

THE EFFECT OF AGE ON MATCH-HIGH ACCELERATIONS AND DECELERATIONS IN ELITE YOUTH

SOCCER PLAYERS

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PURPOSE

Our study aimed to examine whether there are any differences in high accelerations and decelerations ($>5 \text{ m s}^{-2}/\text{min}$) between various ages of football players. The threshold commonly used for accelerations and decelerations ranges from $2\text{-}4 \text{ m s}^{-2}$. However, there needs to be more scientific evidence on whether higher accelerations and decelerations (5 m s^{-2}) during a match, which are more demanding, significantly differ between players with different chronological ages. Our study could contribute to a better understanding the demands imposed on players during a match.

METHODS

The variables collected through GPS were high accelerations and decelerations per minute of match play ($>5 \text{ m s}^{-2}/\text{min}$). Match data were collected in the year 2022. Seventy-eight football players (16.3 ± 1.2 years old) from an elite Czech football academy were part of the study. A total of 968 players' matches recordings of at least 60 minutes played (fewer minutes were removed due to pacing strategies) were collected and divided into groups according to chronological age (14 years $n=92$, 15 years $n=308$, 16 years $n=190$, 17 years $n=190$, 18 years $n=55$ matches). Because of the data normality violation, Kruskal–Wallis one-way analysis of variance was used. The effect size was measured by Hedges g .

Match-high accelerations and decelerations in elite youth soccer players

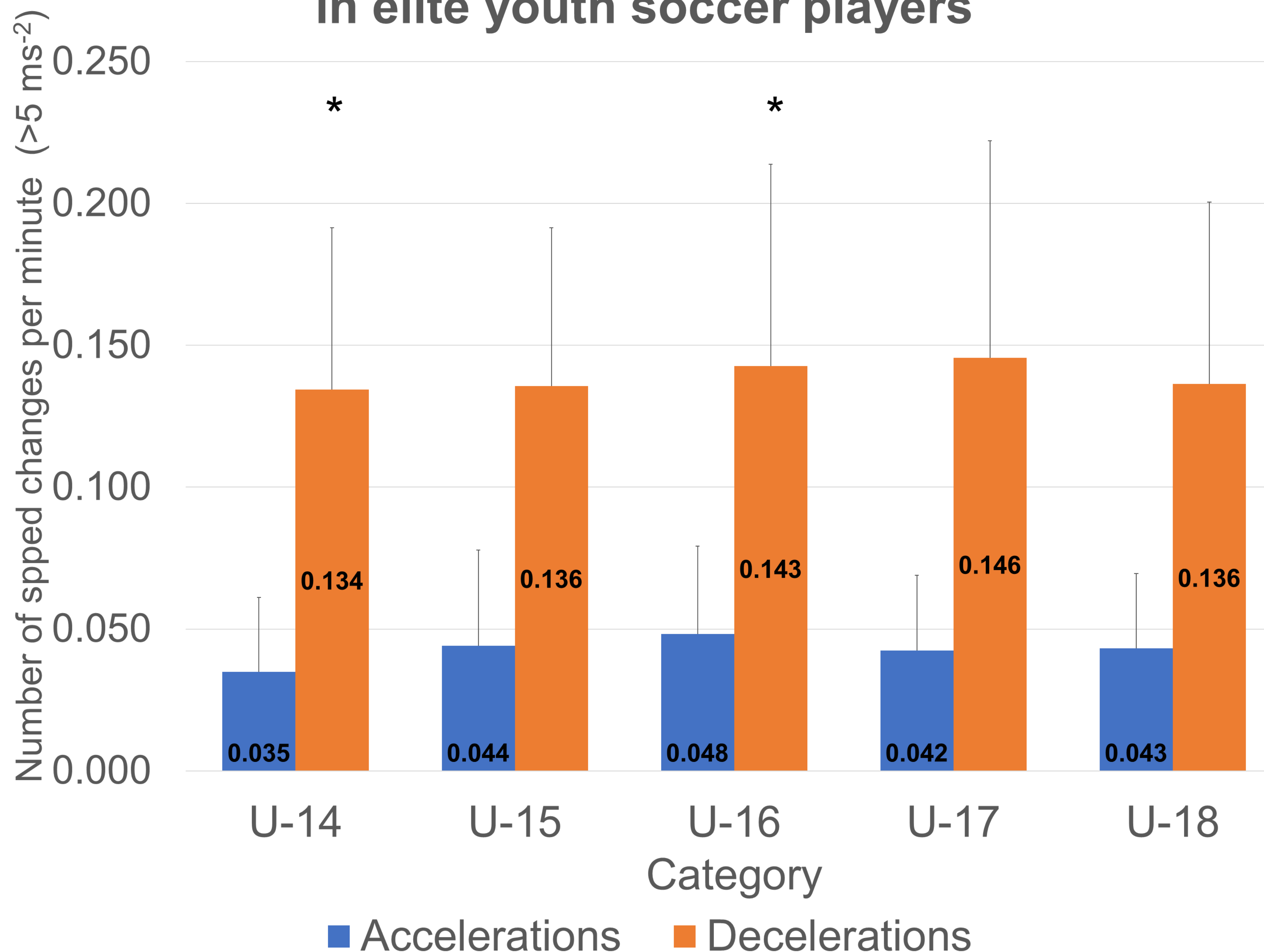


Table 1. Match-high accelerations and decelerations in elite youth soccer players. Numbers are expressed in number of accelerations (resp. decelerations) per minute. * means a statistically significant difference ($p < 0,01$).

RESULTS

Our findings showed very significant differences only in high accelerations between 14- and 16-year-old players ($p < 0.05$; $g = 0.43$), with higher values in 16-year-old players. However, we did not find any other significant differences in accelerations and decelerations between other age groups. The effect size ranged from 0.03 to 0.43 for accelerations and from 0 to 0.17 for decelerations.

CONCLUSION

Our results suggest that there are no significant differences between age categories in accelerations and decelerations at higher speed changes, which are more demanding. Therefore, even in the younger categories (U-14), matches are as demanding for rapid changes of speed as in the older categories.

PRACTICAL APPLICATIONS

Based on our findings, we recommend that coaches and trainers start monitoring the rapid changes in speed, including high accelerations and decelerations, already in younger players. Coaches can then optimize physical load regarding high accelerations and decelerations during the training process to reduce the risk of injury and increase the speed performance of young players.

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