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

The relationship between specific game-based and general performance in young adult elite male team handball players

Wagner, H., Hinz, M.

University of Salzburg

INTRODUCTION:
In young adult elite team handball players, physical performance is an essential factor for becoming a top-elite player and should be measured adequately. However, in elite team handball academies, general, unspecific tests are often used to determine this physical performance. It is unknown if these unspecific physical performance tests have an influence on the specific team handball performance, although this knowledge is essential for the selection process during adolescence or for young adults before transitioning to professional elite team handball. Additionally, reducing the overall testing time and the test equipment is also important for an economical testing. Consequently, the aim of the study was (1) to analyze the relationship between specific game-based and general physical performance in young elite male team handball players, and (2) to reduce the number of tests for a more practical implementation of physical performance diagnostics in team handball.
METHODS:
Twenty young adult elite male team handball field players (18.6 ± 2.1 years) performed the team handball game-based performance test (GBPT) and general tests including a 20 m sprinting test, a repeated sprint ability test (RSA), a modified T-test, countermovement (CMJ), squat (SJ) and drop jump test (DJ), a standing long jump test, a single-leg lateral three jumps test, a standing throw test, and the determination of the one repetition maximum (1RM) in the bench press, bench pull, front squat, and deadlift. The relationship between general physical performance tests (the GBPT) and anthropometric variables (body height and weight) was determined by calculating Pearson Product-Moment correlation coefficients. Additionally, a principal component factor analysis was conducted to determine a few components that define multiple variables.
RESULTS:
Significant correlations (> 0.60 or < -0.60) were mostly found between different sprinting and jumping tests (20 m sprinting test, RSA, modified T-test, defense time in the GBPT, CMJ, SJ and DJ test, standing long jump test, and the single-leg lateral three jumps test) as well as between different strength tests (1RM in the bench press, bench pull, front squat, and deadlift) and body weight. The principal component factor analysis revealed four components (power and speed, strength, jump shot performance, and endurance) including 21 variables of high loads (> 0.60 or < -0.60).
CONCLUSION:
To reduce the number of tests and optimize the testing process in elite team handball, we suggest five physical performance tests (20 m sprinting test, GBPT, CMJ test, 1RM in the bench press and front squat) that enable testing several times in one season. However, due to the high financial costs of the GBPT (for equipment and manpower), we would suggest a different testing procedure in youth and non-elite team handball, including six physical performance tests (20 m sprinting test, T-test, CMJ test, 1RM bench press and front squat, as well as the YoYo intermittent recovery test).

Topic: **Training and Testing**

Presentation **Oral**

European Database of Sport Science (EDSS)

Supported by SporTools GmbH

3811