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Original article

ASSESSMENT OF SPEED IN RUGBY PLAYERS: FORWARDS AND DEFENDERS

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Abstract

Aim. This study highlights the differences between the positions of rugby players in terms of speed. Thus, we assume that between forwards and defenders, there are significant differences in the speed evaluated over distances of 10, 20 and 40 m.

Methods. In this study, 26 senior rugby players from the National Rugby League were analyzed, with an average age of 26.4 years, of whom 16 forwards (182,63 ± 4,79 cm; 104,29 ± 13,08 kg; 25,94 ± 8,41 kg fat mass; 70,71 ± 11,44 kg muscle mass) and 10 defenders (179,80 ± 3,43 cm; 95,76 ± 12,60 kg; 20,87 ± 8 kg fat mass; 71,30 ± 4,45 kg muscle mass). The speed was evaluated through the test of speed running over the distances of 10, 20 and 40 m, measured with the help of automatic timing Witty Sem-Microgate, and the statistical analysis was carried out through the SPSS IBM Statistic 20 program.

Results. Using the Independent Samples T-test, differences between forwards and defenders were highlighted in terms of movement speed over distances of 20 m (p=0,001) and 40 m (p=0,001).

Conclusions. Therefore, we notice that the level of speed development differs depending on the position in which rugby players are specialized, forwards or defenders. This may be explained by the job demands during the game.

Keywords: speed, performance, rugby.

Introduction

Rugby is a complex game characterized by players engaging in frequent bouts of high-intensity activity separated by short bouts of low-intensity activity (Corrado, Murgia & Freda, 2014; McAuliffe, Lavallee & Campbell, 2021).

In team sports, the improvement of players' physical performance is of particular importance in the performance of technical-tactical actions, because during a match, players perform numerous explosive movements, such as jumps, turns, sprints and changes of direction (Freitas et al., 2021; Freitas et al., 2022; Sheppy et al., 2020; Perreira et al., 2018).

In the game of rugby, the playing position is determined by the basic physical and morphological characteristics of the players. The greater body weight of the forwards compared to that of the defenders is influenced by the presence of muscles and adipose tissue, and the forwards have more physical contact during the game compared to defenders (Baez-San Martin et al., 2019; Darrall-Jones, Jones & Till., 2016).

The height and weight of rugby players are two of the physical characteristics that have increased with the development of international rugby (Brazier et al., 2020). In addition, Gabbett (2009) found that elite players have greater muscle mass than lower category players. In the same line, some studies have shown that players with better body composition are associated with the ability to perform longer sprints and better performance in strength tests (Hamlin, Deuchrass, Elliot, & Manimmanakorn, 2021).

In research by Fernandez-Valdez et al. (2023) on male rugby players, it was highlighted that forwards make more collisions during a match, adapt better to tackling actions and have superior strength compared to defenders.

The evidence suggests that rugby athletes require relatively high levels of functional body mass with low percentage body fat (Brazier et al., 2020). In amateur players, body weight differences have been reported, with forwards being heavier than defenders (Wang et al, 2016; Gabbett, Kelly & Pezet, 2008; Gabbett, Kelly & Sheppard, 2008).

Physiologically, rugby is characterized by the presence of repetitive efforts performed at very high intensities, such as tackles, rucks, sprints and changes of direction. This sport is characterized by frequent dynamic collisions and defensive actions aimed at preventing the opponent from advancing, resulting in disputes over possession of the ball (Hendricks et al., 2015). Technical skills have been identified as highly important through the analysis of rugby matches and have been linked to team success (Freitas et al., 2022).

To reach the maximum level of physical performance in the game of rugby, field specialists have identified that the most important motor skills that athletes need in performing the tasks during the match are represented by the speed, reaction speed and agility of the players (Coghetto, Zanrosso, Rabello, da Ros & Rodrigues, 2022; Clarke, Anson & Pyne, 2016; Chiwaridzo et al., 2021; Dobbin, Highton, Moss & Twist, 2019; Freitas et al., 2022).

Another important factor in the positive result of a team in competitions is possession of the ball, more precisely how a player manages to keep possession and advance up the field to score. Coghetto et al. (2022) demonstrated that higher success rates in carrying the ball during a match were associated with 30 m speed.

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Speed and acceleration ability are frequently assessed qualities among rugby players (Till, Scantlebury & Jones, 2017), being considered essential components in player performance. Athletes perform an average of 35 ± 2 sprints during a match, with players' sprint performance typically measured over distances of 10, 20 and 40 m (Gabbett & Gahan, 2015; Clarke, Anson & Pyne, 2017).

Acceleration and sprinting ability are frequently assessed by rugby league practitioners and are used in conjunction with body mass to determine a player's sprint drive, assess training adaptation and monitor development. Furthermore, acceleration and sprinting appear to be integral to successful performance in rugby league, with players performing an average of 35 ± 2 sprints per match (Colomer et al, 2020).

The sprint performance of rugby league players is usually measured over distances of 10, 20 and 40 meters (m), thus measuring the ability to accelerate up to 10 m and reach maximum speed in the range 10 - 40 m (Dempsey, Gibson, Sykes, Pryjmachuk & Turner, 2018).

Objectives

This study highlights the differences between the positions of rugby players in terms of speed. Thus, we assume that between forwards and defenders, there are significant differences in the speed evaluated over distances of 10, 20, and 40 m.

Methods

In this study, 26 senior rugby players from the National Rugby League were analyzed, with an average age of 26.4 years, of whom 16 forwards (182,63 ± 4,79 cm; 104,29 ± 13,08 kg; 25,94 ± 8,41 kg fat mass; 70,71 ± 11,44 kg muscle mass) and 10 defenders (179,80 ± 3,43 cm; 95,76 ± 12,60 kg; 20,87 ± 8 kg fat mass; 71,30 ± 4,45 kg muscle mass), according to Table 1. The speed was evaluated through the test of speed running over the distances of 10, 20 and 40 meters, measured with the help of automatic timing Witty Sem-Microgate, and the statistical analysis was carried out through the SPSS IBM Statistic 20 program**.**

Table 1. Physical characteristics of the subjects

	Forwards (N=16)			Defenders (N=10)			
	Mean		Std. Dev.	Mean		Std. Dev.	p
Height (cm)	182,63	±	4,79	179,80	±	3,43	0,093
Weight (kg)	104,29	±	13,08	95,76	±	12,60	0,114
Fat mass (kg)	25,94	±	8,41	20,78	±	8,00	0,133
Muscle mass (kg)	70,71	±	11,44	71,30	±	4,45	0,856

Results

Using the Independent Samples T-test, differences between forwards and defenders were highlighted in terms of movement speed over distances of 20 m (p=0,001) and 40 m (p=0,001), according to Table 2. We notice that regarding the speed evaluated over a distance of 10 m, no significant differences were identified between the forwards and the defenders (p=0,405).

Table 2. Results of the subjects

	Forwards (N=16)			Defenders (N=10)			
	Mean		Std. Dev.	Mean		Std. Dev.	p
10 m (s)	1,92	±	0,10	2,20	±	1,33	0,405
20 m (s)	3,33	±	0,16	3,11	±	0,12	**0,001***
40 m (s)	5,94	±	0,32	5,53	±	0,21	**0,001***

*p<0,05

In Figure 1, we notice that in the speed evaluation test over a distance of 10 m, the forwards obtained better results than the defenders, but these differences, according to Table 2, are not statistically significant. On the other hand, in the evaluation of the speed at distances of 20 and 40 m, the defenders obtained better results than the forwards.

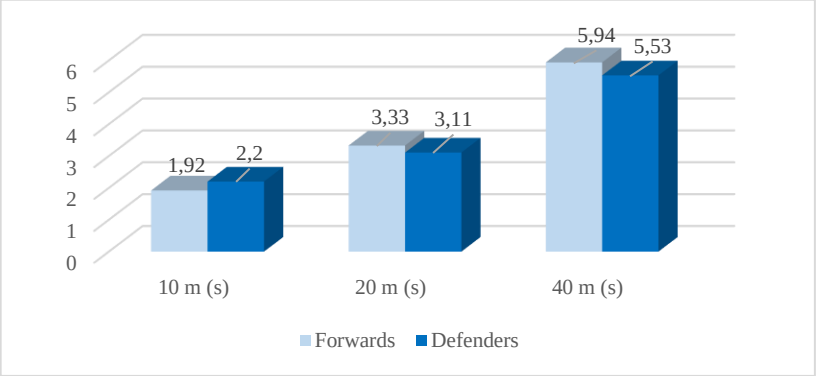

Figure 1. Average results obtained from the players in the speed evaluation tests on the three distances- forwards and defenders

Discussions

Because of the different positional requirements, there are significant differences between the physical profiles of forwards and defenders. The results of our study indicate that the defenders obtained better results than the forwards in the tests for evaluating the speed of movement over distances of 20 m (forwards: 3.33 ± 0.16 s; defenders: 3.11 ± 0.12 s) and 40 m (forwards: 5.94 ± 0.32 s; defenders: 5.53 ± 0.21 s), highlighted in the specialized literature, both in the case of male rugby players and in the case of female rugby players (Lombard, Durandt, Masimla, Green & Lambert, 2015; Gabbett et al., 2019; Darrall-Jones et al., 2016; Dempsey et al., 2018). At the same time, in most of the works found, the players obtained better values of the movement speed evaluated on the 3 distances, compared to the players in our study, but the differences between them are not very large.

At the same time, following the statistical analysis carried out on the body analysis of the athletes, we notice that between forwards and defenders, there are no statistically significant differences in terms of height, weight, fat mass and muscle mass. This is not confirmed in the specialized literature because there are numerous studies that support the fact that there are differences between forwards and defenders in terms of height, weight, fat mass and muscle mass of athletes (Baez-San Martin et al., 2019; Darrall-Jones et al., 2016; Wang et al, 2016; Gabbett, Kelly & Pezet, 2008; Gabbett, Kelly & Sheppard, 2008).

In general, defenders obtained better results in speed evaluation compared with forwards, which can be explained by the demands of the position on the field. The specialized literature gives us some pointers in this regard, highlighting the fact that between forwards and defenders, there are differences both in terms of somato-functional characteristics and in terms of the motor potential of the players, among which speed is also found. Because the morphofunctional adaptations of rugby players are specific to each position, they can influence the motor capacity of the players. In the specialized literature, for the evaluation of speed, running tests are frequently found over distances of 10, 20 and 40 m, but we consider that the speed evaluated over distances greater than 40 m is essential, because the current game of rugby occurs at maximum intensity, with quick transitions of game phases from attack to defense and vise versa.

Conclusions

Therefore, we notice that the level of speed development differs depending on the position in which rugby players are specialized, forwards or defenders. This may be explained by the job demands during the game. This study offers us new research directions in the game of rugby existing in our country, because there are many aspects related to the morphological, motor and physiological adaptations of the players that must be studied depending on the position in which the athletes are specialized.

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