

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

Early success is not a prerequisite for success at the adult age in Spanish sprinters

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## INTRODUCTION:

An earlier onset of discipline-specific training and competition during their development years need not necessarily be associated with greater success in senior category (1). In fact, small performance transfer between junior and senior categories has been observed in track and field athletes (2-6). However, most studies have analysed the transition rate only from U18 to senior (2, 4, 7), or from U13 to U20 (6). Studies from U14 to senior category are scarce (3, 5). The main research objective was to quantify the transition rate from success in junior categories (from U14 to U23) to success in senior category, in sprint events in Spain.

## METHODS:

An observational and longitudinal analysis was carried out using the Royal Spanish Athletics Federation database rankings. We analysed 547 sprinters (238 women and 309 men) from their U14 to their senior stage who ranked in top-20 on at least one occasion during the period 2004 to 2021 in any age category. Contingency tables were used with McNemars statistic to analyse the status in each category, and the transition rate in subsequent categories.

## RESULTS:

The first entry in top-20 occurs mostly in U14 (42.8%, 234), and the frequency in following categories is progressively lower: 23.6% (129) in U16; 20.2% (111) in U18; 7.5% (41) in U20; 4.4% (24) in U23; and only 1.4% (8) of athletes make their first top-20 entry in the senior category.

The rate of athletes who, being in top-20 positions in any of the different junior categories, achieve the senior top-20 position is 3.8% (9) in the U14; 7.4% (15) in U16; 10.6% (24) in U18; 20.9% (32) in U20; and 31.4% (32) from U23 to senior ( $p < 0.05$  in all cases).

Transition rates from junior categories with their subsequent categories was statistically significant in all cases ( $p < 0.05$ ). From the total of top-20 U14 athletes (234), 31.2% (73) maintained top20 status in U16, 24.4% (57) in U18, 15.4% (36) in U20, and 9% (21) in U23 category. From the total of top-20 athletes in U16 (202), 53.5% (108) remained their top20 in U18, 27.5% (55) in U20 and 16.3% (33) in U23. From the total of top-20 in U18 athletes (228), 45.6% (104) remained their top-20 status in U20 and 26.8% (61) in U23. From the total of top-20 athletes in U20 (153), 43.1% (66) maintained their top-20 status in U23.

## CONCLUSION:

Data analysis from 547 Spanish sprint athletes showed that: 1) first entry in top-20 position occurs mainly at early ages; 2) the hardest steps to overcome are from U14 to U16, and from U23 to senior; and 3) success in junior categories is not a good predictor of success in the senior category (i.e., low transition rate).

Topic: Statistics and Analyses

Presentation: Poster

European Database of Sport Science (EDSS)

Supported by SporTools GmbH



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