

## FITNESS DETERMINANTS OF REPEATED-SPRINT ABILITY IN HIGHLY-TRAINED YOUTH FOOTBALL PLAYERS

Spencer, M. 1), Pyne, D. 2) , Santisteban, J. 3) & Mujika, I. 4)

1) Norwegian Research Centre for Training and Performance, Norwegian School of Sports Sciences, Oslo, Norway

2) Department of Physiology, Australian Institute of Sport, Canberra, Australia

3) Medical Services, Athletic Club Bilbao, Basque Country

4) USP – Araba Sport Clinic, Vitoria-Gasteiz, Basque Country

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### Introduction

We recently documented the development of repeated-sprint ability (RSA) in highly-trained youth football (soccer) players and showed this fitness quality improves substantially with age from under 11 yrs (U11) to U15, although a plateau occurs from U15 to U18 age groups (1). However, the relationship between RSA and other fundamental fitness qualities in these age groups have not been determined. The purpose of this study was to investigate the relationships between RSA and qualities of acceleration, agility, explosive leg power and aerobic conditioning through the ages of U11 to U18 in highly-trained junior football players from a professional football club.

### Methods

Male players (n=119) across the age groups completed a fitness assessment battery over two testing sessions. The first session consisted of counter movement jumps without and with arm swing, 15-m sprint run, 15-m agility run and the 20-m Shuttle Run (U11 to U15) or the Yo-Yo Intermittent Recovery Test, Level 1 (U16 to U18). The players were tested for RSA in the second testing session using a protocol of 6 x 30-m sprints on 30 s with an active jog recovery (2.0-2.2 m/s).

### Results & Discussion

The correlations of RSA with the assorted fitness tests varied considerably between the age groups, especially for agility ( $r = 0.02$  to  $0.92$ ) and explosive leg power ( $r = 0.04$  to  $0.84$ ). Correlations of RSA with acceleration ( $r = 0.48$  to  $0.93$ ) and aerobic conditioning ( $r = 0.28$  to  $0.68$ ) were less variable with age.

### Conclusion

RSA associates differently with other fundamental fitness tests throughout the teenage years in highly-trained football players, although stabilization of these relationships occurs by the age of 18 years. Coaches in junior football should prescribe physical training accounting for variations in short term disruptions or impairment of physical performance during this developmental period.

### References

1. Mujika I, et al. (2009) *J Sports Sci*, 27(14): 1581-1590