

GENDER DIFFERENCES IN THE RELATIONSHIP AMONG BASIC PSYCHOLOGICAL NEEDS AND ATHLETES' BURNOUT

DIFERENCIAS DE GÉNERO EN LA RELACIÓN ENTRE LAS NECESIDADES PSICOLÓGICAS BÁSICAS Y *BURNOUT* EN DEPORTISTAS

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Abstract

The study examined if there is a relationship between basic psychological needs (BPN) and the burnout perceived by athletes and to check if its relationship differs by gender. A sample of 416 athletes ($M_{age} = 24.01$; 198 men and 218 women) completed a series of self-report measures: The Spanish version of the Basic Needs Satisfaction in General Scale and the Spanish version of the Athlete Burnout Questionnaire. Structural equation modeling (SEM) was used to examine the relationships among the studied variables. The results revealed that autonomy significantly positively predicted reduced sense of accomplishment, competence negatively predicted reduced sense of accomplishment, and relatedness positively predicted reduced sense of accomplishment. In women, there is no relationship between BPN and burnout. In men, autonomy and relatedness significantly positively predicted the reduced sense of accomplishment. In the sports field, there exists a connection between BPN and burnout, especially affecting male athletes. Therefore, there may be other contextual factors (e.g., employment, maternity, scholarships, studies, among others) that could be influencing burnout symptoms in female athletes.

Keywords: Competition, athletes, sport, psychological adjustment.

Resumen

Este estudio examinó si existe relación entre las necesidades psicológicas básicas (BPN) y el burnout percibido por atletas y evaluar si la relación difiere por género. Una muestra de 416 deportistas ($M_{edad} = 24,01$; 198 hombres y 218 mujeres) completaron una serie de medidas de autoinforme: la versión española de la Escala de Satisfacción de las Necesidades Psicológicas Básicas en General y la versión española del Cuestionario de Burnout del Deportista. Se utilizó un modelo de ecuaciones estructurales (SEM) para examinar las relaciones entre las variables estudiadas. Los resultados revelaron que la autonomía predijo significativamente de forma positiva la reducida sensación de logro, la competencia predijo negativamente la reducida sensación de logro, y la relación predijo positivamente la reducida sensación de logro. En las mujeres no existe relación entre las BPN y el burnout. En los hombres, la autonomía y la relación predijeron significativamente de forma positiva la reducida sensación de logro. En el ámbito deportivo, existe relación entre las BPN y el burnout, que afecta especialmente a deportistas masculinos. Por lo tanto, puede haber otros factores contextuales (p. ej., empleo, maternidad, becas, estudios, entre otros) que podrían estar influyendo en los síntomas de burnout en las deportistas femeninas.

Palabras clave: Competición, atletas, deporte, ajuste psicológico.

Introduction

Some athletes perceive a lack of motivation, low sport commitment and poor performance during competitions as a consequence of perceived burnout (Creswell & Eklund, 2005; Jowett et al., 2016). As such, athletes may show some tendency to avoid training sessions and even go as far as quitting the sport (Hu & Xu, 2008; Larson et al., 2019). Given that burnout in athletes has increased in recent decades (Madigan et al., 2022), it is worthy to inquire about the reasons why this burnout may arise among athletes, and how to avoid its possible negative effects while they compete.

Previous research postulates Self-Determination macro theory (SDT) (Deci & Ryan, 1985) as a feasible construct that may help to explain athlete's burnout (Fan et al., 2023). Within SDT, greater emphasis is placed on the Basic Psychological Needs (BPN) Subtheory, as it posits that there exist three BPN that are important for positive personal development. Therefore, in the present research, BPN and perceived burnout are related to verifying if there is a connection between these variables in athletes and a differentiation by gender will be made. This may help to unravel the gender connection among these variables, which may enhance the advancement of knowledge in intervening with athletes. Regarding BPN, it is known that it is necessary to satisfy the three universal BPN for athletes to reach their full potential and thrive (Fan et al., 2023). BPN are inherent requirements of human beings, capable of guiding their behavior to achieve psychological well-being (Ryan & Deci, 2000). In particular, there are three BPN: autonomy, competence, and relatedness (Ryan & Deci, 2000). Autonomy determines the degree of initiative that people feel is necessary to be able to direct their behaviors (Deci & Ryan, 1985), and in the sport context, it is satisfied when athletes are able to act freely and manage to orient themselves according to their values during training and competitions. Competence refers to the perception that human beings have of their ability to perform a task (Ryan & Deci, 2000), which is satisfied in the sport context when athletes improve their performance, face challenges and develop their sport skills. Finally, relatedness is the perceived feeling of being included in a specific social group (Deci & Ryan, 1985), which is satisfied when strong interpersonal bonds are created within the sports community.

Burnout is the lack of energy, emotional exhaustion, and loss of interest in an activity (Leiter & Maslach, 2016). Raedeke (1997) was the pioneer in proposing this concept within the sports field and, consequently, referred to the figure of the athlete. According to Raedeke (1997), athlete burnout is described as a syndrome that presents three dimensions: emotional/physical exhaustion (negative response to the intense demands of training and sports competition), reduced sense of accomplishment (decreased sense of accomplishment in the athlete's skills and ability) and sport devaluation (lack of interest in participating in sport). Previous research extensively examined the role of BPN in the interplay with well-being and ill-being (Morano et al., 2020) and, more specifically, with burnout (De-Francisco et al., 2020; Morano et al., 2020). Hence, Martínez-Alvarado et al. (2016) suggested that the need for autonomy was the variable that best predicted the symptoms of athlete burnout, especially reduced sense of accomplishment. Morano et al. (2020) revealed that competence was found to be the most influential variable in burnout symptoms, especially with reduced sense of accomplishment. Scotto-di-Luzio et al. (2020) found that relatedness negatively predicted athlete burnout, in particular, with a reduced sense of accomplishment and sport devaluation. The wide variety of results indicate that the influence of each one on athlete burnout is not clear (Hodge et al., 2008) and might be influenced by gender in different ways (Chu & Koppenhaver, 2025; Chu et al., 2019). Therefore, this study aims to provide more information that helps to understand which is the most salient BPN to prevent burnout symptoms. Hence, this information is quite valuable as it may confirm or reject if there are interindividual differences in the relationship between BPN and burnout.

However, little is known about the role of gender in the relationship between the three BPN and the three symptoms of burnout. In particular, De-Francisco et al. (2020) showed that BPN satisfaction had a direct negative effect on burnout in athletes of both sexes without specifying the dimensions of burnout. On the other hand, Morano et al. (2020), examining related concepts to burnout, found that boys reported higher scores in competence and autonomy than girls. Specifically, these authors found that autonomy was related to dysfunctional states (e.g., distracted, worried) in girls, while it was positively related to functional states (e.g., fighting spirit, relaxed) in boys. Pacewicz et al. (2020) examined female perceptions of group cohesion in relation to burnout, showing that the greater the sense of cohesion, the lower the burnout perceptions. As such, due to the lack of research examining the connection between gender, BPN, and burnout, this study will shed light on a different approach that may help to unravel the hallmarks of gender in helping athletes' BPN and burnout. Therefore, the study aimed to examine if there is a relationship between basic psychological needs and the burnout perceived by athletes

and to check if the relationship between basic psychological needs and burnout differs by gender. First, no hypothesis was established for the relationship between basic psychological needs and burnout, as previous literature is not clear. Second, it was hypothesized that autonomy will be positively related to burnout in girls and negatively with boys.

Materials and Methods

Participants

This research followed a cross-sectional, non-experimental, correlational design and the data were analyzed using multivariate and confirmatory techniques. The sample consisted of 416 athletes ($M_{age} = 24.01$; $SD = 3.30$; 198 men and 218 women) between 18 and 30 years old. Regarding the type of sport practiced, some of the participants performed individual sports ($n = 150$) (e.g., athletics, tennis), another part performed collective sports ($n = 221$) (e.g., football, basketball), and a minority performed both types of sports ($n = 45$). The Spanish population between 18 and 30 years old who practiced sports was selected as an inclusion criterion. Participants from other nationalities different from Spanish, over 30 years old, minors, and people with sedentary habits were excluded from the study. This was because we intended to know the relationship between the BPN and burnout in young athletes.

Instruments

To examine the satisfaction of the BPN, it was used the Spanish version (González-Cutre et al., 2015) of the Basic Needs Satisfaction in General Scale (BNSG-S; Gagné, 2003). The scale is made up of 21 items that measure the satisfaction of autonomy ($\alpha = .75$; seven items, e.g., "I feel that I am free to decide for myself how to live my life"), competence ($\alpha = .63$; six items, e.g., "Most days I feel that I am successful in what I do"), and relatedness ($\alpha = .83$; eight items, e.g., "I really like the people that I interact with"). The participants had to answer all the items thinking about how they related to their life and indicating how true they were for them on a Likert-type scale from 1 (not true) to 7 (totally true).

To examine burnout in athletes, the Spanish version of the Athlete Burnout Questionnaire (ABQ; Arce et al., 2012) of Isoard-Gautheur et al. (2010) was used. This questionnaire consists of 15 items and three subscales that measure emotional/physical exhaustion ($\alpha = .89$; five items, e.g., "I feel too tired from practicing my sport"), sport devaluation ($\alpha = .88$; five items, e.g., "I have negative feelings towards sport") and reduced sense of accomplishment ($\alpha = .88$; five items, e.g., "I am not achieving anything in sport"). The scale consists of a Likert-type scale ranging from 1 (almost never) to 5 (almost always).

Procedure

The study complied with the ethical guidelines established by the American Association of Psychology in its seventh edition (APA 7) (American Psychological Association, 2020) and it was approved by the local Ethics Committee of the Universidad Internacional de La Rioja (Code PI:018/2019). The anonymity was preserved, and the principles of the Declaration of Helsinki (World Medical Association, 2013) were followed. Prior to data collection, participants received the information concerning the study and signed the informed consent. Once they received the information, they could start with the survey that took from 29/09/2022 to 11/11/2022. The questionnaire was structured in three different sections, the first section corresponded to sociodemographic data (e.g., age, gender, type of sport, hours of practice, etc.), and the other two sections corresponded to each of the questionnaires used in the study (BNSG and ABQ). The data were automatically recorded in the Microsoft Excel 365, and later exported to MPLUS to perform the statistical analysis.

Data Analyses

All the analyses were conducted using Mplus Version 7.3. This software was used to compute the structural equation modeling (SEM). SEM are statistical models that incorporate latent variables and enable the investigation of correlations between variables (Vega-Díaz & González-García, 2024). When compared to independent tests of each relationship, this method avoids type I errors. Two-step modeling was carried out in accordance with Anderson and Gerbing (1988), with steps one and two being the measurement model and the structural model, respectively.

First, we used a combination of indices to achieve a comprehensive evaluation of fit (Hu & Bentler, 1999), including the chi-square (χ^2), the Comparative fit index (CFI), the Tucker-Lewis index (TLI), the root means square error of approximation

(*RMSEA*) and its confidence interval (90% *CI*). *CFI* and *TLI* of .90 and .95 are taken to reflect acceptable and excellent fits, respectively, whereas *RMSEA* of less than .06 and .08 is taken to reflect close and reasonable fits, respectively (van de Schoot et al., 2012).

Secondly, to create the structural equation model, items were aggregated to create parcels (Little et al., 2002) of BPN (autonomy, competence, and relatedness) and burnout (emotional/physical exhaustion, sport devaluation, and reduced sense of accomplishment). For instance, the first, the second, and the third items of autonomy were averaged to create one of the two parcels. The fourth, fifth, sixth, and seventh items of autonomy were averaged to create the other parcel. Likewise, the first, the second, and the third items of competence were averaged to create one of the two parcels. Then, the fourth, fifth, and sixth items of competence were averaged to create the other parcel. For relatedness, the first four items and the last four items were averaged to create the two parcels. Regarding burnout, the first two items of emotional/physical exhaustion and the previous three were averaged to create two parcels. The same procedure was performed for the other two burnout factors, the sport devaluation and a reduced sense of accomplishment.

Finally, the same analysis was carried out with the parcels created but differentiated by gender. This was motivated to verify if there were differences between basic psychological needs and the burnout perceived by women and men.

Results

Descriptive statistics of the study variables are presented in Table 1. Medium-high scores of BPN (between .66 and .68) were reported by participants (i.e., autonomy, competence, and relatedness). Regarding burnout, medium-low scores (between .14 to .30) were reported by participants. Besides, medium-low scores (between .05 to .74) of BPN and burnout were reported. Moreover, correlational analyses showed that there was no multicollinearity among the variables examined in the study.

Table 1

Descriptive Statistics and Correlations Among the Variables

Variable	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	1	2	3	4	5	6
1. Autonomy	3.94	0.74	-0.17	-0.89	-					
2. Competence	4.85	0.87	0.07	1.73	.66**	-				
3. Relatedness	4.70	0.91	-0.30	1.49	.71**	.68**	-			
4. Reduced sense of accomplishment	3.08	0.67	0.53	1.16	.29**	.30**	.21**	-		
5. Emotional / physical exhaustion	2.80	0.05	1.02	0.01	.14**	.18**	.05*	.57**	-	
6. Sport devaluation	2.67	0.05	1.04	0.07	.14**	.18**	.06	.56**	.74**	-

Note. $p < .05^*$; $p < .01^{**}$

Preliminary Analyses

In the first place, the goodness-of-fit indices of the general model are presented in Table 2. The model was acceptable (*CFI* = .95; *TLI* = .92; *RMSEA* = .07). Table 2 shows the goodness of fit indices of the female and male models. Particularly in women, the model was acceptable (*CFI* = .97; *TLI* = .95; *RMSEA* = .052). Likewise, in men, the model was acceptable (*CFI* = .94; *TLI* = .90; *RMSEA* = .087).

Table 2

Fit Indices for the Measurement Models

Model	χ^2	CFI	TLI	RMSEA	90% CI RMSEA	AIC	BIC	ABIC
General	118.043	.958	.929	.070	[.056, .084]	11742.81	11948.37	11786.54
Females	61.815	.975	.958	.052	[.025, .075]	6131.94	6304.55	6142.94
Males	118.043	.941	.900	.087	[.066, .109]	5643.54	5811.24	5649.67

Note. CFI = Comparative fit index; TLI = Tucker-Lewis Index; RMSEA = Root-mean-square Error of Approximation; CI = Confidence Interval; AIC = Akaike's Information Criterion; BIC = Bayesian Information Criteria; ABIC = Sample-size Adjusted BIC

Standardized Estimated for the Structural Model

The results of the relationships between the variables are summarized in Table 3 and Figure 1. The results revealed that autonomy significantly positively predicted reduced sense of accomplishment ($\beta = 1.12$; $p < .01$). Likewise, the results showed that competence negatively predicted reduced sense of accomplishment ($\beta = -.36$; $p < .05$). Finally, the relationship positively predicted reduced sense of accomplishment ($\beta = 1.32$; $p < .01$).

Table 3

Standardized Estimates for the Structural Model: Basic Psychological Needs and Burnout

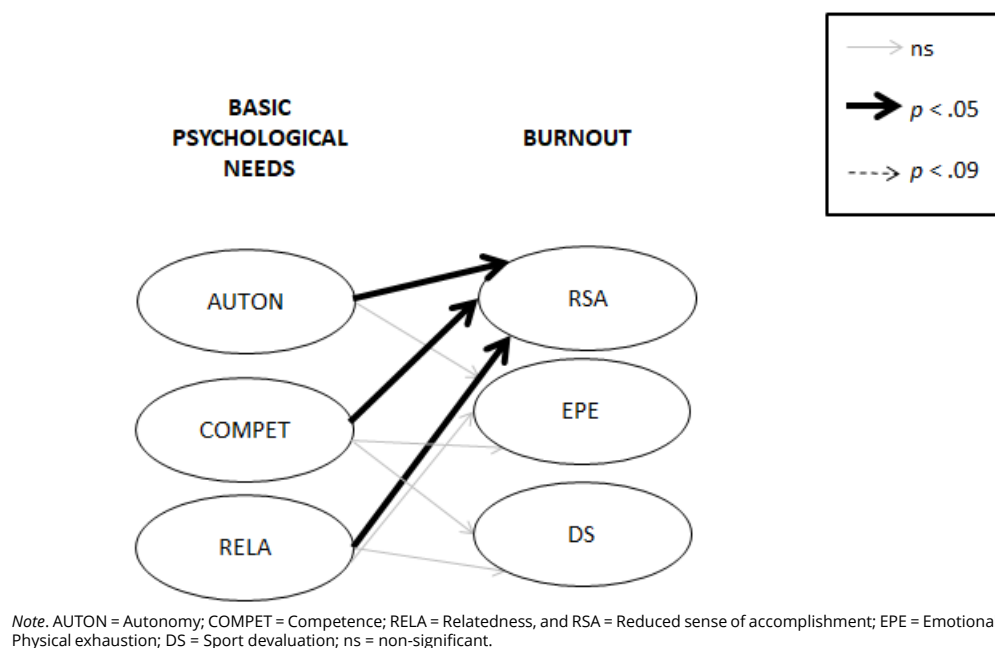
Dependent variables of general model	Independent Variables	Estimate (β)	SE	p
Autonomy	Reduced sense of accomplishment	1.12	0.41	.00**
Autonomy	Emotional/physical exhaustion	-0.19	0.40	.63
Autonomy	Sport devaluation	0.65	0.51	.20
Competence	Reduced sense of accomplishment	-0.36	0.17	.03*
Competence	Emotional/physical exhaustion	0.16	0.15	.30
Competence	Sport devaluation	-0.19	0.19	.37
Relatedness	Reduced sense of accomplishment	1.32	0.47	.00**
Relatedness	Emotional/physical exhaustion	-0.16	0.42	.70
Relatedness	Sport devaluation	0.67	0.56	.23
Dependent variables of female model	Independent Variables	Estimate (β)	SE	p
Autonomy	Reduced sense of accomplishment	0.50	0.38	.18
Autonomy	Emotional/physical exhaustion	0.06	0.48	.89
Autonomy	Sport devaluation	0.09	0.58	.87
Competence	Reduced sense of accomplishment	-0.41	0.19	.16
Competence	Emotional/physical exhaustion	0.19	0.20	.34
Competence	Sport devaluation	-0.28	0.28	.32
Relatedness	Reduced sense of accomplishment	0.23	0.39	.55
Relatedness	Emotional/physical exhaustion	0.47	0.43	.27
Relatedness	Sport devaluation	-0.47	0.55	.39

Dependent variables of male model	Independent Variables	Estimate (β)	SE	p
Autonomy	Reduced sense of accomplishment	1.53	0.67	.02*
Autonomy	Emotional/physical exhaustion	-0.27	0.55	.62
Autonomy	Sport devaluation	0.91	0.69	.18
Competence	Reduced sense of accomplishment	-0.22	0.19	.23
Competence	Emotional/physical exhaustion	0.10	0.19	.60
Competence	Sport devaluation	-0.02	0.20	.90
Relatedness	Reduced sense of accomplishment	2.25	0.91	.01**
Relatedness	Emotional/physical exhaustion	-0.73	0.96	.44
Relatedness	Sport devaluation	1.58	1.09	.14

Note. $p < .01^{**}$; $p < .05^{*}$

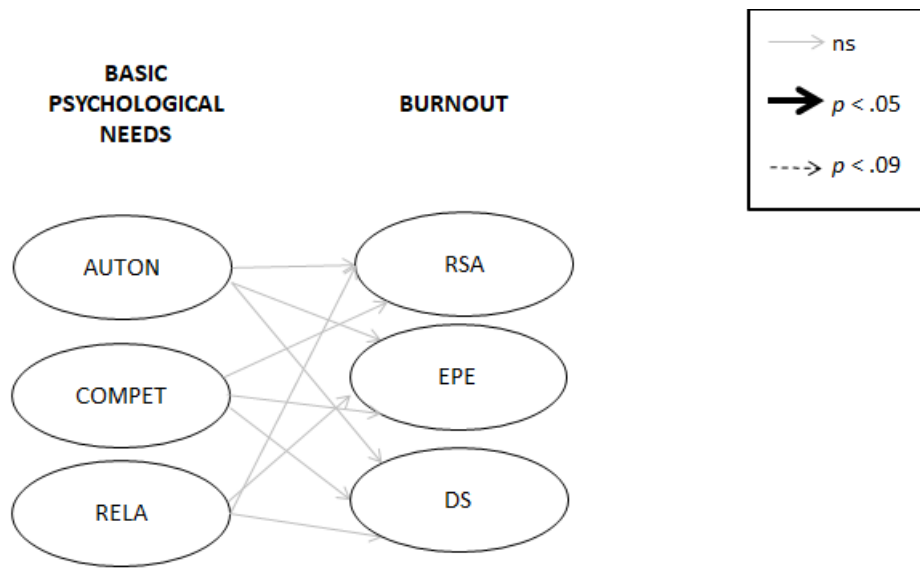
Figure 1

Results of the Structural Equation Modelling in the General Model With all Sample

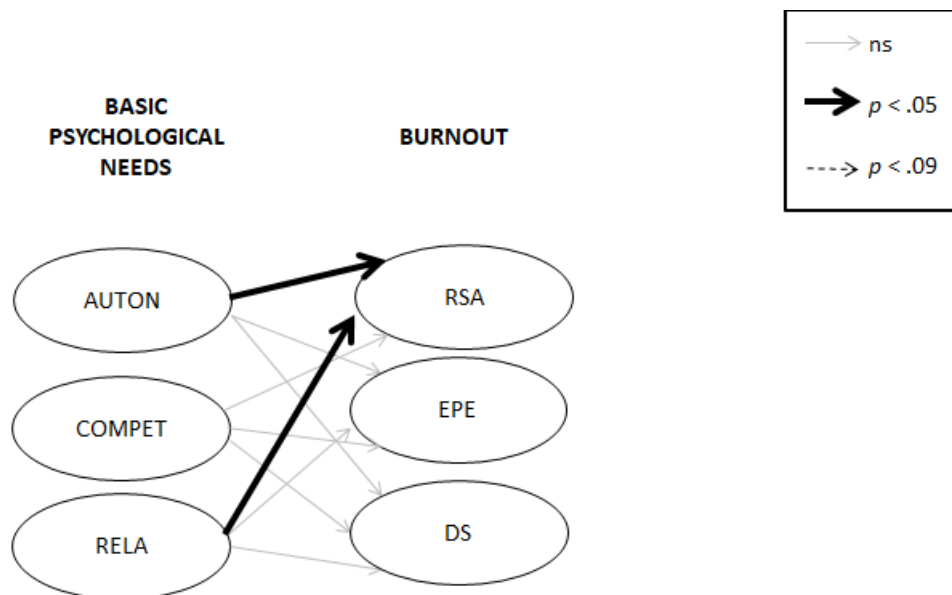


Standardized Estimated for the Females and Males' Model

The results of the relationships between the female variables are summarized in Table 3 and in the figure 2, and figure 3. The results revealed that the BPN are not related to burnout in women. However, the results revealed that in males, autonomy significantly positively predicted reduced sense of accomplishment ($\beta = 1.53$; $p < .05$). Likewise, in males the results revealed that relatedness positively predicted the reduced sense of accomplishment ($\beta = 2.25$; $p < .05$).

Figure 2*Results of the Structural Model in Female Athletes*

Note. AUTON = Autonomy; COMPET = Competence; RELA = Relatedness, and RSA = Reduced sense of accomplishment; EPE = Emotional/Physical exhaustion; DS = Sport devaluation; ns = non-significant.

Figure 3*Results of the Structural Model in Male Athletes*

Note. AUTON = Autonomy; COMPET = Competence; RELA = Relatedness, and RSA = Reduced sense of accomplishment; EPE = Emotional/Physical exhaustion; DS = Sport devaluation; ns = non-significant.

Discussion

The study aimed to examine if there exists a relationship between BPN (i.e., autonomy, competence, and relatedness) and the perception of burnout (i.e., emotional/physical exhaustion, reduced sense of accomplishment, and sport devaluation) in athletes; and to check if the relationship between BPN and burnout differs by gender. In congruence with our expectations, the results of SEM analyses revealed that the dimensions of BPN served as predictors of athletes' perceptions of burnout. It makes sense as sports career is a continuum of ups and downs for athletes and several aspects influence athletes' burnout (e.g., increasing demands and overtraining, study, or work) (Cece et al., 2019; De-Francisco et al., 2020).

Within this study, BPN are related to burnout, as suggested in previous research (e.g., De-Francisco et al., 2020; Ramírez-Nava et al., 2023; Vilchez et al., 2020). Specifically, Bicalho and Costa (2018) suggested that BPN were found to be blockers of burnout in elite athletes. That is, elite athletes that had high competence, autonomy, and relatedness had a lower chance to develop burnout. However, the importance of each need for needs fulfilment varies across studies, thus, it is not clear the influence of each one on athlete burnout (Hodge et al., 2008; Jowett et al., 2021; Martínez-Alvarado et al., 2016). Autonomy basic need has been suggested to be a predictor of burnout (Martínez-Alvarado et al., 2016), and it mediates the relationship between perfectionism and burnout, suggesting that autonomy support can prevent burnout (Jowett et al., 2021). This basic need has been negatively associated with a reduced sense of accomplishment (Martínez-Alvarado et al., 2016), which means that athletes who perceive themselves as having opportunities to take choices were less likely to experience sport burnout. However, the results analyzed in this sample suggest that there exist associations between this basic need and symptoms of burnout, in particular, autonomy significantly positively predicted reduced sense of accomplishment.

While previous research has suggested an inverse association, the results in this study indicate that a higher autonomy meant a bigger reduced sense of accomplishment while athletes cannot achieve personal goals. This result is surprising, but here coaches' style could provide information about that finding. In particular, Fan et al. (2023) suggested that, for athletes with unmet autonomy needs, the coach should give them a certain degree of freedom to decide on specific activities to help them in recovering their autonomy. However, this statement should be taken with caution, as the style of the coach does not influence players in the same way, as younger players have a stronger influence of controlled styles than senior players (Pulido et al., 2021). In addition, there are maybe other contextual variables that may be influencing the increased level of reduced sense of accomplishment, such as low-level trainings due to the high autonomy athletes are perceiving, few days of training sessions that are hindering achievements, negative goal settings, among others.

Some authors suggest that basic competence needs are the most influential variable on burnout variables, especially linked to the reduced sense of accomplishment (Morano et al., 2020). The results of the present study coincide with Morano et al. (2020) study, since competence negatively predicted reduced sense of accomplishment, although not significantly in the previous study of Morano et al. (2020). This means that, as the athletes feel a high degree of competence, their perception of inefficacy is reduced. On the opposite, if athletes feel competent in their sports, they are more likely to experience satisfaction and motivation. In this sense, opportunities for improving their skills and recognition by their coaches (e.g., individual feedback and challenges) would help players to satisfy their basic need for competence.

Athletes' burnout is the result of a maladaptive sports experience influenced by the social context, in which group cohesion can be considered as having an important role in relation to burnout (Pacewicz et al., 2020). Despite that assumption, relatedness has been scarcely explored in the sports context in relation to burnout (Scotto-di-Luzio et al., 2020). In the present study, relatedness negatively predicted reduced sense of accomplishment. This means that if athletes feel immersed in their sports community (e.g., teammates), they could perceive less perception of inefficacy. This result aligns with the results of Scotto-di-Luzio et al. (2020). These authors found that players with a high sense of membership presented a reduced sense of accomplishment and sport devaluation. Specifically, they found that a sense of belonging positively predicted a reduced sense of accomplishment, and opportunity for influence negatively predicted sport devaluation. These results suggest that creating a supportive and positive social environment in the sports context could be crucial for avoiding burnout. Considering the above results, in addition to the relationship with teammates, the relationship between players and coaches is particularly important (Pulido et al., 2021). Fan et al. (2023) suggested that ensuring education on interpersonal skills can help athletes with unmet relatedness. Besides, the quality of the presentation of the tasks has been positively related to the satisfaction of the three BPNs (Ramírez-Nava et al., 2023). Regarding to that assumption, supporting styles are related to satisfaction of BPN (Aguirre et al., 2016). Fan et al. (2023) support that there exists a three-way relationship between the support of coaches and BPN: athletes will perceive a greater sense of control (autonomy); through their efforts to promote mutual trust with coaches, athletes will participate more actively and both training and competition, facilitating improvements in their abilities (competence); a safe and healthy environment will flourish (relationship) (Fan et al., 2023).

Isoard-Gauthier et al. (2015) suggested that a gendered perspective on burnout trends is a promising focus since research on gender in relation to athletes' burnout has produced equivocal results. In this sense, Chu et al. (2019) suggest that gender differences may exist in BPN, with girls being more sensitive to interpersonal relationships and boys placing greater value on personal achievements. This assumption makes it necessary that coaches adapt the strategies and the approaches employed for satisfying BPN for girls and boys (Chu & Koppenhaver, 2025). Isoard-Gauthier et al. (2015), in

relation to burnout symptoms, suggest that during adolescence, gender was significantly associated with a reduced sense of accomplishment in the middle of adolescence, showing that this dimension was higher for female than male athletes, which might be interpreted as an unfavorable outcome for women in sport. De-Francisco et al. (2020) showed that satisfaction with BPN had a direct negative effect on burnout in athletes of both sexes. Within the present study, SEM analyses did not reveal differences between BPN and burnout in female athletes. However, for males, autonomy and relatedness significantly positively predicted reduced sense of accomplishment. Female and male players do not present the same scores in BPN. For example, Morano et al. (2020) found that boys reported higher scores in competence and autonomy than girls, and autonomy was related to dysfunctional states (e.g. distracted, worried) on girls, while it was positively related to functional (e.g. fighting spirit, relaxed) states in boys. These differences could explain why female and male athletes' burnout and BPN do not correlate in the same way. Pacewicz et al. (2020) examined female perceptions of group cohesion in relation to burnout, showing that the greater the sense of cohesion, the lower the burnout perceptions. Hodge et al. (2008), with a sample of elite males athletes, showed that autonomy and competence were strongly related to burnout, specifically, with a reduced sense of accomplishment and devaluation. A recent survey in the Spanish Higher Sports Council (2022) shows differences according to gender in sports participation in Spanish athletes. These differences are shown in the modality played or the reasons for practicing sport. As this report suggests, the main reason for female athletes practicing sports is to be in good shape, while the main reason for male athletes is to have a good time (Higher Sports Council, 2022). Different reasons for practicing a sport could explain why BPN does not explain results in female and male athletes to the same degree. Despite the contradictory findings, there could be other aspects that can influence these results. For example, the time in which data is collected. Athletes can feel different burnout levels and satisfaction with BPN during their sporting career. Isoard-Gautheur et al. (2015) found that emotional/physical exhaustion increased and then decreased and seemed to have been attenuated at time points in which athletes had higher levels of sport devaluation. Besides, these authors also found that sport devaluation increased over time, although these increases were higher for girls than boys. These authors suggested that burnout perceptions reached their highest levels during early years and, before, gradually declined during the transition from adolescence to emerging adulthood. Finally, other factors, such as the number of sports practiced, could explain these results. Athletes' specialization implies significantly increased time and energy allocated to training for sports competitions (Isoard-Gautheur et al., 2015). Besides, the amount of time athletes has been playing the sport might influence the relationship between BPN and burnout. For those reasons, more research is needed to understand what the repercussion of gender is in the relationship between BPN and burnout.

As limitations, data were collected at a specific moment in the season, and the level of BPN and burnout could vary according to the moment in the season. Besides, other information, such as the role of the athlete (e.g., captain in team sports) or if they are beginners or not, could influence the results. This could explain whether players who have played only one sport during their entire sporting career (early specialization) or, on the contrary, have played several sports (multi-sport approach), have a higher satisfaction of their BPN, or whether the association is different. Finally, when using quantitative data, a ceiling effect appears, so interviews could help to learn more information about the relationship between BPN and burnout. Moreover, the influence of coaches as a mediator factor was not measured in the present study and it could be a variable of interest. In particular, it could help to understand better what variables influence female burnout. Finally, it would be of interest to reexamine the variables of this study, subdividing the sample into different subgroups depending on age ranges, sport commitment, sports performance, and type of sports, etc. This information would be very precise in determining the characteristics that most influence the relationship between BPN and burnout, and it could be valuable for practitioners to adapt their training and interventions.

Conclusions

The purpose of the study was to investigate the relationship between BPN (autonomy, competence, and relationship) and burnout symptoms (i.e., physical/mental exhaustion, reduced sense of accomplishment, and sport devaluation) in athletes, including gender analyses. In terms of practical application, the results of the present study indicate that a relationship exists between basic needs and burnout. However, this relationship was only present for male athletes; specifically, autonomy significantly and positively correlated with a reduced sense of accomplishment. These results highlight the importance of considering BPN, especially in males, which may help practitioners in developing strategies to foster BPN and their possible connection to burnout from a gender perspective, helping to personalize interventions.

At the same time, more research is needed to comprehend better the factors that influence women's burnout and, as a consequence, their drop out of sports. Thus, coaches and athletes need to be aware of the influence of BPN and how it affects burnout, which may safeguard athletes from the development of sports burnout.

Ethics Committee Statement

The study was conducted in accordance with the Declaration of Helsinki and was approved by the Ethics Committee of the Universidad Internacional de La Rioja (registration code 074/2022, date of approval: 11 October 2022).

Conflict of Interest

There are no conflicts of interest amongst the authors of this article.

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Authors' Contributions

Conceptualisation: M.V-D., H.G-G. & E.G.; Methodology M.V-D. & H.G-G; Formal Analysis H.G-G; Investigation M.V-D. & H.G-G.; Resources M.V-D. & H.G-G; Data Curation M.V-D., H.G-G. & E.G.; Writing – Original Draft M.V-D., H.G-G. & E.G.; Writing – Review & Editing M.V-D., H.G-G. & E.G; Supervision H.G-G.; Project Administration M.V-D., H.G-G. All authors have read and agree with the published version of the manuscript.

Data Availability Statement

Data are available on request from the corresponding author: eva.guijarro@unir.net.

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