

28th ECSS Anniversary Congress, Paris/France, 4-7 July 2023

Differences in future success among profiles of youth elite soccer players in multidimensional performance assessments: A person-oriented approach based on deep learning factor and cluster analyses

LEYHR, D., KILIAN, P., KELAVA, A., HÖNER, O.

University of Tübingen

INTRODUCTION:

Over the last decades, the prognostic relevance of performance assessments in talent identification and development (TID) programs in soccer is critically discussed in talent research. While a major part of studies deals with variable-centered approaches investigating the predictive value of single tests and/or their combination, also person-oriented analyses focusing on the player holistically, e.g., by examining player profiles, seem promising [1;2]. Therefore, the aims of the present study were (a) to explore different player profiles based on multidimensional performance assessments, and (b) to examine differences among those profiles regarding players' future success in youth elite soccer.

METHODS:

The study sample consisted of N=6523 male U12 players participating in nationwide conducted multidimensional assessments (12 outcome variables) in the German TID program [3]. To address (a), a deep learning factor analysis identified four underlying latent factors behind the assessments: (1) subjective coach evaluations of players' tactical, technical, and psychosocial skills; (2) age-related and anthropometric measurements, (3) technical skills; and (4) speed abilities. Those were used to discover player profiles via a k-means-cluster analysis. Regarding (b), it was assessed, whether players transitioned into a U15 at a German youth academy three years after the assessment. 570 players (8.7%) met the criterion. Chi-square tests examined differences between identified profiles and success rates. Odds ratios for being selected (for each profile) served as effect size.

RESULTS:

(a) The cluster analysis revealed six different player profiles: "Anthropometrically advanced high performers" (n=788), "Subjectively low rated, anthropometrically advantaged" (n=604), "Subjectively high rated and technically skilled" (n=1189), "Average performers" (n=1344), "Subjectively low rated players with low technical skills" (n=1157), and "Anthropometrically and technically below average" (n=1440). (b) Significantly different proportions of successful players among profiles were detected ($p < .001$). "Anthropometrically advanced high performers" obtained the highest chances for future success (22.6%, OR=2.6, $p < .05$), while the lowest chances occurred for the profile "Anthropometrically and technically below average" (1.7%, OR=0.2, $p < .05$).

CONCLUSION:

The results indicate differences in future success among the identified performance profiles of players. Similar to former variable-centered approaches, the person-oriented analyses confirmed the predictive value of the multidimensional performance assessments. Whether and to what extent benefits of the person-oriented approach (e.g., the potential to discover compensation effects) may provide valuable information for research and applied practice of TID processes needs to be examined in future studies.

REFERENCES:

- 1 Bergmann & Andersson (2015), J Psy, 155-165.
- 2 Zibung et al. (2016), PLoS One.
- 3 Höner et al. (2021), Front Sports Act Living.

Topic: Statistics and Analyses

Presentation Oral

European Database of Sport Science (EDSS)

Supported by SporTools GmbH



27440