

DIFFERENCES IN THE PSYCHOLOGICAL SKILLS AND STRATEGIES USED BY ELITE MALE UNDER-19 RUGBY UNION PLAYERS IN COMPETITION ACCORDING TO PLAYING POSITION

Luis Vaz¹, Ignacio Martín², Marco Batista³, Luís Almeida¹, & Helder M. Fernandes¹

University of Trás-os-Montes e Alto Douro¹, Portugal; University of Granada², Spain & Polytechnic Institute of Castelo Branco³, Portugal

ABSTRACT: The aim of this study is to identify differences in the use of psychological skills in competitive situations depending on playing position (forwards vs. back lines) and also considering the final classification obtained (1st to 3rd vs. 4th to 7th places). A total of 183 male athletes ($M = 18.67$, $SD = 0.51$ years) from seven nations participating in the European Championship under 19 (2014 edition) volunteered to the study. The sample consisted of 92 forwards and 91 backs players. Athletes responded to translated and adapted versions of the questionnaire Test of Performance Strategies (TOPS; Thomas et al., 1999) an hour before the first competition. The results indicated that, in general, forward players reported higher levels of self-talk ($p = .030$) and activation ($p = .025$) than the backs. When compared separately by the playing position, forward players of the better-ranked national teams in the competition scored significantly lower on negative thinking ($p = .001$) when compared with the forward players of the worst-ranked teams. It is concluded that certain psychological skills used in competition varies according to the game position and that a better control of negative thoughts by forward rugby players may contribute to their teams' overall performance success.

KEYWORDS: Psychological skills, rugby, playing position, U19.

COMPARAÇÃO DAS COMPETÊNCIAS PSICOLÓGICAS DE JOGADORES U19 DE RUGBY DE ELITE EM FUNÇÃO DA POSIÇÃO DE JOGO

RESUMO: O objetivo deste estudo é identificar diferenças no uso de competências psicológicas em situações de competição em função da posição de jogo (avançados vs. linhas atrasadas) e considerando também a classificação final obtida (1º ao 3º vs. 4º ao 7º lugares). Participaram no estudo 183 atletas masculinos ($M = 18.67$; $DP = 0.51$ anos de idade) de sete diferentes nacionalidades, participantes no Campeonato da Europa sub 19 (edição 2014). A amostra foi constituída por 92 jogadores avançados e 91 jogadores das linhas atrasadas. Os atletas responderam a versões traduzidas e adaptadas do questionário Test of Performance Strategies (TOPS; Thomas et al., 1999) cerca de uma hora antes da sua primeira competição. Os resultados obtidos indicaram que, no geral, os jogadores avançados reportaram níveis superiores de diálogo interno ($p = .030$) e ativação ($p = .025$) em comparação com os das linhas atrasadas. Quando comparados segundo a classificação final, os jogadores avançados das equipas melhores classificadas revelaram níveis inferiores de pensamentos negativos antes da competição ($p = .001$), em comparação com os avançados das equipas piores classificadas. Conclui-se que certas competências psicológicas em situação de competição variam em função da posição de jogo e que um melhor controlo dos pensamentos negativos por parte dos jovens jogadores avançados parece contribuir para melhores resultados desportivos.

PALAVRAS CHAVE: Competências psicológicas, rugby, posição de jogo, sub-19.

DIFERENCIAS EN LAS COMPETENCIAS PSICOLÓGICAS DE JUGADORES DE ÉLITE SUB-19 DE RUGBY EN FUNCIÓN DE SU POSICIÓN DE JUEGO

RESUMEN: El objetivo de este estudio es identificar las diferencias en el uso de habilidades psicológicas en competición en función de la posición de juego (delanteros vs. tres cuartos) y, también, teniendo en cuenta la clasificación final obtenida (del 1º al 3º vs del 4º al 7º). En el estudio participaron 183 deportistas masculinos ($M = 18.67$, $DT = 0.51$ años) de siete nacionalidades diferentes que participaron en el Campeonato de Europa de menores de 19 años (año 2014). La muestra estuvo formada por 92 delanteros y 91 tres cuartos. Los atletas respondieron a las versiones traducidas y adaptadas del Test of Performance Strategies (TOPS;

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Dirección de contacto Helder Miguel Fernandes, Universidade de Trás-os-Montes e Alto Douro, Departamento de Ciências do Desporto, Exercício e Saúde, Quinta de Prados - Campus Desportivo, Apartado 1013, 5001-801 Vila Real - Portugal
Correo-e: hfernandes@utad.pt

Thomas et al, 1999) alrededor de una hora antes de su primer partido. Los resultados indicaron que, en general, los delanteros informaron de mayores niveles de diálogo interno ($p = .030$) y de activación ($p = .025$) en comparación con los tres cuartos. En función de la clasificación final, los jugadores delanteros de los mejores equipos clasificados revelaron niveles más bajos de pensamientos negativos antes de la competición ($p = .001$) en comparación con los delanteros de los equipos peor clasificados. Se concluye que ciertas habilidades psicológicas en situación de competición varían de acuerdo con la posición de juego y que un mejor control de los pensamientos negativos en jóvenes jugadores delanteros puede contribuir a mejores resultados deportivos de la equipa.

PALABRAS CLAVE: Competencias Psicológicas, Rugby, posición de juego, Sub-19.

Over the last decades, there has been a growing interest in performance analyses of rugby union, namely the physical demands of competition through the use of time motion analysis (Duthie, Pyne, & Hooper, 2003; Vaz, Van Rooyen, & Sampaio, 2010), global positioning systems (Cunniffe, Proctor, Baker, & Davies, 2009; McLellan & Lovell, 2013; Suarez-Arrones, Portillo, Gonzalez-Rave, Munoz, & Sanchez, 2012; Vaz, Leite, João, Gonçalves, & Sampaio, 2012) and the measurement of a variety of physiological variables (Austin, Gabbett, & Jenkins, 2011; Holmyard & Hazeldine, 1993; Reilly, 1997). Moreover, the development of notational analysis and the identification of key performance indicators have also provided further information into the specific playing profiles of successful teams and individuals (Hughes & Bartlett, 2002). Therefore, it becomes evident that the increasing professionalism of rugby union has been accompanied by the rise of scientific research on the sport.

Playing positions in rugby union may be classified in two main groups: forwards and backs. Forwards include players numbered from 1 to 8 and backs include players numbered from 9 to 15. Traditional rugby is distinguished by the physical commitment of forwards and the game specific agility of backs. Rugby forwards are typically larger and heavier, engage in more physical contact situations (i.e., rucks/mauls/scrums) and cover less distance per game, while backs are considerably lighter, involved in less impacts and cover more distance at high speed and more total distance per game (Austin et al., 2011; Cunniffe et al., 2009; Duthie, Pyne, & Hooper, 2005; Suarez-Arrones et al., 2012; Vaz, Vasilica, Carreras, Kraak, & Nakamura, 2015).

A number of studies have investigated the relationship between the use of certain psychological skills and competitive anxiety levels in rugby (Kruger, Potgieter, Malan, & Steyn, 2010; Lane, Rodger, & Karageorghis, 1997; Neil, Mellalieu, & Hanton, 2006; Neil, Mellalieu, Wilson, & Hanton, 2007; Robazza & Bortoli, 2007), but mainly in adult players. Consequently, knowledge is still lacking on the psychological skills and strategies used by youth rugby players before and when competing. In addition, there appears to be less research concerning the specific psychological skills and strategies used by players playing different positions and their subsequent performance profiles.

A number of researchers have recommended the Test of Performance Strategies (TOPS; Thomas, Murphy, & Hardy, 1999) as an appropriate instrument for assessing the use of psychological skills (Fernandes & Fernandes, 2015; Fletcher & Hanton, 2001; Goudas, Kontou, & Theodorakis, 2006; Jackson, Thomas, Marsh, & Smethurst, 2001) in practice and competition contexts. In addition, the TOPS test has also been considered as one of the most popular tests in sports psychology practice. This

questionnaire was designed to assess a range of psychological skills and techniques, as well as their strategic use by athletes in different settings (Hardy, Roberts, Thomas, & Murphy, 2010). Although the terms "psychological skills" and "psychological strategies" are somehow used interchangeably in regards to this instrument, some distinction should be noted. Thus, a skill may be defined as the learned ability/capacity to perform a specific task, whereas the term strategies may refer to "the means or the plan of action used to achieve the enhancement of psychological skills by using one or more psychological techniques" (Birrer & Morgan, 2010, p. 79).

Mellalieu, Hanton, and Fletcher (2006) suggested that the appropriate use of certain psychological skills may lead to increases in self-reported mental toughness, thereby sustaining a positive relationship between mental toughness and the use of psychological strategies. Frey, Laguna, and Ravizza (2003) reported a relationship between mental skill use in practice and success in competition suggesting that athletes, who also use mental skills when practicing their physical skills, are more capable of enhancing the quality of their practice.

As such, the aim of this study is to identify differences in the use of psychological skills in competitive situations by elite male under-19 rugby union players as a function of their playing position (forwards vs. back lines) and teams' final classifications (1st to 3rd vs. 4th to 7th places).

Based on the aforementioned literature, the TOPS was selected for our study and used in a youth elite competitive situation. The present study seeks to extend current knowledge in the sport psychology literature regarding performance enhancement (e.g., Fernandes, Nunes, Vasconcelos-Raposo, Fernandes, & Brustad, 2013; Fernandes, Vasconcelos-Raposo, & Fernandes, 2012; Lane et al., 1997; Neil et al., 2006, 2007; Robazza & Bortoli, 2007). We expect that a more comprehensive description and measurement of the psychological skills and strategies used by elite male rugby union players in competition according to player position will allow coaches and sport psychologists to better prepare and carry out mental training programs and better rank athletes according to these psychological measures.

METHOD

Participants

Data for the study were collected during the under-19 European Championship 2014, held in Lisbon - Portugal. Initially, a total of 200 elite male under-19 rugby union players from 8 national teams volunteered to participate in the present study. However, the Polish sample (8th place in the championship; $n = 17$) was

later excluded from the analyses due to low reliability issues in most of the instrument's dimensions (Cronbach's alpha values below .60). Consequently, the final sample included a total of one hundred eighty-three elite male U19 rugby players classified as backs ($n = 91$) and forwards ($n = 92$), with ages comprised between 17 and 19 years ($M = 18.67$, $SD = 0.51$). The mean height of the players was 182.1 cm ($SD = 6.46$) and the mean weight was 89.70 kg ($SD = 12.19$). Athletes reported a mean average of 5.66 years ($SD = 1.80$) of rugby experience. With respect to the sample distribution ranked by the teams' final classification in the championship, the following was observed: Georgia (1st place, $n = 34$), Portugal (2nd place, $n = 20$), Spain (3rd place, $n = 26$), Russia (4th place, $n = 27$), Netherlands (5th place, $n = 17$), Belgium (6th place, $n = 14$), and Romania (7th place, $n = 45$).

The institutional ethics committee of the first author provided ethical approval for this study (CE.UTAD 27/2015).

Instruments

The Test of Performance Strategies (TOPS; Thomas et al., 1999) is a 64-item self-report questionnaire designed to assess the use of psychological skills and strategies (self-talk, emotional control, automaticity, goal-setting, imagery, activation, relaxation and negative thinking) by athletes in competition and practice settings. For the purpose of this study, only the 32-item of the eight competition subscales were administered and examined. Participants were asked to rate the frequency of each item on a 5-point response scale ranging from 1 (never) to 5 (always). Different language versions of the instrument were administered. The Portuguese national team responded to a translated and validated version of the TOPS (Bastos, Corredeira, Probst, & Fonseca, 2012). The Spanish and the Romanian national teams responded to previously translated and back-translated versions of the scale by independent professional translators. The remaining teams responded to the original English-version of the instrument and a professional translator was made available (see Golby, Sheard, & Lavalley, 2003), if needed, during data collection to minimize any language issues. This procedure was adopted due to the unavailability of other specific language versions of this questionnaire and because these players have a large international game experience, with most of them playing in teams of English-speaking countries.

Procedures

Firstly, the team managers or coaches were informed of the study goals and permission was requested to approach the

athletes on their national team. Next, signed informed consents were obtained from the athletes or by the legal guardians of players aged below 18. After this, the athletes completed the questionnaire one hour before the first competition of the tournament, in the presence of the same researcher. The instrument was administered individually, in a quiet room with no distractions. The professional translator mentioned before was only consulted in case of language difficulties and standard answers/examples were provided.

Statistical analysis

Descriptive statistics are reported as $M \pm SD$. Skewness and kurtosis values were computed in order to examine the normality of the data. The composite reliability of the subscales was tested by computing Cronbach's alpha coefficients for the total sample and by national team. To examine the main and interaction effects of the athletes' playing position (backs vs. forwards) and the final classification of the team in the competition (top three teams vs. teams classified between 4th and 7th place), a 2×2 MANOVA was conducted on the TOPS subscales and subsequent ANOVAs and follow-up comparisons were performed, as necessary. Partial eta-squared (η_p^2) was reported as a measure of the effect size between groups according to the following rule of thumb: small ($> .01$), medium ($> .06$) and large ($> .14$). Statistical significance was set at $p < .05$. All of these statistical analyses were conducted using SPSS (version 17.0).

RESULTS

Preliminary analysis of the item responses showed no missing data. In general, these U19 rugby players scored higher on activation and goal-setting in competition, and lower on negative thinking. The absolute values of skewness and kurtosis for the subscales' scores ranged between -0.67 and 0.98 , thereby supporting the use of parametric statistical procedures. Cronbach's alphas for the subscales reached low to moderate levels. The majority of the subscales demonstrated acceptable reliability (i.e., $\alpha > .60$; Loewenthal, 2001), with the exception of the automaticity subscale. Based on this result and on previous similar evidences (Fernandes & Fernandes, 2015; Fernandes, Vasconcelos-Raposo, & Fernandes, 2013; Hardy et al., 2010; Katsikas, Donti, & Psychountaki, 2011), this subscale was excluded from the following analyses. The descriptive statistics for the competition strategies subscales are presented in Table 1.

Table 1

Descriptive statistics for the competition strategies subscales (n = 183)

Competition strategies	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	Cronbach's alpha (range)
Self-talk	3.51	0.80	-0.50	0.11	.74 (.61-.85)
Emotional control	3.39	0.70	-0.56	0.98	.69 (.59-.72)
Automaticity	2.88	0.64	-0.38	0.89	.48 (.27-.58)
Goal-setting	3.76	0.74	-0.67	0.19	.72 (.65-.79)
Imagery	3.47	0.68	-0.32	-0.23	.63 (.57-.81)
Activation	3.90	0.52	-0.28	0.32	.61 (.57-.69)
Relaxation	3.50	0.63	-0.21	0.23	.66 (.59-.92)
Negative thinking	2.05	0.65	0.69	0.21	.60 (.55-.64)

The playing position \times team final classification MANOVA did not reveal a significant interaction effect ($F_{(7,173)} = 1.68, p > .05$). Subsequent univariate analyses of variance indicated a main effect of the playing position on self-talk ($F_{(1,179)} = 4.76, p = .03$,

$\eta_p^2 = .030$) and activation ($F_{(1,179)} = 5.12, p = .025, \eta_p^2 = .04$). Follow-up Bonferroni tests showed that forward players used more self-talk and activation strategies in competition than the backs. The descriptive results are presented in table 2.

Table 2

Means and standard deviations for the competition strategies grouped by playing position

Competition strategies	Back players (n = 91)		Forward players (n = 92)	
	M (SD)		M (SD)	
Self-talk	3.40 (0.75)		3.62 (0.83)	
Emotional control	3.36 (0.61)		3.42 (0.77)	
Goal-setting	3.75 (0.74)		3.76 (0.75)	
Imagery	3.48 (0.69)		3.47 (0.67)	
Activation	3.81 (0.56)		3.99 (0.46)	
Relaxation	3.46 (0.60)		3.54 (0.67)	
Negative thinking	2.08 (0.68)		2.02 (0.63)	

When compared separately by playing position, no significant differences were found in the TOPS subscales when comparing back players based on their team's final classification. However, the ANOVA results for the forwards' comparison indicated a moderate and significant effect on the negative thinking subscale ($F_{(1,90)} = 10.96, p = .001, \eta_p^2 = 0.11$). Examination of

the groups' means showed that the forward players of the better-ranked national teams in the competition scored significantly lower on negative thinking, when compared with the forward players of the worst-ranked teams (1.78 ± 0.50 vs. 2.20 ± 0.65 , respectively). The descriptive results are presented in table 3.

Table 3

Means and standard deviations for the competition strategies grouped by playing position and teams' final ranking

Competition strategies	Back players (n = 91)		Forward players (n = 92)	
	BRT	WRT	BRT	WRT
	(n = 41) M (SD)	(n = 50) M (SD)	(n = 39) M (SD)	(n = 53) M (SD)
Self-talk	3.50 (0.73)	3.26 (0.77)	3.78 (0.81)	3.50 (0.83)
Emotional control	3.40 (0.68)	3.31 (0.52)	3.53 (0.79)	3.34 (0.76)
Goal-setting	3.76 (0.59)	3.75 (0.85)	3.94 (0.75)	3.64 (0.73)
Imagery	3.63 (0.68)	3.36 (0.67)	3.55 (0.63)	3.41 (0.70)
Activation	3.84 (0.65)	3.79 (0.44)	4.00 (0.49)	3.98 (0.44)
Relaxation	3.48 (0.56)	3.43 (0.63)	3.62 (0.56)	3.48 (0.73)
Negative thinking	2.02 (0.63)	2.14 (0.72)	1.78 (0.50)	2.20 (0.65)

Note: BRT (better-ranked teams; i.e., 1st to 3rd place); WRT (worst-ranked teams; i.e., 4th to 7th place).

DISCUSSION

The purpose of this study was measure the psychological skills and strategies used by elite male under-19 rugby union players in competition and compare them as a function of playing position and championship final rank position. This study's results suggest a possible relationship between the use of certain psychological strategies in competition by playing position and the teams' overall performance success. More precisely, forward players reported higher levels of self-talk and activation than the backs. It was also observed that forward players of the first three better-ranked national teams in the end of the competition reported a better control of the negative thinking before the beginning of the European Championship.

The findings that U19 rugby union forward players experience higher levels of activation and higher use of self-talk before competition provides a further insight into the understanding of this game. These results suggest that, alongside the previous differences found in physical qualities and game demands by game position (Austin et al., 2011; Cunniffe et al., 2009; Duthie et al., 2003; Suarez-Arrones et al., 2012; Vaz et al., 2015), forward players may benefit from higher activation/arousal state levels, as this will increase the athlete's activation state, and promote

mental and physical readiness to endure the physical confrontational nature of this sport (Neil et al, 2006). In addition, the combination of higher use of activation and self-talk strategies in competition by the forward players may be explained by the fact that these players are more exposed to the detrimental effects from cognitive anxiety due to the increased threat of personal confrontation (Mellalieu, Hanton, & O'Brien, 2004). Previous research has demonstrated that self-talk is inversely related to negative thinking and positively related to self-confidence (Fletcher & Hanton, 2001; Thomas et al., 1999) and that the use of positive self-talk helps protect against debilitating interpretations of competitive anxiety (Mellalieu et al., 2006). This appears to be in line with the results of a recent study in U18 rugby players (Batista & Vaz, 2015), which demonstrated that forward players tend to report lower cognitive anxiety scores in comparison with the backs. One other potential explanation for this finding is that self-talk may also be considered as a motivational mechanism, by enhancing the athletes' self-confidence and promoting greater effort and long-term persistence (Hardy, 2006), which are key aspects of the game demands on rugby forwards.

One other salient feature of our results was the fact that forward rugby players of national teams that were more successful in this competition also showed a better ability to control negative thinking. On the other hand, it appears that forward rugby players from the worst ranked national teams in the championship experienced more psychological difficulties just before the competition begins (namely negative thoughts, lack or poor attention and/or emotional control) or have poorly developed pre-performance strategies to cope with such difficulties. Previous research has consistently suggested that experiencing negative 'doubting' cognitions and/or negative images of performance is somehow related to reduced expectancies and self-confidence (Neil et al., 2006), and higher levels of anger symptoms in rugby players (Robazza & Bortoli, 2007). Moreover, Lane et al. (1997) found that perceived readiness and match conditions were significant predictors of self-confidence among rugby players, whereas Neil et al. (2006) observed that elite rugby players report more facilitative interpretations of competitive anxiety symptoms and higher levels of self-confidence. In addition, ideographic research has also demonstrated that a better performance in a closed skill (i.e., rugby lineout throwing) is associated with minor anxiety symptoms, more facilitative interpretations, and superior levels of self-confidence (Neil et al., 2007). Thus, a possible explanation for these results could be that the insufficient self-confidence of the players in the worst ranked teams does not allow them to protect against debilitating cognitive anxiety interpretations and/or to cope with the physical and mental stressors associated with the rugby union game demands by playing position. Other possible explanations may also be related to previous unsuccessful competitive experiences and deficient training programs. Therefore, future research is needed to further deepen the understanding of the relationship between the athletes' use of psychological skills and their teams' overall success in competition.

The current evidences should be interpreted in light of the strengths and limitations of the study. The strengths are the sample size and its heterogeneity, and the data collection process before the beginning of an important international competition. The limitations are the use of different language versions of the instrument without a systematical establishment of the cross-cultural equivalence in terms of the measures/samples. Consequently, the present evidences should be interpreted with the necessary caution.

CONCLUSIONS

The findings of the present study suggest that forwards' U19 rugby union players experience higher self-talk and activation levels, just before the competition, than the back players and that a better control of negative thoughts by forward rugby players may contribute to their teams' overall performance success.

Future research is suggested to better understand the possible mechanisms and processes that determine the game position differences found in the present study, as well as to provide a further insight on how different psychological strategies used by rugby players influence their teams' performance.

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