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The Impact Of Coaching Behaviours On The Sustainable Development Of Youth Athletes

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Abstract:

The development of youth athletes is the foundation of sports advancement. It is imperative to assist youth athletes in maintaining a positive mindset and motivation throughout their athletic career, overcoming challenges and setbacks, striking a balance between sports development and other domains, and achieving comprehensive personal growth. The coach's conduct plays a crucial role in the developmental journey of youth athletes, as they serve as the primary mentor and influencer. Therefore, this study adopts the self-determination theory as a theoretical framework and investigates the association between coaching behaviours and the sustainable development of youth athletes. It aims to explore which coaching behaviours can facilitate the cultivation of self-determination ability among youth athletes through questionnaire surveys, thereby fostering their long-term athletic career progression. The data for this study were collected from a research questionnaire administered to 321 youth athletes. Structural Equation Modeling (SEM) of AMOS was employed for data analysis. The study's findings suggest that coaching behaviours significantly impact youth athletes' self-determination ability and sustainable development. Moreover, it was found that the self-determination ability of youth athletes plays a mediating role in this relationship. These results offer valuable insights for regulating coaching behaviours.

Keywords: *coaching behavio.ur; self-determination ability; sustainable development of youth athletes*

1. Introduction

Youth athletes are the future and hope of the sports industry, and their sustainable development is crucial for enhancing national sports standards and promoting social sports culture. In addition to facin[1]g fierce competition and high-intensity training, youth athletes also encounter challenges in learning, life, and health. These factors impose significant stress on their mental and physical well-being. Therefore, finding ways to assist youth athletes in maintaining a positive attitude and motivation throughout their sporting careers, overcoming obstacles and setbacks, balancing athletic pursuits with other areas of life, and achieving personal growth has become an urgent issue that needs to be addressed. According to the sports career transformation model proposed by Wylleman et al., youth

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athletes undergo multiple stages of transformation in their sports careers, each impacting their psychological, social, and emotional aspects. However, due to individual differences and diversity, these influences may either facilitate athletes' growth and development or give rise to psychological and emotional issues [1-2]. The successful adaptation and adjustment of youth athletes necessitates the active participation and collaborative efforts of coaches, parents, and professionals [3]. Specifically, coaches, being the primary mentors and influencers for athletes, play a pivotal role in facilitating the transformative process of youth athletes [4].

Different coaching behaviours exert varying influences on behaviour guidance and the development of psychological qualities in youth athletes, thereby impacting their self-determination ability and sustainable growth[5]. Self-determination is a fundamental concept within the self-determination theory, reflecting an individual's intrinsic motivation and autonomy, which significantly affects their mental well-being and behavioural outcomes. Particularly among youth athletes, self-determination ability can be influenced by coaches' behaviours as they serve as crucial external supporters and motivators for athletes. Consequently, coaches' behaviour directly impacts athletes' satisfaction of psychological needs and internalization of motivation [6]. Generally, coaches' supportive, respectful, and encouraging behaviours can facilitate the internalization of athletes' motivation, while coaches' controlling, authoritarian, and punitive behaviours can hinder the internalization of athletes' motivation [7]. Furthermore, by the theory of psychological needs, satisfying autonomy, belongingness, and competence is crucial for optimizing function across diverse cultures and individuals [8]. Therefore, it is imperative in the realm of sports education and sports psychology to investigate coaching behaviours that can effectively facilitate the cultivation of youth athletes' self-determination ability and foster the sustainable progression of their athletic careers. However, existing research predominantly concentrates on aspects such as sports engagement, motivation for sporting achievements, and mental resilience among youth athletes [9]. In terms of the impact of coach behaviour on the motivation of youth athletes, the majority of studies have predominantly focused on the coach's perspective rather than considering the athletes' perception [10]. Research on youth athletes' self-determination ability, which refers to their capacity to autonomously choose and regulate their own sports behaviour and goals, primarily centres around assessing this ability, identifying influencing factors, and examining its effects. However, there is a lack of comprehensive discussion regarding the process involved in forming and developing youth athletes' self-determination ability. Furthermore, there is limited exploration into the relationship between this capability and sustainable development [11].

Therefore, based on the self-determination theory perspective, this study focuses on coaching behaviour and the sustainable development of youth athletes as its research subject. It aims to investigate through a questionnaire survey which coaching behaviours can effectively foster the formation of youth athletes' self-determination abilities, thereby promoting their long-term sports career development. This study contributes to the application and expansion of self-determination theory in the field of sports while providing theoretical support for social psychology, sociology, and developmental psychology. Simultaneously, it assists coaches in comprehending the impact of their behaviour on youth

athletes' psychology and behaviour so that they can adopt more effective behavioural strategies to stimulate and sustain internal motivation among youth athletes, ultimately enhancing their sports performance and satisfaction.

2. Literature reviews

2.1 Coaching behaviors and self-determination ability of youth athletes

The term "coaching behavior" encompasses a wide range of actions exhibited by coaches as they exert influence on youth athletes through their words and actions. Petrovska proposed that coaching behavior comprises guiding, physical, feedback, emotional expression, silence, question-and-answer, and organizational management behaviors [12]. Chelladurai posits that coaching behavior can be categorized into five dimensions, namely training, guidance, democratic leadership, authoritarian leadership, social support and positive feedback[13]. The author argues that coach behavior can be categorized into five dimensions: leadership, teaching ability, emotional regulation, athlete attention, and communication. It is deemed appropriate to assess coach behavior based on these aspects [14]. This study utilizes Ma to categorize coach behavior, which has significant impacts on youth athletes. Lopez et al. proposed that coaching proficiency and leadership directly determine a team's athletic performance, emphasizing the necessity of a scientific management system to ensure coaches' continuous possession of such abilities [15].

Research indicates that leadership plays a crucial role in the association between coaching behaviour and youth athletes' self-determination ability. Coaching behaviour's leadership is categorized into adaptive leadership, which can be further divided into transformational and transactional leadership styles [16]. The findings of various studies have consistently demonstrated that transformational leadership exerts a positive influence on athletes' self-determination ability by effectively addressing their fundamental psychological needs, including autonomy, sense of competence and belonging. Consequently, this leads to an enhancement in athletes' intrinsic motivation and autonomous motivation [17]. The impact of transactional leadership on an athlete's self-determination ability is contingent upon the coach's approach to rewarding and punishing, whereby it can foster autonomous motivation if the coach emphasizes effort and progress rather than outcomes and comparisons. Conversely, if a coach's rewards and punishments are based solely on results and comparisons, it will diminish the athlete's autonomous motivation while increasing extrinsic motivation and demotivation [18].

The teaching proficiency in coach behaviour can be assessed from two perspectives: teaching effectiveness and teaching quality [19]. Research has demonstrated that coaching proficiency significantly impacts athletes' self-determination abilities by enhancing their skill and knowledge levels, thereby bolstering their sense of competence and self-efficacy. Consequently, this leads to an improvement in athletes' intrinsic motivation and autonomous motivation [20]. Moreover, there exists a reciprocal relationship between coaches' teaching effectiveness and teaching quality; higher levels of coaching effectiveness correspond to elevated levels of teaching quality [21].

Emotional control in coaching behaviour refers to the behavioural characteristics of coaches' adjustment and management of their own and athletes' emotions during training

and competition [22]. Emotion control can be categorized into emotion expression, which involves the outward manifestation of emotions, and emotion regulation, which pertains to the internal processes that influence emotional experiences [23]. The research indicates that the coach's emotional regulation has a positive impact on athletes' self-determination ability, as it influences athletes' emotional states and experiences, thereby affecting their motivation levels and types [24]. The coach's emotional expression and regulation should be tailored to the athlete's personality, situation, and goals to achieve optimal outcomes. Generally speaking, the coach's emotional expression should be positive, genuine, moderate, and timely. Coaches' emotional regulation should be effective, adaptable, rational, and advantageous [25]. Conversely, inappropriate emotional expression by coaches and a failure to regulate emotions can impede athletes' development. As highlighted by Van Kleef et al., frequent displays of anger by coaches can lead to players feeling tense which subsequently limits their athletic abilities; this strained relationship between coaches and players ultimately hampers player development [26].

The coach's attention to athletes can be categorized into two dimensions: relational support and autonomous support [27]. Research has demonstrated that the coach's attentiveness towards athletes positively influences their self-determination ability, as it fulfils their fundamental psychological needs of belongingness and autonomy, thereby enhancing intrinsic motivation and autonomous motivation among athletes [28]. Laishuang et al. proposed that the extent of coaches' attentiveness towards athletes impacts their behaviour, as individuals seek recognition and approval from others; praise generates attraction and consequently fosters training motivation [29].

The term "communication in coaching behaviour" refers to the behavioural aspects of information exchange and opinion communication between coaches and athletes during training and competition [30]. Research has demonstrated that effective coach-athlete communication positively influences athletes' self-determination abilities, as it impacts their cognition, emotions, behaviours, motivation levels, and motivational orientations [31]. For instance, Davis et al. discovered that through proficient communication, coaches can gain a better understanding of athletes' needs and desires, tailor training programs accordingly, and enhance athletes' skills and capabilities [32].

By analyzing the components of coaching behaviour, this study aims to explore the pathway for enhancing adolescents' self-determination ability. Additionally, it sheds light on the intricate relationship between coaching behaviour and sports scientific management mechanisms, thereby providing a theoretical foundation for elevating the level of ability management among youth athletes. Building upon these premises, this study puts forth the following hypothesis:

2.2 Coaching behaviour and sustainable development of youth athletes

The sustainable development of youth athletes includes providing resources and support for their health, education and overall well-being [33]. The behaviour of coaches significantly impacts the physical and mental well-being of youth athletes. Sports play a crucial role in enhancing the physical health of youth athletes. Simultaneously, athletes' perceptions regarding coach behaviour, including aspects like physical training and establishing positive rapport, can profoundly influence their overall experience and

performance in team sports [34]. Youth athletes demonstrate enhanced cardiorespiratory fitness and musculoskeletal development through regular exercise [35]. Furthermore, sports exert a positive influence on the mental well-being of youth athletes [36]. Moen et al.'s study reveals that physical activity can alleviate anxiety and enhance self-esteem, thereby positively impacting the mental health of adolescents [37]. In addition, the behaviour of coaches significantly influences athletes' perception of their ability to make relational inferences, which subsequently impacts their self-efficacy, level of sports engagement, and enjoyment [38]. Overall, the role of sports coaches extends beyond imparting skills; it involves effectively stimulating athletes' potential and passion while positively contributing to their physical and mental well-being [39].

The coaching behaviour significantly impacts the education of young athletes. Extensive research has demonstrated that coaching plays a pivotal role in shaping the sports experience and fostering positive development among youth athletes [40]. Coaches' exhibited behaviours, including coaching philosophies, values, and leadership methods, exert influence on athletes' ethical conduct, personal and social skill development, as well as their athletic performance [41]. Ian Stonebridge and Christopher Cushion explore the coaching behaviour of professional youth football coaches and their perspectives on academic learning [42]. Research has demonstrated that coaches who foster a climate of ownership, emphasizing learning, effort, and improvement, are more likely to cultivate prosocial behaviour in athletes and achieve favourable outcomes [43]. Consequently, coaches must be mindful of their own conduct and establish a positive, supportive environment that enables athletes to strike a harmonious balance between academic learning and athletic skill development.

Coaching behaviours offer resources and support for the holistic development of youth athletes. Competent coaches genuinely prioritize the well-being and welfare of each athlete, demonstrating emotional investment in their long-term growth. [44] By comprehending the needs, goals, and aspirations of youth athletes while providing essential support and resources, it becomes feasible to harness their passion for sports and enhance their overall development. Coaching behaviour plays a pivotal role in the sustainable development of youth athletes, as it not only impacts their sports performance but also moulds their overall comprehensive growth. Based on this premise, the following hypothesis is proposed in this study:

2.3 Self-determination ability and sustainable development of youth athletes

The concept of self-determination pertains to an individual's capacity to independently select and carry out behaviours by their values and objectives[45]. Self-determination constitutes a significant psychological attribute among athletes, fostering intrinsic motivation, autonomous learning, self-regulation, and personal accomplishments[46]. The research on self-determination ability primarily relies on the framework of self-determination theory, which posits that an individual's self-determination ability is influenced by the extent to which their fundamental psychological needs are fulfilled, encompassing autonomy, competence, and a sense of belonging[47].

The intrinsic motivation of athletes plays a pivotal role in the sustainable development of young athletes [48]. Intrinsic motivation refers to engagement in sports driven by

personal satisfaction and interest, rather than external rewards or recognition. It is influenced by factors such as the motivational climate fostered by parents and coaches, as well as the fulfilment of perceived needs including autonomy, competence, and relevance [49]. A climate of ownership that prioritizes enjoyment, self-improvement, and effort is positively associated with higher levels of intrinsic motivation, whereas a climate centred around competition and comparison to others tends to foster extrinsic motivation [50]. Furthermore, the motivational atmosphere created by peers significantly influences the motivation and persistence of young athletes [51]. Therefore, it is crucial to cultivate an environment that supports intrinsic motivation and provides opportunities for autonomy, competence, and affiliation to ensure the sustainable development of youth athletes.

The promotion of independent learning can contribute to the sustainable development of youth athletes. Research has consistently demonstrated a positive correlation between self-directed learning and both academic and athletic accomplishments [52]. Athletes who possess strong independent learning abilities in sports often exhibit proficiency in managing their studies as well, suggesting that such skills are likely transferable across domains [53].

Self-regulation is a crucial component of the sustainable development of young athletes. The acquisition of self-regulatory skills plays a pivotal role in fostering deliberate practice among young athletes. Adolescent athletes exhibit superior performance in fundamental cognitive functions related to self-regulation [54]. Early involvement in individual sports during childhood is positively associated with higher levels of self-regulation, whereas poor self-regulation is linked to lower rates of sports participation [55]. These findings suggest that interventions aimed at enhancing self-regulatory abilities can yield positive outcomes for athletic performance and well-being. Based on this, the following hypothesis is proposed in this study:

2.4 Coaching behaviour, self-determination ability and sustainable development of youth athletes

Many scholars focus on the relationship between self-determination ability, coach behaviour and sustainable development of young athletes. According to statistics, about 70% of youth athletes quit sports before the age of 13. [58] Therefore, many scholars use self-determination theory to study the motivation of young athletes to insist on sports. It has been observed that the psychological perception and self-determination ability of young athletes are intricately linked to the sustainable development of sports. In their study, Clermont et al. investigated the mediating role of sports self-determination in the association between psychological needs and restrictive eating behaviours among adolescent athletes [59]. The aforementioned evidence demonstrates the influential role of self-determination in guiding individuals' behaviour, thereby emphasizing the crucial responsibility of coaches to attend to the psychological needs of young athletes. It is noteworthy that athletes' perception of their coach's conduct significantly impacts their ability to regulate and enhance sports learning [60]. The behaviour of coaches can significantly influence psychological factors such as self-perception and self-esteem in young athletes, thereby impacting their engagement and performance in sports [61]. Perceived autonomy support, a fundamental principle of self-determination theory, has the

potential to positively affect the preference and persistence of youth athletes in participating in sports activities [62]. Therefore, young athletes must receive scientifically guided coaching and behaviour guidance to develop their self-determination abilities. By enhancing the training experience and performance levels of athletes, attention can also be given to their physical and mental health as well as academic achievements, ultimately improving their sustainable development capabilities. Based on these premises, this study proposes the following hypothesis:

In conclusion, this study examines the correlation between coach behaviour and the sustainable development of young athletes based on self-determination theory, to provide theoretical and practical guidance for optimizing coach behaviour and enhancing athletes' capacity for autonomous decision-making. The conceptual framework of the specific research is illustrated in Figure 1.

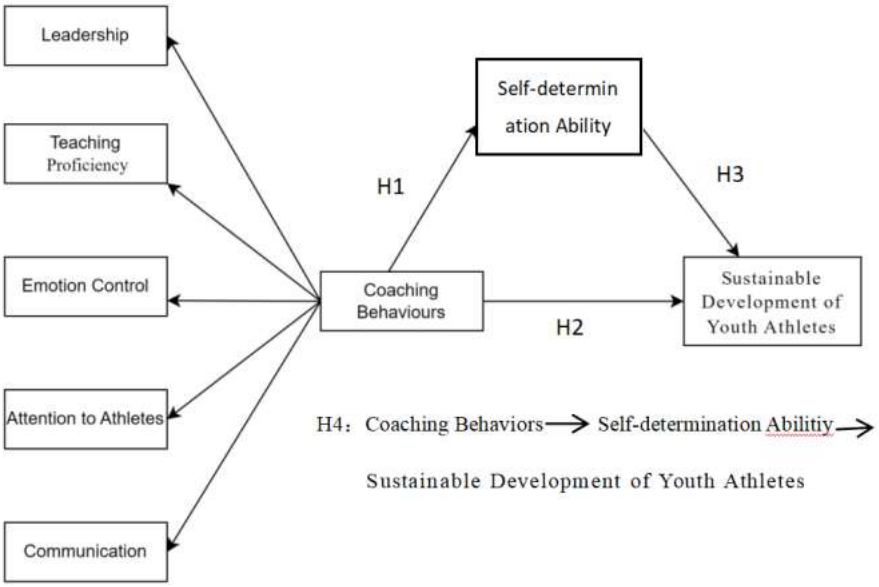

Figure 1 Conceptual Framework

3. Methods

The present study employed a questionnaire survey to gather data, constructed a structural equation model, utilized SPSS and AMOS for data analysis and hypothesis testing, and conducted a cross-sectional investigation on young athletes. The aim was to elucidate the relationship between coach behaviour and young athletes' self-determination ability, as well as its impact on sustainable development. This study focused specifically on campus football players in Liaoning Province, China. The selection of such a research subject is based on the nationwide and government-driven nature of China's campus football training system, which caters to teenagers across three age groups. Specifically, this study focuses on adolescent athletes aged 17-19 years old. This particular age group was chosen due to their critical developmental stage in athletic pursuits. They exhibit a higher degree of self-determination compared to other age groups. Although their sustainability is influenced by multiple factors, it can be easily assessed through the use of questionnaires. The coach's behaviour, as their primary instructor and influencer, plays a crucial role in shaping their psychology and behaviour. Moreover, these research subjects possess certain

representativeness, stability, and accessibility, thereby providing ample data and samples for this study.

The present study employed a second-order factor model to examine the multifaceted nature of coach behaviour. By confirming that second-order factors adequately capture the relationship between first-order factors, this investigation delved into the impact of coach behaviour on the self-determination ability and sustainable development abilities of young athletes.

3.1 Sample and data collection

According to the statistics released by the Liaoning Provincial Department of Education, a total of 44 schools actively participated in the highly esteemed Liaoning Provincial College Football Competition in 2023, encompassing an impressive cohort of 1,200 dedicated participants. Consequently, this study encompasses a comprehensive sample size of 1,200 individuals. The Morgan scale was used in this study to determine the sample size, which was 291. It is worth noting that questionnaire response rates are usually below 100 per cent. According to Babi, an American sociologist, a questionnaire return rate of at least 50 per cent is sufficient, a return rate of 60 per cent is considered good, and 70 per cent is very good[30].In this study, 416 questionnaires were distributed according to the 70 per cent recovery rate of the questionnaires. In this study, the questionnaire survey was conducted through face-to-face interviews and questionnaires sent by mail, and 321 valid questionnaires were obtained after excluding the questionnaires with a lot of repetitive options and incomplete questionnaires from the recovered questionnaires. Therefore, the recovery rate of valid questionnaires in this study was 77.16 per cent.

3.2 Questionnaire design and measurement

The objective of this study is to examine the correlation between coach behaviour, self-determination ability, and the sustainable development of young athletes. The questionnaire design is based on existing research and a conceptual model, with all questions being closed-ended.

The questionnaire consists of two main parts. The first part is the basic information of the respondents. This part is the demographic variables of the respondents, which mainly include respondents' age, gender, school, and home area. The second part is the measurement question items for each variable. Among them, coaching behaviour is divided into five modules to measure, namely leadership, teaching proficiency, emotional control, attention to athletes, and communication. Leadership is measured by using the scale of Creative Leadership proposed by Wen et al. and adapted to the opinions of industry experts [64]. Teaching proficiency is measured by using the scale of FFT Teaching Evaluation proposed by Zhang & Yang, which was developed with expert opinions [65]. The emotional control scale and concern for athletes were adopted from the scale of concern for others' emotions proposed by Quinn [66]. Communication is developed by using the Communication Orientation Scale proposed by Ward, with the selection of suitable items based on the opinions of industry experts [67]. The self-determination ability of youth athletes is measured by using the Self-Determination Scale developed by Lin et al. and adapted with input from industry experts [68]. The measurement of sustainability in youth

athletes was based on Wylleman et al.'s model of sports career transition and related literature to determine the scale [69]. To ensure the reliability and validity of the questionnaire, three school football experts from the Ministry of Education of China were selected to be interviewed for the reasonableness of the measurement variables involved in this questionnaire. Through the interviews, the questionnaire was amended to form a questionnaire that could be used in the study. The Likert scale employed in the questionnaire ranged from 1 (indicating "strongly disagree") to 5 (indicating "strongly agree").

3.3 Sample description

According to Table 1, the collected samples (n=321) exhibit a relatively balanced distribution between males (57.8%) and females (42.2%), indicating a gender ratio that is well-maintained. The respondents were youth football players in the age group of 17 to 19 years old. According to the scoring rules of the Likert 5-point scale, a high level of agreement is considered to be achieved when the mean value of the question items reaches a score between 3.5 and 5. The mean and variance of the questionnaire items indicate that the leadership of coaches in respondents' schools is highly acknowledged by youth athletes (mean 3.82). Moreover, respondents believe that teaching proficiency adequately meets their training and competition needs (mean 3.86). Additionally, coaches demonstrate effective emotional control (mean 3.785) and exhibit genuine concern for youth athletes (mean 3.838). Furthermore, respondents expressed higher satisfaction with the coach's performance. The coach's behaviours demonstrated an overall high level of effectiveness. Youth athletes have better self-determination ability (mean 3.848), and the sustainability of youth athletes also received a high level of agreement (mean 3.777). These findings further support the suitability of the selected sample for this study.

4. Results

4.1 Reliability and validity test

Using SPSS 26.0 software for reliability test, we can find that the KMO value of the sample is 0.979, which is greater than the critical value of 0.7, and the results of Bartlett's test of sphericity are significant (Table 2). Cronbach's α is greater than the critical value of 0.7, which means that the reliability of the sample is better; the combined reliability (CR) is greater than the critical value of 0.7, which means that the internal consistency of the sample is higher; the standard factor loadings are greater than the critical value of 0.7, and Z-values are greater than 3.29. ; the standardised factor loadings were all greater than the critical value of 0.7, and the Z-values were all greater than 3.29, with P-values significant at 0.001, which indicated that the measurement items explained the latent variables to a better extent; the AVEs were all greater than the critical value of 0.5, with a better degree of convergent validity of the sample (Table 1).

Table 1: The Descriptive Analysis for the Items of Variables

Code	Item	Mean	SD	Overall Mean

Leadership （LS）	LS1	The coach effectively harnesses my creativity in innovative manners.	3.77	1.051	3.82
	LS2	My coach encouraged me to be creative dribbling or innovative as my goal.	3.81	1.031	
	LS3	Coach often have different and new ideas to guide me in training and competition.	3.83	1.022	
	LS4	The coach will apply new management ideas and management styles.	3.83	1.045	
	LS5	Coach embraced my idea.	3.86	1.02	
Teaching Proficiency （TP）	TP1	I would like to have coaches with professional experience to coach me in football.	3.84	1.036	3.86
	TP2	Coach has had a big impact on my ability to play football.	3.88	1.02	
	TP3	In training and games, the coach will support me in my personal breakthroughs (dishing and dribbling).	3.9	1.039	
	TP4	The coach will provide senior-level football matches.	3.82	1.035	
Emotional Control (EC)	EC1	The coach exhibited exceptional emotional regulation and displayed patient coaching skills in response to my errors.	3.75	1.075	3.785
	EC2	The coach was often able to make me feel like he was having fun.	3.79	1.073	
	EC3	I rely on my coach to help me when I make mistakes.	3.78	1.077	
	EC4	The coach smiles at me a lot.	3.82	1.073	
Attention to Athletes (ATA)	ATA1	The coach is concerned about my technique and tactics during training and games.	3.82	1.047	3.838
	ATA2	In life, the coach will always give me help.	3.84	1.048	
	ATA3	The coach often asks me how I've been feeling lately.	3.9	1.029	
	ATA4	The coach often discusses my footballing abilities with me.	3.79	1.04	
Communication （CC）	CC1	When I encountered problems, the coach took the initiative to communicate with me and help me alleviate my bad feelings.	3.87	1.011	3.853
	CC2	Encouragement from my coach during training and competitions can help ease my mental anxiety.	3.83	1.029	

	CC3	My athleticism improved after my coach communicated with me.	3.86	1.013	
	CC4	The coach interacted with me and made me more confident.	3.85	1.031	
Self-determination ability （SD）	SD1	I have specific training and competition goals.	3.84	1.044	3.848
	SD2	I would love to be coached.	3.85	1.013	
	SD3	I can give timely and positive feedback to the coach's guidance.	3.85	1.055	
	SD4	In the eyes of others, my skills and level are constantly improving.	3.86	1.01	
	SD5	I can cooperate with team members to enhance team cohesion and centripetal force.	3.84	1.041	
sustainability of youth athletes (AA)	AA1	I have good decision-making skills in the game of football.	3.83	1.039	3.777
	AA2	I have a high level of tactical awareness in football.	3.76	1.032	
	AA3	I have good stress tolerance.	3.74	1.062	

4.2 Construction of second-order model

The second-order factors of coaching behaviour in this study were integrated into the models of the self-determination ability of adolescent athletes and the sustainability ability of adolescent athletes. The dimensions of coaching behaviour are exogenous variables, and youth athlete self-determination ability and youth athlete sustainability ability are endogenous variables. Coaching behaviour is a second-order factor consisting of a first-order factor of five dimensions. To verify the reliability and validity of the second-order factor model, this study conducted validation factor analyses of a single first-order factor model of coaching behaviour, M1 , a first-order correlated five-factor model of five dimensions of coaching behaviour, M2 , and a model of coaching behaviour with five first-order factors plus one second-order factor, M3.

The goodness of fit of a model is a method of determining the degree of agreement between a theoretical model and a sample model. In this study, the model's goodness of fit was examined using AMOS 24.0 software. According to the critical values of the structural equation goodness-of-fit indicators, 2/df is between 0-3 for a good model fit; the two similarity indicators, GFI and AGFI, are greater than 0.8 acceptable and greater than 0.9 for a good fit. Other similarity indicators, including TLI and CFI, need to be greater than 0.9, and the closer to 1, the better the model fit. For the dissimilarity metrics, the model fits well when RMSEA is less than 0.08 and SRMR is less than 0.05.

The fit indices of the three models are shown in Table 4. M1 has the weakest model fit,

while M2 and M3 satisfy the critical values for model fit. However, the fit index of M2 is slightly better than that of M3. Since a model with second-order factors never produces a better fit than its first-order factorial model with correlation [70]. the fit of M3 is better and has a theoretical basis. Therefore, M3 was adopted as the model to measure coaching behaviour..

4.3 Measurement Model

Based on the scale data modelling, as shown in Table 2, where the first order seven factor correlation model is modelling the five dimensions of coaching behaviors, youth athlete self-determination ability and youth athlete sustainable development as correlated with each other, a good fit goodness-of-fit metric was obtained to satisfy the proposed range. In order to simplify the model and reduce the estimated parameters of the structural equation model, a second-order model was constructed, i.e., the five dimensions of coaching behaviour were the first-order five factors and the second-order was coaching behaviour. Its corresponding goodness-of-fit indexes are 2/df=2.634, GFI=0.842, AGFI=0.801, TLI=0.960, CFI=0.966, RMSEA=0.071, and SRMR=0.0164. All the indexes satisfy the range of recommended values. In addition, the chi-square ratio of the first-order seven-factor correlated model to the second-order factor was 89.8%, i.e., the objective coefficient was 0.898. According to Marsh's suggestion, the closer the objective coefficient is to 1, the closer it is to 1, suggesting that the second-order model can represent the first-order model making the model more streamlined [71].

Table 2. Comparison of the results of the goodness-of-fit indicators for the second-order validated factor mode

Second-order validation factor model	c2/df	GFI	AGFI	TLI	CFI	RMSEA	SRMR
First-order seven-factor model (with correlation between factors)	2.976	0.827	0.779	0.952	0.960	0.079	0.0162
second-order factor model	2.634	0.842	0.801	0.960	0.966	0.071	0.0164
reference point	<3	>0.800	>0.800	>0.900	>0.900	<0.08	<0.05

4.4 Structural Model and Hypothesis Testing

The hypothesised relationships between the constructs in this study were tested by structural modelling. The results showed (Figure 2) that the structural model fit well with 2 /df = 2.575, GFI = 0.849, AGFI = 0.808, TLI = 0.962, CFI = 0.968, RMSEA = 0.070 and SRMR = 0.0157. It is assumed that the model fits well with the empirical data. As can be seen in Table 3, the three hypothesised relationships (paths) that make up the structural model are significant in the expected direction. The standardised path coefficients for hypotheses H1, H2 and H3 are 0.981, 0.793 and 0.971 respectively. p-values are less than

0.001 and the hypotheses are valid. Therefore, there is a positive correlation between coaching behaviors and youth athletes' self-determination ability; coaching behaviors and youth athletes' sustainable development; and youth athletes' self-determination ability and youth athletes' sustainable development.

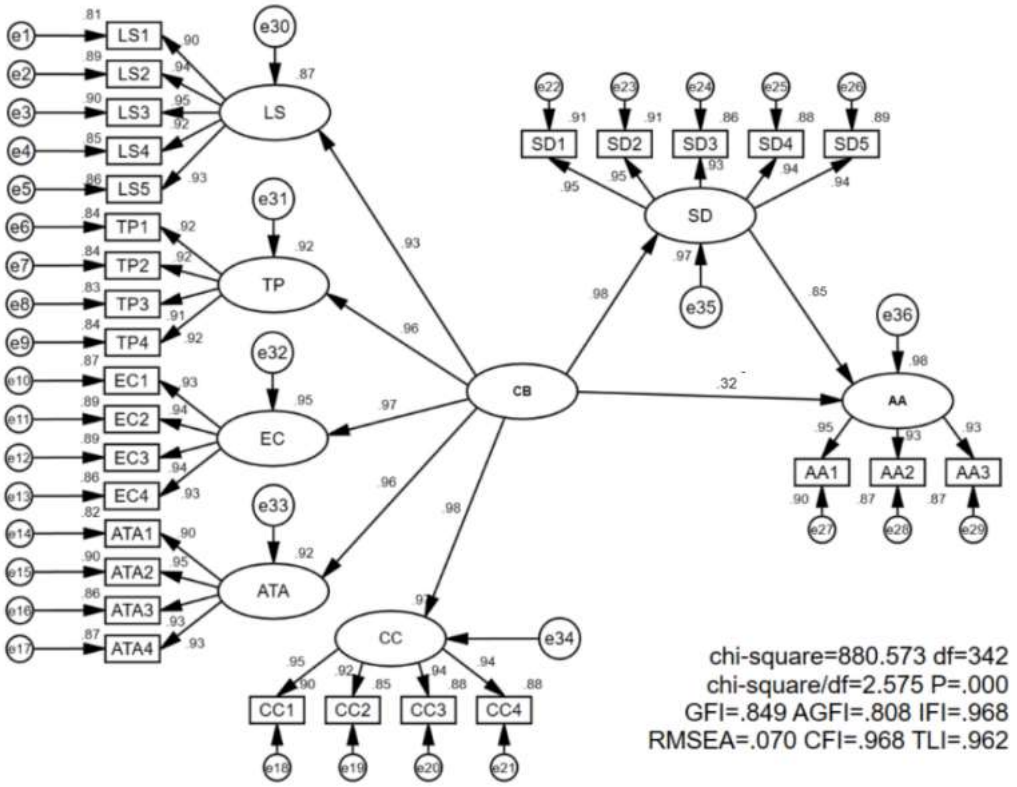

Figure 2 Structural Models of Latent Variables

Table 3. Path relationship test results

hypothetical	pathway relationship	Unstd.	S. E.	Z	P	Std.	Hypothetical results
H1	CB ® CPM	1.082	0.037	28.902	***	0.981	accepted
H2	CB®AA	0.896	0.124	6.222	0.025	0.793	accepted
H3	SD ®AA	1.097	0.144	7.618	***	0.971	accepted

4.4. Mediation test

Among the mediating effect test methods, Bootstrap method has the best bias correction effect. Therefore, in this paper, Bootstrap is used to test the mediating effect on the samples. A 95% confidence interval is set for this test and samples are taken 1000 times. In this study, the judgement is based on the confidence interval of Bias-corrected and Percentile. According to the results in Table 4, the confidence intervals of all paths do not contain 0. The mediating effect of self-determination ability of adolescent athletes is significantly present. The mediating effect of self-determination ability of adolescent athletes accounted for 17.1% of the total effect of coaching behavior and sustainable development of adolescent athletes.

Table 4 Bootstrap mediated effects test

pathway relationship	point estimate	Derivative value of coefficients		Bootstrapping inspect			
				bias-corrected 95%		Percentile 95%	
		SE	Z	Lower	Upper	Lower	Upper
			Indirect Effect				
CB®CPM®AA	0.183	0.108	0.002	0.022	0.387	0.027	0.391
			Direct Effect				
CB®CPM	0.831	0.109	0.002	0.623	1.028	0.636	1.044
			Total Effect				
CB®AA	1.014	0.012	0.000	0.99	1.04	0.982	1.042
Percentage P1	0.171	0.107	6.145	0.023	0.089	0.028	0.384

5.Discussion

It was found that regulating coaching behaviors and developing self-determination ability in adolescent athletes can achieve the enhancement of sustainable development in youth athletes.

H1: The coaching behaviors has signifucantly impacted self-determination ability in youth athletes. This study focuses on how coaches can develop athletes' self-determination skills through specific behaviors to achieve sustainable development in adolescent athletes. The coach as a leader needs to provide direction and vision to inspire motivation and a sense of purpose in athletes. A coach with leadership skills can help keep a team together, encourage innovation, and create a positive work culture that fosters athlete development [72]. The expertise and skills of the coach are crucial to the technical and tactical development of the athlete. High-level coaches can provide effective instruction and technical training to help athletes continually improve their game [73]. Coaches need to remain calm and emotionally stable in high-pressure situations. Their emotions and attitudes can affect athletes' confidence and performance. An emotionally stable coach can help youth athletes relieve stress and help athletes cope with challenges [74]. Coaches should show care and attention to the individual needs and development of each athlete. Individualised attention can help athletes feel valued and motivated to improve [75]. The communication skills of the coach are crucial. Clear, effective communication can help athletes understand goals, feedback, and expectations so that they can better cope with challenges, improve skills, and achieve personal growth [76]. Therefore, the coaching behaviour dimension is closely related to self-determination ability in youth athletes. Through positive coaching behaviours, coaches can better guide and support the development of athletes to achieve sustainable improvement in their abilities and better performance.

H2: Coaching behaviours have a positive impact on improving the sustainable development of young athletes. Coaches are not only the transmitters of tactics and

techniques, but should also have the ability to motivate, encourage, guide and support young athletes. Positive coaching behaviours can motivate adolescent athletes to better develop their potential [77]. Through positive coaching behaviours, the performance and development of youth athletes can be improved, thus helping them to achieve their individual and team goals. Therefore, positive coaching behaviours can better serve the growth and success of adolescent athletes [78].

H3: The self-determination ability of youth athletes impacted the sustainable development ability of youth athletes. The development of self-determination ability in youth athletes can help build self-confidence and motivation, create a positive psychological state to cope with the difficulties they face and help youth athletes establish clear developmental goals, which will lay the foundation for their lasting success in the field of sports [79]. This relationship emphasises the positive role that the formation of self-determination ability plays in the future development of adolescent athletes, and indirectly reflects the importance of coaching behaviours that help youth athletes develop self-determination ability. The formation and improvement of self-determination ability not only contributes to athletes' self-growth, but also promotes teamwork [80]. Therefore, the positive correlation between self-determination ability of adolescent athletes and the ability of adolescent athletes to develop sustainably. The key role that coaches play in shaping the future success of adolescent athletes.

H4: The mediating role of self-determination ability of youth athletes between coaching behaviors and youth athletes' ability to develop sustainably is also confirmed. The mediating role of self-determination ability between coaching behaviors and youth athletes' ability to develop sustainably underscores the importance of scientific coaching behaviors. The construction of a pathway for the development of self-determination ability in youth athletes is essentially an exploration of coaching behaviors in order to establish a comprehensive coach training and management programme to improve the coach's instructional management and the performance level of the whole athlete team. The strength of self-determination ability of youth athletes can be used as a criterion to guide and optimize the behaviour of coaches and ultimately improve the sustainable development of youth athletes [81]. Therefore, coaches need to focus on the training and development of management skills to better support the overall performance of youth athletes.

6 Conclusions

In this study, the relationship between self-determination ability of young athletes, coaching behaviour and sustainable development ability of youth athletes was verified by constructing a structural equation model using youth football players in Liaoning Province as an example. Based on the test results, the following conclusions were obtained: leadership, teaching level, emotional control, attention to athletes and communication all positively and significantly affect coaching behaviour. It can be concluded that school football needs to enhance coach training and development through multifaceted initiatives. Establish a comprehensive coach training programme that includes professional knowledge, teaching skills, leadership development and emotional management. To organize experience sharing and exchange activities for coaches, so that outstanding coaches can share their successful experience and enhance the overall coaching level. Provide coaches

with psychological counselling and emotion management training to help them better handle stress and emotions and maintain a stable and positive mindset. Encourage coaches to pay attention to the individual needs of each athlete and formulate personalised training plans and coaching programmes to help them realise their potential. Establish a sound feedback and improvement mechanism to assess and guide coaches' performance in a timely manner and help them to continuously improve their teaching standards. Through training and practice, the leadership of coaches is cultivated so that they can better motivate and guide youth athletes and establish a positive team atmosphere [82].Strengthen the training of coaches' communication skills so that they can establish good communication channels with youth athletes and parents to solve problems and confusions. Schools can combine the self-determination ability of youth athletes with the implementation strategy of coaching behaviors to positively guide athletes' psychological behaviors in training, competitions and life, and to develop youth athletes' thinking creativity by drumming up their motivation to train, so as to improve their athletic abilities. The findings fill a gap in the existing literature that focuses on individual athlete competence in the promotion of team programmes. It provides paths and suggestions for athletes' individual competence deficiencies affecting the sustainable development of team performance and is a practical application of self-determination theory.

6.1 Theoretical implications of the study

This study modelled the theoretical framework through a research gap to help understand the current situation of adolescent athletes and to identify the mediating mechanisms for improving the sustainable development of adolescent athletes, i.e., the development of self-determination ability in youth athletes. In addition, this study provides practical guidance for coaches and managers, encouraging them to focus not only on their own behaviors, but also on management to maximize the development of young athletes' competencies.This study also contributes to expanding the theoretical framework of causation and mediation in the social sciences by providing researchers with a practical case study that can be applied to different domains. In conclusion, the theoretical significance of this study is to deepen the understanding of the relationship between coaching behaviours, youth athletes' self-determination ability and youth athletes' sustainability in the field of sport, and to provide a sustainable perspective for actual practice and future research.

6.2 Managerial implications of the study

In the practice of developing self-determination in youth athletes, coaching behaviors can be optimized by training and developing the coach's competencies to improve the athlete's sustainable development. Coaches play an important role. They are not only responsible for tactical and technical instruction, but also for regulating emotions, paying attention to athletes, and communicating with young athletes promptly. Scientific behavioral standards of coaches can stimulate athletes' potential and improve their competitive level. In addition, coaching performance can be improved by implementing assessment and feedback mechanisms. Ultimately, coaches can pursue leadership development and learn how to better manage their teams and improve their athletes, and these practices can help to increase the performance level of the whole team, contributing to success and competition

in sports [83].

6.3 Limitations and future research

The main limitation of this study lies in the temporal nature of the data acquisition, making it challenging to ascertain the duration of an individual's adherence to the training regimen. Data were collected from coaches who measured a selected sample, namely students; however, it should be noted that in many contexts there are coaches at different levels corresponding to each educational level. Consequently, the study of management systems is subject to certain limitations.

References

1.Wylleman, P., Alfermann, D., & Lavallee, D. (2004). Career transitions in sport: European perspectives. Psychology of sport and exercise, 5(1), 7-20.

2. Stambulova, N. B., & Wylleman, P. (2019). Psychology of athletes' dual careers: A state-of-the-art critical review of the European discourse. Psychology of Sport and Exercise, 42, 74-88.

3. Stambulova, N. B., Ryba, T. V., & Henriksen, K. (2021). Career development and transitions of athletes: The international society of sport psychology position stand revisited. International Journal of Sport and Exercise Psychology, 19(4), 524-550.

4. Choi, J., & Kim, H. D. (2021). Sustainable careers of athletes: themes and concepts regarding transition theories involving athletes. Sustainability, 13(9), 4824.

5. Huang, H., Zhang, Q., & Jin, M. (2021). Coaches' leadership behavior, motivational atmosphere and athletes' motivational internalization: the perspective of self-determination theory. Revista de Psicología del Deporte (Journal of Sport Psychology), 30(4), 151-158.

6. Cai, D. W., & Xu, L. (2020). The effect of coach's leadership behaviors on athlete's motivation internalization: The moderating role of core self-evaluation. Journal of Nanjing Sport Institute (Social Science), 34(1), 1-9.

7. Shannon, S., Brick, N., Prentice, G., & Breslin, G. (2023). The Influence of Athletes' Psychological Needs on Motivation, Burnout, and Well-Being: A Test of Self-Determination Theory. Journal of Clinical Sport Psychology, 1(aop), 1-20.

8. Li, C., Martindale, R., & Sun, Y. (2019). Relationships between talent development environments and mental toughness: The role of basic psychological need satisfaction. Journal of sports sciences, 37(18), 2057-2065.

9. Varghese, M., Ruparell, S., & LaBella, C. (2022). Youth athlete development models: a narrative review. Sports Health, 14(1), 20-29.

10. Wekesser, M. M., Harris, B. S., Langdon, J., & Wilson Jr, C. H. (2021). Coaches' impact on youth athletes' intentions to continue sport participation: The mediational influence of the coach–athlete relationship. International Journal of Sports Science & Coaching, 16(3), 490-499.

11. Cronin, L., Ellison, P., Allen, J., Huntley, E., Johnson, L., Kosteli, M. C., ... & Marchant, D. (2022). A self-determination theory based investigation of life skills development in youth sport. Journal of Sports Sciences, 40(8), 886-898.

12. Petrovska, T., Sova, V., Khmelnitska, I., Borysova, O., Imas, Y., Malinovskyi, A., & Tereschenko, L. (2020). Research of football coach's professionally important qualities in football player's perception. Journal of Physical Education and Sport, 20, 435-440.

13. Chelladurai P., Saleh SD. Preferred leadership in sport. Canadian Journal of Applied Sport

Science.1978(3):85-97.

14. Ma, H.Y.; Wang, E.P. The relationship between group cohesion and athletic performance: reasons for the inconsistency of research results. Journal of Beijing Sport University. 2002,25(6):834-836.

15. Lopez de Subijana, C., Martin, L. J., Ramos, J., & Cote, J. (2021). How coach leadership is related to the coach-athlete relationship in elite sport. International Journal of Sports Science & Coaching, 16(6), 1239-1246.

16. Lopez de Subijana, C., Martin, L. J., McGuire, C. S., & Côté, J. (2023). Moderators of the coach leadership and athlete motivation relationship. European Journal of Sport Science, 23(3), 404-414.

17. Garcia Orellana, D. (2023). Emotional Intelligence and Transformational Leadership in Sport Coaches: The Mediating Role of Coaching Efficacy and the Relationship to Coach-Athlete Relationships.

18. Lopez de Subijana, C., Martin, L. J., McGuire, C. S., & Côté, J. (2023). Moderators of the coach leadership and athlete motivation relationship. European Journal of Sport Science, 23(3), 404-414.

19. Pinder, R. A., & Renshaw, I. (2019). What can coaches and physical education teachers learn from a constraints-led approach in para-sport?. Physical Education and Sport Pedagogy, 24(2), 190-205.

20. Camiré, M., Rathwell, S., Turgeon³, S., & Kendellen, K. (2019). Coach–athlete relationships, basic psychological needs satisfaction and thwarting, and the teaching of life skills in Canadian high school sport. International journal of sports science & coaching, 14(5), 591-606.

21.Brenner, C. A. (2022). Self-regulated learning, self-determination theory and teacher candidates' development of competency-based teaching practices. Smart Learning Environments, 9(1), 1-14.

22. Watson, M., & Kleinert, J. (2019). The relationship between coaches' emotional intelligence and basic need satisfaction in athletes. Sports Coaching Review, 8(3), 224-242.

23. Braun, C., & Tamminen, K. A. (2019). Coaches' interpersonal emotion regulation and the coach-athlete relationship. Movement & Sport Sciences-Science & Motricité, (3), 37-51.

24. Roth, G., Vansteenkiste, M., & Ryan, R. M. (2019). Integrative emotion regulation: Process and development from a self-determination theory perspective. Development and psychopathology, 31(3), 945-956.

25. Van Kleef, G. A., Cheshin, A., Koning, L. F., & Wolf, S. A. (2019). Emotional games: How coaches' emotional expressions shape players' emotions, inferences, and team performance. Psychology of Sport and Exercise, 41, 1-11.

26. Moll, T., & Davies, G. L. (2021). The effects of coaches' emotional expressions on players' performance: Experimental evidence in a football context. Psychology of Sport and Exercise, 54, 101913.

27. Benish, D., Langdon, J., & Culp, B. (2021). Examination of Novice Coaches' Previous Experience as Athletes: Examples of Autonomy Support and Controlling Behaviors as Influences on Future Coaching Practice. International Sport Coaching Journal, 8(1), 48-61.

28. Meredith, M, Wekesser., Meredith, M, Wekesser., Brandonn, S., Harris., Brandonn, S., Harris., Jody, L., Langdon., Jody, L., Langdon., Charles, H., Wilson., Charles, H., Wilson. (2021). Coaches' Impact on Youth Athletes' Intentions to Continue Sport Participation: The Mediational Influence of

the Coach-Athlete Relationship. International Journal of Sports Science & Coaching, 16(3). https://doi.org/10.1177/1747954121991817

29. Laishuang, S., Zhaoyin, J., & Benxu, Z. (2021). Effects of physical fitness, player ability and coaching feedback on the athletes'satisfaction and athletic performance in China: moderating role of teamwork competencies. Revista de Psicología del Deporte (Journal of Sport Psychology), 30(3), 141-155.

30. Rey, R. T., Cranmer, G. A., Browning, B., & Sanderson, J. (2022). Sport Knowledge: The Effects of Division I Coach Communication on Student-Athlete Learning Indicators. International Journal of Sport Communication, 15(1), 33-42. https://doi.org/10.1123/ijsc.2021-0062

31. Choi, H., Jeong, Y., & Kim, S. K. (2020). The Relationship between coaching behavior and athlete burnout: mediating effects of communication and the coach–athlete relationship. International journal of environmental research and public health, 17(22), 8618.

32. Davis, L., Jowett, S., & Tafvelin, S. (2019). Communication strategies: The fuel for quality coach-athlete relationships and athlete satisfaction. Frontiers in psychology, 10, 2156.

33.Bergeron MF, Mountjoy M, Armstrong N, et al International Olympic Committee consensus statement on youth athletic development British Journal of Sports Medicine 2015;49:843-851.

34.Vella, S., & Liddle, S. (2020). Coaching and athlete mental health. Coaching for Human Development and Performance in Sports, 289-304.

35.Moen, F., Sæther, S. A., & Bjørkøy, J. A. (2022). Coaching Elite Junior Athletes. In Routledge Handbook of Coaching Children in Sport. Routledge, 215-224.

36.Roxas, A. S., & Ridinger, L. L. (2016). Relationships of coaching behaviors to student-athlete well-being. Higher education politics & economics, 2(1), 95-109.

37.Moen, F., Myhre, K., Sandbakk, Ø., & Moen, F. (2016). Psychological determinants of burnout, illness and injury among elite junior athletes. The Sport Journal, 19, 1-14.

38.McMullen, B., Henderson, H. L., Ziegenfuss, D. H., & Newton, M. (2020). Coaching behaviors as sources of relation-inferred self-efficacy (RISE) in American male high school athletes. International Sport Coaching Journal, 7(1), 52-60.

39.Jowett, S., & Arthur, C. (2019). Effective coaching: The links between coach leadership and coach-athlete relationship—From theory to research to practice. In APA handbook of sport and exercise psychology, Vol. 1 (pp. 419-449). American Psychological Association.

40.MacDonald, D. J., Camiré, M., Erickson, K., & Santos, F. (2020). Positive youth development related athlete experiences and coach behaviors following a targeted coach education course. International Journal of Sports Science & Coaching, 15(5-6), 621-630.

41.Newman, T. J., Santos, F., Cardoso, A., & Pereira, P. (2020). The experiential nature of coach education within a positive youth development perspective: Implications for practice and research. International Sport Coaching Journal, 7(3), 398-406.

42.Ian Stonebridge & Christopher Cushion (2018) An exploration of the relationship between educational background and the coaching behaviours and practice activities of professional youth soccer coaches, Physical Education and Sport Pedagogy, 23:6, 636-656

43.Lawrason, S., Turnnidge, J., & Côté, J. (2020). Coaching behaviors and team constructs in youth sport: A transformational leadership perspective. In The power of groups in youth sport (pp. 49-71). Academic Press.

44.Bloom, G.A., Dohme, LC., Falcão, W.R. (2020). Coaching Youth Athletes. In: Resende, R., Gomes, A.R. (eds) Coaching for Human Development and Performance in Sports. Springer, Cham.

https://doi.org/10.1007/978-3-030-63912-9_8

45.Deci, E.L., Ryan, R.M. (1985). Conceptualizations of Intrinsic Motivation and Self-Determination. In: Intrinsic Motivation and Self-Determination in Human Behavior. Perspectives in Social Psychology. Springer, Boston, MA. https://doi.org/10.1007/978-1-4899-2271-7_2

46.Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. American Psychologist, 55(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

47.Edward L. Deci & Richard M. Ryan (2000) The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior, Psychological Inquiry, 11:4, 227-268

48.William, D., Russell., Regan, Dodd., Margaret, Lee. (2017). Youth Athletes' Sport Motivation and Physical Activity Enjoyment across Specialization Status. Journal of Contemporary Athletics, 11:2.

49.Fayet, B., & Tran, H. (2016). Sustainable development and intrinsic and extrinsic employee motivation.

50.Jõesaar, H., Hein, V., & Hagger, M. S. (2011). Peer influence on young athletes' need satisfaction, intrinsic motivation and persistence in sport: A 12-month prospective study. Psychology of Sport and Exercise, 12(5), 500-508.

51.Almagro, B. J., Sáenz-López, P., Fierro-Suero, S., & Conde, C. (2020). Perceived performance, intrinsic motivation and adherence in athletes. International Journal of Environmental Research and Public Health, 17(24), 9441.

52.MacIntosh, E. W., Parent, M. M., & Culver, D. (2022). Understanding young athletes' learning at the Youth Olympic Games: A sport development perspective. Journal of Global Sport Management, 7(1), 1-20.

53.McCardle, L., Young, B. W., & Baker, J. (2019). Self-regulated learning and expertise development in sport: Current status, challenges, and future opportunities. International Review of Sport and Exercise Psychology, 12(1), 112-138.

54.Reverberi, E., Gozzoli, C., D'Angelo, C., Lanz, M., & Sorgente, A. (2021). The self-regulation of learning–self-report scale for sport practice: validation of an Italian version for football. Frontiers in psychology, 12, 604852.

55.Steven, J, Howard., Stewart, A., Vella., Dylan, P., Cliff. (2018). Children's sports participation and self-regulation: Bi-directional longitudinal associations. Early Childhood Research Quarterly, 42, 140-147.

56.McGlynn, J., Boneau, R. D., & Richardson, B. K. (2020). "It might also be good for your brain": Cognitive and social benefits that motivate parents to permit youth tackle football. Journal of sport and social issues, 44(3), 261-282.

57.Yildirim, S., Yildiz, A., Türkeri Bozkurt, H., Bilgin, E., Yüksel, Y., & Koruç, Z. (2023). The associations of transformational leadership and team cohesion on the psychological health of young football players through basic psychological needs. Science and Medicine in Football, 1-10.

58.Wekesser, M. M., Harris, B. S., Langdon, J., & Wilson Jr, C. H. (2021). Coaches' impact on youth athletes' intentions to continue sport participation: The mediational influence of the coach–athlete relationship. International Journal of Sports Science & Coaching, 16(3), 490-499.

59.Clermont, C., Paquette, L., Lalande, D., & Dion, J. (2022). Self-determination, restrictive eating, and psychological needs: Challenges for young athletes. Brain and Behavior, 12(11), e2761.

60.Goffena, J. D., & Horn, T. S. (2021). The relationship between coach behavior and athlete self-

regulated learning. International Journal of Sports Science & Coaching, 16(1), 3-15.

61.Raglin, J. S., Beebe, K. E., & Micklewright, D. (2018). Psychological and behavioral determinants of sport participation and performance in the young athlete. In Elite Youth Cycling. Routledge. 177-206.

62.Langdon, J., Harris, B. S., Burdette, G. P., & Rothberger, S. (2015). Development and implementation of an autonomy supportive training program among youth sport coaches. International Sport Coaching Journal, 2(2), 169-177.

63.Babi, A. (2000). Social Research Methods. Bei Jing: Hua Xia Publishing House.

64.Wen L. Q., Zhou M. J., Lu Q. (2017). A study of the effect of creative leadership on subordinates' creativity: scale development and validation. Management Review, 29(2), 130-142.

65.Zhang Y., Yang Z.Y. Teaching for Quality: Implications of the FFT Teaching Evaluation Framework. Journal of South China normal University (Social Science Edition), 2022, (2): 119-131.

66.Quinn, R. W. (2013). Could we huddle on this project? participant learning in newsroom conversations. Journal of Management, Vol 42(2), 386-418.

67.Ward, A. K., Ravlin, E. C., Klaas, B. S., Ployhart, R. E., & Buchan, N. R. (2016). When do high-context communicators speak up? exploring contextual communication orientation and employee voice. Journal of Applied Psychology, Vol 101(10), Oct 2016, 1498-1511.

68.Lin, C.-P., Tsai, Y. H., & Chiu, C.-K.(2009). Modeling customer loyalty from an integrative perspective of self-determination theory and expectation-confirmation theory. Journal of Business and Psychology, 24, 315–326.

69.Wylleman, P., Alfermann, D., & Lavallee, D. (2004). Career transitions in sport. Psychology of Sport and Exercise, 5(1), 3-5.

70.Koufteros, X., Babbar, S., & Kaighobadi, M. (2009). A paradigmfor examining second-order factor models employingstructural equation modeling. International Journal ofProduction Economics, 120(2), 633–652.

71.Marsh, H. W., Hocevar, D. Application of Confirmatory Factor Analysisto the Study of Self Concept: First and Higher-Order Factor Modelsand Their Invariance Across Groups ． Psychological Bulletin，1985，97(3) : 562-582 ．

72.Malloy, E., Yukhymenko-Lescroart, M. A., & Kavussanu, M. (2023). Investigating the relationship between authentic leadership and athletes' commitment, positive affect, and perceived teammate prosocial behaviour via trust and team culture. International Journal of Sports Science & Coaching, 18(4), 1082-1090.

73.Werner, I., & Federolf, P. (2023). Focus of Attention in Coach Instructions for Technique Training in Sports: A Scrutinized Review of Review Studies. Journal of Functional Morphology and Kinesiology, 8(1), 7.

74.Garcia Orellana, D. (2023). Emotional Intelligence and Transformational Leadership in Sport Coaches: The Mediating Role of Coaching Efficacy and the Relationship to Coach-Athlete Relationships.

75.Tahki, K., & Ali, N. (2022). Competency Upgrading for Coaches of Depok City: Internalization of Basic Characters in Sports. Jurnal Pemberdayaan Masyarakat Madani (JPMM), 6(2), 297-314.

76.Jowett, S., Do Nascimento-Júnior, J. R. A., Zhao, C., & Gosai, J. (2023). Creating the conditions for psychological safety and its impact on quality coach-athlete relationships. Psychology of Sport and Exercise, 65, 102363.

77.Smith, K., Burns, C., O'Neill, C., Duggan, J. D., Winkelman, N., Wilkie, M., & Coughlan, E. K. (2023). How to coach: A review of theoretical approaches for the development of a novel coach education framework. International Journal of Sports Science & Coaching, 18(2), 594-608.

78.Lopez de Subijana, C., Martin, L. J., McGuire, C. S., & Côté, J. (2023). Moderators of the coach leadership and athlete motivation relationship. European Journal of Sport Science, 23(3), 404-414.

79.Nichol, A. J., Hall, E. T., Vickery, W., & Hayes, P. R. (2019). Examining the relationships between coaching practice and athlete "outcomes": A systematic review and critical realist critique. International Sport Coaching Journal, 6(1), 13-29.

80.Bowles, R., & O'Dwyer, A. (2020). Athlete-centred coaching: Perspectives from the sideline. Sports Coaching Review, 9(3), 231-252.

81. Gul, R., Muhammad, N., & Ullah, I. (2022). Effects of Socio-economics Status on Athletes' Motivation mediated by Coach Behaviour: A Case of University's' Students. Journal of Social Sciences Review, 2(3), 66-75.

82. Henderson, S., Bloom, G. A., & Alexander, D. (2022). Desired coaching behaviours of elite divers during competition. International Journal of Sport and Exercise Psychology, 20(6), 1777-1794.

83. Henderson, S., Bloom, G. A., & Alexander, D. (2022). Desired coaching behaviours of elite divers during competition. International Journal of Sport and Exercise Psychology, 20(6), 1777-1794.