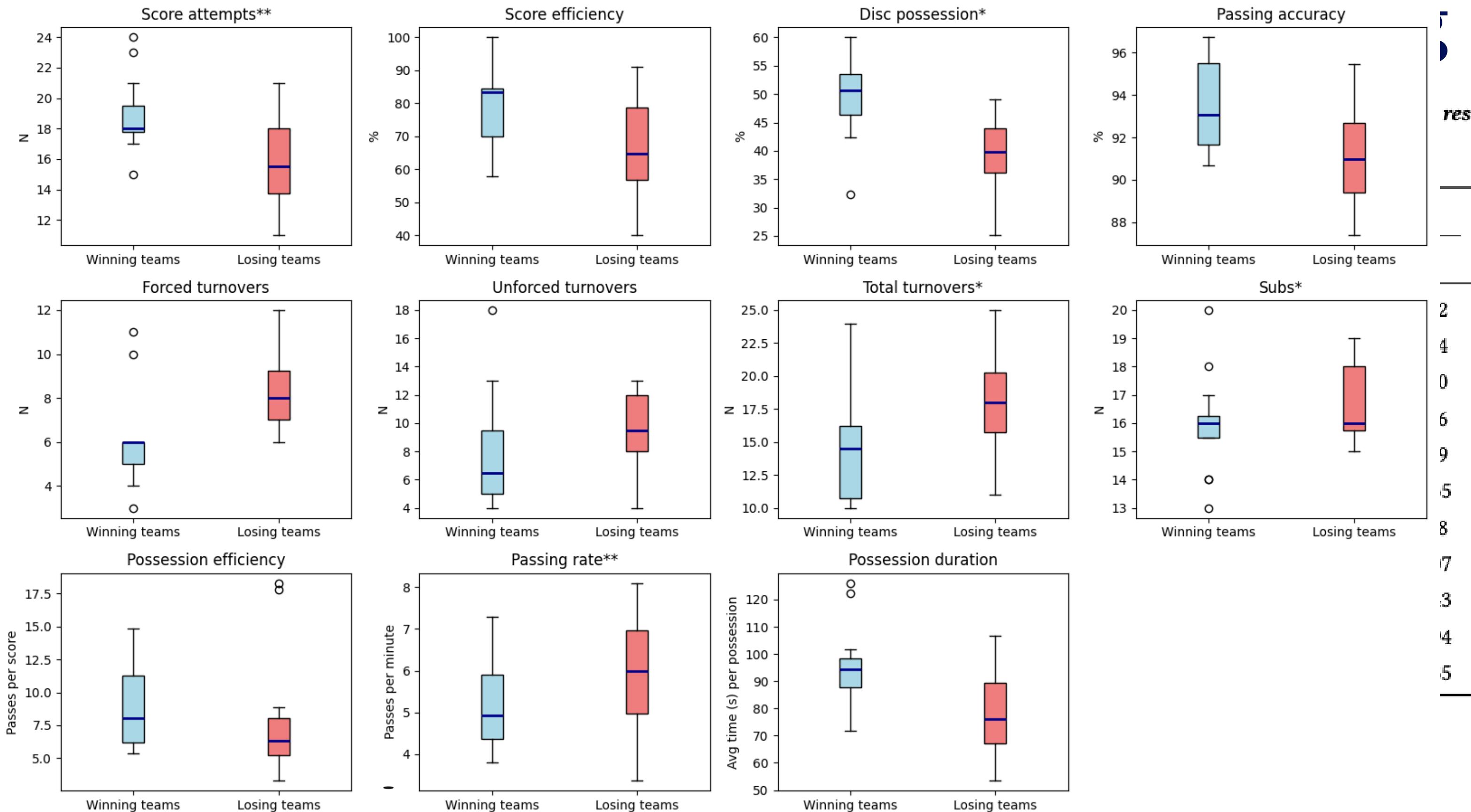
- Comparison between winning and losing teams
- Points win margins
- State transition probabilities



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Comparison between winning and losing teams

- Attempted scores
- Disc possession
- Total turnovers
- Number of subs
- Passing rate



Comparison between winning and losing teams

- Attempted scores
 - Disc possession
 - Total turnovers
 - Number of subs
 - Passing rate



Comparison between winning and losing teams

- Attempted scores
- Disc possession
- **Total turnovers**
- Number of subs
- Passing rate



Comparison between winning and losing teams

- Attempted scores
- Disc possession
- Total turnovers
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Comparison between winning and losing teams

- Attempted scores
- Disc possession
- Total turnovers
- Number of subs
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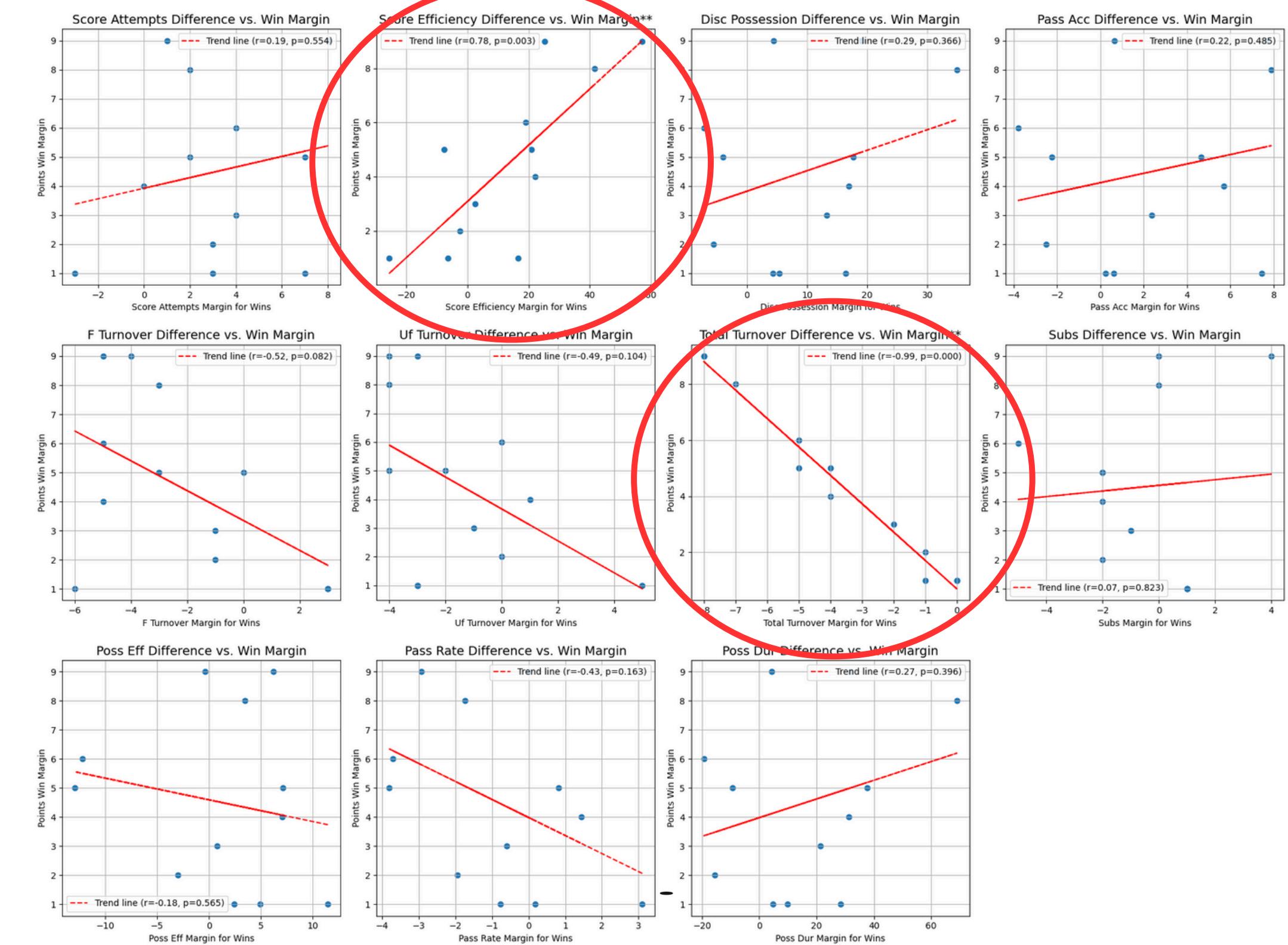
Comparison between winning and losing teams

- Winning teams adapt a playing style that emphasises **disc control, patience, assertive offense, and high defensive pressure** that limits opponent opportunities.

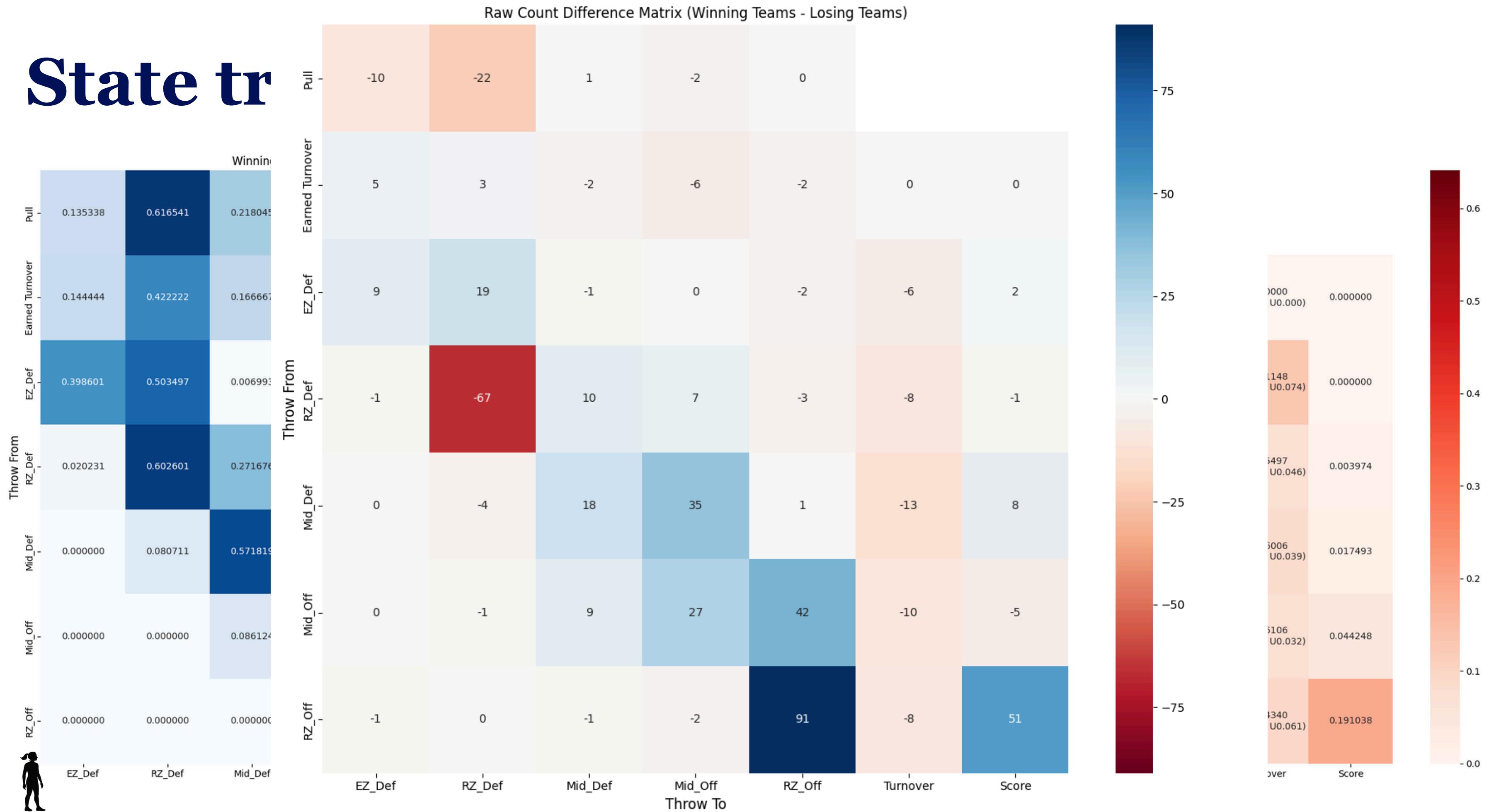


Points win margins

- Score efficiency
- Total turnovers



State transition matrix



Conclusions

- Winning teams adapt a playing style that emphasises **disc control, patience, assertive offense, and high defensive pressure** that limits opponent opportunities.
- How **efficient a team is on offense** and **how often they give up the disc** strongly relate to how much they win or lose by - it helps to explain the **scale of victory or defeat**.
- Losing teams make **longer throws and more backwards throws** than winning teams, while winning teams **keep the disc within a zone and advance slowly but steady**.



Thanks!



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