Leadership efficacy, perceived sport performance, and satisfaction with leadership of competitive athletes

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The Leadership Efficacy Model is an integrative approach that considers three distinct factors involved in leadership efficacy that simultaneously contribute to explaining leadership efficacy (i.e., Optimized Congruence Hypothesis; OCH): leadership cycles, leadership styles, and antecedent factors of leadership. This study tested the OCH by evaluating the relationship between leadership cycles and the perception of sport performance (individual and team) and satisfaction with leadership, considering also the influence of leadership styles and antecedent factors of leadership. It also tested the invariance of the OCH according to athletes' gender and type of sport. The study included 255 athletes (146 women) playing basketball or volleyball competitively. Results indicated the need for coaches to explain leadership cycles further to their athletes and confirmed the OCH for perception of individual sport performance and satisfaction with leadership. This relationship was mediated by leadership styles and antecedent factors, regardless of athletes' gender and type of sport. In summary, coaches should consider the leadership cycles, styles, and antecedent factors of leadership to increase their efficacy.

KEY WORDS: Leadership cycles, Leadership styles, Antecedent factors; S performance; satisfaction.

In sports, coaches are frequently perceived as one of the greatest sources of influence on athletes, not only for the instruction and preparation they provide but also for the potential impact on athletes' emotional state and development (Chelladurai, 2012; González-García et al., 2021). Thus, coaches take a leading role in sports teams (Shang & Ku, 2018), making it essential to know the factors that influence their actions as they contribute directly to the efficacy of the athletes (Weinberg & Gould, 2019).

The study of leadership has assumed several approaches, initially focusing on finding general personality traits (e.g., extroversion, trust, dominance) and typical leadership behaviors (e.g., problem-solving capacity, support given to employees) that would explain the efficacy achieved (Lord et al., 2017). Some authors proposed contingency approaches instead, arguing that the previous approaches did not explain the process of leadership efficacy in the best way as they disregarded situational and contextual variables (e.g., Chemers, 2000; Stenling et al., 2017). Therefore, literature has highlighted the need for an integrative analysis of leadership that hostically captures the wide range of variables that could explain leaders' efficacy (e.g., variables related to the leader, their leadership, team members, and the situation) (Bormann et al., 2016; Oc, 2018; Peachey et al., 2015; Sosik & Jung, 2018). For example, meta-analysis studies indicate that considering the contributions of transformational leadership, relations-task- oriented leadership, and LMX (leader-member exchange) theory contributed to better explaining several indicators of performance, such as group and organization performance, individual overall performance (Dulebohn et al., 2012; Judge & Piccolo, 2004) and even mental health and job performance (Montano et al., 2017).

The Leadership Efficacy Model (LEM; Gomes, 2020; see Figure 1) is an integrative approach that acknowledges the need to consider distinct factors involved in leadership efficacy (i.e., consequences/impact produced by leadership), namely leadership cycles, leadership styles, and antecedent factors of leadership. Although the literature has already shown the importance these factors assume in explaining the efficacy achieved by the leader, they have been analyzed separately and not in an integrated manner, as proposed by this model. According to this theoretical framework, leaders' efficacy depends on the congruence established between the leadership cycles, considering the influence of leadership styles and the antecedent factors of leadership (Gomes, 2020).

Leadership cycles, the primary (and main) component of the model, refer to the dynamic relationships established between the conceptual cycle (i.e., the leader's mental representations of the best way to lead) and the practical cycle (i.e., how the leader puts into practice the ideas about lead-

ership). Each of these cycles has three dimensions: leadership philosophy (main ideas assumed by the leader that sustain the activity of leadership), leadership practice (main behaviors assumed by the leader directed to accomplish the ideas of leadership), and leadership criteria (main indicators assumed by the leader directed to monitor the achievement of ideas and behaviors of leadership).

The literature has primarily focused on the characterization of leadership philosophy, particularly in the sports domain (Hochstetler, 2019; Lyle, 1999; Vallée & Bloom, 2016), assuming it represents a key factor in explaining the success of coaches (Collins, 2021; Gould et al., 2017). However, several authors reinforce that a significant gap exists between the knowledge we have about the philosophy of coaches and how the philosophy is applied by the coach (e.g., Cushion & Partington, 2016; Gould et al., 2017), the way it is evaluated (Jacobs et al., 2016), and the impact it may have on the leadership efficacy (Lyle & Cushion, 2017).

To better represent the dynamic relations established between philosophy, practice, and leadership criteria, the LEM includes all three dimensions, proposing that the higher congruence between the cycles corresponds to greater coach efficacy (Gomes, 2020). In other words, according to the LEM, leaders (coaches) may increase their efficacy if they establish linear and congruent relations between the conceptual cycle of leadership (the ideas, actions, and indicators they value and convey to their athletes) and the practical cycle of leadership (the ideas, actions, and indicators they really assume when leading their athletes on a daily basis). This congruence (i.e., the juxtaposition) between cycles is evaluated by the *Leadership Cycles Congruence Index* (LCCI; Gomes, 2020), explained further in the instruments section.

As for leadership styles, the model includes three key areas of the leader's action: transformational leadership, which is the leader's ability to motivate team members to accomplish more than they expected (Bass, 1985); transactional leadership, based on mutual exchanges between the leader and members (Bass, 1985); and decision-making leadership, that incorporates the way leaders manage their power and make critical decisions when leading others (Yulk, 1998). The literature already indicates the positive results that transformational leadership produces in several measures of leadership efficacy (e.g., Judge et al., 2006; Ng, 2017), as well as the superior effects it has regarding transactional leadership and decision-making leadership (Bass & Riggio, 2006; Gomes & Resende, 2014; Rowold, 2006); however, there is less evidence about the impact that these styles can have on maximizing the leadership efficacy through the impact they may have on leadership cycles (Gomes et al., 2022).

Specifically, it is proposed in the LEM that, together, these styles can maximize the effects produced by leadership cycles, enhancing leadership efficacy. This maximization occurs when leaders adopt the optimal profile of leadership that results from the conjunction of higher use of transformational leadership, positive feedback from transactional leadership, and active management from decision-making leadership. In other words, according to the LEM, leaders may increase their efficacy if they implement their leadership cycles by using positive behaviors represented by the optimal profile of leadership (i.e., a congregation of transformational behaviors, positive feedback, and active management). This maximization of leadership styles and behaviors is evaluated by the *Optimal Profile of Leadership Index* (OPLI; Gomes, 2020), which is explained later in the instruments section.

Regarding the antecedent factors of leadership, the LEM includes three dimensions: leader characteristics, team members' characteristics, and situational characteristics (Gomes, 2020). When combined, they indicate three types of leadership favorability: technical favorability (technical human conditions that stimulate the impact produced by the leadership cycles in the leadership efficacy), psychological favorability (emotional human conditions that stimulate the impact produced by the leadership cycles in the leadership efficacy), and situational favorability (contextual and situational conditions, external to the leader and the team, that stimulate the impact produced by the leadership cycles in the leadership efficacy). In the literature, there is already evidence regarding the impact that demographic characteristics of the coach, athletes, and situation have on the coach's efficacy (e.g., Cook et al., 2021; Rowold, 2006). Nevertheless, the relationship that these characteristics establish with other factors in explaining leadership efficacy is still unknown. According to the model, like leadership styles, antecedent factors can influence the relationship between leadership cycles and leadership efficacy, and when acting as facilitators of leadership, the effects produced by leadership cycles on coaches' efficacy are enhanced. In other words, according to the LEM, leaders may increase their efficacy if they implement their leadership cycles by considering their own characteristics, the team members' characteristics, and the situational characteristics. The favorability of the antecedent factors of leadership is evaluated by the *Leadership Favorability Index* (LFI; Gomes, 2020), explained further in the instruments section.

Considering the lack of research that investigates this phenomenon in an integrated manner, this study tries to fill this gap by analyzing the leader's efficacy following the LEM (cf. Figure 1). In this study, the evaluation of leadership efficacy considered two subjective measures: the Perception of Sport Performance, which has not received much attention from researchers, and
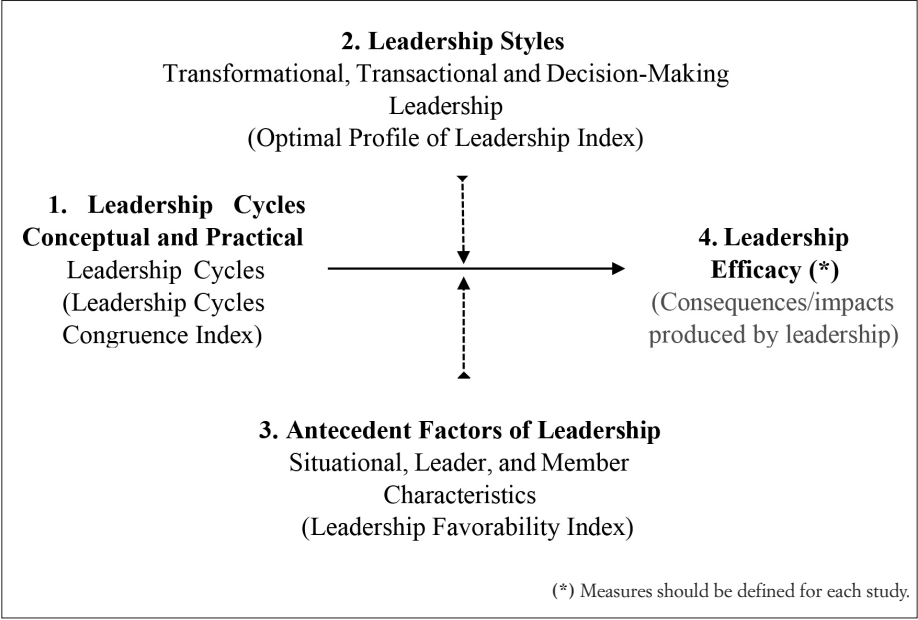
Figure 1 - Leadership Efficacy Model

the Satisfaction with Leadership, which has been indicated in the literature as one of the most appropriate measures to evaluate the coach's efficacy (Chelladurai, 2007, 2012; Chelladurai & Riemer, 1997). In this sense, the following hypothesis was established:

H1- Optimized Congruence Hypothesis (OCH): Higher levels of congruence between leadership cycles positively predict greater perception of sport performance (H1a) and greater satisfaction with leadership (H1b), and the optimal profile of leadership and greater leadership favorability influence this prediction.

This is one of the first studies to analyze the OCH; only a previous study focused on the OCH, considering the perception of sport performance (see Gomes et al., 2022). In this study, even though the optimal profile of leadership and leadership favorability were important variables to understand the perception of sport performance, the authors did not moderate OCH (leadership cycles congruence -> leadership efficacy). Therefore, in this study, we tested the possibility of these variables moderating the relationship between leadership cycles and the dependent variables, as predicted originally in the model (cf. Gomes, 2020). We also tested the possibility, in case there were no moderation

effects, of alternative relationships such as, mediation effects. In this way, this study aims to clarify the relations established between the leadership cycles (predictor variable) and both the optimal profile of leadership and leadership favorability (intervening variables) to explain the perception of sport performance and satisfaction with leadership (dependent variables).

Another aspect that deserves attention in the current literature is the possibility that some personal and sports variables of athletes, such as gender and type of sport, influence leadership efficacy (e.g., Baker et al., 2003; Gomes et al., 2022; Papadopoulou et al., 2006; Rowold, 2006; Shen & Joseph, 2021). However, the results are still scarce regarding their influence in conjunction with theoretical explanations of leadership efficacy. Therefore, in this study, we tested both the moderating influence of gender and type of sport in the relationship established between cycles/styles/antecedents of leadership and the efficacy of leadership, testing the invariance of the Optimized Congruence Hypothesis in the function of the athletes' gender and type of sport (see Figure 2). These two variables have been studied as possible influencers of leadership efficacy:

H2-Hypothesis of the Invariance of Optimized Congruence in Function of the Sex of Athletes: H1 is invariant depending on the athletes' sex (male and female).

H3-Hypothesis of the Invariance of Optimized Congruence in Function of Type of Sport: H1 is invariant depending on the type of sport practiced by the athletes, in this case considering the modalities of basketball and volleyball. In simple words, sex (male and female) and sport modality (individual versus team) will not significantly influence the positive impact of LCCI on the perception of sport performance (H1a) and satisfaction with leadership (H1b).

Method

PROCEDURE

A convenience sample was recruited considering the following criteria: (a) compete at the adult level, (b) compete in the first national division (the highest division organized by national federations), and (c) compete in volleyball or basketball. Once the study was approved by the Ethics Committee of the first author's university (SECSH 008/2016), the research team contacted volleyball and basketball clubs in the first division leagues. Then, the coaches of the teams of each club were contacted to ask for their participation. Once accepted, athletes were contacted to ask for their participation in the study. They were asked to complete an informed consent, which included all necessary information about the study,
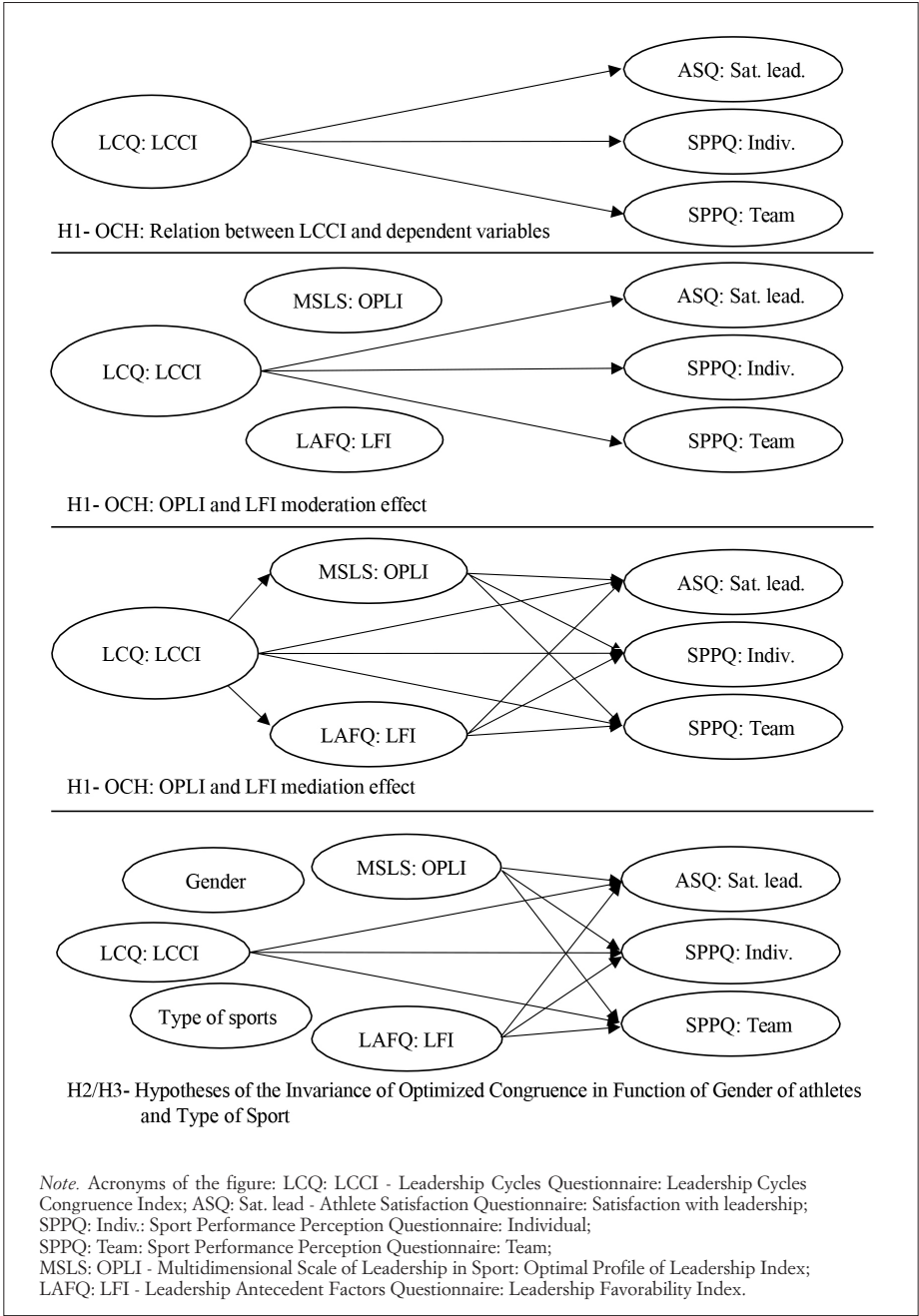
Figure 2 - Leadership Efficacy Model: Structural Models

the voluntary nature of their participation, and the confidentiality and anonymity of all data collected (approval from legal guardians was obtained for athletes under the age of 18). The assessment protocol was collected through the Qualtrics® platform and had an average response time of 20 minutes. The link to respond to the study was sent to athletes via SMS and/or email, always between Tuesday and Thursday, so that it would not overlap with the pre- and post-competition period.

PARTICIPANTS

The sample included 16 volleyball teams (50%) and 16 basketball teams (50%), with a total of 255 participants (out of 420 questionnaires sent – a return rate of 61%). Of the 255 participants, 109 were male (43%) and 146 were female (57%), aged between 15 and 43 (*M* = 22.44; *SD* = 5.73), and 159 competed in volleyball (62%) and 96 competed in basketball (38%). Most athletes competed at the national level, with 80% in the first division, 18% in the second division, and 2% at the regional level. Their average experience in their sport was 12 years (*SD* = 5.77), with an average of 5 international appearances as juniors (ranged between 0 and 70; 62% with no international caps at junior level; *SD* = 10.99) and of 4 international caps at the adult national team (ranged between 0 and 113; 85% with no international caps at adult level; *SD* = 15.09). Athletes were working an average of 2 years (*SD* = 2.07) with the coach they evaluated in the study.

MEASURES

The different measures used in this study are described below. Table 1 summarizes its main psychometric properties and provides item examples for each dimension.

Cycles Congruence Index (LCCI)

Leadership cycles (and the LCCI) from the LEM were calculated using the Leadership Cycles Questionnaire (LCQ – version for athletes; Gomes et al., 2022). The LCQ evaluates the leadership's conceptual and practical cycles through three dimensions (five items per dimension), using a five-point Likert-type scale (1 = *Never*; 5 = *Always*): leadership philosophy, leadership practice, and leadership criteria.

Athletes answered each item twice to obtain the scores of the two leadership cycles: (a) the conceptual cycle of leadership (i.e., athletes' perceptions of idealized leadership of their coaches in terms of philosophy, practice, and criteria, "how I would like to be"); and (b) the practical cycle of leadership (i.e., athletes' perceptions of how coaches carry out on a daily basis their philosophy, practice, and criteria, "how it is"). The LCCI represents a global score of the LCQ instrument, resulting from the difference between the conceptual and the practical axes, and then transforming the results obtained into a modular variable (i.e., the negative values were transformed into its positive mirror) so that values closer to zero indicated greater congruence between the cycles.

Confirmatory factorial analysis indicated a good adjustment of the instrument to the three-factor model.

TABLE I
Synthesis Of Measures Descriptions And Psychometric Properties.

Measure	Description	Item Example	α
Leadership Cycles Congruence Index (LCCI)			**.95**
Leadership Philosophy	Values, beliefs, assumptions, attitudes, principles, and priorities assumed by coaches influenced by leadership practice and criteria	"My coach tells us the ideas s/he values the most"	.90
Leadership Practice	Coaches' specific behaviors to implement their leadership philosophy	"My coach acts in accordance with the ideas valued"	.86
Leadership Criteria	Indicators used to monitor whether they are meeting the tenets of their leadership philosophy and practice	"My coach evaluates if his/her ideas were executed"	.90
CFA	$\chi^2(87) = 221.842$, $p < .001$; $\chi^2/df = 2.550$; RMSEA = .078, 90% C.I. [.065; .091]; TLI = .945; CFI = .955		
Optimal Profile of Leadership Index (OPLI)			
Transformational leadership			
Vision	Coaches' tendency to present an enthusiastic and optimistic vision of athletes' future	"My coach defines a positive vision for my future"	.95
Inspiration	Coaches' positive expectations and behaviors directed towards promoting the success and continuous efforts of athletes	"My coach encourages me to work the best I can"	.91
Instruction	Coaches' actions focused on teaching positively technical skills	"My coach explains me what I should do in order to improve my skills"	.91
Individualization	Coaches' tendency to consider the needs and expectations of athletes	"My coach respects my personal expectations and desires"	.89
Support	Coaches' personal concern regarding athletes' well-being and interest in building positive relationships based on mutual confidence	"My coach helps me when I have a personal problem"	.85
Transactional leadership			
Positive feedback	Coaches' reinforcement and recognition of good performance and effort of athletes	"My coach congratulates me when I have a good performance"	.90
Negative feedback	Punishment behaviors of coaches intended to manage athletes' inadequate behaviors and performance	"My coach speaks aggressively when I fail or make mistakes"	.91
Decision-making			
Active management	Coaches' behaviors of power management, by assuming the decisions in a more decentralized process (involving athletes) or in a more centralized process (assuming the decisions alone)	"My coach allows me to participate in the decisions to be taken"	.84

(Continue)

Continue TABLE I

Measure	Description	Item Example	α
Passive management	Coaches' avoidance or delay in taking responsibility for decision-making when it is necessary to solve important problems	"My coach allows problems go on before doing something about it"	.82
CFA	$\chi^2(558) = 969.903$, $p < .001$; $\chi^2/df = 1.738$; RMSEA = .054, 90% C.I. [.048; .060]; TLI = .938; CFI = .945		

Leadership Favorability Index (LFI)

Leader task orientation	Coaches' interest in technical and productive aspects of work, having as central concern the accomplishment of the tasks, the achievement of goals, and the increase of sport performance	"For my coach, it is important that we achieve the defined goals"	.83
Leader people orientation	Coaches' interest in the personal and human aspects of athletes, namely, their needs, expectations, and values	"For my coach, it is important to consider our personal and professional needs"	.79
Team members' technical maturity	Athletes' level of competence and knowledge about the established tasks and goals	"As athlete, I am very good at performing my tasks"	.69
Team members' psychological maturity	Athletes' level of self-confidence and openness to accept responsibility for carrying out the established tasks	"As athlete, I am very motivated/committed to complete my tasks"	.59
Situation	Contextual factors that can influence the coaches' actions	"My coach has autonomy to decide what to do"	.67
CFA	$\chi^2(80) = 146.441$, $p < .001$; $\chi^2/df = 1.831$; RMSEA = .057, 90% C.I. [.042; .060]; TLI = .934; CFI = .925		

Perception of Sport Performance

Individual sport performance	Athletes' perception about their own performance	"Until now, in competitions, I performed as I expected"	.92
Team sport performance	Athletes' perception of their team performance	"Until now, in competitions, my team performed as expected"	.92
CFA	$\chi^2(28) = 66.332$, $p < .001$; $\chi^2/df = 2.369$; RMSEA = .073, 90% C.I. [.051; .096]; TLI = .972; CFI = .983		

Satisfaction with Leadership | | | .96

Use of skills	Athletes' opinion on how the coach promotes and improves their skills	"The degree to which my abilities are used"	.90
Strategy	Athletes' opinion about the sports tactics used by the coach	"The coach's choice of plays during competition"	.95
Personal treatment	Athletes' opinion about the treatment they receive from the coach on an individual basis	"The recognition I receive from my coach"	.94
Training and instruction	Athletes' opinion of the training and instructions the coach provides	"The training I receive from the coach during the season"	.91
CFA	$\chi^2(141) = 358.614$, $p < .001$; $\chi^2/df = 2.543$; RMSEA = .078, 90% C.I. [.068; .088]; TLI = .949; CFI = .958		

Optimal Profile of Leadership Index (OPLI)

Leadership styles (and the OPLI) from the LEM were calculated using the Multidimensional Scale of Leadership in Sport (MSLS – version for athletes; Gomes et al., 2021). The MSLS evaluates nine leadership dimensions (four items per dimension) using a five-point Likert-type scale (1 = *Never*; 5 = *Always*). The leadership dimensions are divided into three areas: transformational leadership, transactional leadership, and decision-making leadership. The transformational leadership area includes five dimensions (vision, inspiration, instruction, individualization, and support), the transactional leadership area includes two dimensions (positive and negative feedback), and the decision-making leadership area also includes two dimensions (active and passive management). The scores of MSLS were used in two ways: continuous variable (to test the mediation effects) and nominal variable (to test the moderation effects). Regarding the continuous variable, results were averaged in the nine dimensions to calculate the Optimal Profile of Leadership Index (OPLI), with the dimensions of negative feedback and passive management reversed; thus, higher values represent a greater tendency of coaches to use the optimal profile of leadership according to the athletes. Regarding the nominal variable, it was calculated the participants' median score of OPLI (*Md* = 3.41), and they were divided into two groups: high optimal profile (> 3.41) and low optimal profile (≤ 3.41). Confirmatory factorial analysis indicated a good fit of the instrument to the nine-factor model.

Leadership Favorability Index (LFI)

Antecedent factors of leadership (and the LFI) from the LEM were calculated using the Leadership Antecedent Factors Questionnaire (LAFQ – version for athletes; Gomes et al., 2022). The LAFQ evaluates the antecedent factors of leadership through five dimensions (3 items per dimension), using a five-point Likert- type scale (1 = *Never*; 5 = *Always*): leader task orientation, leader people orientation, team members' technical maturity, team members' psychological maturity, and situation. These five dimensions can be combined to analyze the technical, psychological, and situational leadership favorability. The scores of LAFQ were used in two ways: continuous variable (to test the mediation effects) and nominal variable (to test the moderation effects). Regarding the continuous variable, results were averaged in the five dimensions to calculate the Leadership Favorability Index (LFI), meaning that higher values represent a greater tendency to have favorable conditions for leadership, according to athletes' perceptions. Regarding the nominal variable, it was calculated the participants' median score of (*Md* = 4.06), which allowed the division of participants into two groups: high leadership favorability (≥ 4.06) and low leadership favorability (< 4.06). Confirmatory factorial analysis indicated a good adjustment of the instrument to the five-factor model.

Perception of Sport Performance

The Sport Performance Perception Questionnaire (SPPQ; Gomes et al., 2020) evaluates the athletes' perception of sport performance, consisting of 10 items responded on a five-point Likert scale (1 = *Strongly disagree*, 5 = *Strongly agree*), divided into two dimensions (each with five items): individual and team sport performance. Higher values in each dimension represents a higher perception of sport performance. Confirmatory factorial analysis indicated a good fit of the instrument to the two-factor model.

Satisfaction with Leadership

The Athlete Satisfaction Questionnaire (ASQ; Riemer & Chelladurai, 1998; translated by Gomes & Resende, 2014) evaluates athletes' satisfaction with sport activity. For this study, four dimensions of ASQ related to satisfaction with leadership, answered on a seven-point Likert scale (1 = *Not satisfied at all*; 7 = *Extremely satisfied*) were used. Specifically, athletes were asked to rate their satisfaction regarding the use of skills (five items), strategy (six items), personal treatment received (five items), and training and instruction (three items). The responses were averaged to compute a single score of satisfaction with leadership, where higher values correspond to greater satisfaction with their coach's leadership. A second-order factor model was used in this study to simplify the tested models and reduce the number of manifest variables. This selection allowed for a decrease in idiosyncratic variation and the number of variables measured, as well as an increase in the reliability of the factors (Marsh et al., 1994). Confirmatory factorial analysis indicated a good fit of the instrument to the one-factor model.

DATA ANALYSIS PROCEDURE

IBM SPSS software (version 27.0) was used for descriptive and inferential analyses and for checking normality and multicollinearity assumptions. Normality assumptions were tested using Kline's (2015) recommendation of skewness inferior to |3| and kurtosis below |10|. Multicollinearity criteria were met if VIF coefficients were below 5 (cf. Marôco, 2014). The IBM SPSS AMOS (version 27.0) was used to test structural equation models. The following indicators were used to test and compare the quality of fit of the different models (i.e., direct models, moderation and mediation) to the data: (a) chi-square test statistics (χ^2); (b) Root Mean Square Error of Approximation (RMSEA; Steiger, 1990), in which values between 0.05 and 0.08 correspond to an adequate fit between the model and the population, and values < 0.05 indicate a very good fit (Arbuckle, 2008), as well as a confidence interval of 90% and *p*- value for RMSEA ≤ .05 (Steiger, 1990); and (c) Tucker-Lewis Index (TLI; Bentler & Bonett, 1980) and Comparative Fit Index (CFI; Bentler, 1990), in which CFI and TLI values ≥ 0.90 indicated an adequate fit and values ≥ 0.95 indicated an excellent fit (Bentler, 1990; Bentler & Bonett, 1980). The minimum sample size required for testing the proposed model was calculated using Westland's recommendation (2010) of $N \geq 50r^2 - 450r + 1100$, where *r* is the number of manifest variables/number of latent variables. Therefore, considering an *r* of 2.9 (29 manifest variables/10 latent variables), a minimum of 215 participants was required.

Invariance tests and multigroup analyses were conducted to evaluate the moderating effect of leadership styles and antecedent factors and the moderating effect of athletes' characteristics (gender and type of sport). For the mediating effect of leadership styles and antecedent factors, bootstrap was calculated to obtain the indirect effects.

Results

PRELIMINARY DATA ANALYSISIS

Variables' skewness and kurtosis were analyzed and it was concluded that no severe deviations from normality were found (-0.94 > *sk* < 1.36; -1.28

> *ku* < 1.54). The absence of multicollinearity assumption among the independent variables (leadership cycles, optimal profile of leadership, and leadership favorability) was also met (all VIF < 2.08).

CORRELATIONS BETWEEN VARIABLES

Table II includes the correlations among the study variables. OPLI correlated positively with LFI, perceived sport performance (individual and team), and satisfaction with leadership. Additionally, LFI correlated positively with both dependent variables, which in turn also correlated positively with each other. LCCI correlated negatively with the other variables under study, meaning that higher congruency levels were associated with higher optimal profile of leadership, leadership favorability, satisfaction with leadership and perceptions of performance. It is also important to highlight the significant and strong correlations (Heiman, 2014) among all variables.

TABLE II
Correlations Between Variables

	1	2	3	4.1	4.2	5
1. LCQ: LCCI	--	--	--	--	--	--
2. MSLS: OPLI	-.595***	--	--	--	--	--
3. LFAQ: LFI	-.607***	.706***	--	--	--	--
4. SPPQ						
4.1. Individual	-.371***	.442***	.334***	--	--	--
4.2. Team	-.409***	.343***	.353***	.524***	--	--
5. ASQ: Satisfaction with leadership	-.633***	.832***	.709***	.540***	448***	--

*p < .05; ** p < .01; ***p < .001

Leadership Cycles

In the analysis described in Table III, the non-modular LCCI variable was used to understand whether athletes perceive that their coaches should increase (values greater than zero), decrease (values below zero), or maintain (values equal to zero) the leadership cycles in the three dimensions evaluated (i.e., philosophy, practice, and criteria). Most athletes perceived that their coaches should clarify their philosophy and, mainly, make their practice and leadership criteria even more explicit.

TABLE III
Leadership Cycles

LCQ: LCCI	Increase n (%)	Decrease n (%)	Maintain n (%)
Philosophy	135 (53%)	7 (3%)	113 (44%)
Practice	194 (76%)	4 (2%)	57 (22%)
Criteria	139 (55%)	6 (2%)	110 (43%)

Congruence of Leadership Cycles

To test the OCH (H1), a structural equation model was conducted (cf. Figure 3) to assess the relationship between leadership cycles, perceived sport performance (H1a), and satisfaction with leadership (H1b). The model showed an adequate fit ($\chi^2(359) = 769.783$, $p < .001$; $\chi^2/df = 2.122$; RMSEA = .066, 90% C.I. [.060; .073]; TLI = .938; CFI = .949). The congruence between leadership cycles predicted the level of perceived sport performance (14% of individual and 15% of team sport performance variance explained) and the satisfaction with leadership by the athletes (49% of variance explained). Specifically, the higher the congruence (i.e., LCCI closer to zero), the greater the perception of sport performance (H1a) and satisfaction with leadership athletes experienced (H1b), as expected.
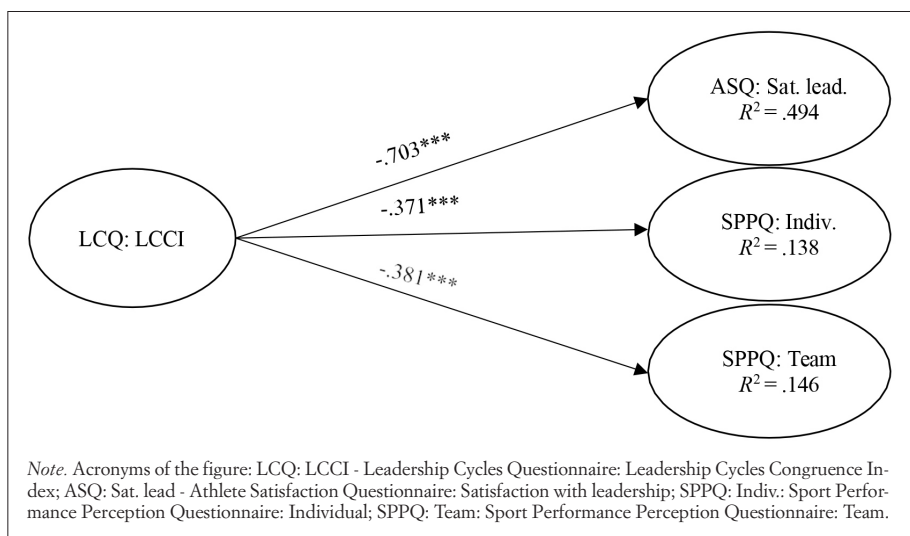

Note. Acronyms of the figure: LCQ: LCCI - Leadership Cycles Questionnaire: Leadership Cycles Congruence Index; ASQ: Sat. lead - Athlete Satisfaction Questionnaire: Satisfaction with leadership; SPPQ: Indiv.: Sport Performance Perception Questionnaire: Individual; SPPQ: Team: Sport Performance Perception Questionnaire: Team.

Figure 3 - OCH: Relationship between LCCI, SSPQ and ASQ.

Moderation of Leadership Styles and Antecedent Factors

To test the moderation effects of leadership styles and antecedent factors (nominal variables), two structural equation models were analyzed (cf. Figure 2). Both models showed an adequate fit for the data (cf. Table IV).

The first step tested the invariance of the measurement model. For the OPLI multigroup, the analysis indicated that, considering the free model as correct, the measurement model did not present a worse adjustment to the groups when compared to the free model (α = .05, $p\Delta\chi^2$ > .05) (Marôco, 2014), indicating the invariance of the measurement model in this multigroup. In turn, for the LFI multigroup, the measurement model presented a worse adjustment to the groups when compared to the free model (α = .05, $p\Delta\chi^2$ < .05) (Marôco, 2014), pointing out the variance of the measurement model. Therefore, the data analysis ended for the LFI multigroup since the results did not suggest the possibility of its moderating effect.

For the OPLI variable, the invariance of the structural model was tested, considering the measurement model as correct. Thus, when comparing the structural model with the measurement model, the former did not present a worse adjustment (α = .05, $p\Delta\chi^2$ > .05) (Marôco, 2014). This result showed that the effect of the optimal profile of leadership on the relationship between leadership cycles and the dependent variables is invariant between groups (i.e., high optimal profile *vs.* low optimal profile), resulting in the rejection of the possible moderating effect of this variable.

TABLE IV
OPLI and LFI Moderation Models: Adjustment Indices

Groups/Models	$\chi2$	df	p	$\chi2/df$	TLI	CFI	RMSEA [90%CI]	pclose
"High optimal profile vs Low optimal profile"								
Unconstrained	1152.33	718	< .001	1.605	.908	.924	.049 [.044;.054]	.631
Measurement weights	1185.77	741	< .001	1.600	.909	.922	.049 [.044;.054]	.556
Structural weights	1190.51	747	< .001	1.594	.910	.922	.048 [.043;.054]	.587
"High leadership favorability vs Low leadership favorability"								
Unconstrained	1148.70	718	< .001	1.600	.920	.934	.049 [.043;.054]	.655
Measurement weights	1198.40	741	< .001	1.617	.917	.930	.049 [.044;.054]	.572
Structural weights	1216.59	747	< .001	1.629	.916	.928	.050 [.045;.055]	.514

Since the corroboration of H1 through moderation depended on the prior confirmation of the OPLI and LFI moderation, and since this was not verified, the double moderation effect of the optimal profile of leadership and the leadership favorability was rejected, and the mediation models were tested.

Mediation of Leadership Styles and Antecedent Factors

Considering that no moderation effects of OPLI and LFI were identified, the investigation proceeded to the alternative analysis of mediation by using the continuous variables of OPLI and LFI. To this end, two structural equation models were carried out, one for the direct effect (i.e., direct relations between LCCI, OPLI, and LFI, and the dependent variables) and one with mediated effect (i.e., mediation of OPLI and LFI in the relationship between leadership cycles and the dependent variables), to verify the best model to follow (Figure 4). Both the direct effect model ($\chi^2(412) = 1202.604$, $p < .001$; $\chi^2/df = 2.122$; RMSEA = .087, 90% C.I. [.081; .093]; TLI = .887; CFI = .907) and the mediation model ($\chi^2(410) = 975.205$, $p < .001$; $\chi^2/df = 2.379$; RMSEA = .074, 90% C.I. [.068; .080]; TLI = .919; CFI = .933) showed a good fit for the data. The chi-square values were compared, and statistically significant differences were found ($\Delta\chi^2 = 227.399$; $\Delta df = 2$; $p < .001$). As a result, the partial mediation model was selected.

Results for the Partial Mediation Model are presented in Figure 4, which summarizes this model's regression coefficients. It is important to note that the model explained 35% of the OPLI variance, 37% of LFI, 23% of the variance associated with the perception of individual sport performance, 16% of the perception of team sport performance, and 78% of satisfaction with leadership. Then, the direct and indirect effects were analyzed. Regarding the direct effects, it was found that the LCCI was related to an increase in all other variables. That is, the greater the congruence between the leadership cycles (i.e., the lower the LCCI), the greater the perception of an optimal profile of leadership and favorability, and the greater the perceived sport performance (individual and team) and the satisfaction with leadership evidenced by athletes.

Regarding OPLI, it was found that the higher the optimal profile, the higher the perception of individual sport performance and satisfaction with leadership. As for LFI, the greater the favorability of leadership conditions, the greater the satisfaction with leadership. Regarding the significant indirect effects, LCCI predicted the perception of individual sport performance
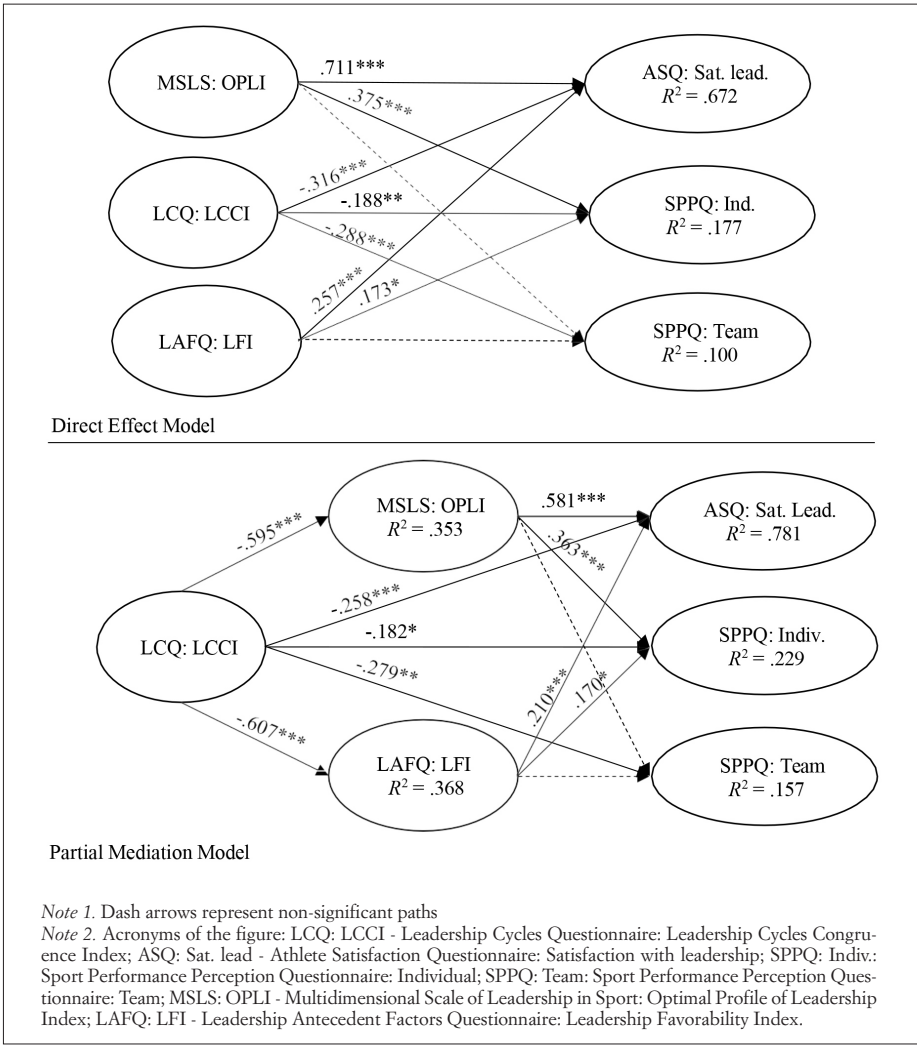
Figure 4 - OCH: OPLI and LFI mediation effect.

($p = .003$) and satisfaction with leadership ($p = .006$) via indirect paths: greater congruence (lower LCCI) was related to a higher optimal profile of leadership and greater favorability of leadership conditions, which, in turn, were related to a greater perception of individual sport performance and satisfaction of athletes with the action of their coaches. These results corroborated H1 through mediation, clarifying that the OPLI and LFI mediated the ef-

fects produced by the leadership cycles on the perception of individual sport performance and satisfaction with leadership.

Moderation of Gender and Type of Sport of Athletes

This last step analyzed whether the partial mediation model was invariant according to sex (male versus female) and type of sport (basketball versus volleyball). For both cases, the models showed an adequate fit for the data (cf. Table V).

In relation to the multigroups' sex and type of sport, the invariance of the measurement model was tested. Assuming the free model as correct, the results indicated that in both multigroups, the invariance of the measurement model was verified since the measurement model did not present a worse adjustment to the groups than the free model ($\alpha = .05$, p$\Delta\chi2 > .05$) (Marôco, 2014). Then, the invariance of the structural model was analyzed, and assuming the measurement model as correct, the structural model did not present a worse adjustment to the groups, verifying structural invariance between groups ($\alpha = .05$, p$\Delta\chi2 > .05$) (Marôco, 2014). These results confirmed this study's second and third hypotheses, indicating that the athletes' sex and type of sport did not have a moderating effect.

TABLE V
Gender and Type of Sport Moderation Models: Adjustment Indices

Groups/Models	χ2	df	p	χ2/ df	TLI	CFI	RMSEA [90%CI]	pclose
"Male vs Female"								
Unconstrained	1568.91	820	< .001	1.913	.896	.914	.060 [.056;.065]	< .001
Measurement weights	1599.63	843	< .001	1.898	.898	.913	.060 [.055;.064]	< .001
Structural weights	1619.13	857	< .001	1.889	.899	.913	.059 [.055;.064]	< .001
"Basketball vs Volleyball"								
Unconstrained	1502.31	820	< .001	1.832	.904	.921	.057 [.053;.062]	.005
Measurement weights	1533.46	843	< .001	1.819	.906	.920	.057 [.052;.061]	.007
Structural weights	1547.90	857	< .001	1.806	.907	.920	.056 [.052;.061]	.010

Discussion

This study analyzed, based on the LEM, the leadership efficacy of coaches through male and female athletes' perception of sport performance and satisfaction with leadership of first division basketball and volleyball teams. The results revealed key aspects that must be highlighted.

First, the results demonstrated a greater need for coaches to better explain their philosophy, and even more their practice and criteria. While there is literature about leadership philosophy (e.g., Lyle & Cushion, 2017; Vallée & Bloom, 2016), little is known about how coaches can reflect their philosophy in the behaviors and criteria they adopt (e.g., Cushion & Partington, 2016; Gould et al., 2017; Jacobs et al., 2016). The results reinforce the idea that coaches would be more effective if their ideas were clearer (i.e., philosophy of leadership), and mainly if they adopted behaviors according to the ideas they convey (i.e., leadership practice), and used indicators to evaluate them (i.e., leadership criteria). In the future, it would be important to explore further how coaches can apply and evaluate their philosophy to increase their efficacy.

Second, the OCH was corroborated since greater congruence between leadership cycles corresponded to greater perceptions of sport performance (H1a) and satisfaction with leadership (H1b). This result reinforces the idea that coaches gain advantages when they match what they think is the best way to lead with how they effectively implement their leadership ideas into practice. In terms of perception of sport performance, the present study added support to previous literature (e.g., Gomes et al., 2018; Gomes et al., 2022), arguing that the establishment of congruence between leadership cycles is positively related to the perception of sport performance and satisfaction with leadership.

The results indicated that leadership styles and antecedent factors are not moderators of the relationship between leadership cycles and the dependent variables (i.e., perception of sport performance and satisfaction with leadership). A possible explanation for this phenomenon may be related to groups' division. The groups were created based on the median of their index results and not on the Likert scale's midpoint to obtain similar sizes of subsamples. Thus, for future research, a single cut-off point should be established for creating groups in the different indices based on the scale's midpoint to allow greater variability among the established groups. Another possible explanation for the results achieved may be the high correlation that both moderating variables (i.e., OPLI and LFI) have with the LCCI (i.e., independent variable) and with the perception of sport performance

and satisfaction with leadership (i.e., dependent variables). As evidenced in the literature, for variables to explain a moderating effect, the correlations between the moderating variables and the dependent/independent variables must be weak (Baron & Kenny, 1986; Kraemer et al., 2002), which was not the case in this study.

Since no moderation effects were found, the possibility of mediation of these variables (i.e., OPLI and LFI) was tested on the relationship between leadership cycles and the dependent variables. The results confirmed that increased congruence of leadership cycles explained a greater optimal profile of leadership and greater favorability, leading to a greater perception of individual sport performance and satisfaction with leadership. In other words, the more leadership cycles match each other (i.e., greater congruence between cycles), the greater the tendency of coaches to use positive leadership styles and the greater tendency of coaches to consider the antecedent factors of leadership, which, in turn, tend to increase athletes' perception of individual sport performance and their satisfaction with leadership. Interestingly, this mediation effect of OPLI and LFI did not occur in the relationship between leadership cycles and the perception of team sport performance. This finding may be related to the fact that the leadership styles used by the coach (i.e., the optimal profile of leadership), especially regarding transformational behaviors (Yammarino & Dubinsky, 1994), include individualized dimensions (e.g., instruction, support) that focus on the specific needs of athletes (Bass & Riggio, 2006). Another possible explanation may be related to the fact that antecedent factors of leadership (i.e., personal characteristics of coaches and athletes, as well as the specific circumstances of the situation in which they are) may be more related to the stimulation of the perception of individual sport performance than team sport performance (Gomes et al., 2022).

The literature has shown the impact that leadership styles and antecedent factors have on leadership efficacy (Cook et al., 2021; Rowold, 2006). However, to the best of our knowledge, only one study focused on analyzing these factors in a combined way to explain the perception of sport performance, but based the relationship between the components of the LEM on moderation analysis (i.e., Gomes et al., 2022). The present study increases the knowledge of the relationship of these factors with the perception of sport performance. It adds to the literature on the relationship between satisfaction with leadership, verifying that this relationship between the leadership cycles and the dependent variables is based on the mediation of the optimal leadership profile and leadership favorability. These results may have future implications on the LEM, namely the introduction of mediation hypotheses

to explain the relationship between leadership cycles, leadership styles, antecedent factors of leadership, and measures of efficacy of the coach's action.

The second and third hypotheses of this study, which analyzed whether the OCH was invariant according to the athletes' sex and sport type, were corroborated. This finding suggests that the levels of efficacy achieved by coaches are independent of athletes' sex and type of sport. However, while the literature is contradicting and scarce, some studies have identified differences based on athletes' sex (e.g., Papadopoulou et al., 2006; Shen & Joseph, 2021) and types of sports (e.g., Baker et al., 2003; Rowold, 2006).

LIMITATIONS AND FUTURE RESEARCH

The overall results highlight the importance of coaches acting congruently to achieve higher leadership efficacy. Regardless of their gender or type of sport, athletes value leadership congruence and believe coaches should increase their behaviors (i.e., practices) and indicators (i.e., criteria) used to evaluate their philosophy. Although these results are relevant, this study did not explore how coaches can apply or evaluate their philosophy to increase their leadership efficacy. Thus, it would be necessary for future studies to explore it and provide specific guidelines for coaches to increase their leadership congruence and, consequently, efficacy.

An important gap in this study is that only athletes' perceptions of coaches' behaviors were considered. Previous research (e.g., Gomes et al., 2022) has suggested the existence of nuances in how athletes and coaches evaluate similar behaviors and situations. Therefore, for future studies and increased knowledge about leadership efficacy and the LEM itself, it is advisable that investigations focus on comparing the coach's perception with that of athletes. Equally interesting, and considering that this coach-athlete relationship is dynamic and constantly influenced by previous behaviors and performance results, it is also suggested that data should be collected throughout the sport's season to ensure that the coach-athlete relationship is better understood.

Practical Implications and Conclusion

This study has practical implications for the actions taken by coaches. First, coaches should improve how they communicate their ideas and goals (i.e., leadership philosophy) to be clearer to athletes. In addition, they should better explain how they intend to implement their ideas (i.e., leadership prac-

tice) and the criteria they will use to evaluate their ideas and their implementation (i.e., leadership criteria). Moreover, when establishing congruence between leadership cycles, coaches must use an optimal leadership profile while communicating with athletes and pay attention to the favorability of the conditions of their leadership since the combination of these three factors increase coaches' efficacy.

This study provided indications on how leadership efficacy can be increased, based on the LEM, showing that the congruence of leadership cycles is an essential factor in predicting levels of perception of sport performance and satisfaction with leadership. Higher leadership congruence influences a greater optimal profile of leadership and greater favorability, leading to an increase in athlete perception of individual sport performance and satisfaction (i.e., mediation effect), regardless of athletes' sex and type of sport.

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