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A meta-analytic review of the relationship between social constructs and athlete burnout☆

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ABSTRACT

Objectives: Athlete burnout is a maladaptive sport experience characterized by emotional and physical exhaustion, perceptions of reduced accomplishment, and sport devaluation. Physical and psychosocial factors can initiate athlete burnout perceptions, making the social context of sport an important consideration when seeking to understand this experience. To advance understanding of the sport social context and athlete burnout perceptions, there is a need to inventory what social constructs have been examined and to assess their respective strengths of association with burnout perceptions. Accordingly, the purpose of this study was to systematically review and quantify the relationships between social constructs and athlete burnout perceptions.

Design: Meta-analytic review.

Method: A comprehensive search of athlete burnout literature from 2001 forward was conducted and meta-analytic procedures were applied to data from studies meeting inclusion criteria.

Results: Twenty studies met the inclusion criteria, with three predominant social constructs represented (social support, $n = 8$ studies; relatedness, $n = 10$ studies; negative social interactions, $n = 3$ studies). Meta-analysis using random effects models showed low-to-moderate inverse relationships of burnout dimensions with social support and relatedness and low-to-moderate positive relationships of burnout dimensions with negative social interactions.

Conclusions: Positive aspects of the sport social context have potential to mitigate athlete burnout perceptions. However, only two positive social constructs are prevalently studied. A broader span of social constructs should be included in quantitative athlete burnout research, particularly those capturing negative aspects of the sport social context, to better understand social contributors to athlete burnout perceptions.

Sport is an activity for youth and adults that can place intensive demands on participants. When such demands are successfully met, adaptive experiences can occur, resulting in various positive benefits (Eime, Young, Harvey, Charity, & Payne, 2013; Fraser-Thomas, Côté, & Deakin, 2005; Weiss, 2008). When these demands are not met, athletes may have maladaptive experiences, leading to negative outcomes such as burnout. Athlete burnout is a multidimensional syndrome characterized by the core dimensions of emotional and physical exhaustion (athletes' feelings of fatigue), a reduced sense of accomplishment (athletes' negative perceptions of their performance), and sport devaluation (athletes' negative, detached attitude toward their sport; Raedeke, 1997; Raedeke & Smith, 2001). Perceptions of exhaustion, reduced accomplishment, and devaluation vary among athletes and can be influenced by the demands of physical training as well as psychosocial aspects of the sport context (for reviews, see Gustafsson, Kenttä, & Hassmén, 2011; Smith, Pacewicz, & Raedeke, 2019). Because sport occurs in a social context where athletes engage closely with various social agents (i.e., coaches, parents, and teammates), social constructs warrant deliberate consideration in research efforts to better understand athlete burnout. Broadly, social constructs represent features or perceptions of this engagement with various social agents, which can include interaction and communication with salient others, perceptions of relationships and social well-being, socializing behaviors, and so forth. In the interest of understanding the landscape of research on social constructs and perceptions of athlete burnout, the present study is designed to inventory what social constructs have been examined and to assess their respective strengths of association with burnout perceptions. This can help us (a) clarify what aspects of the sport social context are associated with burnout perceptions, (b) assess the strength and consistency of associations across studies, and (c) direct future

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research on social contributions to athlete burnout perceptions.

Because participation in sport requires interactions between teammates, coaches, officials, and parents, the social context of sport is important to consider when examining athlete burnout. Early qualitative work by Gould, Tuffey, Udry, and Loehr (1996) highlighted the salience of the social context on athlete burnout experiences. They interviewed 10 burned out junior elite tennis players who had withdrawn from tennis to develop an understanding of the burnout process. Participants identified four main factors that contributed to their burnout: physical, logistical, social/interpersonal, and psychological. Within the social/interpersonal factor, athletes discussed having dissatisfaction with their social life, negative parental influence, and dissatisfaction with people involved in their sport. This dissatisfaction stemmed from aspects of the sport social context such as a negative team atmosphere, a lack of friends on the team, and having a coach that was not helpful. In other words, social interactions with important others (or the absence thereof) were salient in the experiences of burned out players.

In further examining this burnout factor, Udry, Gould, Bridges, and Tuffey (1997) qualitatively examined perceived social interactions with parents and coaches of 10 burned out junior elite tennis players and 21 U.S. Ski team athletes who sustained season-ending injuries. Burnout participants reported various negative (e.g., putting pressure on the athlete, holding inappropriate or unrealistic expectations, and a lack of belief in the athlete), positive (e.g., various types of social support, emotional control, and lack of pressure) and neutral interactions (e.g., lack of involvement, and unable to help) with both parents and coaches. They reported more frequent negative interactions than positive and neutral interactions, suggesting that negative social interactions may be particularly important in the burnout process.

These early findings have been corroborated in other samples of athletes. For example, professional rugby players from New Zealand and England similarly perceived causes of burnout, including specific social contributors (Cresswell & Eklund, 2006, 2007). Both New Zealand and English rugby players reported that having a negative team atmosphere consisting of dishonesty, distrust, and issues with team management, as well as pressure to perform from their coaches, contributes to burnout. New Zealand players internalized negative assessments and perceived high expectations to perform from salient individuals (e.g., coaches, the public). Similarly, English players perceived unrealistic expectations from others (e.g., coaches, the public) and high levels of performance analysis. Thus, the team climate along with athletes' perceptions of sport personnel and the public's expectations contribute to burnout. Considering the qualitative database on athlete burnout, a variety of social factors that are consistent across sport contexts appear to contribute to athlete burnout.

Building on these qualitative efforts, quantitative investigations have been designed that assess the association of various social constructs with athlete burnout perceptions. As there are no clear cut-offs to designate athletes as "burned out" or not in diagnostic terms, quantitative investigations examine perceptions of burnout as continuous in nature rather than dichotomous. Aspects of athlete-coach and athlete-teammate relationships have been associated with burnout perceptions as have aspects of social relationships in general. For example, Cresswell and Eklund (2004) found that satisfaction with social support was negatively associated with the three dimensions of burnout. This link between social support and burnout is affirmed when assessing support from coaches (Lu et al., 2016) and from teammates (DeFreese & Smith, 2014). Negative aspects of social relationships are also linked with burnout perceptions. Utilizing a commitment perspective, Raedeke (1997) examined adolescent athletes' profiles of sport commitment and burnout perceptions. Social constraints (i.e., expectations to participate) from salient individuals were positively associated with all burnout dimensions, suggesting that feelings of obligation to participate in sport may foster athlete burnout. Other negative aspects of social relationships, including bullying and conflict with teammates, are positively linked with burnout dimensions, indicating that negative social interactions may increase burnout perceptions (Smith, Gustafsson, & Hassmén, 2010; Yildiz, 2015).

Overall, empirical efforts have indicated that social aspects of the sport context are linked with athlete burnout perceptions. Both qualitative and quantitative studies suggest that positive aspects of social relationships in sport may decrease vulnerability to athlete burnout (e.g., Cresswell & Eklund, 2004; Udry et al., 1997) whereas negative aspects of social relationships may increase vulnerability to athlete burnout (DeFreese & Smith, 2014; Udry et al., 1997; Yildiz, 2015). Thus, social experiences in sport have potential to both mitigate and exacerbate athlete burnout perceptions. With research efforts in this area beginning to expand, there is value in generating an inventory of social constructs that have been examined in quantitative athlete burnout research, determining which constructs are prevalently examined, and assessing the strength and consistency of relationships of well-studied social constructs with athlete burnout perceptions. This would clarify the state of knowledge on social factors and athlete burnout, and help to determine key knowledge gaps requiring attention in future research on this topic.

In summary, extant research has shown aspects of the sport social context to link with athlete burnout. There is a need to synthesize and quantify these findings to clarify: (a) what aspects of the sport social context are associated with burnout perceptions, (b) the magnitude and consistency of these associations, and (c) future research directions. Therefore, the purpose of the current study was to systematically review and quantify the relationships between social constructs and athlete burnout perceptions. It was hypothesized that positive social constructs would show meaningful inverse relationships with athlete burnout perceptions and that negative social constructs would show meaningful positive relationships to athlete burnout perceptions.

1. Method

1.1. Inclusion and exclusion criteria

Inclusion criteria for the current meta-analysis pertain specifically to the independent variables, the definition of athlete burnout applied to the study, the instrumentation used, when the studies were conducted, the participants, and the available effect sizes. Studies were included if independent variables consisted of a social construct. Studies were included that aligned with the three-dimensional conception of athlete burnout that consists of perceptions of physical and emotional exhaustion, reduced sense of accomplishment, and sport devaluation (Raedeke, 1997; Raedeke & Smith, 2001). This definition corresponds with burnout perceptions as measured by the Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001), the predominant instrument used in athlete burnout research that has exhibited reliable and valid scores (see reviews by Eklund & Cresswell, 2007; Raedeke & Smith, 2009). To ensure that the studies included in the current meta-analysis were measuring burnout perceptions in the same way (Feldman, 1971), we intended to use only those studies utilizing at least one subscale of the ABQ and we conducted our search for articles published in the year 2001 or later accordingly. After applying the other inclusion/exclusion criteria, all remaining studies had used the ABQ and therefore no studies were ultimately excluded for using a different athlete burnout measure. Studies were included regardless of participant characteristics (e.g., age, sport type, and participation level). Studies that provided correlation coefficients for the relationship between one or more of the burnout dimensions and a social construct were included. Studies not meeting the inclusion criteria outlined above were excluded. We also excluded studies with questionable measurement quality to improve interpretability of results (Valentine, 2009). Specifically, studies with social construct or burnout scores showing weak internal consistency reliability ($\alpha < 0.70$) or that used a social construct measure composed of fewer than three items were excluded.

1.2. Search strategies

Several strategies were used to perform an exhaustive search for literature fitting the eligibility criteria. First, a keyword search was performed on an array of online abstract databases (i.e., EBSCOhost, ProQuest, PsychINFO, and SPORTDiscus). Search terms included "athlete burnout" and "social constructs". Results were restricted to records published in English from 2001 through May 2018. This search method helped identify what social constructs have been examined in relation to athlete burnout, leading to the use of additional search terms (i.e., athlete burnout OR exhaustion AND social support OR relatedness OR social constraints OR control). Second, bibliographies of past reviews of athlete burnout were reviewed. Third, forward searches for works that have cited studies incorporating athlete burnout and social constructs were conducted. Fourth, we used Google Scholar to examine profiles of individuals who frequently publish athlete burnout work. After finishing the above searches and reviewing the studies as described later, the list of studies was shared with a leading athlete burnout scholar to determine if any key studies were omitted. Finally, a specialist in meta-analytic techniques was consulted at the outset of and during the research process to ensure fidelity of the search strategies and analysis process.

Figure 1 outlines the process for identification and selection of eligible studies and aligns with the preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009). Initial search procedures generated 279 potential studies for evaluation. In acknowledgement of publication bias, the studies included unpublished theses and dissertations as well as published work. Eight studies from this group were removed because they were duplicates, leaving a potential sample of 271 studies. Abstracts from this sample of studies were screened and 40 studies emerged as potential sources of data for the meta-analysis. Ten of these studies were excluded after reviewing the entire publication. Reasons for exclusion at this point of the search included (a) utilization of an identical sample to a previous study, (b) failure to assess a specific social construct (e.g., global need satisfaction rather than relatedness specifically), or (c) not being a quantitative study. With respect to the remaining 30 studies, when a social construct was not examined with reliable measurement in at least three studies, studies of that social construct were excluded from the meta-analysis but included in our descriptive synthesis of social constructs examined in quantitative athlete burnout research. For studies that did not provide correlations for the social construct–burnout relationship(s), we excluded them from the meta-analysis if we otherwise could not obtain the values after attempting to contact the authors. Of the 30 studies that were descriptively synthesized, 20 studies with 20 unique samples were meta-analyzed.

1.3. Data abstraction

The following data were extracted from the 30 studies that were descriptively synthesized: author(s), publication year, social construct measured (e.g., relatedness), total number of participants, participant demographics (i.e., mean age, sport type, and sport level), study design (e.g., cross-sectional), and the effect size by burnout dimension (*r*; e.g., correlation of relatedness with sport devaluation). Tables 1 and 2 contain these data. In the current meta-analysis, only cross-sectional effect sizes were extracted and used in the random effects models. When

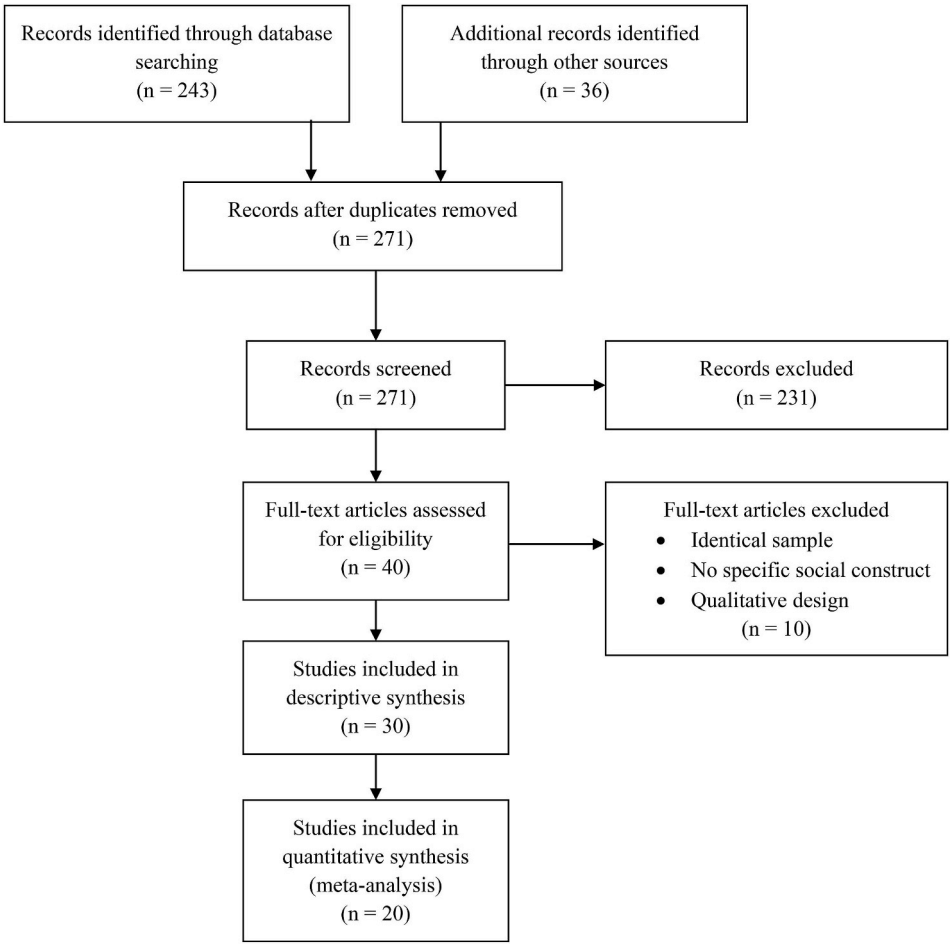

Fig. 1. Record identification process for research examining social constructs and athlete burnout.

Table 1
Characteristics of studies with social constructs not included in the meta-analysis.

Study	Social Construct	Questionnaire	Participants					Effect Size (*r*)			
			N	*M* Age	Type	Level	Design	EX	RA	DV	Global
LaVoi (2002)	CON	RAS (Hendrick, 1988)*	411	19.4	MS	C	CS	0.29	0.30	0.36	–
Lee et al. (2017)	CON	Created for study	332	17.6	MS	Y	CS	0.37	0.29	0.20	–
Smith et al. (2010)	CON	PMCYSQ (Ntoumanis & Vazou, 2005)	206	17.2	MS	EY	CS	0.17	0.22	0.26	–
Isoard-Gautheur et al. (2016)	CARQ	CART-Q (Jowett & Ntoumanis, 2004)	360	21.0	MS	E	CS	–	–	–	–
LaVoi, 2002	CARQ	RHI-S (Liang et al., 2002)*	411	19.4	MS	C	CS	−0.19	−0.40	−0.29	–
Harris (2008)	SC	AOS (Carpenter, 1992; Scanlan, Simons, Carpenter, Schmidt, & Keeler, 1993)*	181	12.6	SW	Y	CS	–	–	–	–
Byrd (2017)	PI	PANSE (Newsom et al., 2005)*	179	19.8	MS	C	CS	–	–	–	−0.16
DeFreese and Barczak (2017)	PI	PANSE (Newsom et al., 2005)	86	20.2	MS	C	CS	−0.18	−0.30	−0.24	−0.28
Yildiz (2015)	B	NAQ-F (Einarsen, Hoel, & Notelaers, 2009; Leymann, 1996)	102	25.6	S	P	CS	0.61	0.52	0.59	–
Al-Yaaribi and Kavussanu (2017)	PB	PABS (Kavussanu & Boardley, 2009)*	272	21.9	MS	E	CS	−0.23	−0.27	−0.40	–
	AB	PABS (Kavussanu & Boardley, 2009)*	272	21.9	MS	E	CS	0.31	0.29	0.37	–
Vanorsby (2017)	SWB	MHC-SF (Keyes, 2009)	104	20.2	MS	C	CS	–	–	–	–
Moen et al. (2016)	WA	WAI (Horvath & Greenberg, 1989)	356	18.2	MS	EY	CS	–	–	–	0.85
Hodge et al. (2008)	R	NSS (Deci et al., 2001)*	133	19.7	R	E	CS	–	–	–	–

Note. Social Construct: CON = conflict, CARQ = coach-athlete relationship quality, SC = social constraints, PI = positive social interactions, B = bullying, PB = prosocial behavior, AB = antisocial behavior, SWB = social well-being, WA = working alliance, R = Relatedness; Questionnaire: RAS = Relationship Assessment Scale, PMCYSQ = Peer Motivational Climate in Youth Sport Questionnaire, CART-Q = Coach-Athlete Relationship Questionnaire, RHI-S = Relational Health Indices-Sport, AOS = Athletes' Opinion Survey, PNSE = Positive and Negative Social Exchanges, NAQ-F = Negative Acts Questionnaire-Football, PABS = Prosocial and Antisocial Behavior in Sport Scale, MHC-SF = Mental Health Continuum-Short Form, WAI = Working Alliance Inventory, NSWS = Need Satisfaction Scale, * = questionnaire was adapted; Sport Type: MS = multiple sports, R = Rugby, S = soccer, SW = swimming; Sport Level: Y = recreational youth, EY = elite youth, E = elite, C = collegiate, P = professional; Design: CS = cross-sectional; Burnout Dimension: EX = exhaustion, RA = reduced accomplishment, DV = sport devaluation, Global = global burnout.

a longitudinal study reported multiple cross-sectional effect sizes (e.g., relatedness T1–devaluation T1, relatedness T2–devaluation T2), these effect sizes were averaged (Borenstein, Hedges, Higgins, & Rothstein, 2009). Effect sizes across time points (e.g., relatedness T1–devaluation T2) were not used in the random-effects models. This was done to maintain consistency across the type of effect sizes used from individual studies when calculating average effect sizes.

1.4. Meta-analytic procedures

A series of analytic procedures were applied to the extracted data to generate the meta-analytic findings. First transformation of the effect size index was necessary prior to synthesizing the data. Specifically, the correlation coefficients were transformed into Fisher's *Z* scores. These indexes were used for further analysis. Summary Fisher's Z values were converted back to summary correlation coefficients for presentation (Borenstein et al., 2009). Average effect sizes were calculated for each dimension of burnout, as well as global burnout, for the three social constructs that were reliably measured in three or more studies (i.e., social support, relatedness, negative social interactions). Global burnout is a combined index of the three burnout dimensions. This index was included in analyses because there are theoretical and practical reasons to examine a unidimensional construct of burnout (i.e., global burnout index) (Brenninkmeiger & VanYperen, 2003). Theoretically, the initial conceptualization of burnout in sport highlighted how the three dimensions are driven by an overarching construct of athlete burnout (see Raedeke, 1997). Practically, a global burnout index is commonly used by researchers to simplify complex research models. Thus, its inclusion in the current meta-analysis provides the most comprehensive representation of the existing literature. Analyses were conducted in Microsoft Excel (Microsoft Office Professional Plus 2010; Version 14.0.7208.5000) and HLM7 (Scientific Software International, Version 7.03). The use of two software programs enabled the verification of findings.

There are two primary models that can be applied to determine statistical assumptions of errors when conducting a meta-analysis (Hedges & Vevea, 1998). A fixed-effects model assumes one underlying effect size for all studies in the sample and that differences are due to sampling error. In a fixed-effects model, inference pertains to the specific studies in the sample (i.e., the summary effect size is the estimate of the underlying, common effect size). To obtain a more precise estimate of the mean of the effect size, a weight is assigned to each study. This weight is the inverse of each study's respective variance (i.e., within-study variance). A random-effects model assumes many underlying effect sizes for random samples of studies. Inference applies to the distribution of studies in which the study sample was obtained. In other words, the summary effect size is an estimate of the mean of the distribution of effect sizes (Borenstein et al., 2009). The weight assigned to each study is similar to the fixed-effects model weight, but includes between-study variance (i.e., 1/within-study variance + between-study variance).

Random-effects models suggest the effect size varies among the studies, an assumption that can be tested. Heterogeneity statistics include Cochran's Q, alpha (i.e., summed weight adjusted for size of studies), tau-squared (i.e., between-study variance calculated using Cochran's Q, degrees of freedom, and alpha), and I^2 (i.e., proportion of observed variance that reflects real differences in effect sizes as opposed to error) (Borenstein et al., 2009). Cochran's Q Test was used to assess homogeneity of variance within the sample of studies (Field & Gillett, 2010). The Q-statistic follows a chi-square distribution with degrees of freedom of k-1 where k is the number of studies. A significant Q-statistic indicates heterogeneity, or significant variability across effect sizes in the sample. Random-effects models were used even when the Q-statistic was not significant as the values of the I^2 statistic were generally moderate-large, except for negative social interactions which were low, indicating that most of the observed variance was real. In addition, studies differed by type of athlete, sample size, and design, supporting the use of a random-effects model. Such a model allows for the true effect to vary among studies which is more likely than assuming that the true effect size is the same in all studies (i.e., a fixed-effect model) (Borenstein et al., 2009).

The model estimates for each social construct and burnout dimension included a number of statistics to interpret the overall association. The average effect size (correlation coefficient and Fisher's *Z*) as well as

Table 2
Characteristics of studies that met inclusion criteria for the meta-analysis.

Study ID	Study	Social Construct	Questionnaire	Participants					Effect Size (r)			
				N	*M* Age	Type	Level	Design	EX	RA	DV	Global
1	Altahayneh (2003)	SS	LSS (Chelladurai & Saleh, 1980)	413	20.55	MS	C	CS	−0.63	−0.70	−0.66	–
2	Cresswell (2009)	SS	IES (Cresswell & Eklund, 2004)	183	26.92	R	P	L2	−0.24	−0.24	−0.17	–
3	Cresswell and Eklund (2004)	SS	IES (Cresswell & Eklund, 2004)	199	25.19	R	P	CS	−0.17	−0.42	−0.30	–
4	DeFreese and Smith (2013)	SS	SSQ-SF (Sarason et al., 1987)*	234	19.80	MS	C	CS	−0.11	−0.32	−0.26	−0.27
5	DeFreese and Smith (2014)	SS	SSQ-SF (Sarason et al., 1987)*	465	19.70	MS	C	L4	−0.33	−0.36	−0.33	−0.40
6	Gabana, Steinfeldt, Wong, and Chung (2017)	SS	PASS-Q (Freeman et al., 2011)	293	19.63	MS	C	CS	–	–	–	−0.48
7	Lu et al. (2016)	SS	ARSQ (Freeman et al., 2014)	218	20.04	MS	C	CS	–	–	–	−0.29
8	Raedeke and Smith (2004)	SS	SSQ-SF (Sarason et al., 1987)*	244	15.80	SW	EY	CS	−0.31	−0.28	−0.24	−0.34
9	Adie, Duda, and Ntoumanis (2012)	R	A-NRS (Richer & Vallerand, 1998)	54	13.82	S	EY	L2	−0.28	–	–	–
10	González, Thomás, Castillo, Duda, and Balaguer (2017)	R	A-NRS (Richer & Vallerand, 1998)	597	12.57	S	Y	L2	–	–	–	−0.34
11	Isoard-Gautheur, Guillet-Descas, and Lemyre (2012)	R	FRS (Richer & Vallerand, 1998)*	309	15.40	H	EY	L2	0.00	−0.29	−0.21	–
12	Li, Wang, and Pyun (2017)	R	BNSSS (Ng et al., 2011)	691	14.11	MS	EY	CS	−0.16	−0.38	−0.31	−0.34
13	Lonsdale, Hodge, and Rose (2009)	R	NSS (Deci et al., 2001)*	201	22.90	MS	E	CS	−0.27	−0.17	−0.24	−0.29
14	Perreault, Gaudreau, Lapointe, and Lacroix (2007)	R	A-NRS (Richer & Vallerand, 1998)	259	14.80	MS	EY	CS	−0.26	−0.45	−0.42	−0.49
15	Quested and Duda (2009)	R	A-NRS (Richer & Vallerand, 1998)	59	20.29	D	P	CS	−0.33	–	–	–
16	Quested and Duda (2010)	R	A-NRS (Richer & Vallerand, 1998)	392	18.67	D	P	CS	−0.21	–	–	–
17	Quested and Duda (2011)	R	A-NRS (Richer & Vallerand, 1998)	219	18.44	D	P	L3	−0.30	−0.38	−0.36	−0.44
18	Smith et al. (2010)	R	PMCYSQ (Ntoumanis & Vazou, 2005)	206	17.20	MS	EY	CS	−0.15	−0.33	−0.29	−0.31
19	Byrd (2017)	NI	PANSE (Newsom et al., 2005)*	179	19.80	MS	C	CS	0.19	0.19	0.18	0.23
20	DeFreese and Barczak (2017)	NI	PANSE (Newsom et al., 2005)	86	20.20	MS	E	CS	0.35	0.31	0.40	0.43
5	DeFreese and Smith (2014)	NI	PANSE (Newsom et al., 2005)	465	19.70	MS	C	L4	0.31	0.24	0.19	0.30

Note. Social Construct: SS = social support, R = relatedness, NI = negative social interactions; Questionnaire: LSS = Leadership Scale for Sports, IES = Inventory of Early Signs, SSQ-SF = Social Support Questionnaire-Short Form, PASS-Q = Perceived Available Support in Sport Questionnaire, ARSQ = Athletes' Received Support Questionnaire, A-NRS = Acceptance subscale – Need for Relatedness Scale, FRS = Feelings of Relatedness Scale, BNSSS = Basic Needs Satisfaction in Sport Scale, NSS = Need Satisfaction Scale, PMCYSQ = Peer Motivational Climate in Youth Sport Questionnaire, PNSE = Positive and Negative Social Exchanges Scale, * = questionnaire was adapted; Sport Type: D = dance, H = handball, MS = multiple sports, R = rugby, S = soccer, SW = swimming; Sport Level: Y = recreational youth, EY = elite youth, E = elite, C = collegiate, P = professional; Design: CS = cross-sectional, L2 = longitudinal (2 wave), L3 = longitudinal (3 wave), L4 = longitudinal (4 wave); Burnout Dimension: EX = exhaustion, RA = reduced accomplishment, DV = sport devaluation, Global = global burnout.

the standard error and 95 percent confidence interval of Fisher's Z estimates were calculated. The 95 percent confidence interval and the *p*-value from the HLM7 output were used to determine significance. Specifically, a 95 percent confidence interval that did not span zero was considered to represent a significant association between the social construct and burnout dimension. Additionally, a *p*-value less than 0.05 represented a significant association. Final interpretation of the summary correlation coefficients was based on standard interpretation guidelines in behavioral and social sciences (Cohen, 1988).

Risk of bias across studies was assessed using Egger's regression test, which is recommended in meta-analyses with a relatively small number of effect sizes per model (Quintana, 2015; Sterne, Gavaghan, & Egger, 2000). Egger's test regresses the standardized effect sizes on a measure of precision (i.e., standard errors of the effect sizes) (Egger, Smith, Schneider, & Minder, 1997; Quintana, 2015). A non-significant coefficient indicates that the effects sizes and sampling variance for each study are not related and is a good indication that publication bias is not present. Analyses were conducted for each random effects model in the meta-analysis. In the case of evidence of publication bias, the Trim and Fill method (Duval & Tweedie, 2000) was employed to calculate the best estimate of the unbiased effect size for the model (Borenstein et al., 2009; Quintana, 2015).

2. Results

2.1. Descriptive synthesis

After reviewing the literature, 30 studies were retained for the descriptive synthesis. Social constructs appearing in this literature that were not submitted to meta-analysis included: conflict between teammates and coaches (LaVoi, 2002; Lee, Kang, & Kim, 2017; Smith et al., 2010), coach-athlete relationship quality (Isoard-Gautheur, Trouilloud, Gustafsson, & Guillet-Descas, 2016; LaVoi, 2002), social constraints (Harris, 2008), positive social interactions (Byrd, 2017; DeFreese & Barczak, 2017), bullying (Yildiz, 2015), prosocial and antisocial behavior (Al-Yaaribi & Kavussanu, 2017), social well-being (Vanorsby, 2017), and working alliance (Moen, Myhre, & Sandbakk, 2016). These social constructs could not be included in the meta-analysis because of: (1) missing effect sizes, (2) social construct or burnout scores lacking internal consistency reliability, (3) measures being composed of less than three items, or (4) the construct being present in two or fewer studies. We present effect size (*r*) values from these studies in Table 1, with the caveat that they should be interpreted cautiously in light of the limited number of investigations and in some cases unreliable measurement. The direction of relationships between the social construct variables and burnout perceptions are in conceptually expected directions. Considered together, a range of social constructs have been examined in burnout research with little effort at replication to date.

Three social constructs included in the meta-analysis – social support, relatedness, and negative social interactions – were examined with reliable measurement in three or more studies. Eight studies (Study ID 1–8) examined the relationship between social support, defined as social interactions with others which are aimed at generating positive outcomes (Bianco & Eklund, 2001), and athlete burnout perceptions. Five of these studies (Study ID 2–5, 8) assessed satisfaction with social support, specifically with overall social support (Study ID 2, 3, 5, 8) and social support from teammates (Study ID 4). Two studies (Study ID 1 and 7) examined perceptions of the frequency of social support received from coaches and one study (Study ID 6) examined overall perceived social support. Scales used to examine social support (see Table 2) included the Social Support subscale of the Leadership Scale for Sports (Chelladurai & Saleh, 1980), the Social Support subscale from Cresswell and Eklund's (2004) Inventory of Early Signs of Burnout, the Social Support Questionnaire - Short Form (Sarason, Sarason, Shearin, & Pierce, 1987), the Perceived Available Support in Sport Questionnaire (Freeman, Coffee, & Rees, 2011), and the Athletes' Received Support Questionnaire (Freeman, Coffee, Moll, Rees, & Sammy, 2014).

Regarding social support, five studies (Study ID 2–5, 8) found a weak-to-moderate inverse relationship between social support and the three dimensions of burnout (emotional and physical exhaustion: −0.11 to −0.33; reduced accomplishment: −0.24 to −0.42; sport devaluation: −0.17 to −0.33) (see Table 2). One exception to this general finding involved Study ID 1. This study examined athletes in public universities located in Jordan. Relationships between social support and all burnout dimensions were moderate-to-strong (−0.63 to −0.70). Five studies (Study ID 4–8) examined global burnout and found weak-to-moderate inverse relationships (−0.27 to −0.48) between social support and global burnout.

Eleven studies (Study ID 9–18 and Hodge, Lonsdale, & Ng, 2008 [1]) examined the association of relatedness, defined as feelings of connectedness with salient individuals in sport (Baumeister & Leary, 1995), with athlete burnout perceptions. Among these studies, relatedness was assessed in general (i.e., among the team or dance company; Study ID 9, 10, 11, 12, 13, 15, 16, 17, 18, and Hodge et al., 2008) and regarding the head coach (Study ID 14). The most widely used scale ($n = 6$) was the Acceptance subscale from the Need for Relatedness Scale (Richer & Vallerand, 1998). Relatedness was also examined using the Relatedness Support subscale of the Peer Motivational Climate in Youth Sport Questionnaire (Ntoumanis & Vazou, 2005), adapted items from the Need Satisfaction Scale (Deci et al., 2001), adapted items from the Feelings of Relatedness Scale (Richer & Vallerand, 1998), and the Relatedness subscale of the Basic Needs Satisfaction in Sport scale (Ng, Lonsdale, & Hodge, 2011) (see Table 2).

For the ten studies with available effect sizes, nine (Study ID 9, 11–18) examined the association of relatedness with the emotional and physical exhaustion dimension, finding weak-to-moderate inverse relationships (−0.003 to −0.33) (see Table 2). Six studies (Study ID 11–14, 17 and 18) showed weak-to-moderate inverse relationships of relatedness with the dimensions of reduced accomplishment (−0.17 to −0.45) and sport devaluation (−0.21 to −0.42), respectively. Six studies (Study ID 10, 12, 13, 14, 17, 18) examined the association of relatedness with global burnout and showed weak-to-moderate inverse relationships (−0.29 to −0.49).

Three studies (Study ID 5, 19, and 20) examined the relationship of negative social interactions (i.e., unwanted advice or intrusion, failure to provide help, unsympathetic or insensitive behavior, and rejection or neglect) with burnout perceptions. All studies used the Positive and Negative Social Exchanges scale (Newsom, Rook, Nishishiba, Sorkin, & Mahan, 2005) and showed the associations of negative social interactions with the burnout dimensions as well as global burnout to be positive and weak-to-moderate (0.18–0.43) (see Table 2).

2.2. Meta-analytic results

The 20 studies included in the meta-analysis are summarized in Table 2. Across these studies, 5501 participants were recruited (range = 54 to 691). Mean age of participant samples ranged from 12.6 to 26.9 years and participants competed in a variety of sports at all levels (i.e., recreational to professional). Both cross-sectional (n = 14) and longitudinal (n = 6) designs were used. Results of the random-effects models and heterogeneity statistics are presented in Table 3. Model results suggested weak-to-moderate inverse relationships of social support and relatedness with burnout perceptions. For social support, summary correlations ranged from −0.31 to −0.40 for all burnout dimensions as well as global burnout, with the largest correlation between social support and reduced accomplishment. No confidence intervals included zero, indicating the meta-analytic results for social support were significant. Summary correlations for relatedness

[1] This study is excluded from the meta-analysis because the inclusion criteria were not fully satisfied.

Table 3
Results of meta-analytic random-effects models.

Variable	Effect Size Statistics by Dimension					Heterogeneity Statistics				Bias
	k	*r*	*Z*	*SE (Z)*	*95% C.I. (Z)*	*Q*	*Alpha*	*Tau²*	I^2	*Egger*
Social Support										
Physical/Emotional Exhaustion	6	−0.31	−0.32*	0.093	(-0.51, −0.14)	83.78*	1368.18	0.058	94.03	2.01*
Reduced Accomplishment	6	−0.40	−0.43**	0.095	(-0.61, −0.24)	90.51*	1368.18	0.062	94.47	1.53
Sport Devaluation	6	−0.34	−0.36*	0.093	(-0.54, −0.18)	85.54*	1368.18	0.059	94.15	1.94
Global Burnout	5	−0.36	−0.38*	0.045	(-0.47, −0.29)	10.67*	1101.33	0.006	62.53	1.35
Relatedness										
Physical/Emotional Exhaustion	9	−0.20	−0.21***	0.033	(-0.27, −0.14)	20.15*	1796.19	0.007	60.30	−1.46
Reduced Accomplishment	6	−0.34	−0.35***	0.038	(-0.43, −0.28)	13.69*	1460.15	0.006	63.47	0.71
Sport Devaluation	6	−0.31	−0.32***	0.031	(-0.38, −0.25)	9.22	1460.15	0.003	45.76	−0.02
Global Burnout	6	−0.37	−0.39***	0.031	(-0.45, −0.32)	10.96	1682.25	0.004	54.39	−0.37
Negative Social Interactions										
Physical/Emotional Exhaustion	3	0.28	0.29*	0.035	(0.22, 0.36)	2.57	372.44	0.002	22.12	0.11
Reduced Accomplishment	3	0.24	0.24**	0.015	(0.21, 0.27)	0.95	372.44	0.000	0.00	0.30
Sport Devaluation	3	0.23	0.24*	0.046	(0.14, 0.33)	4.04	372.44	0.005	50.51	1.42
Global Burnout	3	0.30	0.31**	0.025	(0.26, 0.36)	2.87	372.44	0.002	30.43	0.73

Note. k = number of studies with effect sizes; r = effect size (correlation); Z = effect size (Fisher's Z). The following outcomes were calculated using the converted r to Fisher's Z score: *SE* = standard error, *95% C.I.* = confidence interval (lower limit, upper limit), Q = statistic for homogeneity test, *Alpha* = summed weight adjusted for size of studies; Tau^2 = between-study variance in random effect model; I^2 = proportion of observed variance that is real; *Egger* = Egger's regression test; $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

ranged from −0.20 to −0.37 for all burnout dimensions as well as global burnout, with the largest correlation between relatedness and global burnout. No confidence intervals included zero, indicating the meta-analytic results for relatedness were significant. Model results suggested weak-to-moderate positive relationships of negative social interactions with burnout perceptions. Summary correlations ranged from 0.23 to 0.30 for all burnout dimensions as well as global burnout, with the largest correlation between negative social interactions and global burnout. No confidence intervals included zero, indicating the meta-analytic results for negative social interactions were significant. The Q-statistic was significant for social support with all dimensions of burnout as well as global burnout and for relatedness with the exhaustion and reduced sense of accomplishment burnout dimensions. The Q-statistic was not significant for relatedness with the devaluation burnout dimension and global burnout nor for negative social interactions with any of the burnout indices. For social support and relatedness, I^2 values with all burnout dimensions and global burnout were moderate-to-large, indicating that a large proportion of the observed variation between study effect sizes is real (Borenstein et al., 2009). For negative social interactions, all I^2 values except for with reduced accomplishment were small-to-moderate. These values indicate that some of the observed variation between study effect sizes is real.

Only one model showed evidence of publication bias (social support–exhaustion; see Table 3). Egger's regression test was significant (2.01, $p = .04$). Because of this evidence of potential publication bias, the Trim and Fill method was employed to estimate the best unbiased effect size for the association of social support with physical/emotional exhaustion (adjusted Fisher's $Z = -0.41$; 95% CI [-0.59, −0.24]). This specific finding noted, overall the set of Egger's regression tests suggests that publication bias does not appear to be a concern for the current meta-analysis.

3. Discussion

Athlete burnout is a multidimensional syndrome that is influenced by the sport social context (Cresswell & Eklund, 2006, 2007; Udry et al., 1997). Within the sport social context agents, including coaches, parents, and teammates, can influence athletes' sport experiences and affect their well-being. Athletes spend a considerable amount of time with their coaches and teammates, frequently interacting with each other. Consequently, these interactions can shape perceptions of athlete burnout, which in turn can influence athletes' motivation and commitment in sport (Smith et al., 2019). We reviewed the relationships between social constructs and athlete burnout perceptions and conducted a meta-analysis of available effect sizes to clarify what aspects of the social context are linked with burnout, examine the magnitude and consistency of effects across studies, and highlight future research opportunities.

Our search showed that over the span of 17 years, athlete burnout work has assessed various aspects of the social context of sport. Social constructs that have been examined regarding athlete burnout include: conflict with teammates and coaches, social support, relatedness, bullying, negative and positive social interactions, prosocial and antisocial behavior, social constraints, perceptions of the coach-athlete relationship, social well-being, and the working alliance between the coach and athlete. Most constructs were examined and reliably measured in two or fewer studies, with the exception of social support, relatedness, and negative social interactions. Therefore, many constructs could not be used in the meta-analysis. While this limits our ability to draw conclusions about the meaningfulness of effect sizes across studies, it is evident that a noteworthy range of social constructs have begun to be examined in quantitative athlete burnout research. Moving forward, it will be important to conduct replication efforts with these social constructs as well as consider additional theory-driven work that directs attention to promising novel hypotheses pertaining to social contributions to athlete burnout perceptions.

Among the social constructs identified in our review, social support, relatedness, and negative social interactions appeared most frequently in the literature. Despite heterogeneity among studies, summary effect sizes for social support and all three dimensions of athlete burnout were significant. In other words, despite between-study variation, this aspect of relationships is consistently and negatively associated with burnout perceptions. Results suggest that social support from salient individuals in sport, including coaches and teammates, may temper perceptions of exhaustion, reduced accomplishment, and sport devaluation (Cresswell, 2009; Cresswell & Eklund, 2004; DeFreese & Smith, 2013, 2014; Raedeke & Smith, 2004). Considering the type of social support (i.e., emotional, esteem, informational, and tangible; Cutrona & Russell, 1990; Rees & Hardy, 2000) that is provided or perceived to be available could benefit the burnout knowledge base. Emotional support (i.e.,

providing comfort) may help alleviate physical and mental exhaustion by providing an avenue for athletes to cope with fatigue (i.e., emotional coping; Endler & Parker, 1994). On the other hand, esteem support (i.e., providing support for one's competence) and tangible support (i.e., providing instrumental advice) may help lower perceptions of reduced accomplishment. Esteem support may contribute to an athlete's perception of competence and tangible support may provide an athlete with instruction on how to improve performance. Emotional support and informational support (providing advice and guidance) may help an athlete cope with changing attitudes toward his or her sport involvement. In short, more fine-grained exploration of social support type offers a potentially fruitful research direction. For example, future work could examine athlete perceptions of emotional and information support that is provided by coaches across a season and how this influences changes in athlete burnout perceptions.

The social support provider may also be an important consideration. Various providers may be more or less salient to athletes' sport experiences, depending on social development, sport experience, or other maturational factors (Horn, 2004). Because social support can vary in type as well as by the provider of support, a range of instruments are used to measure this important social feature of the sport context. Instruments examine overall support or support from specific social agents. Moreover, instruments assess satisfaction with support, frequency of support, received support, and perceived support. The use of different instruments that assess social support in sport may explain the heterogeneity, or between-study variance, observed for this construct. Thus, future research would be valuable that explores if the type or provider of social support moderates the relationship between this social construct and athlete burnout perceptions.

Relatedness negatively associated with all three burnout dimensions, supporting the findings of Li, Wang, Pyun, and Kee's (2013) meta-analysis examining links between basic psychological needs, motivation, and athlete burnout. Though heterogeneity was present for two of the three dimensions (i.e., emotional and physical exhaustion and reduced accomplishment), summary effect sizes were significant, speaking to the salience of associations between relatedness and athlete burnout dimensions. Perceptions of exhaustion and reduced accomplishment may be diminished by having connections with teammates, leading to interactions (e.g., venting) that enable athletes to emotionally cope with exhaustion and poor performance. Such connections create a sense of belonging and acceptance (Ryan & Deci, 2002), which is a social context with potential to foster friendships on one's team. As higher friendship quality and peer acceptance are positively linked with enjoyment and self-determined motivation (Smith, Ullrich-French, Walker, & Hurley, 2006), friendships with teammates may foster enjoyment and motivation and decrease perceptions of sport devaluation. These possibilities represent potentially valuable research directions on athlete burnout.

Negative social interactions positively associated with athlete burnout dimensions. Heterogeneity was not present for this social construct, indicating that there was little between-study variance. This may be attributable to the small number of studies examining negative social interactions ($n = 3$) as well as the use of the same instrument to measure the construct. Summary effect sizes were significant, suggesting that negative social interactions are associated with greater perceptions of exhaustion, reduced accomplishment, and sport devaluation. Negative social interactions, such as insensitive behavior or rejection, may fuel perceptions of emotional exhaustion because these interactions are linked with psychological distress (Beeri & Lev-Wiesel, 2012). Such interactions could also signal that one's contributions are unimportant, leading to perceptions of reduced accomplishment and devaluation. Indeed, through their interactions, significant others such as parents, coaches, and teammates may reduce an athlete's perception of competence, in turn decreasing self-determined motivation and leaving an athlete vulnerable to burnout perceptions (Ntoumanis, 2012). Such interactions also have potential to signal a context that is unsupportive. An important direction for future research will be to explore the interplay of social constructs, such as negative social interactions as they relate to perceptions of available social support, in shaping athlete burnout perceptions.

Such work will require greater attention to negative aspects of the social context. Though earlier qualitative work highlighted the role of negative aspects of social relationships on athletes' perceptions of burnout (Cresswell & Eklund, 2006, 2007; Gould et al., 1996; Udry et al., 1997), examination of such constructs is sparse compared to the focus on social support and relatedness. As athlete burnout is a maladaptive consequence of sport participation, there is a need for greater examination of negative aspects of social relationships in sport with regard to burnout. Only one negative social construct, negative social interactions, was assessed reliably in more than two studies. Summary effects were positive and low-to-moderate, comparable in magnitude to the inverse links found between positive aspects of social relationships and athlete burnout. Such findings indicate that positive and negative aspects of social relationships are both salient contributors to perceptions of athlete burnout. Work is needed that examines specific negative aspects of social relationships (e.g., conflict, exclusion) and athlete burnout perceptions. Though social support and negative social interactions show a low-to-moderate inverse correlation (DeFreese & Smith, 2014), it is difficult to argue that the absence of positive social support necessarily corresponds with the presence of negative social interactions. Drilling down to specific negative exchanges, for example, one would not assume that an athlete perceiving the absence of supportive behavior necessarily perceives the presence of conflict, bullying, or antisocial behaviors. Accordingly, work is needed that clarifies how specific negative behaviors and interactions affect athlete experiences in sport.

As noted earlier, the effect of social interactions may vary by the specific type of relationship (i.e., athlete–athlete, athlete–coach, athlete–parent). For instance, the type of social support (or pressure) provided by a parent may differ from that given by a coach or teammate. By amalgamating social constructs across various social agents, such potentially important nuances cannot be assessed. Moreover, support, relatedness, or negative social interactions from one agent may be more meaningful to an athlete and exert greater influence on burnout perceptions as a function of various moderators. The type of social support needed, importance of relatedness with teammates and coaches, and the maladaptive consequences of negative social interactions may depend on age or the level of sport participation. Preferred sources of competence information and the salience of parents, peers, and others change with age (Horn, 2004). As children approach adolescence, peer relationships are of increased importance and therefore may be especially important to athlete burnout perceptions. Future work should attend to these moderators, which would provide a developmental understanding of how positive and negative aspects of social interactions tie with athlete burnout perceptions. Specifically, research should examine how social interactions with key agents (e.g., coaches and teammates) both independently and collectively may influence athlete burnout perceptions across development.

As a result of the current state of the literature, there are inherent limitations to the meta-analysis. First, the meta-analysis results for each social construct are based on a small number of studies. Thus, there may be error in the between-study variance (i.e., tau^2). This error can affect the summary effect size and corresponding confidence interval because tau^2 is used to calculate the weight given to each study. This weight is then used to calculate the summary effect size (Borenstein et al., 2009). More generally, the small number of studies necessitates that the conclusions drawn here be considered tentative and requiring further examination as the database expands on social constructs and athlete burnout perceptions. With this examination our conclusions can be affirmed or modified as appropriate, and we can begin to formulate potential practical implications. Second, athlete burnout work has examined aspects of the social context of sport with little replication.

Because of this, we could not explore possible moderators (e.g., age of athlete, level of athlete, type of sport, social agent). As this research area grows, it will be possible to explore theoretically-relevant moderators. Third, the instrumentation used to study social support and relatedness varied for the studies included in the meta-analysis. This could affect conclusions drawn from a summary analysis as well as the conclusions forwarded in the original research investigations. Future work should consider the moderating effects of the instrumentation used to assess social constructs in athlete burnout research. Finally, though the present analyses do not suggest noteworthy publication bias, results should be interpreted with caution in light of the relatively small number of studies that were meta-analyzed and the potential for publication bias to emerge in this literature and influence effect size estimates.

These limitations acknowledged, the current study meaningfully contributes to the athlete burnout literature. Empirical research examining social constructs and burnout perceptions was reviewed and synthesized, clarifying what aspects of the social context have been studied, providing initial summary effect sizes, and directing future research examining the social contributors of burnout perceptions. The most frequently assessed social constructs were social support, relatedness, and negative social interactions. Results highlight the importance of considering the social context when examining perceptions of athlete burnout. As much of the literature has focused on positive aspects of social relationships, there is a need to deliberately examine negative social constructs in quantitative athlete burnout research. This will enable testing of more nuanced hypotheses about the interaction of social constructs and the role of moderators in the social context of athlete burnout.

Conflicts of interest

The authors (Pacewicz, C. E., Mellano, K. T., & Smith, A. L.) certify that there are no conflicts of interest to report.

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