

Examining the Interaction Between Coaches' Self-Efficacy and the Coach-Athlete Relationship in Different Sports Branches

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Abstract

Background

This study aims to examine the relationship between coaches' self-efficacy perceptions and the coach–athlete relationship across different sports disciplines. In addition, it investigates whether coaches' self-efficacy levels and coach–athlete relationship scores differ according to various variables such as gender, age, educational level, coaching experience, type of institution, sport discipline, and coaching rank. Understanding these relationships is important for improving coaching effectiveness and enhancing athlete development.

Methods

The study was designed using a descriptive and correlational survey model within quantitative research methods. The sample consisted of 250 active coaches working in various sports disciplines. Data were collected using the “Personal Information Form,” the “Coach Self-Efficacy Scale,” and the “Coach–Athlete Relationship Scale.” SPSS statistical software was used for data analysis. Initially, skewness and kurtosis values were examined to assess whether the data followed a normal distribution. Based on distribution characteristics, independent samples t-tests, one-way analysis of variance (ANOVA), and Pearson correlation analysis were conducted. Appropriate post-hoc tests were applied to identify the source of significant differences found in ANOVA.

Results

The findings revealed a positive and statistically significant relationship between coaches' self-efficacy levels and the coach–athlete relationship ($p < 0.05$). Significant differences in self-efficacy levels were observed according to educational level, coaching experience, type of institution, and coaching rank. However, coach–athlete relationship scores did not show significant differences across most demographic variables.

Conclusions

The results indicate that higher levels of self-efficacy among coaches are associated with stronger coach–athlete relationships. While certain professional and educational factors influence self-efficacy, the coach–athlete relationship appears to be relatively stable across demographic characteristics. These findings highlight the importance of developing coaches' self-efficacy to foster more effective and supportive relationships with athletes and may contribute to the design of targeted coach education programs.

Introduction

In the sports environment, coaches are at the heart of the sporting process, not only through their technical knowledge and skills, but also through the psychological and social interactions they establish with athletes. The professional competencies of coaches play a decisive role in athlete development, performance level, and sporting sustainability. In this context, coaches' self-efficacy perception—that is, their belief in their ability to successfully fulfill their professional duties—is considered an important psychological element affecting both their own performance and the quality of their relationship with their athletes. It is stated that coaches with a high level of self-efficacy are able to establish more supportive and constructive relationships with athletes; as a result, athlete motivation, commitment, and performance outcomes improve positively [1, 2].

The concept of self-efficacy refers to an individual's belief in their capacity to successfully complete a specific task, shaping their behavior, motivation level, and problem-solving skills [3]. In the context of sports, coaches' self-efficacy perceptions directly influence their professional decision-making processes, their approaches to athletes, and their strategies for coping with challenges. Current studies show that coaches with high levels of self-efficacy adopt both a performance-oriented and psychologically supportive approach, and that this approach has positive effects on athletes' motivation and sporting commitment [4,5].

This indicates that self-efficacy perception is closely related to the quality of the coach -athlete relationship.

The coach-athlete relationship is defined as a multidimensional structure encompassing trust, closeness, quality of communication, and shared goals [6]. The literature emphasizes that a high-quality coach -athlete relationship has positive effects on athletes' psychological resilience, motivation, and performance levels. It is noted that athletes in a supportive and trusting relationship environment can cope more effectively with stressful situations; conversely, negative relationship dynamics can increase athlete burnout [7]. Indeed, studies have shown significant correlations between the sub-dimensions of the coach -athlete relationship and athletes' problem-solving skills and burnout levels [5,8]. These findings demonstrate that the coach - athlete relationship is closely related not only to athletic performance but also to athletes' psychological skills.

However, a review of the existing literature reveals that studies addressing the interaction between coaches' self-efficacy perception and the coach-athlete relationship are mostly limited to a single sport or specific sports types. Yet, sports branches differ in terms of their structural characteristics and the physical and psychological demands they require. The nature of coach -athlete interaction can differ between contact sports (e.g., wrestling, boxing, judo) and non-contact sports (e.g., athletics, swimming, cycling). However, comprehensive findings on how these differences interact with self-efficacy perception and relationship dynamics are limited [9].

Based on this, it is believed that studies encompassing different sports branches will make significant contributions to the fields of coaching science and sports psychology. In particular, examining the interaction between the self-efficacy perceptions of coaches working in contact and non-contact sports and the relationships they establish with their athletes can offer both theoretical and practical implications. In this context, the aim of this study is to examine the interaction between the self-efficacy perception levels of coaches working in different sports branches and the coach-athlete relationship, and to determine whether these variables differ according to demographic factors. This approach aims to evaluate, within a more holistic framework, how coaches' professional competencies shape not only their own performance but also the communication and interaction processes they establish with athletes.

Materials and methods

This section details the purpose, scope, and limitations of the research; the research problem, model, and data collection tools are systematically explained. Furthermore, the research population and sample are defined, and the statistical methods used in data analysis are presented in detail. In addition, the normality distributions of the data obtained in the study are comprehensively evaluated.

Research design

is to examine the interaction between the self-efficacy levels of coaches working in different sports and the coach-athlete relationship. The study also attempts to determine whether these two variables differ according to the demographic characteristics of the coaches (gender, age, education level, years of experience in coaching, rank, type of institution, and age group worked with). Accordingly, the study reveals how the professional competence of coaches and the types of relationships they establish with athletes influence each other; the aim is for the findings to contribute to the development of coach training programs and applications in the field of sports psychology.

Research Aim

The main objective of this research is to examine the interaction between the self-efficacy levels of coaches working in different sports and the coach-athlete relationship. The study also attempts to determine whether these two variables differ according to the demographic characteristics of the coaches (gender, age, education level, years of experience in coaching, rank, type of institution, and age group worked with). Accordingly, the study reveals how the professional competence of coaches and the types of relationships they establish with athletes influence each other; the aim is for the findings to contribute to the development of coach training programs and applications in the field of sports psychology.

Research Problem

The general problem of the research can be stated as follows:

Coaches How can the relationship between coach-athlete relations and self-efficacy be defined?

Within the framework of this general problem, the following sub-problems have been formulated:

Coaches What are the levels of the coach-athlete relationship?

of the coaches ?

What are the differences and relationships between the demographic characteristics of the coaches and their total scores and sub-dimensions on the scales?

Research Model

In this research, a "Descriptive and Relational Survey Model" was adopted in line with the stated objectives . Within the framework of the descriptive model, the variables forming the basis of the research problem were defined in detail, and the current situation regarding these variables was presented.

Data Collection Tools

The study utilized a "Personal Information Form ," a " Coach Self-Efficacy Scale," and a " Coach-Athlete Relationship Scale."

Personal information form

The Personal Information Form used in the research was prepared to determine the demographic and professional characteristics of the participants and includes gender, age, education level, length of experience in coaching, branch of sport , institution where they work, coaching level, and age group they work with.

The Coach Self-Efficacy Scale: *is a 21-item, 5-point Likert- type scale developed to assess coaches' perceptions of their professional competence (1 = Strongly Disagree, 5 = Strongly Agree). The scale consists of four sub-dimensions: psychological competence, teaching competence, personality development competence, and management competence, and aims to comprehensively measure the professional competencies possessed by coaches. The validity and reliability study of the scale was conducted by Veli Kovak,2020 (10).*

Coach-Athlete Relationship Inventory (The Coach-Athlete Relationship Questionnaire CART-Q): *The Inventory is a self-assessment tool developed by Jowett and Ntoumani 2004, (11) to evaluate the nature of the coach-athlete relationship. The scale consists of 11 items. The Inventory includes three sub-dimensions defined as Closeness (4 items), Commitment (3 items), and Complementarity (4 items), where judgments are made according to 7 evaluation levels (1: Strongly disagree-7: Strongly agree).*

The Population and Sample of the Study

coaches actively working in various sports . The sample of the study comprises 250 coaches who participated in the relevant event and were selected using a simple random sampling method.

Data Analysis

Data were analyzed using SPSS 27.0 software. Kurtosis and skewness tests were conducted to determine whether the data exhibited a normal distribution, and the results showed that the data did indeed exhibit a normal distribution. Furthermore, reliability analysis of the scale sub-dimensions and total scores revealed that both sub-dimensions and total scores were reliable. Descriptive statistics included frequency, mean, and standard deviation; t-tests and ANOVA were used to examine differences between variables; and Pearson correlation test was used to analyze relationships between variables. Tukey test was applied for multiple comparisons . A significance level of $p < 0.05$ was considered in the data analysis.

Results

Table 1. Frequency Values Related to the Study

		n
Gender	Male	127
	Woman	123
Education	High school	37
	Associate's Degree	48
	Licence	101
	Postgraduate	64
Coach Training Time	Less than 1 year	26
	1-3 years	41
	4-6 years	28
	7-10 years	73
	11 years and older	82
sport	Wrestle	24
	Badminton	42
	Athletics	30
	Taekwondo	31
	Football	27
	Boxing	53
	Volleyball	23
	Judo	20
Institution where you work	School Team	42
	Sports Academy	59
	Private Club	78
	Federation	71
Ant. Level	Level 2	38
	Level 3	84
	Level 4	63
	Level 5	65
Age Groups Served	6-10 Years	33
	11-14 Years	88
	15-18 Years	80
	Ages 19 and over	49

Table 1, 127 of the coaches participating in the study were male and 123 were female. Regarding education, 37 participants had a high school diploma, 48 had an associate's degree, 101 had a bachelor's degree, and 64 had a postgraduate degree. Looking at the distribution of coaches' years of experience, 26 had less than one year, 41 had 1-3 years, 28 had 4-6 years, 73 had 7-10 years, and 82 had 11 years or more of experience. In terms of sport, 24 participants worked in wrestling, 42 in badminton, 30 in athletics, 31 in taekwondo, 27 in football, 53 in boxing, 23 in volleyball, and 20 in judo. When the distribution according to the institutions they work for is examined, 42 of the coaches work in school teams, 59 in sports academies, 78 in private clubs, and 71 within the federation. Regarding coaching levels, 38 hold Level 2 certificates, 84 hold Level 3 certificates, 63 hold Level 4 certificates, and 65 hold Level 5 certificates. Finally, in terms of age groups, 33 participants work with 6-10 year olds, 88 with 11-14 year olds, 80 with 15-18 year olds, and 49 with 19 year and older groups.

Table 2 Descriptive Statistics and Normal Distribution Values for the Study.

Variable	$\bar{X}$ (Average)	SS (Standard Deviation)	Skewness	Kurtosis
Age	41.21	11.51	-0.033	-0.992
Performance Competence (perf_yet)	3.51	0.92	-0.276	-0.547
Psychological Competence (psycho_yet)	3.64	0.93	-0.290	-0.798
Teaching Competency (ogrt_yet)	3.58	0.82	-0.147	-0.669
Personality Development (personality_development)	3.61	0.93	-0.315	-0.696
Management Competency (management_competence)	3.62	0.89	-0.364	-0.498
Total Self-Efficacy (self-efficacy_total)	75.42	16.99	-0.021	-0.697
Proximity (closeness)	4.07	0.59	0.101	0.205
Commitment (attachment)	4.10	0.74	0.189	0.467
Complementarity	4.04	0.62	0.143	0.119
Coach-Athlete Relationship (Total)	44.76	4.17	-0.078	-0.172
Gender	—	—	-0.032	-2,015
Education	—	—	-0.433	-0.829
Coach Training Time	—	—	-0.587	-0.966
Sport Branch	—	—	0.003	-1,187
Place of work	—	—	-0.270	-1,139
Stage	—	—	-0.027	-1,178
Age Groups Served	—	—	-0.005	-0.932

* $p < .05$;

Table 2 shows that the skewness and kurtosis values of the variables are within the ± 1 range. This indicates that the data are close to a normal distribution. The average age of the participants is 41.21. The mean scores of the competency dimensions are in the range of 3.51–3.64, indicating that participants have a medium-to-high level of perceived competence in the relevant areas. The mean scores of the coach-athlete relationship sub-dimensions (closeness = 4.07; commitment = 4.10; complementarity = 4.04) are high, indicating that the relationship is positively evaluated. Overall, the data have a suitable structure for analysis, meeting the assumption of a normal distribution.

Table 3 T-Test Results Regarding Self-Efficacy and Coach-Athlete Relationship Levels According to Gender Variable.

	Category	N	Avg.	SS	t	p
Performance Competence	Male	127	3.5183	93057	0.225	0.822
	Woman	123	3.4921	90902		
Psychological Competence	Male	127	3.6138	94698	0.438	0.661
	Woman	123	3.6654	91136		
Teaching Competency	Male	127	3.5919	83936	0.194	0.847
	Woman	123	3.5717	81171		
Personality development is sufficient.	Male	127	3.5955	95467	0.257	0.797
	Woman	123	3.6260	91822		
Management Competency	Male	127	3.5955	93186	0.444	0.657
	Woman	123	3.6457	85301		
Total Self-Efficacy	Male	127	75,252	17.5768	0.150	0.881
	Woman	123	75,574	16.4690		
Proximity	Male	127	4.0671	62731	-0.157	0.876
	Woman	123	4.0787	54980		
Loyalty	Male	127	4.1382	77756	0.744	0.458
	Woman	123	4.0682	70940		
Complementarity	Male	127	3.9634	62042	-1,917	0.056
	Woman	123	4.1142	,62262		
Coach-Athlete Relationship Total	Male	127	44,536	4.5091	-0.832	0.406
	Woman	123	44,976	3.8286		

According to Table 3, the t-test results show that the coaches No significant difference was found between the gender variable and the total scores and sub-dimensions of the Coach Self-Efficacy Scale (CSES) ($p > 0.05$). The analysis results showed that there was no significant difference between female and male coaches in the total scores of performance competence, psychological competence, teaching competence, personality development, management competence, and self-efficacy. This finding indicates that coaches' self-efficacy perceptions are independent of the gender variable, and both groups have similar levels of self-efficacy perception. Furthermore, although a near-significant difference ($p = 0.056$) was observed in the complementarity dimension, this difference was not statistically significant. This suggests that female and male coaches have similar relationship dynamics in their interactions with athletes

Table 4 Results of Correlation Analysis Between Age Variable and Self-Efficacy and Coach-Athlete Relationship Sub-dimensions.

		Proximity	Loyalty	Complementarity	Coach-Athlete Relationship Total
Performance Competence	r	,026	,018	-,011	,018
	p	679	772	,859	779
	n	250	250	250	250
Psychological Competence	r	121	-,026	,021	,067
	p	,056	679	741	293
	n	250	250	250	250
Teaching Competency	r	,066	,024	-,034	,030
	p	300	,705	592	642
	n	250	250	250	250
Personality development is sufficient.	r	101	-,023	,065	,083
	p	112	720	309	189
	n	250	250	250	250
Management Competency	r	,089	,010	,053	,087
	p	161	,869	,404	168
	n	250	250	250	250
Total Self-Efficacy	r	,089	,001	,019	,462*
	p	161	984	762	,027
	n	250	250	250	250

Table 4, that there is no significant relationship between age and the sub-dimensions of self-efficacy and coach -athlete relationship ($p > .05$). This indicates that participants' ages do not have a decisive effect on their self-efficacy levels and perceptions of the coach-athlete relationship. When the correlations between the sub-dimensions of self-efficacy and the sub -dimensions **of the coach-athlete relationship** are examined, **a positive and significant relationship is observed only between the total self-efficacy score** and the total coach-athlete relationship score ($r = .462, p < .05$). This finding suggests that as individuals' self-efficacy levels increase, they tend to perceive coach -athlete relationships more positively. The lack of a significant relationship between the other sub-dimensions suggests that the self-efficacy components are related to the elements of the coach -athlete relationship at a general level, rather than directly.

Table 5 ANOVA Results Regarding the Coach Self-Efficacy Scale and its Sub-dimensions According to the Education Variable.

		Squares Total	df	Square Average	F	p	Significant Difference
Performance Competence	Intergroup		3	6,327	7,654	*,000	3>4>1
	Within groups		246	764			
	Total		249				
Psychological Competence	Intergroup	18,723	3	6,241	7,853	*,000	3>4>1
	Within groups	195,502	246	795			
	Total	214,225	249				
Teaching Competency	Intergroup	21,464	3	7,155	11.93	*,000	3>2>4
	Within groups	147,532	246	600			
	Total	168,995	249				
Personality Development Authority.	Intergroup	18,345	3	6,115	7,554	,000	3>4
	Within groups	199,137	246	,809			
	6, Total	217,482	249				
Management Competency	Intergroup	15,076	3	5,025	6,767	,000	3>4
	Within groups	182,701	246	743			
	Total	197,777	249				
Total Self-Efficacy	Intergroup	8533,615	3	5,025	11.04	,000	3>4
	Within groups	63339.12	246	743			
	Total	71872,73	249				
Proximity	Intergroup	1,304	3	435	1,261	288	
	Within groups	84,801	246	345			
	Total	86,105	249				
Loyalty	Intergroup	1,073	3	358	645	587	
	Within groups	136,403	246	,554			
	Total	137,476	249				
Complementarity	Intergroup	1,045	3	348	891	447	
	Within groups	96,180	246	391			
	Total	97,225	249				
Coach-Athlete Relationship Total	Intergroup	32,909	3	10,970	627	598	
	Within groups	4306,691	246	17,507			
	Total	4339,600	249				

According to the ANOVA analysis conducted in Table 5, the education level variable affects the coaches' It was found that there were significant differences in the total scores of **psychological, instructional, personality development, management, and self-efficacy aspects** ($p < 0.05$). According to the Tukey test results, these differences were generally **in favor of coaches with bachelor's degrees**. However, **no significant difference was found** according to education level in terms of the sub-dimensions (closeness, commitment, complementarity) and total score of **the coach -athlete relationship scale** ($p > 0.05$). (1= High School 2= Associate Degree 3= Bachelor's Degree 4= Postgraduate)

Table 6 ANOVA Results Regarding Coach Self-Efficacy Scale and its Sub-dimensions According to Coaches' Working Time Variable.

		Squares Total	df	Square Average	F	p	Significant Difference
Performance Competence	Intergroup	25,165	4	6,291	8,348	,000	4>5
	Within groups	184,641	245	754			
	Total	209,806	249				
Psychological Competence	Intergroup	32,035	4	8,009	10,770	,000	4>5
	Within groups	182,190	245	744			
	Total	214,225	249				
Teaching Competency	Intergroup	24,778	4	6,195	10,523	,000	4>5
	Within groups	144,217	245	589			
	Total	168,995	249				
Personality Development Authority.	Intergroup	38,784	4	9,696	13,293	,000	4>5
	Within groups	178,698	245	729			
	Total	217,482	249				
Management Competency	Intergroup	23,743	4	5,936	8,356	,000	5>4
	Within groups	174,034	245	710			
	Total	197,777	249				
Total Self-Efficacy	Intergroup	12139.36	4	3034,842	12,448	,000	4>5
	Within groups	59733.37	245	243,810			
	Total	71872,7	249				
Proximity	Intergroup	1,633	4	408	1,184	318	
	Within groups	84,473	245	345			
	Total	86,105	249				
Loyalty	Intergroup	2,316	4	579	1,049	382	
	Within groups	135,160	245	,552			
	Total	137,476	249				
Complementarity	Intergroup	1,173	4	293	748	560	
	Within groups	96,052	245	392			
	Total	97,225	249				
Coach-Athlete Relationship Total	Intergroup	98,816	4	24,704	1,427	225	
	Within groups	4240,784	245	17,309			
	Total	4339,600	249				

As shown in Table 6, the ANOVA analysis revealed significant differences in the sub-dimensions of the self-efficacy scale based on the coaches' training duration ($p < .05$). Accordingly, significant differences were found in the performance, psychological, teaching, personality development, management competence, and total self-efficacy scores. The difference between groups is significant. According to the Tukey test results, coaches with 7–10 years of experience scored higher than the group with 11 years or more in most sub-dimensions (4>5). However, no significant difference was found in the coach - athlete relationship sub-dimensions (closeness, commitment, complementarity, and total relationship score) according to the length of experience ($p > .05$). (1 = 1 year or more) 1/3 years, 2 = 1-3 years, 3 = 4-6 years, 4 = 7-10 years, 5 = 11 years And (on top of)

Table 7 ANOVA Results Regarding the Coach Self-Efficacy Scale and its Sub-dimensions According to the Sport Variable.

		Squares Total	df	Square Average	F	p	Significant Difference
Performance Competence	Intergroup	27,439	7	4,043	5,102	,000	2> 5,7,4,3,1,8
	Within groups	167,544	242	663			
	Total	210,443	249				
Psychological Competence	Intergroup	28,439	7	4,063	5,292	,000	2> 5,7,4,3,2,1,8
	Within groups	185,786	242	768			
	Total	214,225	249				
Teaching Competency	Intergroup	24,449	7	3,493	5,847	,000	6> 5,4,3,2,1,7,8
	Within groups	144,546	242	597			
	Total	168,995	249				
Personality Development Authority.	Intergroup	24,547	7	3,507	4,399	,000	2> 3,4,5,6,7,8,1
	Within groups	192,935	242	797			
	Total	217,482	249				
Management Competency	Intergroup	25,105	7	3,586	5,026	,000	4> 3,2,1,5,6,7,8
	Within groups	172,672	242	714			
	Total	197,777	249				
Total Self-Efficacy	Intergroup	10793.26	7	1541,895	6,109	,000	6 > 7,8,1,2,3,4,5
	Within groups	61079.46	242	252,394			
	Total	71872,73	249				
Proximity	Intergroup	2,242	7	320	924	488	
	Within groups	83,863	242	347			
	Total	86,105	249				
Loyalty	Intergroup	2,473	7	353	633	728	
	Within groups	135,003	242	558			
	Total	137,476	249				
Complementarity	Intergroup	4,403	7	629	1,640	125	
	Within groups	92,822	242	384			
	Total	97,225	249				
Coach-Athlete Relationship Total	Intergroup	149,375	7	21,339	1,232	286	
	Within groups	4190,225	242	17,315			
	Total	4339,600	249				

According to Table 7, significant differences were observed in the total scores and sub-dimensions of the Coach Self-Efficacy Scale according to the sport variable ($p < .05$). Significant differences were found between branches in performance, psychological, teaching, personality development, management competencies, and total self-efficacy levels. In contrast, no significant differences were found in the sub-dimensions of Proximity, Commitment and Complementarity, and in the total score of Coach-Athlete Relationship ($p > .05$). (1=Wrestling 2=Badminton 3= Athletics 4= Taekwondo 5=Football 6=Boxing 7=Volleyball 8=Judo)

Table 8 ANOVA Results Regarding the Type of Institution Worked In Variable for the Coach Self-Efficacy Scale and its Sub-dimensions.

		Squares Total	df	Square Average	F	p	Significant Difference
Performance Competence	Intergroup	8,761	3	2.92	3,431		1>2
	Within groups	202,445	246	,831		,006	3>2
	Total	211,205	249				
Psychological Competence	Intergroup	9,771	3	3,094	3,919		1>2
	Within groups	204,454	246	649		,009	3>2
	Total	214,225	249				
Teaching Competency	Intergroup	9,283	3	3,666	4,766		1>2
	Within groups	159,713	246	,839		,003	
	Total	168,995	249				
Personality Development Authority.	Intergroup	10,997	3	1,751	4,367		1>2
	Within groups	206,485	246	783		,005	
	Total	217,482	249				
Management Competency	Intergroup	5,254	3	1,751	2,238		
	Within groups	192,523	246	783		,084	
	Total	197,777	249				
Total Self-Efficacy	Intergroup	3796,406	3	1265,469	4,573		1>2
	Within groups	68076.33	246	276,733		,004	
	Total	71872,73	249				
Proximity	Intergroup	,690	3	230	662		
	Within groups	85,416	246	347		576	
	Total	86,105	249				
Loyalty	Intergroup	1,184	3	395	712		
	Within groups	136,292	246	554		546	
	Total	137,476	249				
Complementarity	Intergroup	576	3	192	489		
	Within groups	96,649	246	393		,690	
	Total	97,225	249				
Coach-Athlete Relationship Total	Intergroup	36,002	3	12,001	686		
	Within groups	4303,598	246	17,494		561	
	Total	4339,600	249				

*p<0,05

Variance (ANOVA) results in Table 8, significant differences were found in the total scores of psychological competence, teaching competence, personality development competence, and self-efficacy among coaches based on the type of institution they work for ($p < .05$). According to the Tukey HSD test, these differences were in favor of coaches working within Sports Academies and against those working within Federations. No significant differences were found in the total scores of the other sub-dimensions: management competence, proximity, commitment, complementarity, and coach-athlete relationship ($p > .05$). (1=Sports Academy, 2=Federation, 3=Private Club).

Table 9 ANOVA Results Regarding Coach Self-Efficacy Scale and its Sub-dimensions According to Coaches' Levels

		Squares Total	df	Square Average	F	p	Significant Difference
Performance Competence	Intergroup	23,210	3	7,737	9,890		
	Within groups	192,172	246	0.782		,000	5> 2,3,4
	Total	215,382	249				
Psychological Competence	Intergroup	24,686	3	8,229	10,680		
	Within groups	189,539	246	770		,000	5> 2,3,4
	Total	214,225	249				
Teaching Competency	Intergroup	19,221	3	6,407	10,524		
	Within groups	149,774	246	609		,000	5> 2,3,4
	Total	168,995	249				
Personality Development Authority.	Intergroup	27,062	3	9,021	11,654		
	Within groups	190,420	246	774		,000	5> 2,3,4
	Total	217,482	249				
Management Competency	Intergroup	14,855	3	4,952	6,659		
	Within groups	182,922	246	,744		,000	5> 2,3,4
	Total	197,777	249				
Total Self-Efficacy	Intergroup	9567,471	3	3189,157	12,592		
	Within groups	62305.26	246	253,273		,000	5> 2,3,4
	Total	71872,73	249				
Proximity	Intergroup	,998	3	333	961	412	
	Within groups	85,108	246	346			
	Total	86,105	249				
Loyalty	Intergroup	1,142	3	381	687	561	
	Within groups	136,334	246	554			
	Total	137,476	249				
Complementarity	Intergroup	,890	3	297	757		
	Within groups	96,335	246	392		,519	
	Total	97,225	249				
Coach-Athlete Relationship Total	Intergroup	20,797	3	6,932	395	757	
	Within groups	4318,803	246	17,556			
	Total	4339,600	249				

*p<0,05

Table 9 shows that the one-way analysis of variance (ANOVA) revealed significant differences in the self-efficacy sub-dimensions according to the coaches' levels. It was determined that significant differences were found in the following variables: performance competence (F=9.89, p<.001), psychological competence (F=10.68, p<.001), teaching competence (F=10.52, p<.001), personality development competence (F=11.65, p<.001), management competence (F=6.66, p<.001), and total self-efficacy score (F=12.59, p<.001). According to the Tukey test, in all of these differences, 5th-level coaches had significantly higher self-efficacy levels than 2nd, 3rd, and 4th-level coaches. It was determined that they were similar. However, no significant differences were found in the variables of closeness (p=.412), commitment (p=.561), complementarity (p=.519), and the total coach-athlete relationship score (p=.757).

Table 10 ANOVA Results Regarding Coach Self-Efficacy Scale and its Sub-dimensions According to the Age Group Variable of the Coaches

		Squares Total	df	Square Average	F	p	Significant Difference
Performance Competence	Intergroup	11,286	3	3,762	4,554	,004	2>1
	Within groups	203,196	246	,826			
	Total	214,482	249				
Psychological Competence	Intergroup	10,469	3	3,490	4,213	,006	2>1
	Within groups	203,756	246	,828			
	Total	214,225	249				
Teaching Competency	Intergroup	4,911	3	1,637	2,454	,064	
	Within groups	164,085	246	667			
	Total	168,995	249				
Personality Development Authority.	Intergroup	13,066	3	4,355	5,241	,002	2>1
	Within groups	204,416	246	,831			
	Total	217,482	249				
Management Competency	Intergroup	6,319	3	2,106	2,706	,046	2>4
	Within groups	191,459	246	778			
	Total	197,777	249				
Total Self-Efficacy	Intergroup	3244,560	3	1081,520	3,877	,010	2>4
	Within groups	68628.17	246	278,976			
	Total	71872,73	249				
Proximity	Intergroup	2,061	3	687	2,011	113	
	Within groups	84,044	246	342			
	Total	86,105	249				
Loyalty	Intergroup	901	3	300	,541	655	
	Within groups	136,575	246	,555			
	Total	137,476	249				
Complementarity	Intergroup	3,628	3	1,209	3,178	,025	
	Within groups	93,597	246	380			
	Total	97,225	249				
Coach-Athlete Relationship Total	Intergroup	157,519	3	52,506	3,089	,028	
	Within groups	4182,081	246	17,000			
	Total	4339,600	249				

Table 10, the one-way analysis of variance (ANOVA) revealed significant differences between groups in some sub-dimensions of athletes' self-efficacy and coach -athlete relationship levels. Accordingly, performance competence... $F(3,246)=4,554; p<,01$ psychological competence $F(3,246)=4,213; p<,01$ personality development competence $F(3,246)=5,241; p<,01$ management competence $F(3,246)=2,706; p<,05$ and total self-efficacy score $F(3,246)=3,877; p<,05$ Significant differences were found in the variables. According to the Tukey test results, these differences generally favored the second group (e.g., 2>1 or 2>4). In contrast, No significant differences were found between groups in the sub-dimensions of teaching competence, proximity, and commitment ($p>,05$). Complementarity $F(3,246)=3,178; p<,05$ and the sum of the coach -athlete relationship $F(3,246)=3,089; p<,05$ Significant differences were observed in these dimensions, with the difference favoring the second group. These results indicate that athletes' self-efficacy and coach -athlete relationships differ in some sub-dimensions according to their age or experience groups, and that the second group, in particular, has a higher level of self-efficacy compared to the other groups.

Table 11 Results of Correlation Analysis Between Self-Efficacy and Coach-Athlete Relationship Sub-Dimensions.

Variables	Proximity	Loyalty	Ok.	Coach – Sports Total	Performance Competence	Psychological Competence	Teaching Competency	Personality Development Competence	Management Competency	Total Self-Efficacy
Proximity	1	,092	,000	,613**	,026	121	,066	,101	,089	,089
Loyalty	,092	1	-,026	,570**	,018	-,026	,024	-,023	,010	,001
Ok.	,000	-,026	1	,585**	-,011	,021	-,034	,065	,053	,019
Coach-Sp.	,613**	,570**	,585**	1	,018	,067	,030	,083	,087	,062
Performance Competence	,026	,018	-,011	,018	1	,675**	,884**	,751**	,667**	,883**
Psychological Competence	121	-,026	,021	,067	,675**	1	,739**	,914**	,783**	,909**
Teaching Competency	,066	,024	-,034	,030	,884**	,739**	1	,725**	,783**	,919**
Personality Development Authority.	101	-,023	,065	,083	,751**	,914**	,725**	1	,772**	,920**
Management Competency	,089	,010	,053	,087	,667**	,783**	,783**	,772**	1	,885**
Total Self-Efficacy	,089	,001	,019	,062	,883**	,909**	,919**	,920**	,885**	1

Notes: Significant correlations at the $p < .01$ level are indicated with “**”.

Table 11 shows that there are positive and significant relationships between the sub-dimensions of self-efficacy ($p < .01$). Moderate to high levels of positive correlation exist between performance competence and psychological competence ($r = .675$), teaching competence ($r = .884$), personality development competence ($r = .751$), and management competence ($r = .667$). Furthermore, high levels of significant relationships ($r = .883 - .920$) were found between the total self-efficacy score and all sub-dimensions. In contrast, no significant relationship was found between the total coach -athlete relationship score and the sub-dimensions of self-efficacy ($p > .05$). However, high levels of positive relationships exist between the coach -athlete relationship sub-dimensions of intimacy, commitment, and complementarity ($r = .570 - .613$, $p < .01$). These findings indicate that the self-efficacy dimensions of athletes support each other, but their self-efficacy levels develop independently of the coach -athlete relationship variable.

Discussion

The positive and significant correlation between self-efficacy perception and the coach -athlete relationship indicates that coaches' beliefs about their own competence play a decisive role in the quality of their relationships with athletes. Considering the social cognitive theory that self-efficacy perception guides an individual's behavior and interpersonal interactions (3), it can be said that high levels of self-efficacy among coaches are not limited to the performance of technical tasks but also influence relationship processes (12).

The fact that gender and age variables do not create a significant difference in either self-efficacy or the coach -athlete relationship indicates that the perception of competence in the coaching profession is shaped more by individual experiences and psychological factors. Findings in the literature that indicate that the professional self-confidence levels of female and male coaches are similar and that the quality of the relationship improves independently of the gender variable support this result (10). Similarly, it is emphasized that the quality of the coach -athlete relationship is related more to mutual trust and communication processes than to the age variable (13).

The influence of educational level and professional experience on self-efficacy reveals that professional development is a significant determinant of coaches' perceptions. The higher self-efficacy scores of coaches with higher educational levels and longer professional experience support the relationship between knowledge and perceived competence. It is stated that pedagogical knowledge and communication skills acquired during the training process positively influence coaches' problem-solving and decision-making processes, thereby strengthening their self-efficacy perception (14). The higher self-efficacy perception of coaches working in academic settings can also be attributed to the professional interaction and continuous learning opportunities offered in these environments (15).

self-efficacy and the coach -athlete relationship suggests that the coach's self-confidence is closely linked to the quality of interaction with athletes. It can be stated that coaches with high self-efficacy conduct communication processes with their athletes more functionally and establish a relationship structure that supports mutual trust. This is consistent with relational approaches that examine the coach -athlete relationship through the dimensions of intimacy, commitment, and complementarity (11). Current studies also show that coaches' psychological competence is related to athletes' motivation and psychological well-being (15).

The differences in self-efficacy levels observed according to the sport branch suggest that the technical and psychological demands of the branches may have an impact on coaches' perceptions. The fact that coaches working in contact sports have more intensely developed stress management and quick decision-making skills may explain the higher self-efficacy perception in this group (16). On the other hand, the fact that no significant difference was found

between branches in terms of the coach -athlete relationship shows that the quality of the relationship develops through similar relationship dynamics regardless of the type of sport (17).

fact that self-efficacy levels increase with length of service and advancement in coaching reveals that experience strengthens the perception of professional confidence. However, the fact that relationship quality remains constant after a certain level suggests that the coach -athlete relationship cannot be explained solely by length of experience. This indicates that coaches' communication skills and psychological awareness levels play a significant role in the quality of the relationship. It is stated that in-service training programs and psychological skill development practices can support these processes (18).

Limitations of the study and recommendations for future research

Given that findings indicate higher self-efficacy levels among coaches with a bachelor's degree, 7–10 years of experience, and those in senior positions, it is recommended that these groups be organized for experience sharing and mentorship. Communication, emotional intelligence and relationship-building skills should be implemented. For example, the literature supports the idea that the coach -athlete relationship influences behavior and motivation by addressing the athlete's psychological needs. If coaches develop strategies to respond to these needs, both relationship quality and performance outcomes can be improved. Different sports and institutional types, organizations should develop training models tailored to their specific contexts. Academic settings, such as sports academies, have been found to contribute more to self-efficacy; similar structures can be integrated into other institutions. Future research should be designed using mixed methods, incorporating qualitative interviews to examine the process and in-depth nature of coach -athlete interaction. Furthermore, the dynamics of relationships and competencies should be compared across different age groups, sports and cultural contexts.

Organizations should establish systems to monitor and improve the quality of the coach -athlete relationship on an annual basis. For example a sustainable development culture can be created through practices such as surveys, mentoring evaluations, and relationship-building workshops.

Conclusion

This study examined the interaction between the self-efficacy levels of coaches working in different sports branches and the coach -athlete relationship. The research findings indicate that coaches generally perceive their self-efficacy at a moderate to high level and view the coach -athlete relationship positively. The average scores obtained for the sub-dimensions of self-efficacy—performance, psychological competence, teaching, personality development, and management competence— reveal that coaches have a strong perception of competence in their professional roles. Found no significant difference between coaches' self-efficacy levels and their perceptions of the coach -athlete relationship based on gender and age variables. However, a positive and significant correlation was found between the total self-efficacy score and the total coach -athlete relationship score. This finding indicates that as coaches' self-efficacy perceptions increase, the relationship established with athletes is perceived as more positive.

It was found that coaches with bachelor's degrees had higher self-efficacy levels compared to other groups. However, no significant difference was found in the dimensions of the coach -athlete relationship based on education level. In terms of years of experience in coaching, it was observed that coaches with 7–10 years of experience had higher self-efficacy levels; however, it was determined that years of experience did not have a significant effect on the coach -athlete relationship.

Analyses based on sports branches revealed significant differences in the sub-dimensions of self-efficacy; however, no significant difference was found between branches in the level of coach -athlete relationships. Similarly, it was determined that coaches working in sports academies had higher levels of self-efficacy than coaches working in other institutions. When coaching levels were examined, it was observed that coaches working at higher levels had higher levels of self-efficacy. In addition, it was found that coaches working with the 11–14 age group had higher levels of both self-efficacy and perceptions of the coach -athlete relationship compared to other age groups.

In conclusion, the research findings reveal that coaches' self-efficacy levels are related to the quality of the coach -athlete relationship. Variables such as education, professional experience, and coaching level are found to be determinants of self-efficacy; however, the coach -athlete relationship exhibits a more stable structure. These results highlight the importance of training and practices aimed at supporting the professional development of coaches.

Abbreviations

SPSS Statistical Package for the Social Sciences

% Percentage

n Number of Participants

p Significance Level

r Correlation Coefficient

s Page Number

df Degrees of Freedom

SD Standard Deviation

Declarations

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Author contributions

Savaş Erel and Murat Kul contributed to the study conception and design. Material preparation, data collection, and analysis were performed by Savaş Erel and Murat Kul. The first draft of the manuscript was written by Savaş Erel, and both authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

This study was approved by the Ethics Committee of Bayburt University Rectorate (Decision No: 517, Date: 02 December 2025).

All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the institutional and/or national research committee and with the Declaration of Helsinki and its later amendments or comparable ethical standards.

Informed consent was obtained from all individual participants included in the study.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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