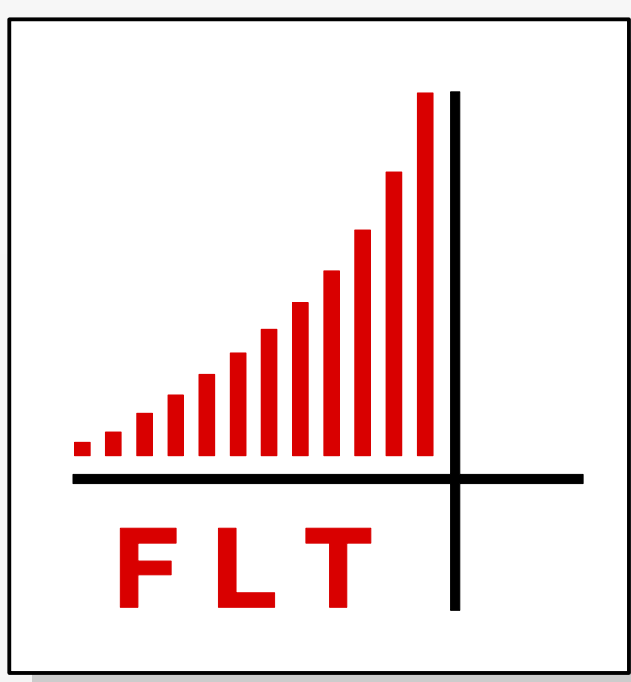


Comparison of sprint and agility performance between German and Brazilian young male elite soccer players

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Introduction

The ability to perform high intensity actions has been reported as a key factor determining soccer performance, competitive standards and frequently deciding the outcome of a match [1, 2]. Linear sprint and agility are independent crucial explosive abilities for soccer players [3] and it is therefore recommended to assess both in a test battery of field-based team sports [4]. The aim of the present study was to compare linear sprint and agility performance between German and Brazilian under-17 (U17) and under-19 (U19) soccer players.

Methods

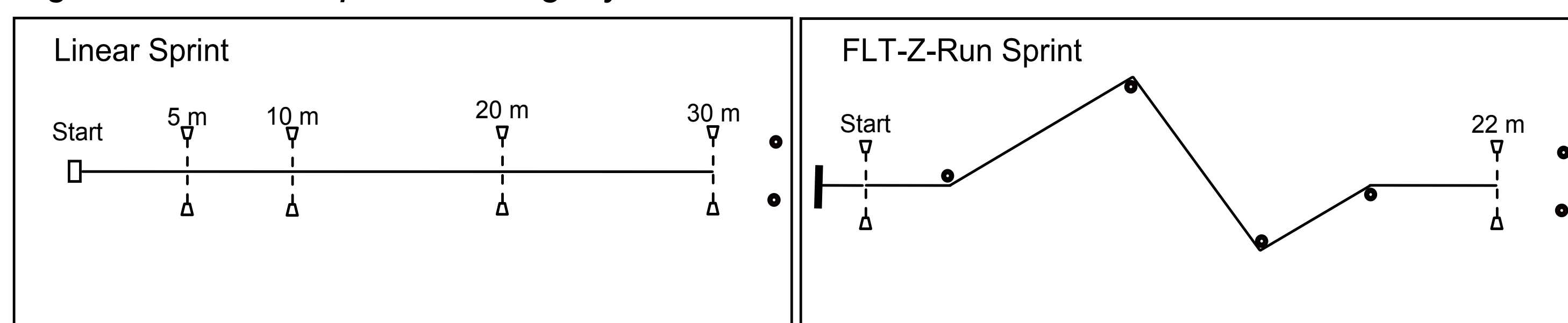
Seventy-five male field players from a German (G) and a Brazilian (B) professional club participated in the study. Measurements were conducted at the beginning of the annual training season. Players were assigned to groups according to their age and country. The anthropometric characteristics are shown in Table 1. After standardized warm-up players performed a 30 m linear sprint including 5 m, 10 m and 20 m split-times, initiated on a starting plate (TDS - Werthner Sport, Austria). Agility was tested with a 22 m nonlinear sprint test (FLT-Z-Run Sprint). Schemes of both procedures are exhibited in Figure 1. The tests were carried out on artificial turf in Germany and on natural grass in Brazil. For each test players accomplished three trials and the mean of the two fastest were used for statistical analysis. The dataset was checked for normality using the KS-test. Differences were determined with a one-way ANOVA with Bonferroni post-hoc test. Statistical significance was set at $p < .05$.

Table 1. Anthropometric characteristics of German and Brazilian young male elite soccer players.

Indicators/Groups	U17G ¹	U17B ²	U19G ³	U19B ⁴
n	14	26	18	17
Age [years]	15.4 ± 0.6 ^{3,4}	15.6 ± 0.5 ^{3,4}	17.4 ± 0.5 ^{1,2}	17.5 ± 0.5 ^{1,2}
Body mass [kg]	69.2 ± 8.4	65.7 ± 7.7 ³	73.8 ± 8.4 ²	71.3 ± 5.5
Stature [cm]	178.6 ± 0.1	174.5 ± 0.1	180.1 ± 0.1	178.2 ± 0.1
BMI [kg/m ²]	21.7 ± 1.8	21.5 ± 1.7	22.5 ± 1.7	22.5 ± 1.1

Significant differences ($p < .05$) are labelled with numbers.

Figure 1. Linear sprint and agility tests.



Results

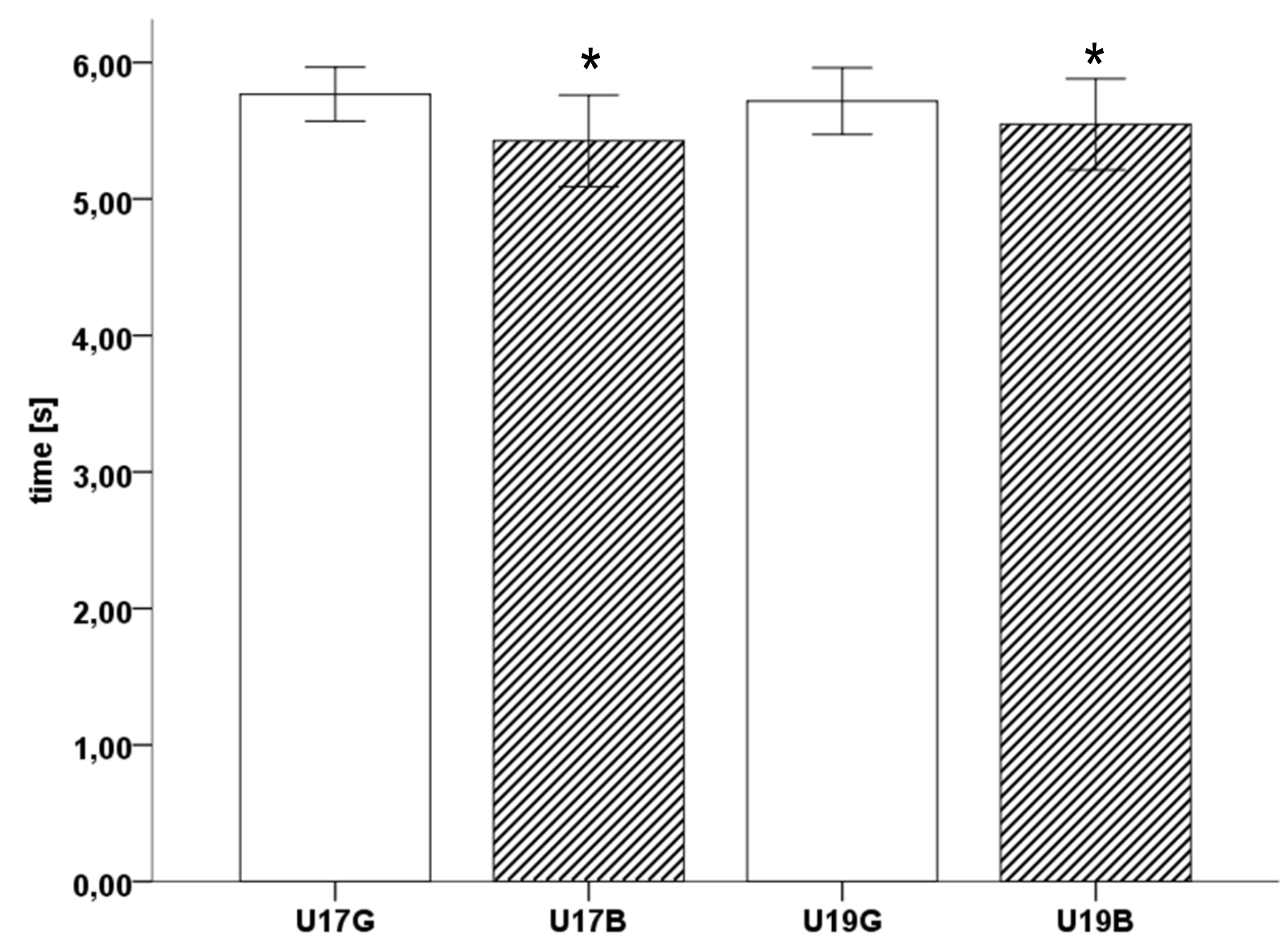
No significant differences ($p > .05$) were found in linear sprint performance over all distances between German and Brazilian young male elite soccer players (Table 2). In contrast, results of agility differed significantly ($p < .05$) between players from each country (Figure 2). Furthermore, differences between U17 and U19 players from the same country were not statistically significant ($p > .05$).

Table 2. Linear sprint and agility performance according to country and age groups.

Time [s]	U17G ¹	U17B ²	U19G ³	U19B ⁴
5 m	1.14 ± 0.03	1.12 ± 0.05	1.11 ± 0.03	1.13 ± 0.04
10 m	1.87 ± 0.05	1.85 ± 0.06	1.84 ± 0.05	1.86 ± 0.06
20 m	3.15 ± 0.09	3.12 ± 0.08	3.10 ± 0.09	3.13 ± 0.09
30 m	4.34 ± 0.13	4.29 ± 0.11	4.28 ± 0.13	4.30 ± 0.13
FLT-Z-Run	5.77 ± 0.10 ^{2,4}	5.43 ± 0.17 ^{1,3}	5.72 ± 0.12 ^{2,4}	5.55 ± 0.17 ^{1,3}

Significant differences ($p < .05$) are labelled with numbers.

Figure 2. Comparison of agility performance (FLT-Z-Run Sprint) between German and Brazilian young male elite soccer players.



*Significant difference ($p \leq .05$) between German (□) and Brazilian (▨) players.

Discussion

Linear sprint and agility performance do not differ between U17 and U19 young soccer players within one country. German and Brazilian young male elite soccer players show similar linear sprint performance, but they differ regarding agility. This difference could be explained by distinct training demands and methodologies (e.g. specific procedures and training drills) [3]. Genetic influences or even the type of the tests' surface should not be neglected [5]. However, the ability to execute sudden changes of direction is a relevant skill for professional soccer players [6]. Thus, further investigation should analyze what kind of training improves agility most efficiently. Moreover, a certain linear sprint performance seems to be required in youth elite soccer, even in Germany as well as in Brazil. In line with this concept, Gissis et al. also pointed out that Greek young elite soccer players possess significantly better speed characteristics than subelite, and recreational practitioners [7].

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