

Perceived coach effectiveness, need indifference coaching and athlete engagement: evaluating the effect of mediation on young volleyball players' intentions to withdraw from sport

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ABSTRACT

There are many reasons behind the decision of young athletes to retire from sport. In most cases, this decision is influenced by a number of factors, including the quality of the interpersonal relationship between the coach and the athlete and the coach's professional competences. The aim of this study was to determine how athlete's engagement, perceived coach effectiveness and need indifference coaching explain young athletes' intentions to withdraw from sport. An online questionnaire survey was conducted with 317 Lithuanian volleyball players aged 12-19 years (38.2 % male athletes and 61.8 % female athletes). Descriptive statistical analysis and correlation analysis were performed using SPSS 28.0. and hierarchical regression analysis using the SPSS macro PROCESS (Module 6) software. The study revealed that there are relationships between athletes' engagement, perceived coach effectiveness, and intentions to withdraw from sports. Engagement had a direct effect on intentions to withdraw from sport and an indirect effect through two mediating variables: perceived coaching effectiveness and need indifference coaching ($p < 0.05$). There is an indirect effect of coaching effectiveness on intentions to withdraw from sport through the mediators' engagement and need indifference coaching ($p < 0.05$), however, they mediate not as serially but as separate mediators. This can help coaches in their development of engagement-enhancing strategies that reinforce the athlete's positive sport experience and intentions to continue participating in sport.

KEYWORDS

Mediation Model; Young Athletes; Team Sport; Volleyball; Coach

1. INTRODUCTION

Regardless of the research-proven positive benefits of sport, not all athletes experience these outcomes or persist in sport for long (Batista et al., 2017; Crane & Temple, 2015). Studies show that athletes in team sports experience less anxiety and depression (Pluhar et al., 2019) and more positive social and psychological emotions than those in individual sports (Woods et al., 2022). Despite these socio-psychological benefits of team sports (Graupensperger et al., 2021), adolescent withdrawal from them remains high (Back et al., 2022). Researchers aim to understand the reasons behind this and identify factors that improve athlete retention. Studying intentions to withdraw from sport can help predict dropout. According to the theory of planned behaviour (Ajzen, 1991), intentions reflect motivational factors that guide behaviour and effort. The stronger the intention, the more likely the behaviour. Back et al. (2022) found that weaker intentions and attitudes toward continuing sport increase dropout. Balish et al. (2014) note that access and motivation are key resources for sport participation. Dropout is most strongly linked to motivation and sporting experience (Back et al., 2022). Youth coaches shape athlete experiences and development; thus, examining educational factors, such as coaching, is crucial in addressing retention.

Coaching is a key educational factor. Coaches act as leaders and influence athlete performance through actions and behaviour (Arthur & Bastardo, 2020; Jowett, 2017). Effective coaches foster not only sport-specific skills, but also psychological and moral development (Broodryk et al., 2014; Côté & Gilbert, 2009; Horn, 2008). Coaching effectiveness involves being competent across all areas, not just performance. Côté & Gilbert (2009) define it as the consistent use of professional, interpersonal, and intrapersonal knowledge to improve athlete competence, confidence, connection, and character. These knowledge types must be applied differently depending on the context. Coaching effectiveness also requires using experience and resources wisely (Lyle, 2021). Athletes perform better when coaches enable satisfaction from task completion (Davis et al., 2013) and are perceived as competent (Chao et al., 2023). Coaching success is reflected in both athletic performance and positive psychological responses (Horn, 2008). Athlete perceptions of coaching affect satisfaction (Boardley et al., 2015), which influences engagement and career longevity. Perceived coaching effectiveness is also linked to personality development and coach-athlete interaction (Kassim & Boardley, 2018). To understand withdrawal intentions, it's essential to know how athletes perceive and respond to their coaches' behaviour.

Coaching competencies significantly impact athletes' educational outcomes (Wang & Bo, 2024). Lemelin et al. (2022) emphasize that the coaching environment affects athlete well-being,

performance, and experience quality. Positive coach-athlete relationships are a key source of social support (Woolliams et al., 2021), whereas poor relationships, low support, or high pressure contribute to dropout (Back et al., 2022; Bidaurrezaga-Letona et al., 2019; Cervelló et al., 2007; Crane & Temple, 2015; Fraser-Thomas et al., 2008; Witt, 2018). Withdrawal is often explained by Self-Determination Theory (Deci & Ryan, 2000; Ryan & Deci, 2017), which highlights the need to satisfy autonomy, competence, and relatedness for optimal functioning. Coaches play a vital role in creating environments that support these needs. Research shows that meeting basic psychological needs reduces dropout and burnout, and increases engagement and future participation (Back et al., 2022; De Francisco et al., 2020; Hodge et al., 2009; Keshtidar & Behzadnia, 2017). Coach behaviours supporting autonomy, competence, and relatedness enhance coach-athlete relationship quality, which positively relates to continued sport participation (Back et al., 2022; Wekesser et al., 2023).

Researchers have tended to focus on the outcomes of satisfaction athletes' needs or thwarting on a range of variables, including intentions to stay in sport and burnout. Recently, researchers have proposed to investigate unfulfillment as a third need state, in addition to the dual-process model (need satisfaction and need thwarting) to explain human functioning. Researchers studying the unfulfillment of psychological needs (Cheon et al., 2019; Bhavsar et al., 2020) argue that analysing this need state, alongside need satisfaction and frustration, could provide a better understanding of athletes' motivation and well-being/ill-being. Cheon et al. (2019) argue that, in a social context, the experience of dissatisfaction stems from interpersonal behaviours that are perceived to reflect need indifference. We found that there is limited research analyzing coach behaviour that is indifferent to athletes' needs. Such indifference occurs when a coach disregards athletes' goals, preferences, and development, fails to create supportive conditions for progress and success, and shows little concern for the quality of the coach-athlete relationship (Bhavsar et al., 2019). Indifferent coaching is linked to athlete exhaustion (Bhavsar et al., 2019), and when athletes view their coach relationship negatively, burnout rates rise (DeFreese & Smith, 2013; Isoard-Gautheur et al., 2016). Evidence shows that athletes' perception of the coach-athlete relationship quality can affect motivation (Adie & Jowett, 2010), which is critical for long-term athletic involvement. Therefore, we hypothesized that indifferent coaching behaviour may increase athletes' intention to withdraw from sport and examined its mediating role in two tested models (Figures 1 and 2).

Coach behaviour also impacts athletes' engagement. Engagement is a stable, long-term experience reflecting the positive effects of sport and cognition (Hodge et al., 2009). Lonsdale et al. (2007b) define it as a continuous, positive cognitive and emotional sport experience marked by

confidence, dedication, enthusiasm, and vigour. It involves high motivation and positive emotions toward training and goal achievement (Graña et al., 2021). Athlete engagement is associated with perseverance, lower burnout risk (DeFreese & Smith, 2013), mental toughness (Jaramillo-Tapia et al., 2024), motivation (Podlog et al., 2015; Raimundi et al., 2024), and flow (Hodge et al., 2009). Enhancing engagement is a strategy to reduce athletes' intentions to quit (De Francisco et al., 2020), making it essential for coaches to foster it. Research shows engagement is influenced by fulfillment of psychological needs (De Francisco et al., 2020; Hodge et al., 2009), athletes' views on coach-athlete relationship quality (Longakit et al., 2024), and the motivational climate (Raimundi et al., 2024). Cahyono et al. (2023) found that in team sports, positive coach-athlete relationships and supportive coaching styles reduce burnout and boost training involvement. Better coach-athlete relationships also increase athlete satisfaction (Davis et al., 2013).

We found no prior studies testing models that include engagement in sport, athletes' perceptions of coaching (coaching effectiveness, indifferent coaching), and intentions to withdraw from sport. The high drop-out rates of adolescents from sport have gradually become an important constraint to the exploitation of the potential athletes have in their long-term sporting careers, as well as to their health and well-being. Recognising that dropout is most strongly related to constructs of motivation and sporting experience (Back et al., 2022), exploring the impact of athletes' perceptions of coaching efficacy and interpersonal behaviour as sporting experience variables resulting from coach, on young athletes' withdrawal decisions is both theoretically valuable and of practical significance. Moreover, the indifferent behaviour of the coach, which leads to unfulfilled needs, has not yet been explored in the context of sport, therefore, this study may contribute to the development of the concept of need dissatisfaction as a construct and the predictive value of need indifference coaching in addressing the problem of retention of young athletes in sport.

The aim of the present study is to examine the relationship between perceived coach effectiveness, need indifference coaching, athletes' engagement and intention to withdraw from sport by evaluating two mediational models of young volleyball players' intention to withdraw from sport. Based on the above studies, we have formulated the following hypotheses:

H1: Athletes' perceived coaching effectiveness is negatively related to intentions to withdraw from sport.

H2: Athletes' engagement negatively mediates the relationship between perceived coaching effectiveness and intentions to withdraw from sport.

H3: Need indifference coaching positively mediates the relationship between athlete perceived coaching effectiveness and intentions to withdraw from sport.

H4: Athletes' engagement and need indifference coaching serially mediates the relationship between perceived coaching effectiveness and intentions to withdraw from sport.

H5: Athletes' engagement is negatively related to intentions to withdraw from sport.

H6: Athletes' perceived coaching effectiveness negatively mediates the relationship between engagement and intentions to withdraw from sport.

H7: Need indifference coaching positively mediates the relationship between athlete's engagement and intention to withdraw from sport.

H8: Athletes' perceived coaching effectiveness and need indifference coaching serially mediate the relationship between engagement and intentions to withdraw from sport.

2. METHODS

2.1. Participants

The population of this study consisted of athletes aged 12–19-year-old who attend volleyball training at various Lithuanian sports schools and clubs. According to the official data of the Lithuanian Volleyball Federation, 1357 volleyball players aged 12 to 19 years old, including 501 (36.9%) males and 919 (63.1%) females, participated in sports schools and sport clubs during the period of study. Using a confidence level of 95% and a margin of error of 5%, we estimate that the sample should consist of at least 300 athletes. In our study participated 317 athletes aged 12-19 years, 121 (38.2%) of them were males and 196 (61.8%) were females (Table 1). Non-probability convenience sampling was used. The inclusion criteria were: a) playing volleyball at a sports school or club; b) aged between 12 and 19 years; c) having parental permission to be interviewed; and d) agreeing to take part in the study. Our sampling method was deliberate, including young volleyball players from different regions of Lithuania and large and small cities. 49.2% of the participants attended volleyball training in the five major cities of Lithuania, 50.8% in other cities and towns. The response rate was 23.4%. Fosnacht et al. (2017) found the estimates based on the data remained reliable even with a 20%-25% response rate with a sample size less than 500. Thus, the sample size used in this study allows to substantiate the reliability of the data estimates.

Three age groups were identified for the analysis of the results: 12 to 14 years (39.8 %), 15 to 16 years (35.6 %) and 17 to 19 years (24.6 %). The distribution of the subjects according to the

number of years of participation in sport was as follows: up to 1 year – 10.1%; 1-3 years – 46.7%; 4-6 years – 27.1%; 7 – 10 years – 8.5%; more than 10 years – 7.6%. According to their level of athletic proficiency the percentage distribution of participants in the study was as follows: international (representing the national team or being a candidate for selection) – 4.1%, national (competing in the Lithuanian volleyball championship – 50.8%), club (participating in local and international tournaments) – 29.3%, recreational (not engaged in competitive events) – 15.8%) (Table 1).

Table 1. Demographic characteristics of survey participants

Variables		Number of subjects	
		n	%
Gender	Male	121	38.2
	Female	196	61.8
Age groups (years)	12-14	126	39.8
	15-16	112	35.6
	17-19	78	24.6
	Less than 1 year	32	10.1
Sports experience (years)	1-3	148	46.7
	4-6	86	27.1
	7-10	27	8.5
	More than 10 years	24	7.6
Athletic proficiency (by competition rank or non-participation in competitions)	International	13	4.1
	National	161	50.8
	Club	93	29.3
	Recreational	50	15.8
Playing sports in big cities		156	49.2
Playing sports in other cities and towns		161	50.8

2.2. Instruments

The anonymous questionnaire used in the study consists of five parts: demographic data; athlete engagement in sporting activities; the athlete's perceived effectiveness of the coach's performance; need indifferent coach behaviours; intentions to withdraw from sport.

The Athlete Engagement Questionnaire (AEQ) (Lonsdale et al., 2007a), consisting of 16 statements, was used to identify four dimensions of engagement: confidence (e.g. 'I believe I am capable of accomplishing my goals in sport'), dedication (e.g. 'I am devoted to my sport'), vigor (e.g. 'I feel energetic when I participate in my sport') and enthusiasm (e.g. 'I enjoy my sport'). A 5-point Likert scale from 1 (almost never) to 5 (almost always) has been used to determine how often athletes

have felt this way in the last three months. The validity and reliability of the AEQ scale has been confirmed in many studies (Francisco et al., 2017; Gu et al., 2023; Martins et al., 2014), performed in different socio-cultural contexts. The Lithuanian version of the AEQ was previously used in the study by Daraškevičiūtė and Poteliūnienė (2022). In present study, Cronbach's alpha value for the AEQ was 0.89 (confidence $\alpha = 0.72$; dedication $\alpha = 0.81$; vigour $\alpha = 0.86$; enthusiasm $\alpha = 0.78$).

The Coach's Effectiveness Scale (CES) (Feltz et al., 1999), adapted by Kavussanu et al. (2008), Boardley et al. (2008) was utilised to assess athletes' perception of their coach's effectiveness. The CES comprises 24 items and measures the four dimensions of perceived coaching effectiveness: motivation (7 items, e.g. 'Motivate his/her athletes'), game strategy (7 items, e.g. 'Make critical decisions during competition'); technique (6 items, e.g. 'Coach individual athletes on technique'), character building (4 items, e.g. 'Installing an attitude of respect for others'). Participants are asked to indicate to what extent each item corresponded to their thinking, for example: 'How effective is your coach in his/her ability to...'. A 10-point Likert scale ranging from 0 (not at all effective) to 9 (extremely effective) has been applied. The internal consistency of the CES was found to be high (Vaske et al., 2017): Cronbach's $\alpha = 0.96$ (motivation $\alpha = 0.93$, game strategy $\alpha = 0.89$; technique $\alpha = 0.88$; character building $\alpha = 0.88$).

To measure need indifferent coach behaviours, we used the 'Need indifference' subscale of the Tripartite Measure of Interpersonal Behaviours-Coach (TMIB-C, Bhavsar et al., 2019). The questionnaire is available on the website of the Centre of Self-Determination Theory (CSDT) (<https://selfdeterminationtheory.org/tripartite-measure-of-interpersonal-behaviors-coach/>) and can be freely used for scientific purposes. To ensure the accuracy of the translation, the scale was translated from English into Lithuanian and back-translated by two independent translators, following the current recommendations of the International Test Commission (2016). Any discrepancies that arose were discussed with the translators and then with two experienced researchers who reviewed and assessed the semantic and conceptual consistency of the translated versions with the original version. The translated version of the scale was tested with 12 young athletes. Respondents were asked to explain what they thought each block of questions meant and what was unclear. The 'Need indifference' subscale consists of 6 items (e.g. 'Is unresponsive to my opinions', 'Is indifferent to how I feel'). Athletes had to think about the past month's experience with their coach and evaluate each statement on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). The reliability of the scale was confirmed by a study by (Sarı & Aşçı, 2022). For the present study Cronbach's $\alpha = 0.79$ was acceptable (Vaske et al., 2017).

To measure intentions to withdraw from sport we were asking athletes to answer four questions (Quested et al., 2013). A 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) was used. Two statements concerned intentions to drop out (e.g. 'I intend to drop out of volleyball at the end of this season.') and two statements about intentions to continue playing volleyball (e.g. 'I plan to play volleyball next season'). The latent variable of intentions to withdraw from sport was obtained by calculating the average of all statements, replacing the inverse values (instead of $7 - 1$, $6 - 2$, etc.) in two statements ('I plan to play volleyball in the next season' and 'I plan to stay with the current coach next season'). A higher score indicates a stronger intention to withdraw from sport. The reliability of the scale has been confirmed in previous studies (Fabra et al., 2021; Quested et al., 2013). For the present study, the internal consistency of the scale was acceptable (Vaske et al., 2017): Cronbach $\alpha = 0.81$.

2.3. Procedures

The research was carried out following the provisions underlining the basic principles of professionalism and research ethics approved by Resolution No SEN-N-17. The study was conducted using an anonymous online questionnaire survey. The questionnaire was posted on www.manoapklausu.lt online platform. Before collecting the research data, the first author of the article obtained permission from nine sports schools and three sports club administrators to conduct the study. The explanatory note contained information on the purpose of the study, the relevance of the topic, and the ethics of the study. After obtaining permits and after the coaches checked the content of the questionnaire, a link to the survey was sent by e-mail to the Lithuanian volleyball coaches working with athletes aged between 12 and 19. Fundamental ethical principles have been respected in the conduct of this study. Participation in the study was voluntary, and any potential participant could refuse to participate in the study. Coaches explained to athletes the purpose of the study and provided information about the fact that in case of uncertainty they can contact the researcher (first author) by e-mail. Participants were informed of the confidentiality and anonymity of the study, and were made aware that the data will only be used in aggregate.

2.4. Statistical Analyses

Statistical analysis was conducted using SPSS 28.0. Cronbach's alpha (α), means, and standard deviations were calculated for each variable to assess internal consistency. Spearman's rho (ρ) coefficient was used to examine relationships between athlete engagement, perceived coaching effectiveness, need indifference coaching, and intention to withdraw from sport. Hierarchical

regression analysis was performed using Hayes' (2013) SPSS Macro PROCESS (Model 6) to assess direct and indirect effects in structural models with one independent, one dependent variable, and two serial mediators. These tools allowed for advanced statistical analyses.

All variables in the models were quantitative, derived from rank variables by calculating means. Two conceptual path models were tested. Model 1 assessed the direct effect of perceived coaching effectiveness on withdrawal intentions, and the indirect effect via athlete engagement and/or need indifference coaching (Figure 1). Model 2 assessed the direct effect of athlete engagement on withdrawal intentions and the indirect effect via perceived coaching effectiveness and/or need indifference coaching (Figure 2).

The bootstrapping method (Hayes, 2013) was used to test effect significance, producing 95% bias-corrected confidence intervals from 5,000 resamples. When intervals did not include zero, the effects were considered significant ($\alpha = 0.05$). All statistical tests were conducted in two directions. In the regression analysis, age and gender were not included as covariates.

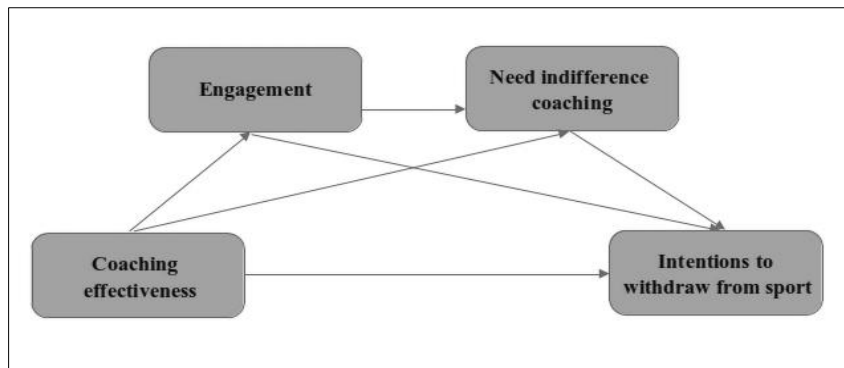


Figure 1. The first conceptual model

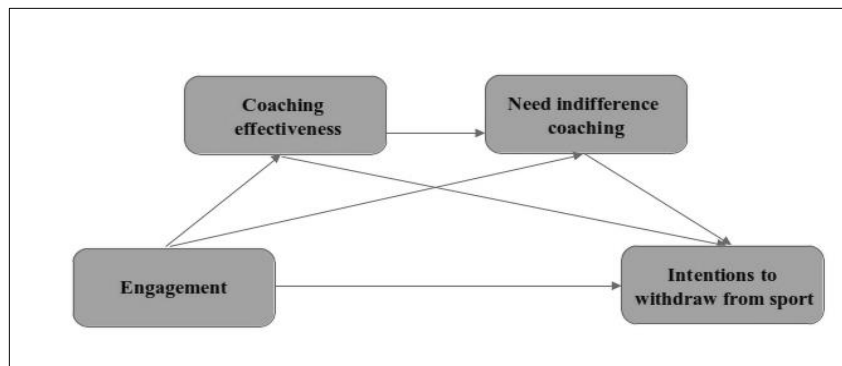


Figure 2. The second conceptual model

3. RESULTS

Correlation Analysis Results

Correlation coefficients, mean and standard deviation of research data are shown Table 2. The correlations between athletes' engagement, perceived coaching effectiveness, need indifference coaching and intention to withdraw from sport were statistically significant, with correlations ranging from moderate to weak (0.48 to 0.24). The positive correlations were found between engagement and coaching effectiveness (0.35), also between need indifference coaching and intentions to withdraw from sport (0.29). The strongest negative association was detected between coaching effectiveness and need indifference coaching (0.48). Coach effectiveness and engagement were negatively correlated with need indifference coaching and intention to withdraw from sport variables.

Table 2. Descriptive statistics and Spearman's correlation coefficients (ρ_s) between variables

Variables	M	SD	2	3	4
1. Engagement	4.26	0.47	0.35**	- 0.33**	- 0.24**
2. Coaching effectiveness	7.66	1.23	1	- 0.27**	- 0.48**
3. Intentions to withdraw from sport	1.66	0.74		1	0.29**
4. Need indifference coaching	2.92	1.12			1

Note. M: arithmetic mean, SD: Standard deviation. **: Significant p-value ($p < 0.01$)

Regression and Mediation Analysis (Model 1)

The first mediation model used a 4-variable design: coaching effectiveness was set as the independent variable, intentions to withdraw from sport were set as dependent variable, athlete's engagement and need indifference coaching were set as mediating variables. The results showed (Table 3 and Figure 3) that there are no statistically significant relationships between the following variables: 1. Engagement did not demonstrate a statistically significant predictive effect on need-indifferent coaching ($\beta = -0.066$, $p > 0.05$, 95% CI [-0.44, 0.088], $0 \in \text{CI}$). Although engagement showed no significant influence, the model explained 23.8% of variance in need-indifferent coaching ($R^2 = 0.238$, $F = 49.036$, $p < 0.001$), indicating other significant factors contribute to this outcome. 2. Coaching effectiveness did not show a statistically significant effect on intentions to withdraw from sport ($\beta = -0.103$, $p > 0.05$, 95% CI [-0.134, 0.010], $0 \in \text{CI}$). The determination coefficient confirms that intentions to withdraw from sport were influenced by other factors, with the model explaining 18.9% of variance ($R^2 = 0.189$, $F = 24.339$, $p < 0.001$). The results revealed a negative standardized

indirect total effect of coaching effectiveness on intentions to withdraw from sport ($\beta = -0.288$, $p < 0.05$, 95% CI $[-0.238, -0.110]$, $0 \notin \text{CI}$). The coaching effectiveness had a positive statistically significant effect on the engagement ($\beta = 0.329$, $p < 0.05$, 95% CI $[0.086, 0.165]$, $0 \notin \text{CI}$) and a negative significant effect on need indifference coaching ($\beta = -0.462$, $p < 0.05$, 95% CI $[-0.515, -0.33]$, $0 \notin \text{CI}$). Intention to withdraw from sport was significantly influenced by the mediating variables of the construct, with a negative effect of the engagement ($\beta = -0.285$, $p < 0.05$, 95% CI $[-0.622, -0.284]$, $0 \notin \text{CI}$) and a positive effect of need indifference coaching ($\beta = 0.189$, $p < 0.05$, 95% CI $[0.049, 0.202]$, $0 \notin \text{CI}$).

Table 3. Regression analysis of the multiple mediation model

Dependent variable	Independent variable	R	R ²	F	β	t	p	LL	UL	CI
Engagement		0.329	0.109	38.339			< 0.001			
	Coaching effectiveness				0.329	6.192	< 0.001	0.086	0.165	$0 \notin \text{CI}$
Need indifference coaching		0.488	0.238	49.036			< 0.001			
	Coaching effectiveness				-0.462	-8.856	< 0.001	-0.515	-0.33	$0 \notin \text{CI}$
Intentions to withdraw from sport	Engagement				-0.066	-1.268	0.206	-0.404	0.088	$0 \in \text{CI}$
		0.435	0.189	24.339			< 0.001			
	Coaching effectiveness				-0.103	-1.703	0.090	-0.134	0.010	$0 \in \text{CI}$
	Engagement				-0.285	-5.278	< 0.001	-0.622	-0.284	$0 \notin \text{CI}$
	Need indifference coaching				0.189	3.241	0.001	0.049	0.202	$0 \notin \text{CI}$
Intentions to withdraw from sport		0.288	0.083	28.487			< 0.001			
	Coaching effectiveness				-0.288	-5.337	< 0.001	-0.238	-0.110	$0 \notin \text{CI}$

Note. R: multiple correlation coefficient, R²: coefficient of determination, F: F-statistic, β : standardized regression coefficient, t: t-statistic, LL (Lower Limit) and UL (Upper Limit): lower (LL) and upper (UL) bounds of the confidence interval, CI: confidence interval.

This model tested H1, H2, H3 and H4 hypotheses assessed the serial mediation with engagement and assurance serially mediating the relationship between coaching effectiveness and intention to withdraw from sport. Mediation summary of Model 1 is presented in Table 4 and Figure 3. The study revealed that only hypotheses H2 and H3 were supported, while hypotheses H1 and H4 remained unconfirmed. For the analysis of the data, a standardized effect (β) was used. We found that significant effects exist in two paths: 1. Coaching effectiveness $\rightarrow$ engagement $\rightarrow$ intentions to withdraw from sport ($\beta = -0.094$, 95% CI [-0.165, -0.039], $0 \notin$ CI, accounting for 32.64% of the total mediated standardized effect). The standardized effect for this path is 51.82% when considering only the statistically significant standardized effect. 2. Coaching effectiveness $\rightarrow$ need indifference coaching $\rightarrow$ intentions to withdraw from sport ($\beta = -0.087$, 95% CI [-0.156, -0.020], $0 \notin$ CI, accounting for 30.21 % of the total mediated standardized effect). The proportion of standardized effect for this path is 48.18% when considering only the total statistically significant standardised effect. The results revealed a significant indirect effect of coaching effectiveness on intentions to withdraw from sport throw engagement that supports H2. Furthermore, significant indirect effect was found of coaching effectiveness on intentions to withdraw from sport throw need indifference coaching that supports H3. There was no direct effect of coaching effectiveness on intention to withdraw from sport ($\beta = -0.103$, 95% CI [-0.134, 0.010], $0 \in$ CI). The hypotheses H1 remained unconfirmed.

No statistically significant effect was found in the path Coaching effectiveness $\rightarrow$ Engagement $\rightarrow$ Need indifferent coaching $\rightarrow$ Intention to withdraw from sport ($\beta = -0.004$, 95% CI [-0.011, -0.003], $0 \in$ CI, accounting for 1.39% of the total mediated standardized effect). The results indicate that there is no statistically significant direct effect of coaching effectiveness on intention to withdraw from sport, and therefore the hypothesis H4 was not supported.

The study showed that there is an indirect effect of coaching effectiveness on intentions to withdraw from sport through the mediators' engagement and need indifference coaching, however, they mediate not as serially but as separate mediators.

Table 4. Test result of Bootstrap mediation effect

Effect path	Effect value	Boot	BootCI	BootCI	CI	Effect percentage
		Standard error	Lower limit	Upper limit		
Total effect	-0.174	0.033	-0.238	-0.110	0 $\notin$ CI p<0.001	100 %
Direct effect	-0.062	0.036	-0.134	0.010	0 $\in$ CI p=0.090	35.63 %
Total mediating effect	-0.112	0.028	-0.170	-0.060	0 $\notin$ CI	64.37 %
CE→AE → IWS	-0.057	0.020	-0.102	-0.023	0 $\notin$ CI	32.76%
CE→NIC→ IWS	-0.053	0.021	-0.096	-0.011	0 $\notin$ CI	29.89 %
CE→AE → NIC→IWS	-0.003	0.002	-0.007	0.002	0 $\in$ CI	1.72 %
Standardized indirect effect β						
Total effect ($c_{cs} = \beta$)	-0.288	0,033	-0,238	-0,110	0 $\notin$ CI	100 %
Direct effect ($c'_{cs} = \beta$)	-0,103	0,036	-0,134	0,010	0 $\in$ CI	35,62 %
Total mediating effect	-0.185	0.044	-0.275	-0.101	0 $\notin$ CI	64.38 %
CE→AE → IWS	-0.094	0.032	-0.165	-0.039	0 $\notin$ CI	32.64 %
CE→NIC→ IWS	-0.087	0.035	-0.156	-0.020	0 $\notin$ CI	30.21 %
CE→AE → NIC→IWS	-0.004	0.003	-0.011	0.003	0 $\in$ CI	1.39 %

Note. AE: Athlete engagement, CE: Coaching effectiveness, IWS: Intentions to withdraw from sport, NIC: Need indifference coaching, c_{cs} : Conditional Direct Effect, c'_{cs} : Adjusted indirect effect, CI: confidence interval

Figure 3 shows statistically significant links between the coaching effectiveness and the intentions to withdraw from sport in the first conceptual model.

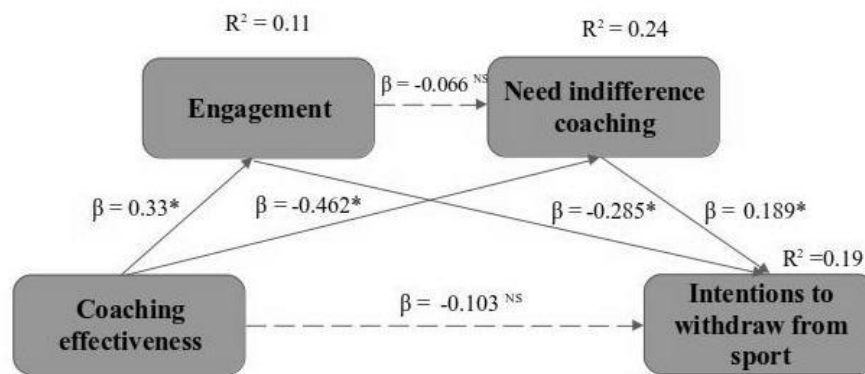


Figure 3. Links between the coach effectiveness and intentions to withdraw from sport (* $p < 0.05$, NS - dotted lines = non-significant paths) of the first conceptual model of the sample as a whole

Regression and Mediation Analysis (Model 2)

As in the previous model, used a 4-variable design: athlete engagement was set as the independent variable, intentions to withdraw from sport were set as dependent variable, coaching

effectiveness and need indifference coaching were set as mediating variables. The results of the study on this model are presented in Table 5 and Figure 6. The study results revealed no statistically significant relationships between athletes' engagement and need-indifferent coaching ($\beta = -0.066$, 95% CI [-0.404, 0.088], $0 \in \text{CI}$), though other factors significantly influenced need-indifferent coaching, as confirmed by the determination coefficient ($R^2 = 0.238$, $F = 49.036$, $p < 0.001$); and coaching effectiveness and intentions to withdraw from sport ($\beta = -0.062$, 95% CI [-0.134, 0.010], $0 \in \text{CI}$). Although no statistically significant relationship was found, the determination coefficient confirms that intentions to withdraw from sport were influenced by other factors ($R^2 = 0.189$, $F = 24.339$, $p < 0.001$). There are statistically significant relationships between other variables in this design, as shown in Table 5.

Table 5. Regression analysis of the multimedia model

Dependent variable	Independent variable	R	R ²	F	B	β	t	p	LL	UL	CI
Coaching effectiveness		0.329	0.109	38.339				<0.001			
	Engagement				0.866	0.329	6.192	<0.001	0.591	1.141	$0 \notin \text{CI}$
Need indifference coaching		0.488	0.238	49.036				<0.001			
	Engagement				-0.158	-0.066	-1.268	0.206	-0.404	0.088	$0 \in \text{CI}$
	Coaching effectiveness				-0.421	-0.462	-8.856	<0.001	-0.515	-0.326	$0 \notin \text{CI}$
Intentions to withdraw from sport		0.435	0.189	24.339				<0.001			
	Engagement				-0.453	-0.285	-5.278	<0.001	-0.622	-0.284	$0 \notin \text{CI}$
	Coaching effectiveness				-0.062	-0.103	-1.703	0.090	-0.134	0.010	$0 \in \text{CI}$
	Need indifference coaching				0.125	0.189	3.241	0.001	0.049	0.202	$0 \notin \text{CI}$
		0.360	0.130	46.984				<0.001			
	Engagement				-0.573	-0.360	-6.855	<0.001	-0.737	-0.408	$0 \notin \text{CI}$

Note. R: multiple correlation coefficient, R²: coefficient of determination, F: F-statistic, β : standardized regression coefficient, t: t-statistic, LL (Lower Limit) and UL (Upper Limit): lower (LL) and upper (UL) bounds of the confidence interval, CI: confidence interval.

Model 2 tested the H5, H6, H7 and H8. Table 6 shows the results of analysing the direct and indirect effects of this model. Significant direct negative effect was found of engagement on intentions of athletes to withdraw from sports ($\beta = -0.285$, 95% CI [-0.622, -0.284], $0 \notin \text{CI}$, accounting for 79.17% of the total mediated standardized effect), that supports H5. The results revealed a significant indirect effect of engagement on intentions to withdraw from sport through perceived coaching effectiveness and need indifference coaching ($\beta = -0.029$, 95% CI [-0.057, -0.006], $0 \notin \text{CI}$). The total mediating effect is 20.83 % of the total effect ($\beta = -0.075$, 95 % CI [-0.126, -0.027], $0 \notin \text{CI}$). Total effect is $\beta = -0.360$, 95% CI [-0.737, -0.408], $0 \notin \text{CI}$). Hence, is partial serial mediation of athlete perceived coaching effectiveness and indifference coaching between engagement and intentions to withdraw from sport that support hypothesis H8. There were not found significant indirect effects in this path: 1. Engagement $\rightarrow$ Coaching effectiveness $\rightarrow$ Intentions to withdraw from sport ($\beta = -0.034$, 95% CI [-0.085, 0.010], $0 \in \text{CI}$). 2. Engagement $\rightarrow$ Need indifference coaching $\rightarrow$ Intentions to withdraw from sport ($\beta = -0.013$, 95% CI [-0.033, 0.009], $0 \in \text{CI}$). The hypotheses H6 and H7 were not supported.

Table 6. Test results of Bootstrap mediation effect

Effect path	Effect value	Boot	BootCI	BootCI	CI	Effect percentage
		Standard error	Lower limit	Upper limit		
Total effect	-0.573	0.084	-0.737	-0.408	$0 \notin \text{CI}$ $p < 0.001$	100 %
Direct effect	-0.453	0.086	-0.622	-0.284	$0 \notin \text{CI}$ $p < 0.001$	79.06 %
Total mediating effect	-0.119	0.041	-0.202	-0.042	$0 \notin \text{CI}$	20.77%
AE $\rightarrow$ CE $\rightarrow$ IWS	-0.054	0.038	-0.135	0.015	$0 \in \text{CI}$	45.38 %
AE $\rightarrow$ NIC $\rightarrow$ IWS	-0.020	0.016	-0.052	0.014	$0 \in \text{CI}$	16.18 %
AE $\rightarrow$ CE $\rightarrow$ NIC $\rightarrow$ IWS	-0.046	0.021	-0.090	-0.009	$0 \notin \text{CI}$	38.66 %
Standardized effect β						
Total effect ($c_{cs} = \beta$)	-0.360	0.084	-0.737	-0.408	$0 \notin \text{CI}$	100 %
Direct effect ($c'_{cs} = \beta$)	-0.285	0.086	-0.622	-0.284	$0 \notin \text{CI}$	79.17%
Total mediating effect	-0.075	0.026	-0.126	-0.027	$0 \notin \text{CI}$	20.83 %
AE $\rightarrow$ CE $\rightarrow$ IWS	-0.034	0.024	-0.085	0.010	$0 \in \text{CI}$	45.33%
AE $\rightarrow$ NIC $\rightarrow$ IWS	-0.013	0.010	-0.033	0.009	$0 \in \text{CI}$	17.33%
AE $\rightarrow$ CE $\rightarrow$ NIC $\rightarrow$ IWS	-0.029	0.013	-0.057	-0.006	$0 \notin \text{CI}$	38.67 %

Note. AE: Athletes' engagement, CE: Coaching effectiveness, IWS: Intentions to withdraw from sport, NIC: Need indifference coaching, c_{cs} : Conditional Direct Effect, c'_{cs} : Adjusted indirect effect, CI: confidence interval

Figure 4 shows statistically significant links between athletes' engagement and intentions to withdraw from sport in the second conceptual model.

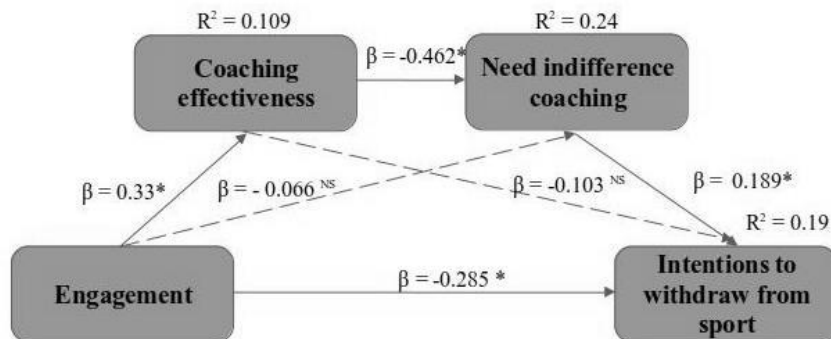


Figure 4. The second conceptual model links between the Athletes' engagement and intentions to withdraw from sport (* $p < 0.05$, NS - dotted lines = non-significant paths)

4. DISCUSSION

In the context of high attrition rates of young athletes before they reach adulthood, it is important to analyse the personal and educational factors that may influence intentions to withdraw from sport. The present study aimed to use a hierarchical multiple regression model to investigate the extent to which athletes' engagement, perceived coach effectiveness and need indifference coaching explain intentions to withdraw from sport in a sample of young volleyball players. The two mediation models explored build on and expand previous research on the impact of coaching effectiveness, meeting basic needs (i.e. through indifferent coaching behaviour), and engagement on athletes' intentions to continue or withdraw from sport. Our study confirms the importance of positive experiences for athletes through high quality interpersonal relationships that meet their needs for the continuation of their sporting careers. The results of the study complement the findings of other researchers (Bhavsar et al., 2018, 2020) that need indifference coaching can have negative outcomes. As our study showed, indifferent coaching can increase athletes' intentions to withdraw from sport. The findings of other researchers on the correlation between athletes' perceived coach efficacy and the evaluation of interpersonal relationships (Boardley et al., 2015; Modh Kassim, 2018), as well as on the impact of engagement and meeting basic needs (Back et al., 2022; De Francisco et al., 2020; Hodge et al., 2009; Jowett et al., 2016) on the intent to stay in the sport have also been supported.

Based on the literature analysis, it was expected that perceived coaching effectiveness would have a direct effect on intentions to withdraw from sport (H1), but this hypothesis was not supported. However, with the inclusion of two mediators, the total indirect effects of coaching effectiveness on withdrawal intentions were significant, supporting H2 and H3. This indicates that higher perceived coaching effectiveness leads to greater athlete engagement, which lowers the risk of young volleyball players intending to leave sport. Although no prior studies examined these exact variables, existing evidence shows that athletes' perceptions of coaching effectiveness correlate with satisfaction with their coach (Boardley et al., 2015), which may influence long-term engagement and career longevity.

Although coaching effectiveness did not significantly mediate withdrawal intentions (H6), perceived coaching effectiveness and need indifference coaching serially mediated the relationship between engagement and intentions to withdraw (H8). Our findings of negative associations between these mediators align with previous studies (Boardley et al., 2015; Kassim & Boardley, 2018), showing that athletes who view their coaches as effective feel more connected. Also, negative links between coaching effectiveness and need indifference support Horn's (2008) model, which outlines the direct and indirect impacts of coach behaviour. As our findings show, lower coaching effectiveness and higher need indifference increase intentions to leave sport.

In our study, need indifference coaching was a mediator in both models. Coaches who exhibit need indifference ignore athletes' opinions and internal motivation, fail to give clear instructions, neglect to create developmental conditions, show little interest in connectedness, and overlook athlete well-being (Bhavsar et al., 2019; Vansteenkiste & Ryan, 2013). While most studies focus on need-supportive or need-thwarting environments, indifference is distinct—it involves neglect, not active obstruction. Although less harmful than need thwarting, indifference still affects need satisfaction, motivation, and well-being (Bhavsar et al., 2019), which may contribute to withdrawal. Our results show that need indifference coaching mediates the relationship between perceived coaching effectiveness and withdrawal intentions, increasing the likelihood of quitting. We also found that need indifference coaching positively mediates the link between athlete engagement and intentions to withdraw (H7), and—together with perceived coaching effectiveness—acts as a serial mediator (H8). These findings support other studies (Sarı & Hülya Asçı, 2022) showing that perceived need indifference is tied to negative evaluations of coach behaviour. Our results align with research indicating that intentions to continue sport are tied to high-quality coach-athlete relationships (Back et al., 2022; Gardner et al., 2016; Wekesser et al., 2023). Bhavsar et al. (2019) found that need indifference coaching better predicted exhaustion and relatedness frustration than need thwarting.

Athletes under indifferent coaching feel left to manage alone, leading to poor instruction, overtraining, or inadequate recovery—factors that can cause exhaustion. Athletes who negatively assess their coach relationship show higher burnout rates (DeFreese & Smith, 2013; Isoard-Gautheur et al., 2016), and burnout is associated with withdrawal (Graña et al., 2021).

Notably, little attention has been given to the interpersonal environment as a factor in athlete career longevity. Social support plays a major role in athlete engagement (Shi et al., 2025). In our two tested mediation models, the first showed no significant link between engagement and need indifference coaching, while the second confirmed a positive mediating effect of indifference on engagement and withdrawal intentions. Our findings also revealed that engagement has both direct (H5) and indirect effects (H8) on intentions to withdraw. This supports the idea that engagement and basic need satisfaction influence long-term sport participation, echoing previous studies (Back et al., 2022; De Francisco et al., 2020; Hodge et al., 2009; Jowett et al., 2016).

The direct impact of engagement on continued participation may be due to its conceptual opposition to burnout and dropout, as supported by prior research (De Francisco et al., 2018, 2020; Graña et al., 2021; Hodge et al., 2009; Raimundi et al., 2024; Shaufeli et al., 2002). Engagement reflects a consistent experience of positive emotions and motivation, and is characterized by long-term cognitive and emotional fulfilment (Hodge et al., 2009; Lonsdale et al., 2007b). Studies with young athletes link engagement to quality sport experiences, basic need satisfaction, and reduced psychological distress (Raimundi et al., 2024; Kamimura et al., 2018).

Our study demonstrates that higher engagement reduces intentions withdraw from sport, while need indifference coaching encourages young volleyball players to have negative experiences in sport and is clearly relevant to athletes' intentions to continue or withdraw from sport. Therefore, it is important for coaches to avoid behaviour that reduces athletes' engagement in sport, as this is directly related to athletes' intentions to continue playing sports. Our and others' studies (Curran et al., 2015, 2016; Gu et al., 2023) show the links between interpersonal coaching behaviour and athlete's engagement. According to Gu et al. (2023), in order to improve the athlete's engagement, it is important to set common goals and emphasise mutual cooperation, trust and support. Teng and Wang (2020) found an inverse U-shaped relationship between coaching competence and athletes' psychological engagement, suggesting that coaches who are able to recognize and address athletes' emotional states and provide support can effectively promote the engagement in young athletes. Evidence is also provided (De Francisco et al., 2020; Graña et al., 2021; Podlog et al., 2015) that engagement plays a mediating role between motivation and burnout, so coach-driven autonomous

athlete motivation can help increase the level of athletes' engagement and protect them from burnout and withdrawal from sport.

The results of this study are relevant for sport education theory and coaches' practice, as they help to better understand how career intentions are affected by athletes' perception of coaching effectiveness and need indifference coaching. The way athletes perceive the coach's behaviour, how they interpret and evaluate the coach's actions is considered relatively more important than the coach's behaviour itself, as it all relates to subjective experiences in a specific context (Gjesdal et al., 2019). Our conclusions of significant moderate and weak correlations between all variables indicate that these variables are interrelated, which justifies deliberate attention to these variables in the context of sport education. The positive associations of intention to leave sport with indifferent coaching and the negative associations with engagement and perceived coaching effectiveness suggest that, without overestimating the role of these factors, they are nevertheless important as they may reinforce the intention of young athletes to withdraw from sport. Research by Sarı and Aşçı, (2022) revealed strong associations between athletes' perceived coach indifference to their needs and indicators of negative coach behaviours. Demand-indifference coaching can lead to athlete disengagement, manifested by non-sport-related thoughts, as well as poor well-being and a sense of exhaustion (Bhavsar et al., 2019), which may lead to athlete withdrawal from the sport career. Athletes need quality interpersonal relationships (Jowet, 2017; Gu et al., 2023) and an effective coach who is able to improve athletes' competence, confidence, connection and character during the training process (Côté & Gilbert, 2009). The quality of coach-athlete interactions shapes both parties' perceptions of their relationship and affects the benefits derived from it, ultimately influencing athlete engagement (Gu et al., 2023). Awareness of the consequences of different personalities can help coaches to build safe and positive relationships with athletes over time (Côté & Gilbert, 2009; S. Jowett & Felton, 2014), which increases the retention of young athletes in sport. The findings of Emmonds et al. (2024) indicate that there is no single strategy to maintain and increase participation in sport during childhood and adolescence. Therefore, he suggests that individual sports and countries may need to consider different strategies depending on their local situation and the different ages of athletes. However, we believe that the results of this study may be relevant for other sports as well. Although research suggests that perceived interpersonal interaction (Rhind et al., 2012) and engagement (Vink et al., 2015) may be influenced by the context of the sport, whether it is an individual or team sport, the satisfaction of basic needs are prerequisites for optimal human functioning, despite individual and cultural differences (Chen et al., 2015).

4.1. Limitations and Future Directions

Although the study has revealed many valuable findings, its limitations could be noted. First of all, the sample was limited to young volleyball players, therefore, in order to generalize the findings of the study, the sample size should be expanded to include other sports games and individual sports, as well to other socio-cultural contexts. Secondly, we relied on a subjective evaluation of the athlete coach's effectiveness and need indifference coaching, and did not include objective evaluations, which would have provided a clearer picture of the research phenomenon. In addition, we conducted a cross-sectional study and considered that a longitudinal study would provide a better understanding of the impact of these models in a sport context. Another limitation is that we have chosen only needs indifference coach behaviour as a mediator, which broadens the theoretical notion of the mediating of such coach behaviour on intentions to withdraw from sport; however, researchers such as Bhavasar et al. (2019) propose to measure coach supportive, thwarting and indifferent behaviours simultaneously. We would suggest that future research could be extended to determine how coach need-supportive, need-thwarting and indifferent behaviours explain intentions to withdraw from sport.

5. CONCLUSIONS

The results of this study explain how athletes' intentions to withdraw from sport are affected by engagement, perceptions of coaching effectiveness and need indifference coaching in a sample of young volleyball players. It was found that engagement in sport had a direct effect on intentions to withdraw from sport and an indirect effect through two mediating variables: perceived coaching effectiveness and need indifference coaching. Therefore, it is important for coaches to use all the resources that can increase athletes' engagement, as well as to improve the quality of relationships, and to address athletes' basic psychological needs in order to reduce the risk of withdrawal from sport. Sports federations and youth sport policy makers should provide opportunities to develop coaches' social leadership skills to better understand the needs and experiences of young athletes in sport and to build positive interpersonal relationships. Coach education and development programmes can be used to raise awareness of the importance of these practices, informed by scientific evidence, while teaching methods and strategies to improve the quality of interpersonal relationships and athlete engagement. Decreased athletes' engagement predicts higher intentions to withdraw from sport, so this symptom can serve as an indicator for the coach of decreased athlete motivation, which may also be related to the lack of satisfaction of basic psychological needs during sports. The study did not find a direct effect of the perceived coach effectiveness on intentions

withdraw from sport, but lower engagement as a mediator and higher coach indifference to the athlete's basic psychological needs as a mediator reinforce these intentions. This confirms the importance of satisfaction with the coach's strategies and methods and the quality of the relationship. The results of the study contribute to a better understand of what young athletes experience and how they interpret the experience of sports education. This can help coaches in their development of engagement-enhancing strategies that reinforce the athlete's positive sport experience and intentions to continue participating in sport.

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CONFLICTS OF INTEREST

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