

# Mastering the midfield transition pass

The analysis is focused on optimal midfield transition passes to create an advantage for winning

Why do transition passes matter?:

- Probability of scoring increases by 4.4% when a chance occurs within 15 seconds after regaining ball control <sup>1</sup>
- Counter-attacks have a higher reward value, while they are not riskier than passes made during other transitions <sup>1</sup>
- Successful teams create more scoring opportunities from the defense and midfield using transitions, than unsuccessful teams <sup>2</sup>

Therefore, the analysis is focused on optimal midfield transition passes

The **goal** is to find characteristics of optimal transition passes to:

- Improve player's decision making
- Improve player's pre-orientation skills to find these characteristics
- Improve the chance of creating scoring opportunities and win matches

In other words: How can we use insights on optimal passes to **create an advantage for winning matches?** By using the potential effectiveness of transitions

To find the optimal pass, we first need to evaluate transition passes...



1) Hobbs, J., Power, P., Sha, L., & Lucey, P. (2018, February). Quantifying the value of transitions in soccer via spatiotemporal trajectory clustering. In MIT Sloan Sports Analytics Conference.

2) Hughes, M., & Lovell, T. (2019). Transition to attack in elite soccer.

# Valuing transition passes

## Using Risk and Reward to find the optimal pass

Common passing valuation metrics (like pass completion and packing<sup>3)</sup>) are limited because, a Risk-Reward model is not considered

A Risk-Reward model is crucial to value transition passes

Luckily! We can do this by using two models:

- 1 **Pitch Value** (Reward) model → the probability of scoring from a certain position in the following events
- 2 **Pitch Control** (Risk) model → which part of the pitch is controlled by which team, thus the probability of a successful pass

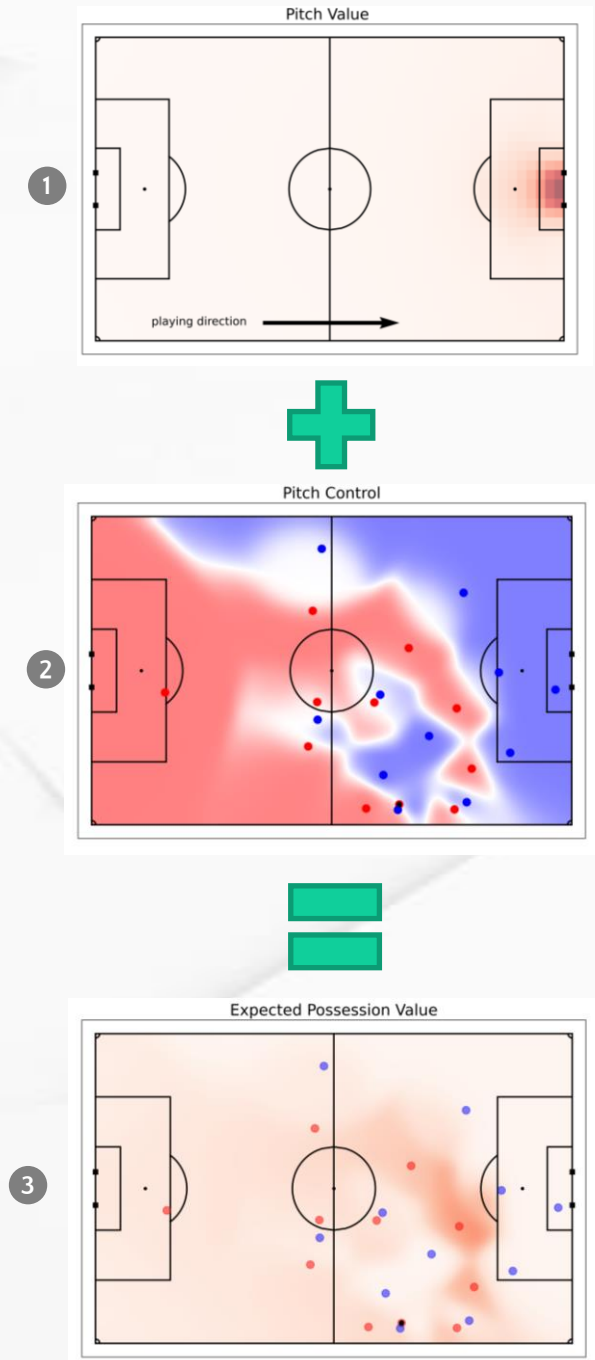
Combining the Risk and Reward results in:

- 3 The **Expected Possession Value** at each location

The **optimal pass** is equal to the highest Expected Possession Value on the pitch

**Take-home message:** Expected Possession Value is used to find the optimal pass using: Risk and Reward

3) Steiner, S., Rauh, S., Rumo, M., Emery, N., Sonderegger, K., & Seiler, R. (2017). Packing in football: a differential ecological perspective on passes.



# Results: What makes an optimal pass

## Using models for finding features that are linked to optimal passes

Game-state features are linked to an optimal transition by 4 steps:

1. The creation of **35 game-state features** based on:
  - Events, and
  - Tracking data
2. The **analysis of 2265 midfield transition passes** from the under-17 World Cup
3. Using **machine learning** to find correlations between these game-state features and optimal passes
4. Using models, to **find the ideal values** of features that are linked to optimal passes

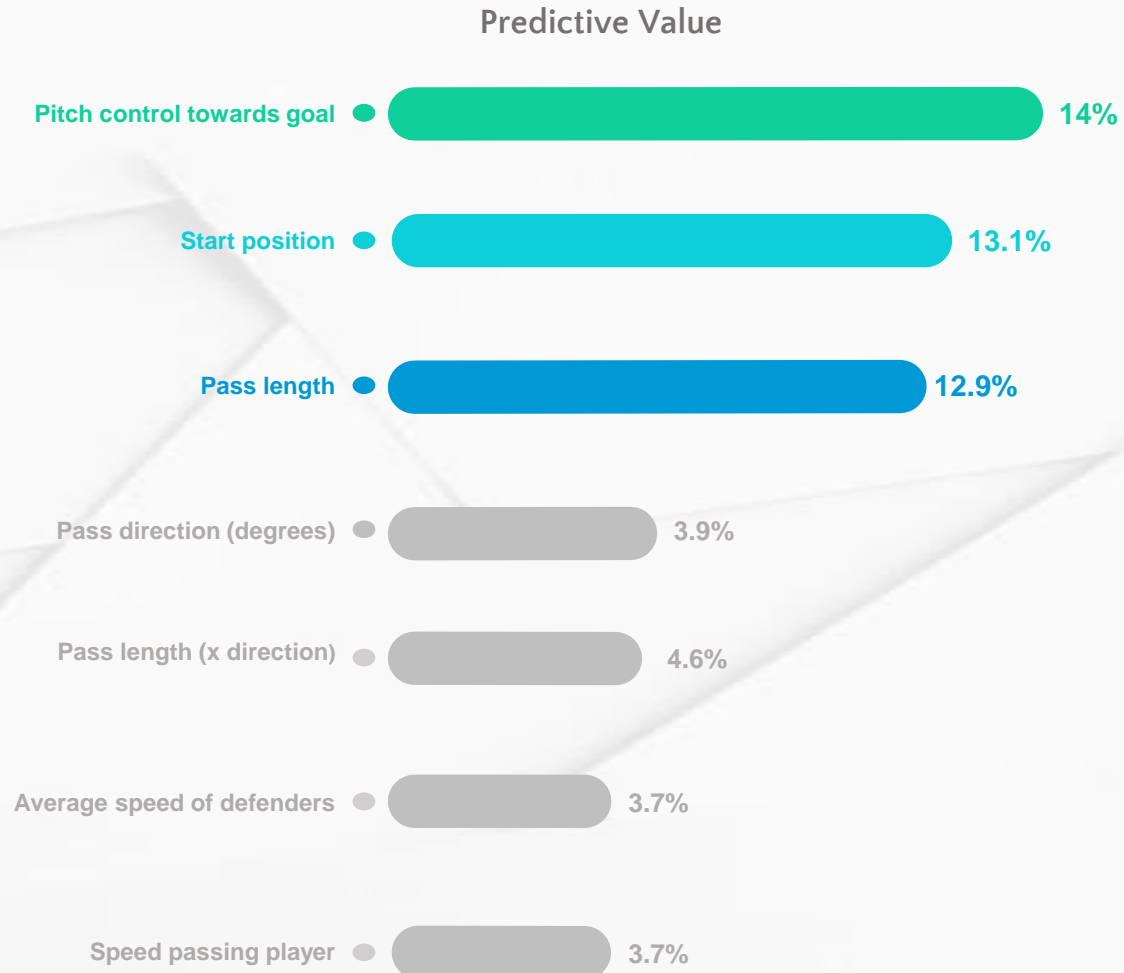
The predictive value of features is shown in the figure

The best predictors for the value of an optimal pass are:

- **Pitch control towards goal** – more control is better
- **Start position** – closer to the goal is better
- **Pass length** – medium to long passes are best (more than 20m)

This allows us to make multiple **recommendations** for teams and players to increase the effectiveness of transition passes

**Take-home message:** Pitch control, start position and pass length are the most important features of an optimal pass



# Recommendations

Recommendations to maximize the added value of transition passes:

## Passing player:

- Be aware of pitch control and space of teammates (pre-orientation)
- Be aware of transition location (closer to the goal means more value)
- Pass forwards
- Avoid short passes

## Attacking players:

- Make runs towards the goal, creating as much space (in front of the ball) for themselves and teammates while staying within an ideal passing distance of more than 20m from the passing player
- Try to win duels high up the pitch

## How to teach players?

**Create awareness** for important game-state features such as:

- Pitch control and the transition position

## Encourage pre-orientation:

- By stimulating players to adapt their looking behaviour to recognize these identifiers

**Take-home message:** Create awareness for important game-state features and encourage pre-orientation



Milan Klaasman  
milanklaasman@gmail.com

# Conclusion

Midfield transition passes are important, because it enables us:

- To create **more scoring opportunities**, without increasing the risk
- **Become a more successful team** by utilizing the effectiveness of transitions

Showed a Risk-Reward model to find optimal midfield transition passes

By analysing **2265 midfield transition** passes from the U17 World Cup with Machine Learning models, correlating features with better midfield transition passes are found

Resulting in multiple **recommendations**:

- **Attacking players** should make **runs towards the goal**, creating as much space for themselves and teammates while staying within an ideal passing **distance of more than 20m** from the passing player.
- **Passing players** should be aware of **forwards passing** options where teammates **have space closest to the goal**, while **avoiding short passes**.
- Encourage player's **pre-orientation** by creating **awareness** for important game-state features



Milan Klaasman  
milanklaasman@gmail.com

# References

- 1) Hobbs, J., Power, P., Sha, L., & Lucey, P. (2018, February). Quantifying the value of transitions in soccer via spatiotemporal trajectory clustering. In *MIT Sloan Sports Analytics Conference*.
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