

Enhancing athletes' sport commitment and continuance through the lens of self-determination theory: The roles of perfectionistic striving and basic psychological needs

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Perfectionism is a multidimensional personality trait encompassing both positive and negative aspects. While previous studies have predominantly focused on its negative aspects, the potential benefits of perfectionistic strivings in sport remain underexplored in sport psychology. Therefore, this study aimed to investigate the effects of perfectionist strivings on sport commitment and intention to continue sport among athletes. In addition, this study examined the mediating role of basic psychological need satisfaction in the research model based on self-determination theory. A total of 273 athletes participated in this study, completing measures of perfectionistic strivings, basic psychological need, sport commitment, and sport continuance intention. Results underscored the positive influence of perfectionistic strivings on athletes' intention to continue sport. Also, this relationship was further elucidated by the mediating mechanisms of basic psychological need satisfaction and sport commitment. These results highlight the importance of fulfilling athletes' basic psychological needs and strengthening their commitment to sustaining long-term participation in sport. By shifting the focus toward the adaptive aspects of perfectionism, this study offers novel insights into sport psychology and provides practical implications for athletes and coaches seeking to optimize performance.

KEY WORDS: Self-determination theory, basic psychological needs, perfectionism, sport commitment, exercise, athletes.

1. Introduction

Achieving perfection in every aspect of preparation and performance is the ultimate goal for athletes, crucial for success in sport (Burns, 1980; Stoeber & Otto, 2020). Previous research indicates that elite-level athletes exhibit perfectionistic qualities in their endeavors (Jowett et al., 2016). Pos-

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itive perfectionism, characterized by an unwavering commitment to success and excellence, is considered essential for success in sport (Sim et al., 2017).

According to the dual-process model of perfectionism (Slade & Owens, 1998; Wang et al., 2017), which draws on Skinner's reinforcement theory (1958), perfectionism is classified into positive and negative dimensions. Previous research predominantly focused on the negative facets of perfectionism (Burns, 1980; Pacht, 1984; Sorotzkin, 1985). For example, researchers examined the correlations between perfectionism and stress (Hewitt & Dyck, 1986; Crocker et al., 2014), burnout (Appleton et al., 2009; Garinger et al., 2018), and anxiety (Hamidi et al., 2010; Karababa 2020). However, an emerging consensus posits that perfectionism is not inherently detrimental but may instead yield positive implications (Stoeber & Otto, 2006). Consequently, there is a recognition that perfectionism exerts positive effects, characterized by a tendency for approach behaviors, continual pursuit of success and excellence, experience of satisfaction, joy, and happiness upon achieving goals as well as maintenance of relative resilience in the face of adversity (Stoeber & Otto, 2006). In addition, Stoeber and Otto (2020) underscored the importance of further exploration into the positive dimension of perfectionism, particularly its association with approach-driven behaviors. In summary, while traditional perspectives have frequently depicted perfectionism in a negative context, recent research illuminates its positive facets, underscoring the necessity for a nuanced comprehension of this complex phenomenon in sport psychology (Stoeber & Otto, 2020).

In the pursuit of athletic excellence, alongside perfectionism, various internal and external factors play pivotal roles in influencing athletes' optimal performance (Hall et al., 2012). Deci and Ryan (2000) emphasize the formalization of desires for autonomy, competence, and relatedness as basic psychological needs, asserting that the support and satisfaction of these needs explain various phenomena based on cultural and personality differences. Moreover, the satisfaction of basic psychological needs serves as a key predictor for experiencing psychological and physical health, growth, intrinsic motivation, well-being, optimal performance, and self-realization (Deci & Ryan, 2017). In addition, sport commitment emerges as another critical factor shaping athletes' performance and sustained sport participation (Kim, 2020). Sport commitment is a valuable emotional state and strategy for athletes in sustaining their sport life, as it centers on the continual process of training and engagement in activities (Sin & Park, 2023). Sport commitment requires athletes to take initiative and dedicate themselves to achievable goals (Shin & Park, 2023). Furthermore, previous research suggests that athletes' basic psychological needs in sport are satisfied, intrinsic motivation strengthens,

leading to stronger sport involvement and behavioral continuation (Li et al., 2013; Partrick et al., 1993). Therefore, fostering commitment is essential to sustain sport continuance (Kim, 2020).

While previous studies have delved into various aspects of perfectionism and its implications for athletes (Hill & Curran, 2015) there remains a notable gap in the literature regarding the positive aspect of perfectionism and its relationships with psychological and behavioral responses. In other words, despite recognizing the importance of nurturing commitment and addressing athletes' psychological needs, sport psychologists have yet to fully explore the specific role of perfectionistic strivings in shaping athletes' experiences and behaviors within the realms of sport participation. Therefore, this study aims to address this gap by investigating the influence of perfectionistic strivings on intention to continue exercising among athletes. Also, this study examined how the satisfaction of basic psychological needs and sport commitment mediate this relationship based on self-determination theory (Deci & Ryan, 1985; Deci & Ryan, 2000) as a conceptual framework. The findings of this study deepen our understanding of athletes' perfectionism by providing insights into the intricate dynamics and implications of perfectionistic traits. Furthermore, this study suggests practical implications for athletes and coaches to facilitate the development of more effective performance optimization strategies in sport settings.

1.1 SELF-DETERMINATION THEORY

Self-Determination Theory (SDT) is a broad empirically based meta-theory widely employed to understand motivated behavior in the sport and exercise domains (Ryan & Deci, 2000; Wilson et al., 2008). Over the past four decades, self-determination theory (SDT) has continuously evolved, elucidating the relationships between human personality development, self-regulation, basic psychological needs, life goals and desires, the social environment, and human motivation, emotion, behavior, and well-being (Deci & Ryan, 2008). It currently stands as one of the most influential theories explaining human motivation, applied across various domains including sport, education, work, and health (Deci & Ryan, 1985; Deci & Ryan, 2000). According to SDT (Deci & Ryan, 2000), a crucial aspect regarding the effectiveness of goal pursuit and attainment is the extent to which individuals can satisfy their fundamental psychological needs when pursuing and achieving valued outcomes.

Deci and Ryan (1985) defined self-determination as the ability of individuals to make choices for themselves, emphasizing that such behavior is not driven

by reinforced contingent behavior or external pressures. When individuals can make decisions for themselves, their actions and expectations align. A considerable number of studies have paid attention to the relationship between perfectionism and self-determination types of motivation, most of them conducted in the sport domain (Ryan & Deci, 2000). Stoeber et al (2018) performed a review of the literature examining the relationship between autonomous and controlled motivation, and the six regulatory styles (Intrinsic, Integrated, Identified, Introjected, External, and Amotivation). In this review, perfectionistic striving is more closely linked to regulatory styles characterized by higher degrees of self-determination (i.e., intrinsic, integrated, and identified regulation). According to SDT (Deci & Ryan, 1985; Deci & Ryan, 2000), optimal functioning occurs when behavior aligns with one's interests, and as basic psychological needs are satisfied, behavior becomes intrinsically regulated, strengthening self-determined motivation, ultimately predicting enhanced engagement. Moreover, it has been reported that the perception of basic psychological needs by individuals brings about changes in motivation, and the degree of this motivation varies, leading to differences in participation behavior, persistence, and training outcomes (Kim, 2007). And, SDT explains that athletes who develop self-determined motivation obtain satisfactory levels in variables such as enjoyment, involvement and commitment to continue the activity, whereas athletes who develop less self-determined motivation may experience feelings of boredom, burnout or they may drop out (Stebbing et al., 2012).

1.2 PERFECTIONISM

Perfectionism is characterized by strong motives to achieve perfection, excessive self-evaluation regarding one's actions, and heightened sensitivity to mistakes (Flett & Hewitt, 2006). Burns (1980) proposed that perfection, considered as the ideal state individuals ultimately strive for in modern society, is also regarded as something individuals must relentlessly pursue for success. In essence, the pursuit of perfection can be understood as the process of striving to successfully achieve the outcomes of one's self-performed tasks (Hamachek, 1978). The early researchers of perfectionism (Burns, 1980; Pacht, 1984; Sorotzkin, 1985) focused on the negative aspects of perfectionism. However, over time, perfectionism has been recognized as having multidimensional and multifaceted characteristics. While some dimensions and facets are considered negative, detrimental, and maladaptive, others are reported to have positive, adaptive, and benign features when viewed from a different perspective (Chang, 2003; Enns & Cox, 2002).

Normal or adaptive perfectionists have shown a high correlation with endeavors aimed at achieving self-directed excellence and maintaining elevated personal standards, which are inherent characteristics of perfectionism (Hong et al., 2011). These individuals acknowledge their achievements or efforts, even when falling slightly short of their ideal standards and show the ability to withdraw from situations where the pursuit of perfection becomes overwhelming (Hong et al., 2011). In other words, they exhibit a positive acceptance of their perfectionistic tendencies and represent individuals who, in the process of achieving through their efforts, authentically experience joy. Stoeber and Otto (2006) defined perfectionism as perfectionistic strivings, characterized by high personal standards and self-directed traits. According to previous research on student athletes, perfectionistic striving is shown to be associated with positive characteristics, processes, and outcomes (Stoeber & Eismann, 2007; Stoeber et al., 2007; Stoeber & Rambow, 2007). That is, approaching perfectionistic striving from a positive and adaptive perspective reveals its close relationship with pursuing self-directed excellence and establishing elevated personal standards (Stoeber, 2011).

1.3 BASIC PSYCHOLOGICAL NEEDS

The basic psychological needs (Ryan & Deci, 2017) refers to individuals' fundamental needs that must fulfill to experience proper growth, development, adaptation, and psychological well-being. The concept of basic psychological needs originates from the basic psychological need theory (BPNT, Ryan & Deci, 2017), which is one of the sub-theories within the broader framework of SDT. People whose basic psychological needs are satisfied tend to pursue intrinsic motivation, establish connections with others, and experience subjective well-being (Reeve, 2014). Additionally, previous research noted that tendency toward higher levels of interest and passion, increased happiness and stability, and elevated engagement and persistence are correlated with satisfaction of basic psychological needs (Gronick & Apostoleris, 2002, Paradis et al., 2014).

The basic psychological needs are comprised of three sub-factors: autonomy, competence, and relatedness. Autonomy is the central desire among the three basic psychological needs, involving a sense that one's behavior originates from oneself, accompanied by a feeling of volition and enthusiasm for that behavior (Ryan & Deci, 2017; Vansteenkiste et al., 2020). When autonomy needs are fulfilled, individuals are likely to engage in tasks with enjoyment and interest, sustaining their involvement in personally chosen

activities. Competence refers to an individual's perception of effectiveness in interacting with their environment, offering opportunities to demonstrate and reveal their abilities (Deci & Ryan, 2002; Vansteenkiste et al., 2020). It encompasses not only to mastery of skills and abilities but also the confidence and self-efficacy individuals feel when striving to accomplish tasks to the best of their abilities, regardless of their actual skill level (Ryan & Deci, 2002). In the context of sport, competence plays a crucial role in individuals' perception of internal evaluation, significantly influencing their choice and sustained participation in physical activities (Kang et al., 2020). Relatedness refers to an emotional connection individuals establish with others during their actions, marked by a sense of belonging in social environments or feelings related to significant interpersonal relationships (Deci & Ryan, 2000). In essence, the fulfillment of relatedness not only enhances motivational drive for participation but also exerts a positive influence on intention to sustain engagement (Kang et al., 2020). Moreover, it has been found to lead to positive changes in attitude (Beom, 2017; Jo & Lee, 2016).

According to previous studies examining the relationship between basic psychological need satisfaction and perfectionism, perfectionist efforts are primarily associated with high levels of intrinsic motivation characterized by self-determination (Jowett et al., 2016).

Through approach behaviors and personal standards achievement, perfectionism can increase satisfaction of basic psychological needs (Jowett et al., 2016). Researchers noted that optimal outcomes cannot be expected without the fulfillment of these basic psychological needs, leading to a state of helplessness (Ryan & Deci, 2017). These findings highlight the importance of fulfilling basic psychological needs and its relationship with perfectionism.

1.4 SPORT COMMITMENT

Scanlan et al. (1993) proposed the first model for sport commitment, defining it as a psychological state characterized by a sustained desire and determination for sport participation. Similarly, Csikszentmihalyi (1990) noted that sport commitment involves motivation and determination to continue participating in sport as an attachment to the desire for sport involvement. Sport commitment is closely related to the inner motivation of sport participants, with enduring commitment often linked to a significant level of enjoyment in intrinsic motivation (Raedeke, 2004; Berestetska, 2016). Sport commitment plays a pivotal role in achieving athletes' optimal performance; satisfaction derived from it leads to the continuity of activities (Jang, 2009; Joung et al., 2024).

Sport commitment is composed of two sub-factors: cognitive commitment and behavioral commitment (Scanlan et al., 1993). First, cognitive commitment refers to the degree of interest in information and imaginative engagement concerning one's personal sport activities (Scanlan et al., 1993). It involves the active pursuit of alternatives for exercise and physical activity goals, along with the validation of these alternatives (Bong, 2010).

Furthermore, cognitive commitment serves as an internal motivation, cultivating a psychological state of readiness by focusing more on sport through enjoyment, satisfaction, and other factors in the sport context (Berestetska, 2016). Next, behavioral commitment refers to expectations, preferences, desires, and levels of perception regarding one's own sport activities (Scanlan et al., 2016). It embodies the combination of attitude and intention in athletes, reflecting their willingness to make efforts and engage in sustained activity with the goal of achieving success (Scanlan et al., 2016). It represents a psychological state where sport and athletes become synonymous (Bong, 2010).

Positive perfectionism can be achieved through effort, influencing commitment by accompanying positive effects of success rather than evoking negative emotions (Chang et al., 2004). Additionally, previous research found that satisfaction of basic psychological needs enhances commitment to sport by fostering intrinsic motivation (Pulido et al., 2018). It is noteworthy that higher satisfaction of basic psychological needs is associated with lower fatigue among athletes (Li et al., 2013). That is, addressing athletes' psychological needs is crucial for promoting sport commitment and increasing sport continuance intention.

1.5 SPORT CONTINUANCE INTENTION

Intention to continue sport refers to individuals' dedication and steadfastness in maintaining their sport participation, similar to sustained performance of predicted physical activities associated with sport continuance intention (Weinberg & Gould, 1995). Also, engaging in exercise behavior continuously involves participating in regular exercise (Weinberg & Gould, 1995). For athletes, sport continuance intention encompasses determination to maintain their involvement in sport or training, uphold an athletic lifestyle, and consistently engage in activities repeatedly in order to preserve their physical fitness (Kim, 2016). In addition, factors influencing sport continuance intention include various elements that contribute to performing regular exercise over an extended duration (Choi, 2004; Kim, 2024; Moon & Jang, 2021).

In this study, we define sport continuance intention as athletes' intention to persist in exercising even when facing constraints on their sport participation. Previous studies showed that an increase in perfectionist tendencies among high school track and field athletes is associated with a higher level of sport continuance intention (Jo, 2013), while some factors of perfectionist tendencies in golf participants significantly influence sport continuance intention (Lee, 2015). That is, the desire to pursue perfection can motivate individuals to maintain their involvement in sport (Kim & Park, 2019). In addition, Li et al. (2013) noted that satisfying basic psychological needs related to sport is linked to higher intrinsic motivation, thereby promoting stronger sport continuance intention (Li et al., 2013). Besides, when the basic psychological need for autonomy is fulfilled, it leads to an increase in positive emotions, positively influencing continuation of behavior (Partrick et al., 1993). Athletic dedication involves athletes' focuses on current training and activities, and it is a process where athletes take the initiative and dedicate themselves to achievable goals, which can be invaluable for sustaining their athletic careers (Shin & Park, 2023). Therefore, commitment plays an essential role in maintaining sport continuance intention (Kim, 2020).

1.6 THE PRESENT STUDY

While there has been much emphasis on the negative aspects of perfectionism in sport, there is also a growing body of research highlighting its positive aspects. Based on theoretical and empirical evidence, this study has two main objectives. The first objective is to investigate the nuanced connections between perfectionistic striving in the sport context, basic psychological need satisfaction, sport commitment, and sport continuance intention. Building on this direct impact model, the second objective of the study took on a more exploratory nature, aiming to examine the indirect connection of basic psychological need satisfaction in the relationship between perfectionistic striving and sport commitment, and sport continuance intention. Thus, the following hypotheses were proposed.

H1: Perfectionistic strivings of athletes has a positive impact on satisfaction of basic psychological needs.

H2: Perfectionist strivings of athletes has a positive effect on sport commitment.

H3: Satisfaction of basic psychological needs in athletes has a positive effect on sport commitment.

H4: Perfectionist strivings of athletes has a positive effect on sport continuance intention.

H5: Satisfaction of basic psychological needs in athletes has a positive effect sportcontinuance intention.

H6: Sport commitment of athletes has a positive effect on sport continuance intention.

H7: Satisfaction of basic psychological needs mediates the relationship betweenathletes' perfectionistic striving and sport commitment.

H8: satisfaction of basic psychological needs mediates the relationship betweenathletes' perfectionistic striving and the sport continuance intention.

2. Methods

2.1 SURVEY INSTRUMENT

The survey instrument used for data collection included questions regarding athletes' perfectionistic striving, satisfaction of basic psychological needs, sport commitment, and their sport continuance intention over the next year. To measure perfectionistic strivings, a simplified version of the multidimensional sport perfectionism inventory for athletes (Stoeber et al., 2007) was utilized. This version includes five items specifically related to perfectionistic striving (e.g., "I strive to be as perfect as possible during matches or games").

Satisfaction of basic psychological needs was assessed using a modified and enhanced version of the psychological need satisfaction scale (Kim, 2010). This scale consists of a total of 15 items, comprising five items for autonomy (e.g., "I can exercise freely without being influenced by others"), five items for competence (e.g., "Other people say that I am good at exercising"), and five items for relatedness (e.g., "I get along well with people I exercise with"). To measure sport commitment, items from the expansion of the sport commitment model (ESCM, Jeong, 2004), based on Scanlan's (1993) model, were employed. This scale consists of 13 items across two factors, including eight items for cognitive commitment (e.g., "I am proud of exercising") and five items for behavioral commitment (e.g., "I feel immersed in this exercise"). Sport continuance intention was assessed using six items (e.g., "Do you intend to continue exercising in the future?") developed by Ajzen and Driver (1992).

2.2 DATA COLLECTION

Prior to data collection, ethical approval was obtained from the Institutional Review Board of a university where the authors are affiliated. In this study, data were collected from athletes who registered with the Korea Sport Council and respective sport associations in 2023. Data collection occurred both offline and online from July 26 to September 13, 2023. Specifically, offline surveys were administered face-to-face to athletes, with questionnaires distributed through coaches in various sports (e.g., basketball, baseball, track and field, soccer, taekwondo, golf, field hockey, and tennis) between August 30 and September 13, 2023. In conducting the online survey, this study used an online platform, specifically Naver Forms, to facilitate data collection from athletes affiliated with the Korea Sport Council, sportassociations, and professional sport teams. To ensure widespread participation and reach a diverse

pool of athletes, the survey link was distributed through various channels, such as email, social media platforms, and official communication channels of the Korea Sport.

Council and relevant sport associations. Additionally, the survey link may have been shared directly with athletes by coaches or team managers. Participants were encouraged to access the survey link provided and complete the questionnaire at their convenience within the designated data collection period, which spanned from July 26 to September 5, 2023. A total of 281 responses were collected. This study included 228 male participants (81.5%) and 53 female participants (18.5%), with a mean age of 22.7 years ($SD = 3.96$). Research participants included 89 Taekwondo athletes (29.7%), 48 baseball players (16.0%), 27 soccer players (9.0%), 20 basketball players (6.7%), 17 volleyball players (5.7%), and 16 hockey players (5.3%). Additionally, athletes from various sports, including golf and kendo (11 participants each, 7.6%), as well as tennis, track and field, rugby, badminton, boxing, bowling, and figure skating, also participated in the survey. On average, the participants had been engaged in their respective sports for 9.58 years ($SD = 4.08$). Furthermore, most participants trained more than six times per week ($n = 122$, 42.5%) at a high intensity ($n = 97$, 33.8%).

2.3 DATA ANALYSIS

Before analyzing the data, data screening was conducted to identify missing values and outliers. In this study, no missing values were found, and univariate outliers were identified using Z-scores. Multivariate outliers were excluded using Mahalanobis distance. As a result of data screening, eight responses were removed, leaving a total of 273 surveys to validate the research hypotheses in this study. Frequency analysis was performed to examine the general characteristics of the respondents. To assess reliability, convergent validity, discriminant validity, and overall model fit of the measurement model, confirmatory factor analysis (CFA) was employed. Structural equation modeling (SEM) analysis was then used to verify the research model's hypotheses. In assessing model fit, this study used comparative fit index (CFI) and non-normed fit index (NNFI) were assessed with a criterion of 0.90 or above, and the root mean square error of approximation (RMSEA) with a criterion of 0.08 or below (Hu & Bentler, 1999; Mueller et al., 2018). Additionally, bootstrapping was employed to examine mediating effects in the research model (Bollen & Stine, 1992; Egbert & Plonsky, 2021).

3. Results

3.1 MEASUREMENT MODEL

To validate the reliability and validity of the measurement tools, confirmatory factor analysis and correlation analysis were utilized to assess (1) internal consistency reliability, (2) convergent validity [factor loading and average variance extracted (AVE)], and (3) discriminant validity [Square root of AVE > Correlation]. According to the results of the CFA, all items showed factor loadings of 0.5 or higher, indicating no issues with those items. The overall fit indices were satisfactory ($\chi^2 = 177.445$, $df = 98$, CFI = 0.969, TLI

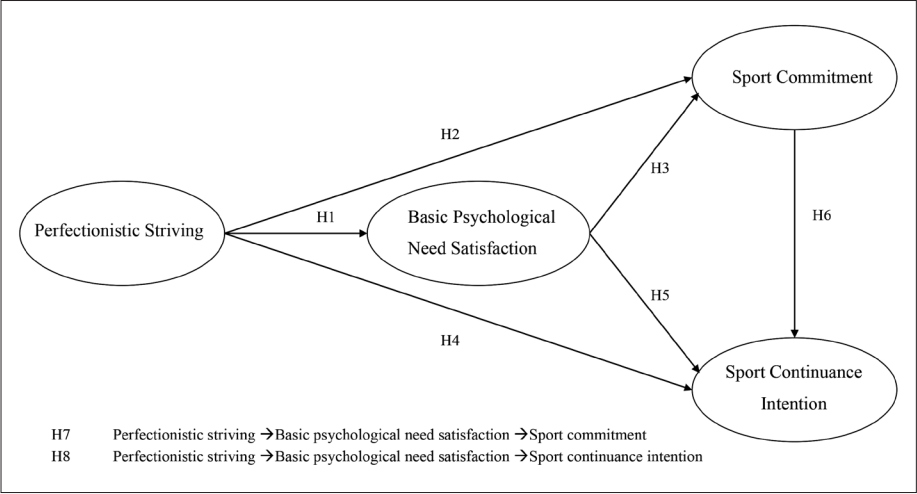


Figure 1. - A hypothesized model.

= 0.962, RMSEA = 0.054). As shown in Table I, Rho coefficients ranged from 0.73 for sport commitment to 0.91 for sport continuance intention, indicating acceptable reliability. Also, all factor loadings were significant ($p < .001$), and the AVE values for constructs with multiple indicators ranged from 0.604 (perfectionistic strivings) to 0.719 (sport commitment), indicating adequate convergent validity. Discriminant validity was confirmed, as the Square root of AVE values, reported in Table II, exceeded the correlations, indicating the establishment of discriminant validity.

3.2 STRUCTURAL MODEL

This study found that data fit the structural model ($\chi^2 = 177.445$, $df = 98$, CFI = .969, TLI = .962, RMSEA = .054), and the results of SEM analysis are as follows (Table III). First, perfectionistic strivings significantly influenced basic psychological need satisfaction (H1: $\beta = .513$, $t = 8.186$, $p < .001$), supporting H1. However, perfectionistic strivings did not significantly affect sport commitment (H2: $\beta = .001$, $t = .009$, $p > .05$) and sport continuance intention (H4: $\beta = .048$, $t = .639$, $p > .05$), rejecting H2 and H4. This study found that basic psychological need satisfaction significantly affected sport commitment (H3: $\beta = .874$, $t = 9.408$, $p < .001$), while basic psychological need satisfaction did not significantly impact sport continuance intention

(H5: $\beta = .028$, $t = .144$, $p > .05$), supporting H3 and rejecting H5. In addition, sport commitment had a positive effect on sport continuance intention (H6: $\beta = .617$, $t = 3.419$, $p < .001$), supporting H6. This study also examined the mediating effects in the research model and found that basic psychological need satisfaction played a mediating role in the relationship between perfectionistic striving and sport commitment and between perfectionistic striving and sport continuance intention, supporting H7 and H8 (Table III.)

4. Discussion

The purpose of this study was to provide foundational insight into enhancing athletes' commitment and continuation in sport, and we empirically examined the relationships among perfectionistic striving, basic psychologi-

TABLE I
Factor loading (λ), Rho, and AVE values for the improved model.

Variable	Item	λ	Rho	AVE
Perfectionistic Striving (PS)	PS1	0.777		
	PS2	0.726		
	PS3	0.834	.80	.604
	PS4	0.78		
	PS5	0.765		
Basic Psychological Need Satisfaction	Autonomy	0.744		
	Competence	0.739	.80	.629
	Relatedness	0.783		
Sport Commitment	Cognitive commitment	0.864		
	Behavioral commitment	0.833	.73	.719
Sport Continuance Intention (SCI)	SCI1	0.86		
	SCI2	0.747		
	SCI3	0.85	.91	.606
	SCI4	0.883		
	SCI5	0.591		
	SCI6	0.697		

*** $p < .001$

TABLE II
Correlation result.

	1	2	3	4	5	6	7
1. Perfectionistic striving	.771 ¹						
2. Autonomy	.450**	.793 ¹					
3. Competence	.414**	.575**	.826 ¹				
4. Relatedness	.427**	.563**	.579**	.840 ¹			
5. Cognitive commitment	.397**	.635**	.530**	.560**	.848 ¹		
6. Behavioral commitment	.486**	.554**	.538**	.534**	.720**	.848 ¹	
7. Sport continuance intention	.355**	.436**	.443**	.427**	.565**	.557**	.778 ¹

Note. **p < .01; ¹ Square root of AVE

cal need satisfaction, sport commitment, and intention to continue in sport among athletes. The results revealed a full mediation model, highlighting the critical role of basic psychological needs in mediating the relationship between perfectionistic striving and athletes' commitment and intention to continue in sport. Detailed discussion of these findings follows below.

First, this study examined the influence of athletes' perfectionistic tendencies, particularly with perfectionistic striving, on their satisfaction of basic psychological needs, revealing a significant and positive relationship. This result aligns with the findings of a study by Jowett and Hill (2016), which

TABLE III
Results of structural equation modeling.

Hypothesis	Direct Path	β	SE	t-value
H1	Perfectionistic striving $\rightarrow$ Basic psychological need satisfaction	0.513	0.057	8.186***
H2	Perfectionistic striving $\rightarrow$ Sport commitment	0.001	0.069	0.009
H3	Basic psychological need satisfaction $\rightarrow$ Sport commitment	0.874	0.117	9.408***
H4	Perfectionistic striving $\rightarrow$ Sport continuance intention	0.048	0.091	0.639
H5	Basic psychological need satisfaction $\rightarrow$ Sport continuance intention	0.028	0.305	0.144
H6	Sport commitment $\rightarrow$ Sport continuance intention	0.617	0.227	3.419***
Indirect Path		β	SE	95% CI
H7	Perfectionistic striving $\rightarrow$ Basic psychological need satisfaction $\rightarrow$ Sport commitment	.517	.075	.388 ~ .678
H8	Perfectionistic striving $\rightarrow$ Basic psychological need satisfaction $\rightarrow$ Sport continuance intention	.420	.091	.276 ~ .653

Note. *p<.05, **p<.01, ***p<.001

explored similar dynamics among athletes. Positive perfectionistic tendencies, such as perfectionistic striving, entail a concerted effort toward attainable and rational standards, leading to enhanced self-esteem and satisfaction (Madigan et al., 2018). This diligent pursuit of internally established criteria appears to play a significant role in fulfilling athletes' basic psychological needs. Additionally, athletes' commitment to self-imposed standards relates closely to their satisfaction of basic psychological needs (Jowett & Hill, 2016). Such positive perfectionistic tendencies, based on approach behavior, empower athletes to derive greater satisfaction from their training goals and exhibit resilience in the face of challenges (Han et al., 2022). Therefore, athletes showing positive perfectionistic tendencies experience heightened satisfaction levels in autonomy, competence, and relatedness throughout their training endeavors. Moreover, they are likely to reveal a constructive mindset and proactive attitude toward personal development, facilitating the satisfaction of their basic psychological needs (Maria et al., 2023).

Next, we also examined how athletes' satisfaction of basic psychological needs affects their commitment to sport and found that satisfaction of basic psychological needs significantly and positively influenced sport commitment. This finding is consistent with the findings of Cheon (2010), who investigated the influence of basic psychological needs on the commitment facets, specifically cognitive commitment and behavioral commitment, among middle school students. Similarly, it aligns with the findings of a study focusing on youth soccer players (Sevil-Serrano et al., 2021), which underscored the direct impact of coaches' autonomy support on athletes' dedication to their sport. It indicates that athletes, when granted autonomy in their training decisions, show high intrinsic motivation, leading to strong expectations and commitment to sport, influencing both factors of commitment.

Moreover, the validation of one's abilities in sport and the opportunities for self-expression among diverse individuals are recognized as factors that enhance confidence and subsequently, commitment to sport (Shim et al., 2016). In particular, as satisfaction of relatedness involves seeking meaningful interpersonal connections, including attachment and emotional intimacy in relationships (Ryan & Deci, 2000; Wang et al., 2019), fulfillment of relational needs within the training environment, whether through interactions with coaches or fellow athletes, is expected to bolster athletes' inclination to engage in sport and make independent decisions in training, thereby enhancing the training atmosphere and promoting athletes' autonomy (Mossman et al., 2022). Additionally, it was found that satisfaction of relational needs in relationships with peers and coaches is likely to enhance athletes' commitment to sport (Pulido et al., 2018).

Third, sport commitment was found to have a significant positive impact on sport continuance intention. This finding supports Jang et al.'s (2011) study, reporting sport commitment significantly influences sport continuance intention in high school athletes. In a similar vein, Jeon and Lee (2016) reported that there was a positive relationship between dedication to sport among adult exerciser and their intention to continue participating in sport. Noh et al. (2015) noted that cognitive and behavioral commitment within dedication to sport significantly affect their intention to continue participating in sport, further reinforcing the significance of sport commitment in shaping athletes' intention. That is, sport commitment emerges as a critical factor in enhancing athletes' intention to continue sport participation. Serving as intrinsic motivation, it not only reduces stress and enhances positive psychological well-being but also sustains engagement with sport over time (Kang et al., 2022). The internal rewards, such as commitment and interest in sport, have positive effects on continuous sport engagement, consistent with previous research findings (Kang et al., 2022).

Sport commitment also acts as a mediator, providing enjoyment and pleasure in the training process, thereby facilitating continuous participation and bolstering overall satisfaction levels (Kim et al., 2016). Higher levels of sport commitment can lead to greater satisfaction, supporting athletes in maintaining their intention to continue participating in sport throughout their athletic careers. It is also evident that maintaining commitment and interest is a critical determinant influencing the intention to continue in sport participation, with the degree of dedication to sport playing a pivotal role. In other words, the importance of elevating the level of commitment to sport as a prerequisite for enhancing the intention to continue sport participation among athletes. Moreover, concerted efforts are warranted to foster a positive synergy between these variables through environmental adjustments and the cultivation of an atmosphere conducive to enhancing sport commitment (Kim & Kwon, 2013).

We also examined the mediating effect in the research model and found that perfectionistic striving had significant indirect effects on sport commitment and sport continuance intention through basic psychological need satisfaction. This finding is consistent with the proposition of the basic psychological need theory (Ryan & Deci, 2000). According to self-determination theory, perfectionistic striving is more closely linked to regulatory styles characterized by higher levels of self-determination (i.e., intrinsic regulation, integrative regulation, and identified regulation) (Stover et al., 2018). The satisfaction of basic psychological needs can reinforce or alter specific behaviors (Gagné & Deci, 2005). That is, when individuals' basic psychological

needs are satisfied, they tend to pursue autonomy, choosing and persisting in activities they find valuable or interesting (Kim, 2006).

Moreover, for regular physical activity participants, fulfilling basic psychological needs is crucial in motivating individuals to initiate and maintain physical activity (Kim et al., 2007). Individuals with satisfied basic psychological needs understand themselves better and experience autonomous motivation through enjoyment in their activities and various positive emotional states (Kim, 2011). Kim (2017) also found that the factors of autonomy, competence, and relatedness positively influence participants' enjoyment and sense of achievement; the activation of intrinsic motivation formed in conjunction with these factors further strengthens participants' intention to continue participating. Wilson and Rodgers (2004) noted that internal motivation, such as autonomous motivation, is crucial for behavior persistence. In environments that support autonomy, autonomous motivation is further enhanced, leading to improved persistence in exercise. Consequently, individuals with developed self-determined motivation achieve satisfactory levels in variables, such as enjoyment, immersion, and intention for activity continuation (Stebbins et al., 2012).

When individuals feel competent, they are more likely to adopt and persist in behaviors, driven by autonomous motivation (Ryan & Deci, 2000). According to self-determination theory (Deci & Ryan, 2000), individuals engage in activities because they are inherently interesting and satisfying, resulting in persistence due to positive experiences (Kim & Lee, 2020). Ryan and Deci (2017) revealed that positive feedback enhances interest and enjoyment in activities (Vallerand & Reid, 1984), explaining these effects through satisfaction of individuals' competence needs (De Muynck et al., 2017). That is, athletes with a perfectionistic striving tendency, who set high personal standards and apply strict criteria to their achievements, are likely to experience satisfaction when their basic psychological needs are met. This satisfaction enhances their interest and enjoyment in sport, positively influencing sport commitment and sport continuance intention.

4.1 THEOLOGICAL AND PRACTICAL IMPLICATIONS

This study provides both theoretical and practical implications in the field of sport psychology. First, this study contributes to the understanding of perfectionism as a multidimensional trait rather than a single dimension. While past research primarily focused on the negative aspects of perfectionism, recent studies have begun to highlight its positive aspects as well. By emphasizing these positive aspects of perfectionism, this study demonstrates that athletes' perfection-

istic tendencies are not merely negative but also possess positive elements. This suggests the potential of positive perfectionism as an effective tool to enhance athletes' performance and intention. Furthermore, by integrating perfectionism with SDT, this study allows for a deeper understanding of the interaction between these two concepts. Applying the principles of SDT to the study of perfectionism broadens the scope of SDT, demonstrating its utility as a framework for explaining various psychological and behavioral phenomena. Thus, this study offers valuable guidelines for practical interventions and program development in the field of sport psychology, extending beyond theoretical contributions.

Understanding the relationship between perfectionism and the fulfillment of basic psychological needs is crucial for educators, coaches, and counselors. This knowledge helps them better understand the psychological states of athletes or participants with perfectionistic tendencies, enabling the development of effective support strategies. It suggests specific intervention methods to encourage positive perfectionism and provides a foundation for creating tailored management strategies for each athlete. By addressing the unique needs of individuals with perfectionistic tendencies, professionals can foster an environment that promotes mental well-being and sustained participation in physical activities. Additionally, the findings of this study offer significant guidelines for academia and practitioners in designing research and intervention programs. For example, educational programs can be created to train coaches and counselors on the importance of fulfilling basic psychological needs and implementing strategies that foster intrinsic motivation. These programs might include workshops, seminars, and practical training sessions, providing professionals with the tools necessary to effectively support athletes. Furthermore, we underscore the importance of fostering a supportive and autonomy-promoting environment in sports settings. Coaches and educators are encouraged to cultivate a culture that values personal growth, self-improvement, and the intrinsic enjoyment of sports, rather than focusing solely on competitive success. This approach can help athletes develop a healthier relationship with their sport, reducing the risk of burnout and promoting long-term engagement. By applying these insights, we can create more supportive and effective athletic programs that not only enhance performance but also contribute to the holistic development of athletes.

4.2 LIMITATIONS AND FUTURE RESEARCH

This study has several limitations. First, although empirical results of this study highlight the importance of satisfying basic psychological needs, there

is a lack of information on how coaches specifically can satisfy these needs. Therefore, qualitative research would be necessary to further approach the practical implications of this study. Conducting qualitative research could provide valuable insights into coaching practices and programs that contribute to the satisfaction of basic psychological needs. Also, this study did not examine individual differences, such as personality traits, which may play a significant role in athletes' sports commitment and persistence. Thus, future research need to incorporate personality dimensions to provide a more comprehensive understanding of these relationships and to examine potential moderating variables within the framework of self-determination theory. In addition, family support is another crucial factor that can influence an athlete's long-term engagement in sports. While we did not measure this aspect, future studies could explore the interaction between social support systems and psychological factors to better understand their combined effects on athletic commitment. Finally, this study did not include a comparative analysis of athletes at different competition levels. As a result, potential differences in sports commitment and persistence across levels remain unclear. Future research should examine these variations to enhance generalizability.

Ethical approval statement:

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee.

Data availability statement:

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

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