Well-being in volleyball players: Examining the contributions of independent and balanced psychological need satisfaction

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ABSTRACT

Objectives: The purpose of this investigation was to test associations between the fulfillment of basic psychological needs and two dimensions of psychological well-being using (a) an additive model and (b) a balanced model.

Design: This study employed a non-probability based sampling and a cross-sectional design.

Methods: Collegiate volleyball players (N = 219; females = 127) completed a battery of self-report instruments.

Results: Aligned within Basic Psychological Needs Theory (Deci & Ryan, 2002) and study hypotheses (Sheldon & Niemiec, 2006), results demonstrated that basic psychological need fulfillment was associated with psychological well-being in the context of volleyball (R²adj ranged from 0.20 to 0.35). Balanced psychological need fulfillment was generally predictive, albeit minimally, of well-being indices beyond the contributions made by perceived competence, autonomy and relatedness.

Conclusions: This investigation highlights the need for further study of BPNT in the realm of sport including assessments of balanced need satisfaction on markers of well-being.

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Despite the established association between sport participation and various indices of well-being (Biddle & Mutrie, 2008; Bouchard, Blair, & Haskell, 2007), the magnitude of the relationship has been weaker than expected (e.g., Greenleaf, Boyer, & Petrie, 2009). In an effort to explain the above, researchers (e.g., Shaffer & Wittes, 2006) have speculated that the effects of sport participation on well-being may be indirect (as opposed to direct) through consideration of other psychological factors. Self-Determination Theory (SDT; Deci & Ryan, 2002, 2008) represents one theoretical approach through which insight into the mechanisms responsible for variation in well-being has been examined. One component of the SDT framework is Basic Psychological Needs Theory (BPNT; Deci & Ryan, 2002) which posits the existence of innate psychological needs for competence, autonomy and relatedness. Competence refers to feeling proficient in dealing with optimal challenges presented within one's social milieu (White, 1963). Autonomy concerns feeling agentic and volitional in the behaviors undertaken such that one's actions are self-endorsed with an internal locus of causality rather than to service external agenda (deCharms, 1968). Relatedness reflects the need for satisfying and supportive social relationships (Baumeister & Leary, 1995).

One proposition central to the development of BPNT according to Deci and Ryan (2002) concerns the direct role played by the authentic fulfillment of each psychological need on well-being. Cointed the “additive” (p. 331) model (Sheldon & Niemiec, 2006), feeling competent, a sense of autonomy, and securely related to others is essential such that each psychological need exerts a unique direct effect on markers of well-being. Support for the ‘additive’ model has been reported across varied domains (cf., Deci & Ryan, 2008) including sport (cf., Ryan & Deci, 2007) with small to moderate relationships noted between psychological need satisfaction and markers of ill-being (e.g., reduced burnout; Eklund & Cresswell, 2007; Hodge, Lonsdale, & Ng, 2008) and well-being (e.g., higher self-esteem; Amorose, Anderson-Butcher, & Cooper, 2009; Gagné, 2002, 2008) represents one theoretical approach through which insight into the mechanisms responsible for variation in well-being has been examined. One component of the SDT framework is Basic Psychological Needs Theory (BPNT; Deci & Ryan, 2002) which posits the existence of innate psychological needs for competence, autonomy and relatedness. Competence refers to feeling proficient in dealing with optimal challenges presented within one's social milieu (White, 1963). Autonomy concerns feeling agentic and volitional in the behaviors undertaken such that one's actions are self-endorsed with an internal locus of causality rather than to service external agenda (deCharms, 1968). Relatedness reflects the need for satisfying and supportive social relationships (Baumeister & Leary, 1995).

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Autonomy, and relatedness impact well-being in the context of sport. Extrapolating from the ‘additive’ model, Sheldon and Niemiec (2006) advanced a complementary approach (i.e., the ‘balanced’ model) for understanding the role of satisfying basic psychological needs within BPNT. ‘Balanced’ psychological need fulfillment suggests that well-being is a function not only of the absolute level of each psychological need satisfied (i.e., the ‘additive’ model), but also the degree to which fulfillment of competence, autonomy, and relatedness needs operate synergistically in a state of “equilibrium” (Perreault, Gaudreau, Lapointe, & Lacroix, 2007, p. 446). As such, individuals reporting less variability (i.e., more balance) across the three basic psychological needs demonstrate higher levels of well-being beyond the contributions of each individual psychological need expressed in the ‘additive’ model. Across a series of seminal studies Sheldon and Niemiec (2006) documented support for the ‘balanced’ model as lower variability among the three psychological needs predicted variation in well-being beyond the contributions of constructs embedded within the ‘additive’ model. Further to this, Sheldon and Gunz (2009) demonstrated that individuals lower in one psychological need (in comparison to other needs) are motivated to reduce this disparity.

Research examining the role of ‘additive’ and ‘balanced’ models in relation to a marker of ill-being (i.e., athlete burnout) reported somewhat contradictory findings (Anderson-Butcher & Amorose, 2008; Perreault et al., 2007). With the anticipated negative association between balanced need satisfaction and burnout demonstrated, only Perreault et al. (2007) noted that balanced need fulfillment statistically contributed to athlete burnout beyond that found for individual effects for each psychological need. More recently, adopting global self-esteem as the outcome variable, Lightheart et al. (2010) demonstrated support for the ‘additive’, but not the ‘balanced’ model, within a diverse sample of individuals living with disability who compete in adapted sport.

Despite this emerging body of literature, Gagné and Blanchard (2007) suggest that further investigation of key assumptions embedded within BPNT (Deci & Ryan, 2008) is warranted to enhance our understanding of ‘when’ and ‘how’ feelings of competence, autonomy, and relatedness impact well-being in the context of sport. One opportunity to extend BPNT (Deci & Ryan, 2008) research is through consideration of the conceptualization of well-being. Well-being has been defined as “a dynamic and relative state where one maximizes his or her physical, mental, and social functioning in the context of supportive environments to live a full, satisfying, and productive life” (Kobau, Sneizek, & Zack, 2009, p. 4) with two broad conceptualizations advanced in the literature (Ryan & Deci, 2001). Hedonic well-being (HWB) has been defined as subjective happiness and the experience of pleasure (Ryan & Deci, 2001) and is typically operationalized as high levels of pleasurable affect, the absence of negative affect, and high life satisfaction. With human nature portrayed as passive in the hedonic tradition, eudaimonic philosophy establishes human nature to be an active process inclusive of motivational and behavioral components (Chatzisarantis & Hagger, 2007; Ryff & Keyes, 1995). Eudaimonic well-being (EWB) reflects optimal psychological functioning and is the outcome of positive goal pursuits (Ryan, Huta, & Deci, 2008). Although not universally endorsed (e.g., Kashdan, Biswas-Diener, & King, 2008), theoretical reviews (Ryan & Deci, 2001) and empirical evidence (Gallagher, Lopez, & Preacher, 2009; Huppert & Whittington, 2003; Steger, Kashdan, & Oishi, 2008) have purported distinctions between hedonic and eudaimonic forms of well-being.

Consideration of the ‘balanced’ model (Sheldon & Niemiec, 2006) represents one meaningful extension to the development of BPNT (Deci & Ryan, 2002). However, considerable scope for further inquiry to determine the relative merits of both the ‘additive’ and ‘balanced’ models to understanding how psychological need fulfillment in sport impacts well-being criterion within BPNT exists. First, the focus of sport-related literature examining the role of ‘balanced’ versus ‘additive’ models of psychological need satisfaction has centered on markers of ill-being such as burnout (e.g., Amorose et al., 2009; Perreault et al., 2007) as opposed to well-being (cf., Lightheart et al., 2010), despite Deci and Ryan’s (2002) contentions that fulfilling psychological needs impacts well-being rather than detracts from ill-being. Consequently, investigation to determine the predictive effects attributed to “balanced” need satisfaction in combination with the “additive” model on markers of well-being was undertaken in the present investigation. Second, eudaimonic well-being (i.e., optimal functioning) is minimally understood in comparison to its hedonic (i.e., the pursuit of pleasure) counterpart (Gagné & Blanchard, 2007). With evidence suggestive that the absence of eudaimonic well-being, rather than the presence of hedonic well-being, is more directly linked with mortality and health (Clark & Watson, 1991; Huppert & Whittington, 2003), consideration of well-being in both its forms is warranted. Finally, most of the aforementioned investigations have focused on global indices of well-being (e.g., Lightheart et al., 2010) despite calls for more consistent examination of context-specific markers embedded within a specific social environment (Amorose et al., 2009). As need satisfaction is largely contextually determined (Deci & Ryan, 2008), context-specific markers of study variables were assessed in the present investigation.

The purpose of this investigation was to examine the contribution of both ‘additive’ and ‘balanced’ models of psychological need satisfaction in relation with hedonic and eudaimonic forms of well-being in a sample of collegiate volleyball players. Consistent with Deci and Ryan (2002), it was hypothesized that greater satisfaction of competence, autonomy, and relatedness needs individually would be associated with higher levels of hedonic and eudaimonic well-being. Given the equivocal nature of previous investigations (Lightheart et al., 2010; Perreault et al., 2007), hypotheses were not advanced specific to the unique contribution of ‘balanced’ need satisfaction.

Methods

Participants

Collegiate volleyball players (N = 219; 57.80% females); \( M_{\text{Age}} = 20.03; \) \( SD_{\text{Age}} = 1.82; \) \( R = 18 \text{–} 28 \text{ years} \) participated in this investigation. The majority of participants identified their ethnicity as “Caucasian/White” (n = 195; 89.90%). Participant Body Mass Index (BMI) values ranged from 17.58 to 31.71 kg/m\(^2\) with male \( (M = 23.80 \text{kg/m}^2; SD = 2.35) \) and female \( (M = 21.82 \text{kg/m}^2; SD = 1.95) \) participants on average classified in the normal category of risk classifications (Health Canada, 2009). Participants reported playing with their current collegiate volleyball team for approximately twelve months which equates to two seasons \( (M = 11.22; SD = 7.70; R = 0 \text{–} 34 \text{ months}) \). Combined, middle and left side positions accounted for more than half of the reported playing positions (55.50%) with over half (60.60%) reporting starting for their current team.

Measures

Demographics

Participants were asked to self-report variables such as age, gender, ethnicity, height/weight, position, and starting status.

An independent samples t-test revealed no statistically significant (\( p > 0.05 \)) differences by gender (Cohen’s \( d = 0.14 \) to 0.08; Cohen, 1988) across any of the study variables.
Basic psychological need satisfaction

Participants completed three modified instruments as indices of psychological need fulfillment including: the 5-item Perceived Competence subscale of the Intrinsic Motivation Inventory (IMI-PC; McAuley, Duncan, & Tammen, 1989), and 6 and 8 items from the Basic Need Satisfaction at Work Scale to assess perceived autonomy (BNS-A) and relatedness (BNS-R) respectively (Deci, Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001). A stem preceded each set of items to direct participant responses to the degree they felt their psychological needs were fulfilled during the time they engaged in volleyball. Sample items used within this study were as follows: (a) IMI-PC (“I think I am pretty good at volleyball”); (b) BNS-A (“I am free to express my ideas and opinions at volleyball”); and (c) BNS-R (“I get along with people at volleyball”). Item responses were provided on a 7-point Likert scale ranging from 1 (Not at all true) to 7 (Very true). The IMI-PC and BNS-A (McAuley et al., 1989; Reinboth & Duda, 2006; Reinboth et al., 2004) and BNS-R (Gray & Wilson, 2008) have previously been modified for use within different sport contexts (McAuley et al., 1989; Reinboth & Duda, 2006; Reinboth et al., 2004) with support for the construct validity of test scores noted.

Well-being

Participants completed two instruments to assess hedonic and eudaimonic markers of well-being. Consistent with the conceptual definition of hedonic well-being (Kahneman, Diener, & Schwarz, 1999), the short form of the Positive and Negative Affect Scale (PANAS; Mackinnon et al., 1999) was administered. The PANAS is designed to assess the intensity associated with positive (5-items; Sample item: “enthusiastic”) and negative (5-items; Sample item: “distressed”) affect. Items were presented following a contextual stem “This scale consists of a number of words that describe different feelings and emotions. Please answer the following questions by considering how you typically feel when participating in volleyball using the scale provided.” Items were assessed across a 5-point Likert scale ranging from 1 (Very slightly or not at all) to 5 (Extremely). The PANAS has been used in previous sport research supporting the construct validity of score interpretations from this instrument (Sanchez, Boschker, & Llewellyn, 2010).

Participants completed the 7-item Subjective Vitality Scale (SVS; Ryan & Frederick, 1997) as one marker of eudaimonic well-being (Ryan et al., 2006). Following the stem “please respond to each of the following statements by indicating the degree to which the statement is true for you when you engage in volleyball”, each item was rated across a 7-point Likert scale anchored at the extremes from 1 (Not at all true) to 7 (Very true). A sample SVS item used in this study was “I feel energized.” Support for the construct validity of the SVS score interpretations in sport contexts has been documented in previous studies (e.g., Reinboth et al., 2004).

Procedure

Following ethical approval and consistent with Dillman’s (2006) recommendations for maximizing responses by survey research, head coaches affiliated with the Canadian College Athletic Association (N = 82) were contacted via electronic mail and informed of the study’s purpose. Coaches who agreed to allow participant recruitment (n = 27; 33.00%) from their team provided either (a) a team roster including contact e-mails for players or (b) agreed to a mutually convenient time for face-to-face recruitment. Regardless of participant recruitment method, athletes were presented with a standardized Letter of Invitation to reduce the potential for between-subjects effects associated with test administration (Pedhazur & Pedhazur-Schmelkin, 1991). Following the provision of informed consent, participants were asked to complete the paper-and-pencil or electronic version of the questionnaire on a single occasion2. Participant response rate regardless of recruitment method was 72.26 percent with a total of 226 collegiate volleyball players consenting to participate in this investigation.

Data analyses

Preliminary data analyses were conducted to assess occurrence and patterns of missing values, univariate normality (i.e., skewness and kurtosis) of study variables, and estimates of internal consistency reliability (i.e., Cronbach’s α; Cronbach, 1951). Descriptive statistics and bivariate correlation (Pearson r) coefficients were then calculated across all study variables. Sheldon and Niemiec’s (2006) approach to calculate ‘balance’ (σ) was adopted whereby Total Divergence (TD) was calculated as the sum of items within each psychological need satisfaction scores. An overall ‘balance’ score was then calculated by subtracting each participant’s observed TD score from the upper value evident in the range of TD scores within this sample. Lastly, separate hierarchical multiple regression analyses (HRMA) were conducted to test the relationship between ‘additive’ and ‘balanced’ models of psychological need satisfaction and well-being indices. Relevant statistical assumptions and the calculation of effect sizes (f2; Cohen, 1988) were conducted in conjunction with the HMRA. To predict each facet of well-being, basic psychological need fulfillment was entered in Model 1 (i.e., the ‘additive’ model) followed by the addition of ‘balanced’ need satisfaction in Model 2 (i.e., the ‘balanced’ model). As such, Model 2 was interpreted as the unique variance of ‘balanced’ need satisfaction on well-being beyond the contribution of the ‘additive’ approach.

Results

Preliminary analyses and descriptive statistics

Data was screened for non-respondents and patterns of missing data. Seven participants were identified as non-respondents rendering an effective sample size of (N = 219). Based on participant responses, minimal evidence of missing values was noted on demographic and psychological variables (i.e., 0.00–2.70%). Examination of missing data patterns demonstrated no evidence of systematic non-response and consequently, missing data were treated as random. For psychological variables, missing values were replaced using a within-person mean substitution protocol (Hawthorne & Elliot, 2005). Continuous variables demonstrated minimal deviation from normality (Skewness = −0.96 to 1.09; 2 Participant responses on psychological variables did not differ significantly (p > 0.05) across questionnaire administration mode (i.e., paper-and-pencil or internet based; Cohen’s d = −0.44 to 0.13; Cohen, 1988.).
Kurtosis = −0.40 to 2.90; Glass & Hopkins, 1996). Estimates of internal consistency reliability (i.e., Cronbach’s α; Cronbach, 1951) ranged from 0.85 to 0.93 in the present sample (see Table 1 for specific α-values). Over all, participants reported that their basic psychological needs were relatively satisfied (i.e., above mid-point levels per Likert response scale) with the fulfillment of the psychological need for relatedness in the context of volleyball most strongly endorsed (see Table 1). Participants generally felt vital and reported positive affect when engaged in volleyball; whereas, negative affect was minimally endorsed (see Table 1).

Bivariate correlations and hierarchical multiple regressions

Bivariate correlations and 95% confidence intervals between study variables are presented in Table 2. Greater fulfillment of each basic psychological need in volleyball contexts was associated with heightened levels of vitality and positive affect (r12 = 0.37–0.50) and lower negative affect (r12 = −0.25 to −0.43). Balanced need satisfaction scores showed a weak negative pattern of relationships with indices of well-being (r12 = −0.11 to −0.16).

A series of HMRRAs were conducted with markers well-being serving as the criterion variables and ‘additive’ (Model 1) and ‘balanced’ need fulfillment (Model 2) entered as the predictor variables. Consideration of outliers (i.e., z-scores > 4.0; SDs from the mean) led to the deletion of two cases. Independent variables were not highly correlated (i.e., r < 0.80) and variance inflation factors (values ranged from 1.29 to 2.64) were not suggestive of concerns specific to singularity or multicollinearity (Kutner, Nachtsheim, & Neter, 2004). No evidence of heteroscedasticity was revealed through visual inspection of residual scatter plots (Tabachnick & Fidell, 2001). Independence of errors were assessed with Durbin–Watson’s statistic and ranged from 1.71 to 1.97 in this sample.

Discussion

The aim of this investigation was to examine the fulfillment of basic psychological needs as a mechanism to promote well-being in a sample of collegiate volleyball players. Proponents of BPN (Deci & Ryan, 2002) contend that the fulfillment of each basic psychological need is inextricably linked, in a direct and positive manner to psychological well-being (i.e., the ‘additive’ model; Sheldon & Niemiec, 2006). Although researchers have examined this tenet across sport contexts (e.g., Amorose et al., 2009; Reinboth & Duda, 2006), the current investigation aimed to extrapolate upon previous empirical work through (a) testing the heuristic contributions of ‘balanced’ need fulfillment on well-being, (b) the inclusion of varied markers of well-being, and (c) considering the importance of examining well-being at a contextual level. Results demonstrated that the fulfillment of the basic psychological needs was associated with greater well-being outcomes in volleyball contexts with balanced need satisfaction demonstrating (at best) minimal association and predictive power.

Deci and Ryan (2002) assert that the fulfillment of the psychological needs for competence, autonomy, and relatedness represent necessary conditions for the promotion of well-being. Results from the present investigation, in combination with other sport-based BPN research (e.g., Amorose et al., 2009; Reinboth et al., 2004),
models estimated with the following formula:

\[ y, x \beta = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \epsilon \]

where \( y \) is the dependent variable, \( x_1 \) and \( x_2 \) are predictors, \( \beta_0 \) is the intercept, and \( \epsilon \) is the error term.

**Table 4**

Hierarchical multiple regression analyses predicting positive affect from psychological need satisfaction.

<table>
<thead>
<tr>
<th>Variable</th>
<th>( \Delta R^2 )</th>
<th>B</th>
<th>p</th>
<th>( \Delta \beta^2 )</th>
<th>95% CI</th>
<th>( r_{y,x}(\beta) )</th>
<th>r_f</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive affect</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Model 1 (F(3, 213)) – 28.95, p = 0.00; ( R^2 = 0.28 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Competence</td>
<td>0.28</td>
<td>0.32</td>
<td>0.00</td>
<td>0.39</td>
<td>0.13–0.31</td>
<td>0.06</td>
<td>0.85</td>
</tr>
<tr>
<td>Autonomy</td>
<td>0.12</td>
<td>0.09</td>
<td></td>
<td>0.01–0.20</td>
<td>0.01</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Relatedness</td>
<td>0.22</td>
<td>0.00</td>
<td></td>
<td>0.05–0.22</td>
<td>0.04</td>
<td>0.78</td>
<td></td>
</tr>
<tr>
<td>Model 2 (F(4, 212)) – 22.92, p = 0.00; ( R^2 = 0.29 )</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competence</td>
<td>0.01</td>
<td>0.31</td>
<td>0.00</td>
<td>0.02</td>
<td>0.13–0.30</td>
<td>0.06</td>
<td>0.83</td>
</tr>
<tr>
<td>Autonomy</td>
<td>0.23</td>
<td>0.01</td>
<td></td>
<td>0.04–0.32</td>
<td>0.02</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>Relatedness</td>
<td>0.10</td>
<td>0.28</td>
<td></td>
<td>0.05–0.18</td>
<td>0.01</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>Balance</td>
<td>-0.16</td>
<td>0.06</td>
<td></td>
<td>0.13–0.00</td>
<td>0.01</td>
<td>-0.20</td>
<td></td>
</tr>
</tbody>
</table>

**Table 5**

Hierarchical multiple regression analyses predicting negative affect from psychological need satisfaction.

<table>
<thead>
<tr>
<th>Variable</th>
<th>( \Delta R^2 )</th>
<th>B</th>
<th>p</th>
<th>( \Delta \beta^2 )</th>
<th>95% CI</th>
<th>( r_{y,x}(\beta) )</th>
<th>r_f</th>
</tr>
</thead>
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<tr>
<td><strong>Negative affect</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 1 (F(3, 213)) – 18.45, p = 0.00; ( R^2 = 0.20 )</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Competence</td>
<td>0.20</td>
<td>-0.08</td>
<td>0.24</td>
<td>0.27</td>
<td>-0.17 to 0.04</td>
<td>0.01</td>
<td>-0.57</td>
</tr>
<tr>
<td>Autonomy</td>
<td>-0.38</td>
<td>0.00</td>
<td></td>
<td>-0.46 to 0.20</td>
<td>0.09</td>
<td>-0.98</td>
<td></td>
</tr>
<tr>
<td>Relatedness</td>
<td>-0.05</td>
<td>0.48</td>
<td></td>
<td>-0.14 to 0.07</td>
<td>0.00</td>
<td>-0.62</td>
<td></td>
</tr>
<tr>
<td>Model 2 (F(4, 212)) – 13.95, p = 0.00; ( R^2 = 0.19 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competence</td>
<td>-0.01</td>
<td>-0.09</td>
<td>0.22</td>
<td>0.00</td>
<td>-0.17 to 0.04</td>
<td>0.00</td>
<td>-0.57</td>
</tr>
<tr>
<td>Autonomy</td>
<td>-0.33</td>
<td>0.00</td>
<td></td>
<td>-0.46 to 0.12</td>
<td>0.04</td>
<td>-0.98</td>
<td></td>
</tr>
<tr>
<td>Relatedness</td>
<td>-0.10</td>
<td>0.31</td>
<td></td>
<td>-0.21 to 0.07</td>
<td>0.00</td>
<td>-0.62</td>
<td></td>
</tr>
<tr>
<td>Balance</td>
<td>-0.07</td>
<td>0.45</td>
<td></td>
<td>-0.11 to 0.05</td>
<td>0.00</td>
<td>-0.25</td>
<td></td>
</tr>
</tbody>
</table>

**Note.** N = 217; \( R^2 = \) adjusted R-squared value from each regression model; \( \hat{\beta} \) – standardized beta coefficients; \( p \) – probability value; \( F = F \) statistic; \( \Delta \beta^2 \) – change in effect size; \( CI \) – confidence intervals; \( r_{y,x}(\beta) \) – estimate of unique variance per predictor variable in the regression models where values represent the square of the part-correlation coefficients for each predictor (Hair et al., 2006); \( r_f \) – structure coefficients for each predictor variable included in the regression models estimated with the following formula: \( r_f \) (where \( r \) is the bivariate correlation and \( B \) is the multiple regression coefficient per model).
potential concerns with the reliability of test scores associated with perceptions of autonomy fulfillment (i.e., Cronbach’s $\alpha = 0.54$; Cronbach, 1951) should be noted. As lower estimates of reliability may compromise validity support or the ability of test scores to yield meaningful effects (e.g., attenuate effect sizes; Thompson, 2002) caution in interpretation of conclusions specific to the need for autonomy is justified. Finally, adapted measures were employed to assess the fulfillment of the basic psychological needs for competence, autonomy, and relatedness in the context of volleyball. While such adaptations are not uncommon in sport-based BPNT literature (e.g., Reinhoth & Duda, 2006; Reinhoth et al., 2004), the extent to which the items are fully representative and relevant to the targeted construct remains undetermined (Steineer & Norman, 2008).

In sum, the present investigation generally afforded support for the study’s hypotheses and BPNT tenets (Deci & Ryan, 2002). Basic psychological need fulfillment in the context of volleyball was associated with, and predictive of, two forms of well-being. Balanced need satisfaction accounted for minimal additional variance beyond the contributions of each independent need, with the exception of negative affect. The present investigation did little to clarify the equivocal evidence specific to the meaningfulness of balanced fulfillment beyond individual-level considerations which is suggestive of additional thoughtful empirical investigation and theoretical considerations. Through the employment of various strategies such as coach interpersonal style, the fulfillment of basic psychological needs may facilitate psychological well-being in sport participants.

References


