Rev Bras Cineantropom Desempenho Hum

original article

https://doi.org/10.1590/1980-0037.2023v25e90980

Do gender and type of sport matter in the association between basic psychological needs satisfaction and life skills development?

Gênero e o tipo de esporte importam na associação entre a satisfação das necessidades psicológicas básicas e o desenvolvimento de competências para a vida?

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Abstract – This study examined how basic psychological needs satisfaction can predict youth participants' life skills development according to gender and sport type. A sample of 461 Brazilian youth sport participants (325 boys and 136 girls) ranging between 10 and 17 years was included. Data collection was conducted through the Life Skills Scale for Sport and Basic Needs Satisfaction in Sport Scale. Overall, the three subscales of basic psychological needs satisfaction explained a significant amount of the variance in eight life skills (R^2 range = .02 to .08 p < .05) and total life skills (R^2 = .07; p < .001) in male athletes. Concerning female athletes, multiple regression analyses revealed significant variance only for teamwork (R^2=.09; p<.01) and goal setting (R^2= .06; p<.05). Regarding the type of sport, the model presented a significant amount of the variance in eight life skills (R^2 range = .02 to .05 p < .05) and total life skills (R^2 = .08; p < .001) in team sports. Lastly, in individual sports, multiple regression analyses revealed significant variance only on goal setting (R^2= .04; p<.05). Findings showed that youth sport coaches could focus on youth participants' basic psychological needs when trying to foster life skills development across sport contexts. Based on these findings, several suggestions for improving future research and practice in this area are presented.

Key words: Motivation; Positive youth development; Self-determination theory; Values; Youth sport.

Resumo – *Este estudo examinou como a satisfação das necessidades psicológicas básicas pode prever o desenvolvimento de competências para a vida dos jovens participantes de acordo com o gênero e o tipo de desporto. Foi incluída uma amostra de 461 atletas juvenis brasileiros (325 meninos e 136 meninas) com idades entre 10 e 17 anos. A coleta de dados foi realizada por meio da Escala de Habilidades para a Vida no Esporte e da Escala de Satisfação de Necessidades Psicológicas Básicas no Esporte. No geral, as três subescalas de satisfação de necessidades psicológicas básicas explicaram uma quantidade significativa da variância em oito habilidades para a vida (faixa R2 = 0,02 a 0,08 p < 0,05) e habilidades para a vida totais (R2 = 0,07; p < 0,001) em atletas masculinos. Em relação às atletas femininas, as análises de regressão múltipla revelaram variância significativa apenas para trabalho em equipe (R^2=0,09; p<0,01) e estabelecimento de metas (R^2 = 0,06; p<0,05). Em relação ao tipo de esporte, o modelo apresentou uma quantidade significativa de variância em oito habilidades para a vida (faixa R2 = 0,02 a 0,05 p < 0,05) e habilidades para a vida totais (R2 = 0,08; p < 0,001) em equipes. Esportes. Por último, nos desportos individuais, as análises de regressão múltipla revelaram variância significativa apenas no estabelecimento de metas (R^2 = 0,04; p<0,05). Os resultados mostraram que os treinadores desportivos juvenis podem concentrar-se nas necessidades psicológicas básicas dos jovens participantes ao tentarem promover o desenvolvimento de competências para a vida em contextos desportivos. Com base nestas conclusões, são apresentadas uma série de sugestões para melhorar futuras pesquisas e práticas nesta área.*

Palavras-chave: *Motivação; Desenvolvimento positivo da juventude; Teoria da autodeterminação; Valores; Esporte juvenil.*

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Received: September 18, 2022
Accepted: September 19, 2023

How to cite this article
Freire GLM, Quinaud RT, Santos F, Oliveira DV, Fiorese L, Xavier SES, Nascimento Junior JRA. Do gender and type of sport matter in the association between basic psychological needs satisfaction and life skills development? Rev Bras Cineantropom Desempenho Hum 2023, 25:e90980. DOI: https://doi.org/10.1590/1980-0037.2023v25e90980

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INTRODUCTION

Research on Positive Youth Development (PYD) have suggested sport as a great context to attain PYD outcomes such as life skills[1]. Life skills can be defined as "those needed to cope with the demands and challenges of day-to-day life"[2] and have been considered meaningful outcomes in youth education, health and self-development[3]. Due to the increased interest and need to develop new ways to measure life skills development through sport, Cronin and Allen[4] created a scale to assess the extent to which young people were developing eight core life skills through sport: teamwork; goal setting; time management; emotional skills; communication; social skills; leadership; and problem solving. This scale was recently validated to the Brazilian context[5].

To optimize the development of these core life skills through sport and contribute to life skills transfer[6] to other life domains, it is important to consider how the motivational climate creates conditions for youth to thrive[7]. For instance, the Basic Psychological Needs Theory (BPNT), a subcategory of the Self-Determination Theory (SDT)[8], has been considered crucial to envision how life skills development occurs[9]. The BPNT includes three basic psychological needs: (a) autonomy; (b) competence; and (c) relatedness. The satisfaction of these three basic psychological needs is crucial for optimal development and potentially for PYD outcomes. Autonomy, for example, refers to the extent to which youth take ownership for their behaviors. Competence connects to effectiveness and mastery. Finally, relatedness includes the quality of the relationships established with others and sense of belonging[8]. Considering these variables, researchers have highlighted the value of BPNT in understanding differences across youth participants concerning needs satisfaction and well-being[8].

Regarding the importance of using BPNT within the sport context, Ng et al.[10] developed and validated the Basic Needs Satisfaction in Sport Scale (BNSSS). This scale measures the three basic psychological needs mentioned previously and has been used and worldwide, including in non-English speaking countries[11]. These studies have provided relevant insights on youth athletes' developmental trajectories according to gender and sport type[12]. Some of the most used variables to understand how BNSSS may influence life skills development are gender and sport type[13]. Indeed, the bulk of research has attempted to understand how life skill development and basic psychological needs are connected[9,12].

Coaches are key sport stakeholders that may facilitate life skill development[14] and ensure basic needs satisfaction[15]. Findings have suggested that coach autonomy support is positively related to the development of life skills[16] as well as athletes' behaviors (e.g., intrinsic motivation, coach autonomy)[17]. Although previous research has addressed the importance of investigating the association between basic psychological needs[15] and life skills development[14] across youth sport participants, more studies may help further our understanding about the role played by sport type and gender, especially in countries whereas cultural nuances and sport experiences may differ[18]. Therefore, this study examined how basic psychological needs satisfaction can predict youth participants' life skills development according to gender and sport type. The first hypothesis was that autonomy, competence, and relatedness satisfaction would be positively associated with life skills development[9] independently of gender. The second hypothesis was that autonomy, competence, and relatedness satisfaction would be positively associated with life skills development independently of sport types.

METHODS

Study design

This study involved a descriptive approach and a cross-sectional design.

Sample

A convenience sample of 461 Brazilian youth sport participants who were involved in sport clubs and school teams was included in the present study. The sample was comprised of 325 male and 136 female athletes aged between 10–17 years old (*M*age = 15.12, *SD* = 1.44) who took part in team (*n*=345) and individual sports (*n*=116). On average, athletes had been involved in each sport for 5.40 years (SD = 2.78) and were coached by the same coach for 2.50 years (SD = 1.22).

Measures

Life skills development

The Portuguese version[5] of the Life Skills Scale for Sport[4] was used to measure players' life skills development in their sport. This 43-item scale uses the stem "This sport has taught me to...." and is followed by items assessing: teamwork (7 items; "work well within a team/group"), goal setting (7 items; "set challenging goals"), time management (4 items; "manage my time well"), emotional skills (4 items; "use my emotions to stay focused"), interpersonal communication (4 items; "speak clearly to others"), social skills (5 items; "get involved in group activities"), leadership (8 items; "organize team/group members to work together"), and problem solving and decision making (4 items; "think carefully about a problem"). Participants responded to items on a scale ranging from 1 (*not at all*) to 5 (*very much*). In the present study, the alpha values for the eight subscales and total life skills ranged from .70 to .94 indicating adequate internal consistency and reliability.

Basic needs satisfaction

To measure youth sport participants basic psychological needs satisfaction, we used the BNSSS[10] which has been adapted and validated for the Brazilian sport context[11]. This scale consists of 12 items divided into three subscales: competence (e.g., "I am skilled in my sport"), autonomy (e.g., "in my sport, I feel like I'm doing what I want to do") and relatedness (e.g., "there are people in my sport who care about me"). Participants respond to items on a seven point-response scale ranging from 1 (*not entirely true*) to 7 (*totally true*). In the present research, the alpha values for the three subscales ranged from .78 to .85, indicating adequate internal consistency reliability.

Procedures

Before data collection began, the study was approved by the Ethics Committee in Human Research (nº 1.648.086). Further, coaches and, subsequently youth athletes and parents/tutors were contacted and provided an informed consent.

Data collection took place at the practice venue and lasted approximately 35 minutes. Data collection was conducted by the authors of the study. The order in which the questionnaires were applied by the research team followed a randomized protocol.

Data analysis

Preliminary data analyses, descriptive statistics, correlations, and standard multiple regression were conducted using SPSS version 23.0. All major assumptions of the statistical tests conducted were met. We then carried out various Multivariate Analyses of Variance (MANOVA) to examine the differences between gender and sport type. The effect size (d) was also calculated using the model proposed by Cohen[19] for differences in the values of two independent groups. According to Cohen's criteria, a value of d = .20 represents a small effect size; d = .50, average; and d = .80, large. Pearson's correlation was used to examine the relationship between basic psychological needs (autonomy, competence, and relatedness) and life skills subscales among youth sport participants. Multiple regression analysis was used to determine if the basic psychological needs (autonomy, competence, and relatedness) combined influenced the eight life skills and total life skills. For this analysis, there were no sufficiently strong correlations between variables that indicated problems with multicollinearity (VIF range = 1.50 to 1.94). Specifically, these VIF values were below the 5 or 10 deemed acceptable by Hair et al.[20].

RESULTS

The data was firstly screened for missing values. There were no missing values as the lead researcher had ensured all surveys were fully completed during the data collection. The data were then screened for univariate and multivariate outliers, with no outliers found within the sample. Finally, the data were screened for normality. The skewness values ranged from -.41 to -.80 and the kurtosis values ranged from -.22 to .83, indicating reasonable normality.

In the comparison of the perception of the eight subscales and the overall score of life skills and the three subscales of basic psychological needs as a function of sex (Table 1), there was a significant difference in the regulation of the autonomy of basic psychological needs (p=.036), for which girls had the highest score. Regarding life skills, there was no significant difference (p>.05) between the groups, demonstrating that boys and girls have similar perceptions about the development of life skills from sports practice.

In relation of sport type, the comparison of the perception of the eight subscales and the overall score of life skills and the three subscales of basic psychological needs, there was a significant difference in all regulation of basic psychological needs: autonomy (p=<.001), competence (p=<.001) and relatedness (p=<.001), for which team sport had the highest score. Regarding life skills, there was no significant difference (p>.05) between the groups, demonstrating that team and individual sports have similar perceptions about the development of life skills from sports practice.

Table 1. Comparison of the dimensions of the satisfaction of basic psychological needs and life skills of adolescents as a function of sex and type of sport.

Variables	Sex		p	d	Type of sport		p	d
	Boys (n=325)	Girls (n=136)			Team (n=345)	Individual (n=116)		
	M (SD)	M (SD)			M (SD)	M (SD)		
BPN								
Competence	5.09 (1.29)	5.13 (1.24)	.791	.031	5.30 (1.22)	4.50 (1.25)	<.001*	.647
Autonomy	5.18 (1.25)	5.45 (1.17)	.036*	.223	5.47 (1.20)	4.64 (1.14)	<.001*	.598
Relatedness	4.91 (1.54)	5.00 (1.46)	.578	.059	5.15 (1.47)	4.30 (1.48)	<.001*	.576
Life Skills								
Teamwork	4.19 (0.52)	4.26 (.46)	.159	.142	4.21 (.50)	4.21 (.50)	.866	.000
Goal Setting	4.13 (.60)	4.22 (.51)	.145	.161	4.18 (.58)	4.09 (.58)	.119	.155
Social Skill	3.83 (.69)	3.91 (.52)	.230	.130	3.84 (.66)	3.87 (.59)	.628	.047
Problem Solving[a]	3.90 (.78)	3.90 (.72)	.971	.000	3.91 (.76)	3.88 (.76)	.746	.039
Emotional Skill	3.89 (.77)	3.86 (.74)	.711	.039	3.88 (.75)	3.89 (.79)	.946	.012
Leadership	3.98 (.67)	4.00 (.59)	.749	.031	4.00 (.66)	3.94 (.62)	.366	.093
Time management	3.77 (.81)	3.74 (.85)	.695	.036	3.76 (.84)	3.76 (.77)	.962	.000
Communication[b]	4.09 (.71)	4.11 (67)	.838	.028	4.12 (.70)	4.04 (.70)	.322	.114
Total Life Skills	4.79 (1.31)	4.56 (1.38)	.096	.170	3.99 (.48)	3.96 (.47)	.601	.063

Note: * Significant difference - p < .05 – Manova. Note: BPN = Basic Psychological Needs; M = Mean; SD = Standard Deviation; d= effect size. [a]problem solving and decision making; [b]interpersonal communication.

From Table 2, we can see the statistically significant correlations between the study variables which are discussed below. The correlations revealed that teamwork, goal setting, problem solving, emotional skill, leadership, time management and communication were positively associated with competence in the boys (r range = .12 to .20). Additionally, total life skills were positively associated with competence (r=.19). Teamwork, goal setting, time management, communication and total life skills were positively associated with autonomy in the boys (r range= .12 to .17). The eight subscales and the overall score of life skills were positively associated with relatedness in the boys (r range= .12 to .27). In the girls, correlations revealed that teamwork, goal settings and total life skills were positively associated with competence (r range= .15 to .22) and relatedness (r range= .22 to .26). Only teamwork (r=.26) and goal settings (r=.23) were positively associated with autonomy.

Table 2. Correlation between basic psychological needs and life skills among boys and girls.

Boys	Basic Needs			Life Skills								
Girls	1	2	3	4	5	6	7	8	9	10	11	12
1.Competence	-	.85**	.78**	**.12***	**.20****	.05	**.12***	**.12***	**.14***	**.20****	**.15****	**.19****
2. Autonomy	.75**	-	.80**	**.12***	**.15****	.05	.09	.02	**.12***	**.17****	**.13***	**.15****
3. Relatedness	61**	.71**	-	**.18****	**.22****	**.14***	**.16****	**.12***	**.16****	**.27****	**.21****	**.25****
4. Teamwork	**.15***	**.26****	**.28****	-	.57**	.37**	.54**	.30**	.63**	.30**	.55**	.71**
5. Goal Setting	**.20****	**.23****	**.22****	.47**	-	.31**	.45**	.39**	.48**	.37**	.43**	.70**
6. Social Skill	-.04	-.03	.04	.42**	.55**	-	.48**	.33**	.38**	.27**	.55**	.70*
7. Problem Solving[a]	-.03	-.03	.02	.47**	.40**	.48**	-	.47**	.53**	.36**	.48**	.67**
8. Emotional Skill	-.01	-.01	-.03	31**	.38**	.37**	.43**	-	.40**	.45**	.38**	.76**
9. Leadership	.01	.03	.10	.54**	.37**	.47**	.63**	.51**	-	.31**	.62**	.77**
10. Time management	-.04	-.01	-.10	.19*	.50**	.40**	39**	.44**	.34**	-	.42**	.64**
11. Communication[b]	.02	.06	.10	.52**	.39**	.52**	.41**	.36**	.66**	.29**	-	.78**
12. Total Life Skills	**.22****	.07	**.22****	.64**	.69**	.72**	.75**	.69**	.79**	.67**	.72**	-

Note: [a]problem solving and decision making; [b]interpersonal communication. *$p < .05$, **$p < .01$.

In Table 3, we can see that standard multiple regression analyses revealed that our model, which included the three subscales of basic psychological needs, explained a significant amount of the variance in eight life skills (R^2 range = .02 to .08 $p < .05$) and total life skills (R^2 = .07; $p < .001$) in the boys. Teamwork, goal setting, social skill, problem solving, leadership, time management, communication and total life skill made the largest positive contribution to relatedness (β range= .20 to .36, $p < .05$). Only emotional skill made the largest positive contribution to competence (β =.27, $p < .05$) and only emotional skill made the largest negative contribution to autonomy (β = -.33, $p < .01$). In relation to girls, the standard multiple regression analyses explained a significant amount of the variance only teamwork (R^2=.09; p<.01) and goal setting (R^2= .06; p<.05). Neither dimension showed significance in the model.

Table 3. Basic psychological needs satisfaction as predictors of life skills development among Brazilian boys and girls sport participants.

Predictors	Teamwork	Goal Setting	Social Skill	Problem Solving[a]	Emotional Skills	Leadership	Time management	Communication[b]	Total Life Skills
	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)
Boys									
Competence	-.05 (-.10, .06)	.17 (-.01, .18)	-.09 (-.17, .06)	.09 (-.07, .19)	.27 (.03, .29)*	.12 (-.04, .18)	.08 (-.08, .19)	.04 (-.09, .14)	.12 (-.03, .13)
Autonomy	-.02 (-.10, .08)	-.19 (-.20, .01)	-.09 (-.17, .07)	-.15 (-.23, .04)	-.33 (-.34, -.06)**	-.15 (-.20, .04)	-.19 (-.26, .01)	-.11 (-.19, .06)	-.23 (-.17, .01)
Relatedness	.24 (.01, .14)*	.24 (.02, .16)*	.28 (.04- .21)*	.20 (.01, .20)*	.15 (-.02, .17)	.18 (-.01, .16)	.36 (.09, .29)***	.27 (.04, .21)**	.34 (.05, .17)***
R2	.02	.06	.03	.03	.03	.03	.08	.04	.07
F	4.013*	7.075***	3.290*	3.450*	4.252**	3.505*	10.073***	5.431**	9.144***
DW	1.712	1.717	1.934	1.974	1.899	1.809	2.038	2.024	1.845
Girls									
Competence	-.15 (-.15, .04)	.04 (-.08, .12)	-.03 (-.12, .09)	-.04 (-.18, .12)	.01 (-.15, .16)	-.06 (-.15, .10)	-.05 (-.21, .14)	-.10 (-.20, .08)	-.06 (-.12; .07)
Autonomy	.23 (-.02, .20)	.11 (-.07, .18)	.02 (-.12, .14)	-.06 (-.22, .14)	.02 (-.17, .20)	-.03 (-.16, .13)	.17 (-.09, .33)	.05 (-.14, .20)	.08 (-.08; .14)
Relatedness	.20 (-.01, .14)	.11 (-.04, .12)	-.02 (-.09, .08)	.09 (-.07, .17)	-.05 (-.15, .10)	.15 (-.03, .16)	-.19 (-.25, .03)	.13 (-.05, .17)	.05 (-.06; .09)
R2	.09	.06	.01	.01	.01	.01	.02	.01	.08
F	4.737**	2.899*	.094	.258	.071	.600	.959	.686	.336
DW	2.091	2.430	2.024	1.745	1.877	1.926	1.818	2.092	2.017

Note. Only the standardized regression coefficients which were less than our significance level of .05 are highlighted in bold. β = Standardized regression coefficient; CI = 95% confidence interval. [a]problem solving and decision making; [b]interpersonal communication. DW= Durbin-Watson. *$p < .05$, **$p < .01$, ***$p < .001$

In relation to type of sport (Table 4), we can see the statistically significant correlations between the studied variables, which are discussed below. The correlations revealed that teamwork, goal setting, problem solving, emotional skill, leadership, time management and communication were positively associated with competence (r range = .12 to .19), also total life skills were positively associated with competence (r=.19) in team sport. Teamwork, goal setting, leadership, time management and communication were positively associated with autonomy (r range = .10 to 18), also total life skills were positively associated with autonomy (r= .16). The eight subscales and the overall score of life skills were positively associated with relatedness in the team sport (r range= .13 to .27). In the individual sport, correlations revealed that only goal settings were positively associated with competence (r= .17). Teamwork and goal setting were positively associated with autonomy (r= .17 and .18 respectively) and relatedness (r= .20 and .26 respectively).

Table 4. Correlation between basic psychological needs and life skills among type of sport.

Individual Team sports	Basic Needs			Life Skills								
	1	2	3	4	5	6	7	8	9	10	11	12
1.Competence	-	.80**	.76**	**.15****	**.19****	.08	**.13***	**.12***	**.13***	**.16****	**.12***	**.19****
2. Autonomy	.82**	-	.76**	**.18****	**.15****	.08	**.10***	.03	**.10***	**.14****	**.12***	**.16****
3. Relatedness	61**	.74**	-	**.24****	**.20****	**.16****	**.19****	**.13***	**.18****	**.22****	**.21****	**.27****
4. Teamwork	.08	**.17***	**.18***	-	.56**	.36**	.55**	.26**	.62**	.28**	.58**	.70**
5. Goal Setting	**.17***	**.20***	**.26****	.53**	-	.33**	.45**	.40**	.45**	.40**	.43**	.68**
6. Social Skill	-.11	-.06	-.08	.46**	.50**	-	.47**	.32**	.38**	.30**	.55**	.65**
7. Problem Solving[a]	-.06	-.08	-.09	.44**	.40**	.53**	-	.47**	.57**	37**	51**	.78**
8. Emotional Skill	-.03	-.05	-.12	.40**	.34**	.41**	.44**	-	.40**	.47**	.36**	.67**
9. Leadership	.01	-.02	-.01	.56**	.44**	.50**	.52**	.52**	-	.31**	.61**	.75**
10. Time management	.05	.04	.04	.23*	.43**	.30**	35**	.40**	.36**	-	.40**	.65**
11. Communication[b]	.06	.06	.06	.42**	.40**	.51**	.31**	.43**	.71**	.32**	-	.78**
12. Total Life Skills	.02	.03	.01	.68**	.69**	.73**	.71**	.71**	.80**	.62**	.72**	-

Note. [a]problem solving and decision making; [b]interpersonal communication. *$p < .05$, **$p < .01$.

From the table 5, team sport explained a significant amount of the variance in eight life skills (R^2 range = .02 to .05 $p < .05$) and total life skills (R^2 = .08; $p < .001$). Teamwork, social skill, problem solving, emotional skill, leadership, time management, communication and total like skill made the largest positive contribution to relatedness (β range= .18 to .34, $p < .05$). Emotional skill made the largest negative contribution to autonomy (β = -.25, $p < .05$). In relation to individual sports, we can see that standard multiple regression analyses explained a significant amount of the variance only for goal setting (R^2= .04; p<.05). Neither dimension showed significance in the model.

Table 5. Basic psychological needs satisfaction as predictors of life skills development among Brazilian team and individual sport participants.

Predictors	Teamwork	Goal Setting	Social Skill	Problem Solving[a]	Emotional Skills	Leadership	Time management	Communication[b]	Total Life Skills
	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)
Team sports									
Competence	-.09 (-.11, .03)	.15 (-.01, .16)	-.06 (-.13, .07)	.02 (-.10, .14)	.18 (-.01, .22)	.02 (-.08, .12)	.03 (-.11, .15)	-.05 (-.14, .07)	.04 (-.05, .09)
Autonomy	.04 (-.06, .09)	-.08 (-.13, .05)	-.06 (-.14, .07)	-.12 (-.20, .04)	-.25 (-.28, -.04)*	-.09 (-.16, .05)	-.07 (-.18, .08)	-.06 (-.14, .07)	-.13 (-.13, .02)
Relatedness	.28 (.04, .15)**	.14 (-.01, .12)	.26 (.04, .20)**	.27 (.05, .23)**	.18 (.01, .18)*	.23 (.03, .18)**	.25 (.04, .24)**	.30 (.06, .22)**	.34 (.05, .17)***
R2	.05	.04	.02	.03	.03	.03	.04	.04	.08
F	7.640***	5.632***	3.719*	5.170**	4.383**	4.991**	6.026***	5.948**	9.818***
DW	1.738	1.747	1.956	1.870	1.885	1.822	1.849	2.110	1.818
Individual sports									
Competence	-.16 (-.19, .06)	.02 (-.13, .16)	-.17 (-.23, .07)	.01 (-.19, .20)	.05 (-.17, .24)	.06 (-.13, .19)	.06 (-.16, .24)	.04 (-.15, .21)	-.01 (-.12, .12)
Autonomy	.26 (-.05, .28)	-.01 (-.19, .18)	.12 (-.13, .26)	-.03 (-.27, .23)	.02 (-.24, .28)	-.08 (-.25, .16)	.04 (-.22, .29)	-.01 (-.24, .22)	.04 (-.14, .18)
Relatedness	.04 (-.07, .10)	.26 (-.01, .21)	-.06 (-.13, .08)	.07 (-18, .10)	-.17 (-.24, .05)	.01 (-.11, .12)	-.07 (-.18, .10)	.05 (-.10, .15)	-.01 (-.09, .08)
R2	.01	.04	.01	.01	.01	.02	.02	.02	.02
F	1.451	2.901*	.618	.331	.676	.068	.209	.210	.044
DW	2.073	2.160	1.999	2.023	1.909	1.791	2.194	1.977	2.137

Note. Only the standardized regression coefficients which were less than our significance level of .05 are highlighted in bold. β = Standardized regression coefficient; CI = 95% confidence interval. [a]problem solving and decision making; [b]interpersonal communication. DW= Durbin-Watson. *$p < .05$, **$p < .01$, ***$p < .001$.

DISCUSSION

This research aimed to study the influence of basic psychological needs (autonomy, competence, and relatedness) on the development of life skills of young Brazilian participants according to gender and type of sport. The present study adds to the body of literature focused on the influence of basic psychological needs concerning life skill development in relation to gender and sport type. The findings showed the positive predictor role of relatedness for development of life skills, for boys (Table 3) and team sports (Table 5). Competence revealed the positive predictor role of emotional skills in the boys (Table 3) and autonomy revealed the negative predictor role of the emotional skills in the boys and team sports. The findings show that girls have greater autonomy when compared to boys and that athlete involved in team sports present greater perception about basic psychological needs in relation to athletes of individual sports. In relation to the perception of the development of skills for life, sex and the type of sport do not interfere (see Table 1).

In terms of our first hypothesis, contrary to our expectations, the findings from our multiple regression analyses demonstrated that basic psychological needs (autonomy, competence, and relatedness) predict were only to the development of boys' life skills (Table 3). The relationship proved to be a predictor of all dimensions of life skills and total life skills, except for emotional skill. These results indicate that the concern to develop bonds, be connected and experience situations with other people, resulting in the feeling of belonging to a social group/activity seem to act as factors from developing of life skills in the boys. Mossman and Cronin[21] observed in cross-sectional study with British boys that social agents are fundamental for the development of life skills. Bean et al.[22] suggest that coaches, parents, and club administrators should be encouraged to create a sporting environment that satisfies participants to promote their life skills development in youth sport. Thus, the social context is considered one of the main factors involved in developing of life skills in young athletes[9,12,21].

On the other hand, competence was positively associated with emotional skill in boys. Such findings can be explained by the fact that young athletes, by feeling competent in their own abilities, provide their teammates with emotional skills. In contrast to Hodge et al.[23] propositions, competence did not significantly predict emotional skill. Lastly, autonomy was negatively associated with emotional skill in boys (see Table 3) and team sports players (see Table 4). This is a surprising finding, because autonomy is a key factor influencing young people's development[24] (and autonomy satisfaction is the most central aspect of SDT[25]. Thus, these factors can also be aggravated by the association of high training routines, concerns about errors and technical level disparity among team members, leading the athletes' autonomy to directly affect the development of emotional skills[26].

In addition, the findings found with the girls can be considered surprising because previous research tested the principles of self-determination structures in physical education and in sports and found no influence by sex[9]. Pomerantz, Altermatt, and Saxon[27] explain that these gender differences in performance self-assessments and performance-related assignments are because even though girls outperform boys on various performance indicators, they generally show less confidence in their skills and are more modest in describing their accomplishments. Thus, in terms of successful causal attribution, while girls are more likely to depend on less stable and external factors, such as effort or luck, boys are more likely to attribute their success to more personal and stable attributes as life skills[28].

As the girls discount their achievements through external assignments, the experiences of achievement are less likely to reinforce their feelings of competence, autonomy, and relationship, which may help to explain the gender observed difference in the present study.

In terms of our second hypothesis, contrary to our expectations, the results of our multiple regression analyze demonstrated that three predicted basic psychological needs were only for the development of life skills in team sports (see Table 5). Relatedness proved to be a predictor of all dimensions of life skills and total life skills in practitioners of team sports. Such findings can be explained by the micro theory of basic psychological needs emphasizing that the relationship has a critical role in promoting self-determined motivation, especially in the contexts of education, arts and sports[8]. Thus, affective bonds and cognitive attachment with the teacher/coach, parents and friends from the sports context lead the adolescent to develop pleasure in sports practice and, consequently, the development of life skills[12,16,21].

Still, the findings do not support the hypothesis that the satisfaction of the three basic psychological needs predicts the development of life skills in practitioners of individual sport. In this way, coaches, teachers, and people who work with individual sport must provide practices to develop the three basic psychological needs and, consequently, life skills. From a practical point of view, past research has demonstrated the way for coaches and teachers to develop the three basic psychological needs of their practitioners[29].

To increase satisfaction with the relationship, coaches can allow practitioners to learn from other practitioners and adopt group goals within individual sports. Thus, practitioners achieve those goals together, communicate with each other and value the friendship relationship within the context sporting. To increase the autonomy of the practitioners, the coaches can offer students about the activities and rules that will be developed in the training, promote the initiative of the practitioners in solving problems. To increase practitioners' satisfaction with skills, coaches must define a range of challenges for the skill level of practitioners who provide positive feedback for them. In general, when coaches get young practitioners to meet the three basic psychological needs combined, coaches should have a positive effect on the development of life skills within the sporting context. Future research should provide interventions to train coaches to satisfy all three basic psychological needs and, consequently, the development of life skills within the context of individual modalities.

The results of this study showed that girls perceive themselves with more autonomy when compared to boys. As it is known that satisfaction with autonomy is the most central aspect of SDT, coaches may provide autonomy support for young people[25]. As a result, affective bonds and cognitive attachment to the coach may have led athletes to develop pleasure in sports and, consequently, the self-determined motivation to practice sports.

In relation to the type of sports, these results demonstrate that practitioners of team sports present superior perceptions of the three basic psychological needs (autonomy, competence, and relatedness) when compared to practitioners of individual sports. According to SDT, the factors that lead to the satisfaction of each of the basic psychological needs are strongly related to the scenario in which the subject is inserted.[8] Thus, these findings show that the context of team sport seems to be a factor that encourages the satisfaction of the three basic psychological needs, which, in in turn, they seem to favor other positive aspects such as the development of life skills[12,16].

It is noteworthy that life skills showed no difference for sex and type of sport. According to a recent meta-analysis that observed the effects of sports interventions on developing of life skills, gender and type of sport are not considered factors that interfere with developing of life skills[30]. The authors added that factors such as the quality of the program in which young people are inserted and the support of parents are considered more relevant factors for the development of life skills. Thus, the findings are in line with the literature, demonstrating that gender and type of sports are not intervening factors in the development of life skills in young sports practitioners[9,12,16,21].

Although the findings of this study point out to important information regarding the isolated effect of each basic psychological needs on life skills development, some limitations should be acknowledged. The first limitation was the small number of girls and individual sport participants included in the study. In this regard, future research should recruit a greater number of participants from girls and individual sports and look to compare them to team sports and boys' participants on basic psychological needs and life skills development. The second limitation was that like with any self-reported data, there was concern with social desirability and the truthfulness of the responses. However, the effects of the above concerns were held to a minimum through assurances of anonymity and requests for honesty when responding. Another important limitation refers to the cross-sectional design of this study, which does not allow causality inferences. Longitudinal studies could be able to point out the causal nature of associations between basic psychological needs of the self-determination theory and life skills development. In addition, although investigations relating life skills issues and basic psychological needs are still recent, especially when analyzing the isolated effect of each basic psychological needs on life skills, there is a restriction on the deepening of discussions of results found, especially related to gender, and sport type. Thus, we recommend the use of multigroup, multilevel analysis, and latent mean differences to better understand the complex relationships between these variables in different groups.

CONCLUSION

Using multiple regression analysis, we found that basic psychological needs (autonomy, competence, and relatedness) were associated with Brazilian youth participants' life skills development especially among boys and team sport participants. From a practical point of view, these findings suggest that coaches and others who seek to help young people develop life skills through sport should create a sporting environment that addresses the satisfaction of basic psychological needs specifically in girls and in practitioners of individual modality. Based on our promising findings, we present several suggestions for improving future research in this area.

COMPLIANCE WITH ETHICAL STANDARDS

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. This study was funded by the authors.

Ethical approval

Ethical approval was obtained from the local Human Research Ethics Committee –University Federal District of the São Francisco Valley and the protocol (no. 1.648.086) was written in accordance with the standards set by the Declaration of Helsinki.

Conflict of interest statement

The authors have no conflict of interests to declare.

Author Contributions

Conceived and designed the experiments: GLMF, RTQ, FS, DVO, LF, SESX, JRANJ; Performed the experiments: GLMF, RTQ, FS, DVO, LF, SESX, JRANJ; Analysed the data: GLMF, RTQ, FS, DVO, LF, SESX, JRANJ; Contributed reagents/materials/analysis tools: GLMF, RTQ, FS, DVO, LF, SESX, JRANJ; Wrote the paper: GLMF, RTQ, FS, DVO, LF, SESX, JRANJ.

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