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El entrenamiento del liderazgo como elemento diferenciador de la carrera profesional: percepciones de los entrenadores de fútbol

Leadership training as a career differential: football coaches' perceptions

Formação em Liderança como diferencial na carreira: percepção de treinadores de futebol

Neto, Louriva Vianna da Silva¹, Miragaia, Dina Alexandra Marques¹, Veiga, Pedro Mota², Ibáñez, Sergio José³.

¹*Sport Science Department, University of Beira Interior - NECE (Research unit in Business Sciences), Covilhã, Portugal;* ²*NECE and Institute of Management and Health Organizations, Catholic University of Portugal, Viseu, Portugal;* ³*Faculty of Sports Sciences – Universidad de Extremadura, GOERD (Training Optimization and Sports Performance Research Group), Badajoz, Spain.*

RESUMEN

El liderazgo ha sido estudiado como una de las principales variables para el buen rendimiento deportivo de los equipos de fútbol. Así, el objetivo de este estudio fue analizar el impacto de la formación obtenida a través de la capacitación oficial de entrenadores de fútbol, en los conocimientos y habilidades de liderazgo de los respectivos entrenadores. La muestra estuvo compuesta por 211 entrenadores portugueses, titulados como entrenadores de fútbol, independientemente de su nivel formativo. Se utilizó un cuestionario con 32 ítems divididos en cuatro dimensiones: i) habilidades de gestión/supervisión, ii) liderazgo organizacional, iii) dominio personal y iv) gestión de recursos. Se utilizó un modelo de ecuaciones estructurales (SEM-PLS) para validar las hipótesis. Los resultados indican que la formación tiene un impacto positivo y estadísticamente significativo en las competencias de liderazgo. También se pudo comprobar un efecto significativo de la formación sobre las competencias de liderazgo. En cuanto al impacto de la formación sobre las competencias de liderazgo mediadas por el conocimiento, se comprobó que no existe un impacto estadísticamente significativo. Los resultados también muestran una autopercepción positiva de los formadores respecto a sus competencias de liderazgo. Los entrenadores reconocen que es necesario seguir formándose en el ámbito del liderazgo, muestran ser conscientes de la importancia del desarrollo profesional y continuo en este tema. Como implicaciones prácticas, el estudio sugiere una reflexión sobre el contenido y la estructura pedagógica del proceso de formación, formal e informal, de los cursos oficiales para entrenadores de fútbol sobre este contenido.

Palabras clave: Competencias, conocimientos; habilidades; formación de entrenadores, proceso de aprendizaje.

ABSTRACT

Leadership has been studied as one of the main variables for football clubs' good sporting performance. Therefore, this study aims to analyse the impact of football coaches' official training on these coaches' knowledge of leadership and competences. The sample includes 211 qualified Portuguese football coaches, irrespective of their level. A questionnaire was used, with 32 items divided in 4 dimensions: management/supervisory skills, organisational leadership, personal domain, and resource management. To validate the hypotheses, structural equation modelling (SEM-PLS) was used. The results indicate that training has a positive and statistically significant impact on leadership skills. A statistically significant effect of training on leadership knowledge was also found. Concerning the impact of training on leadership skills mediated by knowledge, there was no statistically significant impact. The results also show coaches' positive self-perception of their leadership skills. However, recognising the need for more thorough training in the field of leadership, they are aware of the importance of continued professional development in the topic. As practical implications, the study suggests reflection on the pedagogical content and structure of the training process, whether formal or informal, of official football coach courses.

Keywords: competences, knowledge, skills, coaching education, learning process.

RESUMO

A liderança tem vindo a ser estudada com uma das principais variáveis para o bom desempenho desportivo dos clubes de futebol. Deste modo, o objetivo do presente estudo é o de analisar o impacto da formação obtida por via da formação oficial de treinadores de futebol, no conhecimento e competências de liderança dos respetivos treinadores. A amostra incluiu 211 treinadores portugueses, habilitados para a atividade de treinador de futebol, independente do grau. Foi utilizado um questionário com 32 itens divididos em 4 dimensões: competências de gestão/supervisão, liderança organizacional, domínio pessoal, e gestão de recursos. Para a validação das hipóteses foi utilizado um modelo de equações estruturais (SEM-PLS). Os resultados indicam que a formação tem um impacto positivo e estatisticamente significativo nas competências de liderança. Foi ainda possível verificar um efeito com significância estatística da formação nos conhecimentos de liderança. Já no que diz respeito ao impacto da formação nas competências de liderança mediada pelo conhecimento, constatou-se que não existe um impacto com significância estatística. Os resultados evidenciam ainda uma autoperceção positiva dos treinadores referente às suas competências de liderança. Ainda que reconheçam que exista a necessidade de formação mais aprofundada no âmbito da liderança, mostram a sua consciência sobre a importância para o desenvolvimento profissional e contínuo sobre este tema. Como implicações práticas, o estudo sugere uma reflexão sobre o conteúdo e estrutura pedagógica do processo formativo seja ele formal ou informal dos cursos oficiais de treinadores de futebol.

Palavras chave: Competências, conhecimento; skills; formação de treinadores, formação contínua.

INTRODUCTION

The topic of leadership has warranted the interest of researchers and professionals in diverse fields for better understanding of how this phenomenon can stimulate organisations' performance (Back et al., 2022; D'Innocenzo et al., 2016; Vogler et al., 2017). Many approaches to leadership were developed to find resources that can optimize their results and

thereby provide a direct benefit for organizational performance (Crawford et al., 2017; Jang, 2022; Westerman et al., 2021).

Also in the field of sport, researchers are particularly interested in examining leadership due to its direct relation with individual and team performance (Gonzalez-Ponce et al., 2022; Keathletswe & Maleté, 2019; Lopez-Gajardo et al., 2021). One of

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the most prominent lines of research is concerned with how a coach's leadership might improve or hinder players' progress (Chelladurai, 2007; Peachey et al., 2015; Soto et al., 2021). Among the various factors showing the importance of continuing to study the topic is the fact of the coach being a stakeholder who has a direct influence on the continuity or abandonment of sports practice (Back et al., 2022; Fransen et al., 2020). Coaches are key elements in the process of developing interest in the practice and continuity of sport activity in general, particularly in the case of football (Feu et al., 2023; Hill, 2013; Iosard-Gauthier, 2012), making leadership a determinant, influencing tool in that process (Hong & Jeong, 2020; Lawrason et al., 2019). For that reason, it is fundamental to find out what makes one coach more special than another.

Particularly in football, coaches' leadership is one of the subjects of much investigation by the scientific community (Gomes et al., 2019; Keatthoetswe & Malete, 2019; Li et al., 2021). However, many of the studies on leadership in the football context have focused essentially on analysing the influence of coaches' behaviour, style and performance on their teams (Feu et al., 2014; Feu et al., 2023; Maestre et al., 2018).

Training matters related to developing leadership skills particularly in the football context are only dealt with occasionally (Kurak & Aak, 2019; Lawrason et al., 2019). However, issues regarding the development of leadership skills are beginning to attract special attention, not only due to coaches' importance for high performance, but also due to their relevant role in developing and training children and teenagers in football (Blom et al., 2019; Gibson & Groom, 2019; Gonzalez et al., 2019).

Concerning leadership skills, various studies have indicated the importance of training coaches in this component (Blanton et al., 2019; Lawrason et al., 2019; Neto et al., 2021), but despite the importance of the training model, some doubts remain regarding the acquisition of knowledge and skills during coaches' training, and their capacity to put this into practice (Pankow et al., 2018). In other areas of science, studies have also been made in this connection, seeking more efficient solutions to this question of transferability from the theoretical to the practical part (Cebrian et al., 2019; Vogler et al., 2017).

Considering the above, the literature indicates the need for continuous development of the leadership component in coaches, acquiring and updating knowledge and competences that allow good performance in different contexts (Alvarez et al., 2019; Mendes et al., 2019). It is important to mention that in a coach's career, the training process can be formal, particularly through official coach training courses and qualified Higher Education Institutions (Feu et al., 2010; Pires et al., 2021); or informal, through participation in workshops, seminars, development courses and everyday situations (Lemyre, 2007; Pires et al., 2021; Wright et al., 2007).

Although the literature investigating the subject of leadership can be considered very complete, with studies on the profile, performance and behaviour of sport leaders (Balduck & Jowett, 2010; Nascimento-Junior et al., 2020), there is still a gap concerning the types of tools that can be used to quantify the acquisition and development of leadership in the football context (Neto et al., 2021). It is therefore essential to analyse in greater depth how this process of acquiring leadership skills is being addressed in football (Blanton et al., 2019; Lemyre, 2007).

The acquisition and development of leadership in football usually occurs naturally, through experience and acquired over the years (Freire et al., 2023; Ilharco, 2019). However, in many cases there is an urgent need to reach a better and higher level of sport performance in a short period of time, which interferes directly with athletes and coaches' functioning (Hong & Jeong, 2020; Leo et al., 2014).

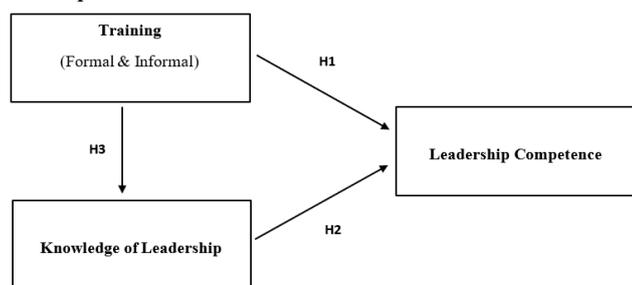
From this perspective, it is increasingly important to identify the leadership skills or sets of competences leaders should have to attain the best results (Blak Hourani et al., 2020). The study by Yoon, Song, Donahue and Woodley (2010), who developed the Leadership Competency Inventory, identified leadership competences in four dimensions: i) management/supervisory competences: where conflict management capacity, negotiating and problem-solving are analysed; ii) organisational leadership competences: analysing the capacity to influence, lead change and share responsibility; iii) personal competences: contemplating resilience, flexibility and emotional intelligence; and finally iv) resource management competences: analysing the capacity to manage technology, the performance and

use of a variety of resources. This scale was conceived to be used in any type of organisation, since the literature suggests there is a common set of leadership competences transversal to the various areas of knowledge, despite being based on research originally carried out on managers in the health context (Yoon et al., 2010).

From the above, it can be perceived that it is not enough for coaches to have a strong educational component in the area of training, strategies or game models, as they may be inefficient regarding management issues and emotional guidance of athletes (García-Ceberino et al., 2020; Garner et al., 2021; Mendes et al., 2019). Therefore, and setting out from the premise that good performance as a coach also includes being competent in leadership choices, it is necessary to carry out more studies exploring the subject of leadership among football coaches (Mossman & Cronin, 2019; van Kleef et al., 2019), particularly regarding the process of training that competence. Consequently, this study aims to analyse whether training has an impact on leadership competences (H1), if knowledge of leadership has an impact on leadership competences (H2), and finally, if training has an impact on leadership competences mediated by knowledge (H3) (Figure 1).

Figure 1

Conceptual model



- Hyp.1: Training has an impact on leadership competences
- Hyp.2: Knowledge of leadership has an impact on leadership competences
- Hyp.3: Training has an impact on leadership competence mediated by knowledge

MATERIAL AND METHODS

The research presented here is of a non-experimental, cross-sectional, comparative and correlational nature, which aims to analyse the main impacts of the training obtained through the official training of football coaches, on the knowledge and leadership

skills of the respective football coaches (Ato et al., 2013).

Participants

The study involved a convenience sampling with total of 211 Portuguese football coaches with 97.6% of them being male (Table 1). They are aged between 20 and 68 with average age being 38.4 + 9.1, 31.8% completed secondary school and 2.8% have a Ph.D. From the participants involved, 105 coaches have training in sports science. Concerning their level as coaches, 47.4% were on level 1 and 1.9% on level 4. The inclusion of the coaches was done, independently of their level (Level 1: UEFA C, Level 2: UEFA B, Level 3: UEFA A, Level 4: UEFA PRO).

The coaches obtained their qualifications from official Coach Training courses, provided by District Associations of Portuguese Football, the Portuguese Sport and Youth Institute (IPDJ), the Portuguese Football Federation or through training in Higher Education Institutions qualified for the purpose.

Table 1

Characterisation of the sample

		N	%
Gender	Female	5	2.4%
	Male	206	97.6%
Age (years), Average + SD (Range)		38.4 + 9.1 (20 - 68)	
Academic Qualifications	Secondary School	67	31.8%
	Degree	64	30.3%
	Master	74	35.1%
	Ph.D.	6	2.8%
Coach level	1	100	47.4%
	2	92	43.6%
	3	15	7.1%
	4	4	1.9%
Last year level, Average + SD (Range)		2015.4 + 6.5 (1989 - 2021)	

Instruments

Coaches first completed general questionnaire comprised of 5 sections of items related to: i) socio-demographic data; ii) coaches' training process; iii) experience as a coach; iv) coaches' knowledge of the subject of leadership; and finally, v) coaches' perception of their leadership competencies.

Concerning leadership competences, the "Leadership Competency Scale", proposed by Yoon et al. (2010) was adapted, using 32 items divided in 4 dimensions: management/supervisory competences (MS), organisational leadership (OL), personal domain (PD) and resource management (RM). The questionnaire was made up of a total of 37 items

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classified based on a Likert-type scale from 1 to 5 (1 = completely disagree, to 5= completely agree).

Procedure

Before applying the instrument, and so as to validate the content and confirm linguistic clarity, it was submitted to 5 experts (3 Higher Education researchers/lecturers, with research in the field of football and/or connected to coach training processes; 2 coaches) for their appreciation.

Subsequently, the questionnaire was converted into an online format via Google docs, to be sent by e-mail. To ensure the greatest possible number of answers, contact was first made with the district football associations, the Portuguese Football Federation (FPF) and the National Association of Football Coaches (ANTF), so that they could forward the questionnaire to registered coaches. Then a direct invitation was sent to football clubs registered with District Football Associations on the FPF site.

Finally, an invitation was sent directly to the clubs for them to forward the questionnaire to their coaches, encouraging them to participate in the study. The objectives, importance and implications of the study were clarified, ensuring the confidentiality of their answers. As participation was voluntary and anonymous and gave their written informed consent at the moment of returning the questionnaire. The research was carried out according to the ethical

criteria of the Declaration of Helsinki (Association, 2013) and the ethical standards in sport and exercise science research (Harriss et al., 2019).

Statistical analysis

Structural equation modelling (SEM) was used to validate the hypotheses studied, with the estimation method used also being partial least squares (PLS), a method which is widely used nowadays in various areas of knowledge (Flaxman et al., 2017; Hair et al., 2020). Since there are no measures of global goodness of fit suitable for models estimated with PLS as in structural equation methodologies based on covariances, the structural models estimated through PLS are assessed by analysing the values of the determination coefficient (R² above 25 %) for endogenous constructs and the value of the standardized root mean squared residual (SRMR under 0.08) (Hair et al., 2020; Hair et al., 2019; Sarstedt et al., 2019).

In estimating the structural models, to determine the t statistics, and the respective statistical significance, the bootstrapping procedure was applied (with a sample of 5000 bootstraps). All the calculations were made using SmartPLS version 3.3.2 (Ringle et al., 2015) and IBM SPSS version 27.0 for Windows (IBM Corporation, New York, USA) software.

Table 2
Validity and reliability of the constructs

	Mean	SD	Range	Factor loading	CR	Alpha	AVE	AVE > Corr ²
Training	0,40	0,30	0,01 - 0,92		0,77	0,74	0,61	0,61 > 0,26
Formal training	0,50	0,30	0,08 - 1	0,94	0,82	0,67	0,61	
Academic Qualifications	1,10	0,90	0 - 3	0,83				
Sport Science Training	0,50	0,50	0 - 1	0,87				
Coach level	1,60	0,70	1 - 4	0,62				
Informal training	0,30	0,20	0,06 - 1	0,47	0,75	0,70	0,54	
After completing the football coach course, during your coaching activity or when inactive, did you attend any training action on the subject of leadership?	0,90	0,90	0 - 3	0,92				
How often do you read about leadership issues?	1,60	1,10	0 - 5	0,62				
Leadership knowledge	0,70	0,20	0,05 - 1		0,77	0,66	0,58	0,58 > 0,32
I consider I have enough knowledge of leadership to lead my team.	4,20	0,70	2 - 5	0,90				
In guiding my athletes, I feel confident about my knowledge of leadership.	4,20	0,70	1 - 5	0,90				
In general, football coaches have good knowledge about leadership.	3,60	1,00	1 - 5	0,57				
Do you consider that football coaches need more knowledge of leadership?	0,90	0,20	0 - 1	-0,61				
Leadership competence	0,79	0,16	0,22 - 1		0,96	0,96	0,51	0,51 > 0,32
Organizational Leadership	0,79	0,16	0,2 - 1	0,96	0,88	0,85	0,55	
I consider I have the capacity to lead the changes necessary in the team or club I represent.	4,33	0,66	2 - 5	0,84				
I consider that my work also includes understanding the characteristics of opposing teams or clubs	4,32	0,68	1 - 5	0,63				
I consider I am able to share responsibilities with my athletes and my technical team.	4,42	0,69	2 - 5	0,76				
I consider I am able to define strategies in line with the goals and vision of the club I represent.	4,25	0,67	1 - 5	0,72				
I consider I have knowledge to plan training and games, as a way to achieve the objectives set for the sport season.	4,42	0,64	2 - 5	0,75				
I consider I have the capacity to assess the performance of the athletes and the team.	4,44	0,59	2 - 5	0,84				
Based on my experience and knowledge, I consider I can have a vision for the future of the team and/or club I represent.	4,33	0,67	2 - 5	0,75				
I consider I have the capacity to self-assess my leadership skills and define measures to improve them.	4,23	0,70	2 - 5	0,70				
I consider I am a creative thinker, which lets me prepare different training sessions, challenging the athletes to seek alternatives to traditional solutions.	4,36	0,66	2 - 5	0,71				
I consider I am able to manage the athletes' performance throughout the season.	4,23	0,65	2 - 5	0,77				

Table 2
Validity and reliability of the constructs (Cont.)

	0,78	0,19	0,15 - 1	0,94	0,93	0,93	0,52
Personal Mastery							
I consider I have good capacity to communicate verbally with the athletes, team and club employees.	4,37	0,63	2 - 5	0,78			
I consider I have good capacity for written communication when I need to interact with club stakeholders, athletes, directors, etc.	4,24	0,74	1 - 5	0,73			
I consider I am open to permanent learning, exploiting new knowledge and developing alternatives, to make training sessions more efficient.	4,49	0,60	3 - 5	0,75			
I consider I am always alert to information that can be relevant for the decision-making process in training.	4,44	0,62	3 - 5	0,78			
I consider I am responsible for the (positive or negative) performance of the athletes and the team	4,54	0,60	3 - 5	0,79			
I consider I am committed to the objectives proposed by the club, to my technical team and to my athletes.	4,48	0,66	2 - 5	0,71			
I consider I have a good capacity to persuade or influence my athletes positively to achieve goals.	4,37	0,68	2 - 5	0,80			
I consider that my emotional intelligence lets me manage my own emotions and those of the athletes and the technical team.	4,19	0,77	1 - 5	0,67			
I understand there is an inter-relation between the different systems involved in football (e.g., systems of games, training, and club conditions).	4,45	0,63	2 - 5	0,75			
Resource Leadership	0,81	0,19	0,07 - 1	0,90	0,82	0,78	0,60
I consider I have the capacity to motivate the team towards better performance, both in training and in matches.	4,43	0,63	2 - 5	0,91			
I use the principles of Training Theory and Methodology to plan training sessions and action in matches.	4,35	0,68	2 - 5	0,79			
I consider I have sufficient technical skills to guide the team I am responsible for.	4,54	0,67	2 - 5	0,88			
I consider I have the capacity to manage the material, human and technological resources the club provides.	4,41	0,62	2 - 5	0,86			
Supervisory/Managerial	0,78	0,16	0,24 - 1	0,95	0,92	0,90	0,51
During training activities, I encourage the development of team work	4,65	0,53	3 - 5	0,60			
I consider I am able to solve problems that can affect the team.	4,37	0,60	2 - 5	0,72			
I consider I am able to negotiate with the main stakeholders involved in football (athletes, directors, referees, etc.	3,99	0,75	1 - 5	0,53			
I consider I am able to manage conflicts that can arise between elements of the team.	4,29	0,62	2 - 5	0,79			
I consider I am able to define a training model that allows me to control the team's development.	4,33	0,66	2 - 5	0,73			
I consider I am able to manage the athletes' various and diversified characteristics so as to attain the objectives set.	4,18	0,65	2 - 5	0,74			
I try to encourage interpersonal relations among the various elements of the team (athletes and technical team).	4,40	0,66	2 - 5	0,71			
I encourage my athletes to cooperate with each other in performing training activities	4,64	0,57	3 - 5	0,66			
I am flexible when presented with new ideas and suggestions by the athletes or the technical team.	4,34	0,63	2 - 5	0,65			
I consider I am resilient, i.e., with the capacity to overcome adversity or crisis situations.	4,34	0,64	2 - 5	0,74			
I consider I am determined to achieve the aims proposed by the club.	4,54	0,57	3 - 5	0,67			
As a coach, I manage to have a positive influence on the athletes, technical team and club directors.	4,30	0,63	2 - 5	0,73			
I try to focus on the athletes' development and improvement, both individually and collectively	4,64	0,54	3 - 5	0,70			

Note: Corr2 = highest squared correlation between the model constructs

RESULTS

Table 2 presents the results of the descriptive statistics, reliability and validity of the latent constructs. The various constructs are seen to have high levels of reliability, as well as factor validity, convergent validity and discriminant validity, and can therefore be considered valid and reliable for use.

For all the constructs, factor loadings, Cronbach Alpha and composite reliability (CR) present values above the recommended limits of 0.70 and 0.60, respectively. For all the constructs, AVE was above the limit of 0.50. To test whether the constructs were sufficiently different, discriminant validity was inspected using the Fornell and Larcker (1981) criterion, which requires the AVE of a construct to be above the square of its greatest correlation with any construction.

Test of hypotheses

Table 3 and Figure 2 present the results of the structural model, with a view to validating the

hypotheses. The independent variables of the structural model estimated (Training and Knowledge of Leadership) have high predictive power ($R^2 = 46.1\%$), with 0.070 being the value of SRMR.

Concerning H1 (Training has an impact on leadership competences), there is a positive and statistically significant impact of training on leadership competences ($\beta = 0.12$; $p < 0.05$). As for H2 (Knowledge of leadership has an impact on leadership competences), there is a statistically significant effect of training on knowledge of leadership ($\beta = 0.67$; $p < 0.01$). In H3 (Training has an impact on leadership competence mediated by knowledge), there is no statistically significant impact ($\beta = 0.01$; $p = 0.988$) of training on knowledge of leadership, and so it is not possible to validate the hypothesis of a mediating effect of leadership knowledge on the impact of training on leadership competences.

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Table 3

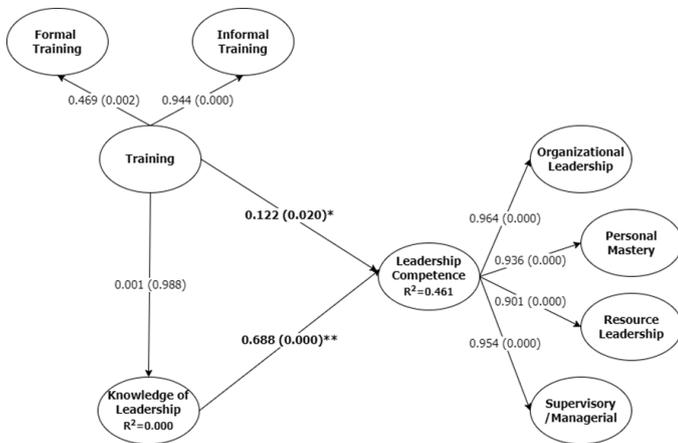
Standardized coefficients of the model

Hypotheses	Paths	β	SD	p
H1	Training -> Leadership competence	0.12	0.05	0.020*
H2	Training -> Knowledge of Leadership	0.01	0.09	0.988
H3	Knowledge of Leadership -> Leadership competence	0.67	0.05	0.000**

Note: * $p < 0.05$; ** $p < 0.01$; β – Standardized Coefficients; SD – Standard Deviation

Figure 2

Standardized estimates of the trajectory coefficients (p-value) and R² of the endogenous factor of the structural model



DISCUSSION

Football coaches' leadership should be studied as an agent of change in the players they train. Therefore, this research aimed to analyse the impact of training on the coach's leadership knowledge and competences and understand whether training influences leadership competences mediated by knowledge. The results show coaches' positive self-perception of their leadership skills. Although they recognise the need for more thorough training in all other areas of knowledge, they show they are aware of the importance of leadership for their professional development. The coaches show the need to seek more information and knowledge on the topic of leadership, and try to do so through "informal training" ($\alpha = 0.70$), thereby highlighting the insufficient learning obtained in formal training.

The model is shown to be reliable, indicating that many coaches seek alternatives to complement their

training in leadership through informal means, namely workshops, supplementary courses and books, as identified in other studies (Lawrason et al., 2019; Pankow et al., 2018). Given the shortage of formal, official and institutionally connected means, trainers continue their training, making up for deficiencies through specific non-formal means for each aspect to be improved (Ibáñez et al., 1997; Pires et al., 2022). This possibility of informal training is an interesting resource, since it will be coaches themselves who seek the format most appropriate for their needs.

Since today various training actions of an informal nature on the topic of leadership are frequently available, these have become alternatives to traditional study sources (Blanton et al., 2019; Mertens et al., 2021; Norzailan et al., 2016). Therefore, coaches use all means at their disposal to improve their training, both formal and informal ones. Informal training makes up for shortcomings in formal training in specific topics such as leadership (Feu et al., 2010; Pires et al., 2021). It is noted that in relation to "informal training" (Feu et al., 2010), the coaches indicate very clearly the need to reinforce the leadership component ("after completing the football coach course, did you follow any training on the topic of leadership?"; Mean = 0.90).

When coaches were asked "if they need more knowledge of leadership", 96.2% answered yes, thereby reinforcing the results obtained in previous studies, when stressing the need to strengthen knowledge of leadership in coaches' formal education process (Pankow et al., 2018; Rivas-Borbon et al., 2018). That is, football coaches' perception shows a shortcoming that can serve as an indication for a new structure of learning on the topic of leadership.

In relation to formal learning, the results indicate the importance of Higher Education Institutions in the learning process, as 68.2% of the coaches are graduates and 44.3% of these in the area of Sport Sciences. These data show that a great many coaches obtain their coaching qualification in this way. Since formal training courses are available in different institutions, it is important to reflect on the content and pedagogical practices employed in teaching leadership (Bertram et al., 2017; Gilbert & Trudel, 2001; Lee et al., 2006).

Through the model proposed, the level of coaches' qualifications was found to have little influence on their view of themselves ($\alpha = 0.64$) regarding knowledge and skills of leadership, having no relevant impact in the model. This result suggests the need to continue to carry out studies on the efficiency of formal training in the acquisition of knowledge and competences, particularly regarding curricular structuring, hours of teaching and pedagogical practices. This result strengthens the need to reflect on the different ways to approach the topic of leadership, at the various levels of teaching (e.g. degree, master and Ph.D.) and in official coaching courses, given the need to ensure leadership competences irrespective of the training typology obtained.

Formal and informal processes end up being important instruments for the acquisition and development of knowledge and competences (Konter, 2012; Pankow et al., 2018). Previous studies discussed the limitations of acquiring knowledge and competences through formal coach training courses (Stodter & Cushion, 2019). In fact, various studies have pointed out limitations in the formal training context, indicating this type of learning is very generalized and not very applicable to the practical context (Camire et al., 2014; Lemyre, 2007; Piggott, 2012). However, one form of training does not cancel out the other, as they are complementary, as suggested by other studies, and strengthening the model proposed here (Mendes et al., 2019; Teng & Wang, 2020).

In science, it is generally accepted that professional knowledge alone is not enough to make a great coach (Baumgartner, 2013; Cote & Gilbert, 2009; Rivas-Borbon et al., 2018). However, it is not clear how important formal knowledge or factors such as personality type, personal sport practice and experience gained through training are in coaches' careers (Detotto et al., 2018; Feu et al., 2012; Pankow et al., 2018). More studies on these matters should be carried out in order to understand how other elements besides formal training can influence coaches' leadership competence. Those elements are fundamental for trainers/lecturers to be able to adjust their pedagogical practices according to the characteristics of prospective coaches.

The results reinforce the importance of the four factors of the research (management/supervisory

competences, organisational leadership, personal domain and resource management) in leadership competences, with the construct of "leadership resources" (mean = 0.81) standing out due to the current structure of formal education, i.e., official coaching courses and qualified Higher Education Institutions (Kjaer, 2019; Sawiuk et al., 2018). Although a change is being seen in the training system, curricular content continues to focus fundamentally on the area of training methodologies and planning (Herold et al., 2021; Santos et al., 2019). Despite the obvious importance of understanding the game, in recent years the whole structure of learning in football has undergone numerous changes, underlining the importance of developing alternative models of learning that allow the acquisition of competence for the match context but also for life (Kurak & Aak, 2019; Westfall, 2020).

Regarding "organisational leadership", items such as "I have the capacity to lead changes in the team or club" and "I have the capacity to assess the performance of the athletes and the team" (factor loading = 0.84) stand out above the others, possibly due to coaches having positive self-perception of their leadership capacities, which agrees with the study by Santos, Mesquita and Rosado (2010).

As for the factor of "personal domain" ($\alpha = 0.93$), items such as: "good capacity for verbal communication", "good persuasive capacity" and "being responsible for the performance of the athletes and team", all with factor loading > 0.78 , stand out as being directly connected to the coach's characteristics. The importance of developing these characteristics has been studied in previous research indicating these items as essential for coaches to lead their teams (Molan et al., 2016; Pankow et al., 2018). Here, both the formal and informal aspects of training are joined, since football coaches are already prepared for teamwork and need to strengthen these characteristics in the course of their training.

Concerning "supervision/management" (factor loading = 0.95), the importance of items such as: "teamwork", "cooperation among the athletes" and "focus on both individual and team improvement" stands out, all with a mean ≥ 4.64 , showing a clear tendency for coaches to think more about the collective and less about individual matters. Various studies find similar results, highlighting items such as

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problem-solving capacity and developing team work to improve performance, which ultimately are of intermediate importance (Hampson & Jowett, 2014; Mesquita et al., 2012). This phenomenon may occur more frequently in football teams due to them having an increasingly more dynamic and shared leadership structure (Mertens et al., 2021). Therefore, football coaches' learning of leadership skills is more and more important, as this has a direct impact on matters referring to teams' collective performance.

When comparing the results of this study with other areas of action, there is a close link between knowledge and competences acquired during training and professional practice. The study by Jansson, Doving and Elstad (2021) clarifies this point when they mention that gaps in musicians' competence presented during their training force them to adjust their identity and way of acting. This is transversal to the football context, since coaches with high levels of training and knowledge often have some difficulties in practice, which will only be remedied with work on the ground (Rivas-Borbon et al., 2018; Santos et al., 2019). This illustrates the importance not only of knowledge but mainly the acquisition of leadership competences, which are usually developed during practice and mainly by experiencing situations in training and matches.

Irrespective of coaches' years of experience, academic training or formal or informal acquisition of knowledge, it was found that even if coaches have a positive self-perception of their competence, they still perceive that they need more knowledge of leadership. This can be seen in the item of "I consider football coaches need more knowledge of leadership" (mean = 0.90). This result can be explained by the characteristics of the sample since 90% of coaches have Levels 1 and 2, where they are concentrated in the younger levels of competition, with their intervention focusing fundamentally on basic match competences such as: techniques, rules, match positions (Camire et al., 2014; Erickson et al., 2008). As many of the coaches at Levels 1 and 2 operate at the lowest levels, there is the risk of a direct impact on the development of some skills in young footballers who are also in the initial period of training.

From the above, the results suggest the need for reflection by formal training entities (Federation and Higher Education Institutions), since it is necessary

to ensure that leadership skills are worked on in basic training. This training is fundamental so as not to compromise the qualitative development of coaches' interventions in practice.

CONCLUSION

Leadership knowledge and competence are fundamental to optimize football coaches' performance. This study indicates that training has a positive impact on leadership competences, the same occurring with regard to knowledge acquisition (H1 and H2 were validated). On the other hand, there was no significant effect regarding the impact of training on leadership competences mediated by knowledge (H3). It is therefore essential to understand how coaches' formal training contributes to their performance in relation to the topic of leadership.

It was also possible to conclude that the relation between formal and informal processes of acquiring knowledge and competences is strengthened through the model presented here. The formal and informal paths are complementary and important processes, making it essential to reinforce both in the process whereby football coaches acquire leadership skills. It is therefore suggested that continuous training to maintain the coach levels should certainly include the subject of leadership. It is important to highlight that informal training can be an interesting alternative for coaches to overcome their leadership deficiencies individually. However, the bodies responsible for official coach training, particularly the Football Federation, must encourage their coaches to supplement their training on this subject. Coaches must be helped to develop their emotional intelligence, to make their intervention with players and clubs in general more efficient.

Concerning the limitations of the study, it is important to mention the size of the sample, which despite not compromising data treatment, suggests the importance of involving more coaches. In addition, this study only used data in relation to coaches' self-perception of their leadership knowledge and competence, so future studies should triangulate this analysis with other directly involved stakeholders. Therefore, future research should study the impact of training on leadership knowledge and competences among coaches, particularly from the perspective of stakeholders such as those responsible for the curricular structure of coaching courses,

athletes and sport leaders and directors. Also suggested are studies in partnership with football coach training bodies, in order to identify coaches' self-perception before and after their training. Additionally, because it is very common for football players to become future coaches, and because they have been subjected to several leadership styles, it is also important understand the impact of these experiences on their own leadership style. For this reason, it is important to study in future research the impact of knowledge and leadership skills according to the experience of the coach, distinguishing those who had official training (Federation or Higher Education with equivalence), from those who also had experience as players. This distinction was not made in this study, so it will be important to investigate this issue in the future.

PRACTICAL IMPLICATIONS

As for practical implications, this study shows clearly and objectively a gap in learning about leadership, pointing towards future changes in teaching structures, mainly the formal context of learning about leadership in football. The study raises fundamental questions for those in charge of this training typology (particularly Federations and Higher Education Institutions) to reflect on their curricular structures, in order to meet the needs presented by coaches in the results found here. Such reflection could lead to optimizing the training process in the football context. Although there are dissimilarities in the number of working hours allocated to the different levels of training, it is still essential that both UEFA levels C and B have workloads that are compatible with the role in which future coaches will play in their clubs and teams. According to our results, most of these coaches who hold UEFA levels C and B, work directly with the training of players, that is, they can be related to the continuity or dropout of the sport. Currently, there is a strong emphasis on the mental and emotional aspects of people, so it is necessary and fundamental to allocate more hours to the psychological discipline applied to soccer, than is currently presented in the training of coaches.

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