Corbalán-Berná, J.et al.s (2023). Sport-Practice Style Questionnaire (Epd). Design and Validation. Revista Internacional de Medicina y Ciencias de la Actividad Física y el Deporte vol. 23 (91) pp. 269-283. https://doi.org/10.15366/rimcafd2023.91.016

ORIGINAL

SPORT-PRACTICE STYLE QUESTIONNAIRE (EPD). DESIGN AND VALIDATION

CUESTIONARIO DE ESTILOS EN LA PRÁCTICA DEPORTIVA (EPD). DISEÑO Y VALIDACIÓN

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CÓDIGO UNESCO / UNESCO CODE: 610501 Psicología Diferencial/Differential Psychology

Clasificación del Consejo de Europa / Council of Europe Classification: 15. Psicología del deporte / Sport Psychology

Recibido 18 de abril de 2022 **Received** April 18, 2022 **Aceptado** 16 de junio de 2023 **Accepted** June 16, 2023

ABSTRACT

The purpose of this research was to make a first contribution to the study of possible psychological styles in terms of the way in which athletes approach their sports practice, regardless of the specific sport they practice; allowing the identification of certain persistent and consistent tendencies in their motor and tactical behaviour. To this end, an instrument, the Sport-Practice Style Questionnaire (EPD, for its Spanish initials), was designed and validated, proceeding to determine its construct validity by means of a confirmatory factor analysis (CFA) and a structural equation model (SEM). The sample consisted of 645 participants, 38% male and 62% female, with a mean age of 21 years (20.6 \pm 7.6). The scale has shown good initial results in terms of validity and reliability, giving rise to an unpublished instrument, designed and validated in Spanish, aimed at athletes of different levels, and which allows them to identify different styles in their sporting practice.

KEYWORDS: sport, psychological styles, questionnaire, validation.

RESUMEN

El propósito del presente trabajo fue realizar una primera contribución al estudio de posibles estilos psicológicos en cuanto al modo en que los deportistas abordan su práctica deportiva, independientemente del deporte concreto que permitiendo identificar ciertas tendencias, practiquen: persistentes consistentes, en su conducta motriz y táctica. Para ello, se diseñó y validó un instrumento, el cuestionario EPD de Estilos de Práctica Deportiva, procediendo a determinar su validez de constructo a través de un análisis factorial confirmatorio (CFA) y un modelo de ecuaciones estructurales (SEM). La muestra fue constituida a partir de 645 participantes, 38% hombres y 62% mujeres, con una edad media de 21 años (20,6 ± 7,6). La escala ha mostrado buenos resultados de partida en cuanto a validez y fiabilidad, dando lugar a un instrumento inédito, diseñado y validado en español, dirigido a deportistas de diferentes niveles, y que permite identificar distintos estilos en su práctica deportiva.

PALABRAS CLAVE: deporte, estilos psicológicos, cuestionario, validación

INTRODUCTION

The study of human behaviour in its different manifestations has been carried out from different structural approaches, in an attempt to capture the enormous diversity with which it manifests itself. Thus, types, traits, factors, states or styles are constructs which allow us to approach the same area of behaviour from different classificatory approaches, each of them contributing their own perspective and nuance. The psychological style is a supraordinal category in the organisation of behaviour and personality, with a global and dynamic nature, which is receptive to different ways of organising behaviour. It makes it possible to categorise different ways of undertaking and understanding such behaviour in complex activities, facilitating an interpretative dynamic of the person's way of acting. "Style organises behaviour, has an eminently global nature, is essential for the adaptive maintenance of the individual and can be considered as a set of patterns of interpretation, donation of meanings and responses" (Sánchez-López, 1997, p. 1). (Sánchez-López, 1997, p.223). The style construct, due to its globalising nature, is applicable to different spheres. Thus, styles range from the classic cognitive styles (Witkin, 1949; Quiroga, 1994), or behavioural styles (Reuchlin, 1990), to thinking styles (Sternberg, 1999; Díaz-Morales and Escribano, 2013), life styles (Sánchez-López, 1997), or their different variants, such as learning styles (Díaz-Mosguera, 2012), teaching styles (Aponte et al. 2020), styles of development, of falling ill, of life and health (Herazo-Beltrán et al. 2020, Leyton-Román et al., 2021), of consumption, etc.

On the other hand, the issue of sport. The practice of sport is essentially the performance of a physical activity undertaken for competitive purposes and in which a series of rules must be respected. It differs from mere physical activity in that the latter is essentially a practice, whereas in sport there is a competition

which produces a result (Ortiz, 2020). The psychological classification of sport includes a wide range of perspectives; from the distinction between individual and group sports, to more or less aggressive sports, or those in which the key is to shape the movement itself, as opposed to those in which the objective is focused on the "performance pole" (Martínez Vidal and Díaz Pereira, 2008b, p. 27). Together with all these distinctions, the styles in sport practice may represent a novel approach to address the way in which the athlete faces the global activity entailed by their participation in a sport activity, taking into account the nuances of their way of organising and acting in a competitive environment, with physical, cognitive, affective and relational implications (Jason & Mitchell, 2022). The more creative or playful nature of their way of playing the game, their possible obstinacy with records, the more or less cooperative tone of their participation with the team, their degree of commitment to the club, their obsession with victory or defeat, their sportspersonship or lack thereof, the elegance in the movement of the "beautiful game"... there are so many nuances characterising the way in which people tend to play sport that knowing how it is practised can be of enormous interest in order to clarify these issues in the sporting world (Adib et al., 2021).

Numerous precedents exist on the concept of style applied to sport and different lines of approach. For instance, González et al. (2016) address decision-making styles, which are directly connected to the personality of the athlete. Along the same lines, Ruiz and Graupera (2005) propose the CETD questionnaire on decision-making style in sport, which allows the subjective profile of the athlete's decision-making to be analysed. Ezquerro and Buceta (2001) also explore the information processing style in relation to sport competition. The different learning styles in athletes are dealt with by Hanson (2007), establishing a curious taxonomy; or the preferred learning styles among sports students are analysed (Peters et al., 2008), including their relationship with academic performance (Serra-Olivares, 2017). Much attention is paid to sport leadership styles (Ekstrand et al., 2018), to the teaching styles of physical educators (Sanchez et al., 2012) and physical education teachers (Merino-Barrero, et al., 2017), or to coaching styles in coaches (Kim et al., 2021). Likewise, there are also studies on players' preferences about them (Parker et al., 2012), or their possible effects on the continuity of their sporting careers (Kim, Pang, & Park, 2019). Other studies have also focused on youth sports parenting styles (Holt et al., 2009), the educational styles of parents and their influence on their children's sporting competence (González-García et al., 2018), or the motivational implications of more or less healthy lifestyles (Leyton Román et al., 2018). Nevertheless, despite this multitude of approaches developed from the concept of style towards the sporting sphere, there is a lack of a specific approach to the style of sporting practice itself (Wee et al., 2018). The purpose of this research is to make a first contribution to the study of possible psychological styles in terms of the way in which athletes approach their sports practice, regardless of the specific sport they play, whether it is an individual or team sport, whether it is classified as compositional and aesthetic, of execution, or as perceptual and decision-making (Martínez-Vidal & Díaz-Pereira, 2002, 2008b). In short, it is about addressing the global approach in which someone sets up their way of behaving while practising sport or under the circumstances of the game, making it possible to identify a sequence of nuances in their motor and tactical behaviour, which is persistent over time and in different events; consistent in the sense that it organises and gives practical meaning to their activity; and identifiable, in relation to the fact that it represents a characterisation that differentiates one from other sportspeople.

1. OBJECTIVES

Therefore, the aim of this study is to design and try to validate an instrument, the Sport-Practice Styles Questionnaire (EPD, for its Spanish initials), whose first application and analysis is dealt with in this article. In order to achieve this objective, it is proposed to determine its construct validity by means of a confirmatory factor analysis (CFA) and a structural equation model (SEM).

2. MATERIAL AND METHOD

2.1. Participants

The study sample consisted of 645 participants, mostly from the Region of Murcia (Spain) and neighbouring areas, with 38% (n = 243) men and 62% (n = 402) women, aged between 13 and 62 years, with a mean age of approximately 21 years (20.6 ± 7.6 ± 7.6). Among them, 31.3% practise sport four or more days a week, 30.4% three days a week and 38.3% two or less days. According to the *Anuario de Estadísticas Deportivas* - Sports Statistics Yearbook (*Ministerio de Cultura y Deporte* - Ministry of Culture and Sport, 2021, p. 163), regarding weekly sport practice in the Region of Murcia, it is estimated that 43.2% of the population aged 12-65 years (463,002 out of 1,071,765 inhabitants) practice sport at least once a week. Taking these data into account and considering the sample size of the study, the margin of error was 3.86% for a confidence level of 95%. On the other hand, 59.8% of the sample studied post-compulsory secondary education (*Bachillerato* in Spanish) or Vocational Training, 20.5% compulsory secondary education, and 19.7% university education; and 80.0% were right-handed, 7.1% were left-handed, 6.4% were ambidextrous and 4.2% were cross-biased.

2.2. Instruments

The questionnaire under validation, called *Estilos de Práctica Deportiva* - Sport-Practice Styles (EPD), consists of 30 items answered on a Likert scale with 5 response options, from "totally disagree" to "totally agree". The design of the test was based on a preliminary version of the scale, developed after qualitative work according to the criteria established by Carretero-Dios and Pérez (2005) for the construction of research instruments.

2.3. Procedure

Incidental sampling was conducted with the collaboration of different sports clubs and the University of Murcia (Spain). The sample consisted of athletes who practise individual or team sports, regardless of their competitive level or frequency of training throughout the week. The participation of the sample was voluntary, consensual and anonymous, and its design was supervised by the Research Ethics Committee of the University of Murcia. For the development of this study, the ethical issues proposed by the American Psychological

Association (APA, 2002; 2010) were taken into consideration, and likewise, it is declared that there is no conflict of interest on the part of the authors of this study. Once the Informed Consent form was signed, participants proceeded to fill in their socio-demographic data and the EPD questionnaire. Two methods were used to collect the sample: analogue and digital. Specifically, a small part of the tests (12%) were completed online, due, among other difficulties, to the health situation of Covid.

2.4. Data analysis

For the data analysis, firstly, a descriptive statistical analysis of the items was performed. Secondly, an Exploratory Factor Analysis (EFA) was conducted in order to test the clustering of the items empirically. The existence of significant correlations for the adequacy of the matrix was confirmed by means of the Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of Sphericity, thus verifying the adequacy of using EFA. A confirmatory factor analysis (CFA) with structural equations was then undertaken. The method used was the maximum likelihood method. To assess the goodness of fit, the following indicators were reviewed: Pearson's Chi-square (χ 2); Degrees of freedom (df); Goodness of fit index (GFI), Adjusted goodness of fit index (AGFI), Comparative fit index (CFI), Normalised fit index (NFI), Tucker Lewis index (TLI) and Root mean square error of approximation (RMSEA).

3. RESULTS

As can be seen in Table 1, none of the variables shows values of asymmetry greater than 3 and kurtosis greater than 10, which indicates that there are no problems of normality in the variables which will become part of the structural equation model (Kline, 2005). Meanwhile, the value of the multivariate Mardia index was 59.21, being lower than 70 and indicating no departure from multivariate normality (Rodríguez Ayán y Ruiz, 2008).

Table 1. Asymmetry and Kurtosis

Variable	Asymmetry	Kurtosis	Variable	Asymmetry	Kurtosis
EDP1	0.113	-0.868	EDP16	-0.507	-0.471
EDP2	-0.219	-0.901	EDP17	0.304	-0.795
EDP3	-0.649	-0.17	EDP18	0.453	-0.527
EDP4	-0.73	-0.13	EDP19	-0.399	-0.633
EDP5	-0.076	-0.963	EDP20	-0.291	-0.87
EDP6	1.161	1.386	EDP21	0.133	-0.662
EDP7	-0.676	0.027	EDP22	0.414	-0.692
EDP8	0.769	-0.886	EDP23	0.285	-0.629
EDP9	-1.121	0.898	EDP24	-0.219	-1.284
EDP10	0.174	-1.025	EDP25	-0.675	-0.458
EDP11	-0.42	-0.731	EDP26	-0.415	-0.991
EDP12	0.001	-0.661	EDP27	-0.499	-0.507
EDP13	-0.57	-0.5	EDP28	-0.107	-0.714
EDP14	0.563	-1.276	EDP29	0.224	-0.945
EDP15	-0.076	-1.064	EDP30	-0.72	0.088

Exploratory factor analysis (EFA) (n = 125)

The exploratory factor analysis was developed following the Principal Component methodology with Varimax rotation (see Table 2). As a result, the existence of five factors with *eigenvalue* greater than 1 was observed, using as a criterion for assigning an item to each factor that its factor loadings were above 0.30. These factors thus explain 4% of the total variance. The correlation matrix showed an outstanding number of correlations (88.5%), which obtained a value above 0.3, with a determinant equal to 3.16x10-6. In turn, the result of Bartlett's test of sphericity proved the non-independence of the variables (Bartlett's test = 4,270.01 (I.g. = 435), p < 0.001). Additionally, the Kaiser-Meyer Olkin test (KMO), which seeks to show the adequacy of the sample, had a result of 0.884 and the communalities were higher than 0.65. Finally, the overall Measures of Sampling Adequacy (MSA) values were above 0.85. In summary, the values described above give viability to the factor analysis of the correlation matrix.

Table 2. Exploratory Factor Analysis (n = 125)

	·	Factor					
	Communality	Persistent	Resilient	Creative	Independent		
EPD3	0.74	0.845					
EPD4	0.674	0.813					
EPD7	0.573	0.727					
EPD9	0.564	0.715					
EPD2	0.635	0.706					
EPD25	0.586	0.664					
EPD1	0.588	0.651					
EPD16	0.514	0.6					
EPD15	0.633	0.561					
EPD24	0.629	0.454					
EPD8	0.704	0.412					
EPD14	0.545		0.673				
EPD6	0.676		0.644				
EPD13	0.573		0.484				
EPD10	0.606		0.461				
EPD5	0.723		0.457				
EPD23	0.685			0.819			
EPD22	0.563			0.739			
EPD17	0.549			0.668			
EPD18	0.656			0.656			
EPD21	0.506			0.649			
EPD20	0.698			0.604			
EPD19	0.709			0.538			
EPD11	0.664			0.443			
EPD12	0.516			0.287			
EPD27	0.598				0.724		
EPD28	0.602				0.696		
EPD26	0.684				0.672		
EPD29	0.723				0.436		
EPD30	0.593				0.4		
Eigenvalues		7.33	2.06	1.60	1.22		
% Explained variance		22.96	17.86	10.82	8.91		
% Cumulative explained variance		22.96	40.82	51.64	60.55		
Cronbach's alpha		0.895	0.862	0.806	0.796		

Confirmatory factor analysis (CFA) (n = 520)

Following the model generated in the exploratory study, the confirmatory analysis with structural equations was performed using the maximum likelihood extraction method.

The adequacy of the model obtained in the exploratory study was confirmed, since a model composed of four factors and 30 indicators in total was found. The estimated parameters were statistically significant (p < 0.05) and the factor loadings presented values higher than 0.5 (Figure 1), so it can be pointed out that all the indicators saturate satisfactorily with each of their latent variables and the AVE values were higher than 0.65, which is evidence of convergent validity. In terms of internal consistency, Cronbach's alpha values and composite reliability values were above 0.75. Discriminant validity was also adjusted in an acceptable way since, in all cases, the square root of the AVE of each of the constructs was higher than the correlation of one with any other (Table 3).

	α	ρ c	AVE	Persistent	Resilient	Creative	Independent
Persistent	0.90	0.82	0.75	0.87†			
Resilient	0.87	0.76	0.71	-0.79‡	0.84		
Creative	0.86	0.82	0.69	0.52	-0.65	0.83	
Independent	0.83	0.77	0.67	0.07	-0.31	0.26	0.82

α: Alfa Cronbach ρc: Composite reliability. AVE: Average variance extracted. †Square root of AVE on the diagonal. ‡ Correlations between constructs below the diagonal

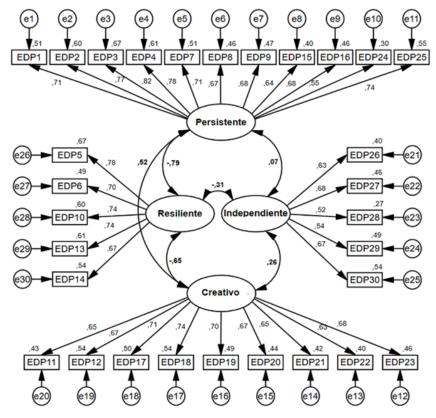


Figure 1. Confirmatory Factor Analysis

As far as the model fit is concerned, the different fit indices were adequate, so it can be stated that the proposed model of the factor structure of the scale is sustainable. On the other hand, in the analyses conducted on two random subsamples the results were also satisfactory.

Table 3. CFA goodness-of-fit indices

	χ2(df)	p<	χ2/df	GFI	AGFI	CFI	NFI	TLI	RMSEA (I.C. 90%)
Total	1,128.26(399)	0.001	2.83	0.97	0.96	0.97	0.96	0.96	0.049 (0.047-0.06)
Sub- sample 1	1,028.34(399)	0.001	2.58	0.96	0.95	0.96	0.95	0.95	0.063 (0.054-0.076)
Sub- sample 2	993.97(399)	0.001	2.49	0.96	0.95	0.96	0.95	0.95	0.061 (0.053-0.075)

Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), Tucker Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA).

4. DISCUSSION

This study aimed to design and validate an instrument to characterise, in a valid and reliable way, the presence of behavioural styles in sport practice. The EPD scale is presented, which makes it possible to explore the presence of different ways of proceeding among athletes, in terms of the global way in which they approach their behaviour while planning, training and developing their practice of a sport. It has good initial results in terms of validity and reliability, giving rise to an unpublished instrument which, logically, will need further confirmatory studies.

The questionnaire EPD, Sport-Practice Styles, has a structure of 4 factors and 30 items, with an adequate fit to the data. The four subscales showed good internal reliability in both the FEA and the CFA. The four extracted factors were made up of different numbers of items and were labelled as follows: 1) Persistent Style, 2) Resilient Style, 3) Creative Style and 4) Independent Style.

The first factor refers to the presence of a PERSISTENT, tenacious, hard-working and successful style. It is built from 11 items, numbers 1, 2, 3, 4, 7, 8, 9, 15, 16, 24, 25, and in a negative sense 8. Its contents allude to persistence in the game and in training to obtain better results, effort to improve performance, overcoming goals, excellence, competition, great activity and variety of contexts. Moreover, their performance is not indifferent.

The second factor refers to the presence of a RESILIENT style, which is non-competitive, relaxed, marked by the game. It is made up of 5 items, numbers 5, 10, 13, and in a negative sense, 6 and 14. It is not particularly concerned with overcoming goals or achieving objectives. For this reason, they cope well with the frustration associated with competition when results are not achieved. Likewise, their frustration when they do not win is limited. Therefore, they enjoy sport regardless of whether they achieve their goals or whether they have won or lost in competition.

The third factor refers to the presence of a CREATIVE, spontaneous, intuitive and unpredictable style. It is based on 9 items, numbers 11, 12, 17, 18, 19, 20,

21, 22, and 23. Its contents allude to a game unexpected by others, unpredictable and disorienting for opponents, original, surprising. This does not detract from the fact that it is elaborate, with nuances and details, resolving unforeseen situations better, being considered intuitive and imaginative, as well as expressive and with good communication with teammates. They enjoy improvising, new tactics, strategies and techniques, and in general while practising sport and competing in different contexts.

The fourth factor refers to the presence of an INDEPENDENT, non-conformist, autonomous, oppositionist style. It consists of 5 items, Nos. 26, 27, 28, 29, and 30. Its contents allude to a somewhat non-conformist opinion with respect to the usual as a conceptual stance, being in favour of a less mechanised and programmed game, more creative. They believe that there is too much rigidity in today's sport and that sometimes their ideas are poorly adapted to specific situations. They like not to follow rules and planned exercises and to play "at their own pace", believing that it is not relevant to concentrate too much on what is commonly understood not to be done.

Therefore, there are four independent factors which simultaneously comply with a sufficient technical and conceptual differentiation between them; but which, at the same time, present a certain relationship, and their discriminant validity can be considered adequate, according to Lehmann et al. (1999), as shown in Table 3.

There are not many references on this subject. However, there are certain precedents which allow us to integrate the styles considered here with aspects of sporting practice already observed by different authors. For instance, González et al. (2016), in agreement with many other authors, point out that perseverance is the most identifiable personality characteristic among the most successful athletes. This instrument could complement this observation by offering the possibility of qualifying which aspects of this perseverance coincide with a persistent style, or if this perseverance is found to be shared as a general trait of the successful athlete, regardless of the style of their game.

Furthermore, Ruiz-Pérez (1995) emphasises that the more complex the situation in which a decision is made, the more confidence the athlete needs in his or her ability to act without inhibition. And it is pointed out that the ability to make decisions quickly implies: assimilating a large amount of information in a few seconds, understanding the global situation of the problem at any given moment, and finally moving on to action rapidly. And in this sense, Martínez-Vidal and Díaz-Pereira (2008b) underline that these aspects could well describe a creative subject, with mental aptitudes and attitudes based on motivation and confidence, stating that "athletes presenting a fast and fluid decision-making style are closer to success and are more likely to be identified as creative athletes" (p. 31). On the contrary, they consider that the conservative decision-making style does not seem to favour the presence of creativity, due to a low tolerance for risk in change.

However, unlike what these authors (Martínez-Vidal and Díaz-Pereira, 2008a) report, this study shows data differentiating between a more successful style,

focused on persistence, and a more creative style, focused on unpredictability. This is a nuance which may be relevant, since even within those who show a fast decision-making style, not all athletes necessarily display a creative style, but there may be differentiated formats of this speed. Similarly, it could be that there are differences in style among athletes with a slower decision-making style. Creativity is not shown in the current study as a factor associated with speed, but rather with a more intuitive and spontaneous style of functioning. In fact, in the Questionnaire of Decision-Making Style in Sport (CETD) (Ruiz and Graupera, 2005), the dimensions proposed include perceived competence, commitment to learning and anxiety-strain in decision-making activity, but the speed component is omitted. And this is the general trend in tests assessing motor creativity (Méndez-Martínez, & Fernández-Río, 2019, p. 537).

Other authors also explore a creative style in relation to sport, but they focus on the teaching dimension of physical education (Delgado-Noguera, 2015), and even within this, they place it more as a cognitive means to achieve the goal of autonomy in teaching, not as a goal by itself (Mosston and Ashworth, 1993). Unlike them, in our case this style is discussed in relation to the practitioner of sport, not in relation to the way he/she is coached or instructed in physical education.

Furthermore, the creative style which seems to emerge from our data does not match what Almeida et al. (2008) describe as a "creative player" in "invasion sports". In an interesting study conducted with physical education teachers who are simultaneously coaches in basketball, handball or football sports clubs, researchers found that they characterise creative players in these sports to possess "high technical ability based on personal and very varied styles of execution" (p. 235). They are intelligent players, "with the ability to play the game and to make quick decisions when faced with the problems of the game. All these features are reinforced by a set of attitudes of perseverance and self-confidence (toughness)" (p. 243).

Regardless of their level of motor creativity, a variable for which there are specific instruments (see Méndez-Martínez and Fernández-Río, 2019), in a group like ours, labelled as "creative" by coaches, two types of styles can be found. On the one hand, the persevering style and on the other, the creative style. These sometimes tend to be confused and, predictably, the EPD could help to differentiate them, fine-tuning the most appropriate training tactics for each of them.

In fact, in the very interesting work "El reloj detenido en el tiempo" ("The clock stopped in time"), Morales-Águila (2004) explains how the reality of the preparation of athletes is fundamentally concerned with the development of a "physical and volitional" athlete and how the vast majority of the theoretical, methodological, scientific and practical procedures usually deployed are directed towards this objective. Nevertheless, as this questionnaire can help to detect, there seem to be athletes for several types of styles and perhaps it would be operative to be able to pay differentiated attention to each of them, with different preparation strategies. Alongside the physical-volitional athlete, perhaps directly related to the persevering style, there are other ways of being effective in sport,

such as the creative athlete, the independent athlete, or even the resilient athlete, although in this last case it is not for competitive purposes, but rather oriented towards wellbeing, integration or health (Urrea-Cuéllar et al., 2021).

There are models which explore the influence of the interpersonal style that athletes perceive that the coach generates and how this affects their competitive attitude and therefore their satisfaction and frustration, and their self-confidence and pre-competitive anxiety (Pineda-Espejel et al., 2020). In contrast to this perspective, the one explored by the EPD focuses preferably on the knowledge of the intrinsic characteristics of the athlete, so that these can be exploited differentially in their training. In line with Allen et al. (2013), González et al. (2016), García-Naveira, and Ruiz-Barquín, (2020), Mezcua-Hidalgo et al. (2020), or Hernández-Pérez (2021), among many others, this study aims to offer a complement to those lines of research highlighting the intrinsic characteristics of athletes, such as certain personality traits, anxiety or decision-making, in order to define strategies which enhance the results of their preparation. The study of styles in the practice of sport could offer an interesting complement in order to define their type of training and the enhancement of their possibilities in their sporting career.

5. CONCLUSIONS

In conclusion, it can be said that this is an instrument for which a first application is presented, which is original, unpublished, designed and validated in Spanish, which is aimed at sportspeople of different levels, and whose objective is to identify different styles in their sporting practice.

Nevertheless, the study has some limitations, including the difficulty of contrasting it with previous studies on a similar topic, the obvious need to be compared with larger and more diverse samples, and the consideration of specific sex and gender characteristics which could influence some of the results obtained.

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