

QUANTIFYING AND ANALYSING SKILL IN SOCCER PLAYERS: A MULTIVARIATE STATISTICAL APPROACH

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Introduction

Skill is one of the primary determinants of an individual's performance in soccer matches. However, assessing the quality of individual players using analyses of their skill can be problematic because: (i) skill performance tests are inherently complex, (ii) the time taken to run skill tests is often greater than athletic traits, and (iii) individual quality is a composite of many different underlying aspects of skill. In this study, we developed a protocol for quantifying the overall skill of individual players using a time-effective and comprehensive analysis of skill for a large number of individuals.

Methods

We quantified the skill performance of 110 semi-professional and elite football academy players from Liechtenstein, England and Australia. For each player, we assessed their performance in 17 different skill tasks that included three measures of dribbling performance, two measures of shooting, five measures of passing, three measure of juggling, and four measures of rapid passing and controlling. The interaction of these separate traits was analysed using a multivariate statistical framework to identify clear predictive measures of overall individual skill, functional linkages among traits (e.g. trade-offs), and streamlining analyses of player quality.

Results & Discussion

We found several measures of skill performance were positively correlated but overall football ability could not be accurately predicted from a single measure of skill performance. Simple analyses of a player's skill based on few traits did not provide a reliable indication of over individual quality. Rather, unambiguous metrics of a player's quality could only be understood using multi-trait analyses of skill that incorporated both the correlations and trade-offs among the traits. We also found that our data provided unambiguous and detailed feedback to individual players on their relative strengths and weaknesses. Our analyses of skill have the potential to formulate a streamlined protocol for the assessment of individual quality and talent identification.

Conclusion

We found that an individual's technical skill could only be understood using a multivariate description of their performance across a range of skill tasks.