

Effects of Youth Participation in Extra-Curricular Sport Programs on Perceived Self-Efficacy: A Multilevel Analysis

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Abstract

The present study examined extracurricular sport participation variables and developmental context in relationship to perceived self-efficacy among underserved adolescents. Participants ($n = 821$, 13.6 ± 1.5 years) completed the Youth Experience in Sport questionnaire and General Self-Efficacy Scale. We used the Human Development Index (HDI) to characterize developmental contexts. Multilevel regression models were used to explore the relative contributions of age, sex, years of participation in extracurricular sport, HDI, and perceived positive experience in sport. Our results highlight that positive experience alone and in interaction with length of participation in the program fostered perceived self-efficacy. Participants from higher HDI contexts remained longer in the program. An implication of our research is that variables linked to positive sport experiences and perceived self-efficacy can be used as markers to evaluate the outcomes and impact of sport participation programs aimed at promoting positive youth development.

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adolescents, positive experience, positive youth development, sport participation, multilevel modeling, contextual

Introduction

Youth participation in extracurricular activities is of interest to several scientific areas given their potential benefits to positive youth development (PYD). In particular, available data highlights a beneficial influence of sports participation on youth competencies, expectancies and beliefs, potentially shaping personal and social well-being (Agans et al., 2014; Blomfield & Barber, 2011; Larson et al., 2015; Lerner et al., 2015). Personal characteristics (i.e., self-efficacy, competence, behavior, capacities) in interaction with the environment may shape and are shaped positively and negatively by the developmental context. Hence, several studies have observed how sport participation contributes positively to personal development (Bruner et al., 2014; Coalter, 2013a; Coalter & Taylor, 2010; Côté & Hancock, 2014; Gould, Flett, & Lauer, 2012; Larson & Tran, 2014; Lerner, 2015; Overton & Lerner, 2014; MacDonald, Côté, & Deakin, 2010; MacDonald et al., 2011; Vella, Oades, & Crowe, 2013). The assumption is that individuals are active beings, able to change the course of their own life and environment (Bronfenbrenner & Morris, 2007; Lerner, 2015), and that sports represent an important context to help young people influence their own positive development.

It has been argued that intrinsic motivation is the catalyst for learning and development and that positive experiences enhance the effects of this catalyst (Larson, 2000; Larson et al., 2015). Hence, the Youth Experience Survey (YES) was developed to assess developmental experiences provided by different organized activities (Hansen & Larson, 2005; Larson, Hansen, & Moneta, 2006), through personal (identity, initiative and emotions, cognition, and motor skills) and interpersonal characteristics (teamwork, social networks, and connections with adults). A modified version was proposed for applied sports contexts (MacDonald et al., 2012). This revised version contains 37 items and was renamed the Youth Experience Survey for Sport (YES-S).

Although extensive and systematic, the study of the relationship between youth sport participation and PYD (Camiré, 2014; Coalter, 2013b; Côté & Hancock, 2014; Gould et al., 2012; Holt, 2008; Holt et al., 2017) is recent and remains concentrated in North America and Europe. Relevant perceived psychosocial benefits, such as the adult network size, gains in associated social capital, teamwork, and social skills, have been positively linked to experiences in sport programs in North American underserved youth (Gould et al., 2012). Personal and social skills, goal setting, and initiative have all been associated with sport participation (Bruner et al., 2014; MacDonald et al., 2010;

MacDonald et al., 2011; Vella et al., 2013). Additionally, available data appears to support the positive influence of sport participation on perceived self-efficacy (Carreres-Ponsoda et al., 2012; Coalter, 2013a; Coalter & Taylor, 2010).

Perceived self-efficacy is recognized as a viable criterion for evaluating the impact of youth sport participation due to its multidimensional nature (Coalter, 2013a; Coalter & Taylor, 2010). In Bandura's social learning theory (2012), perceived self-efficacy has been defined as the persons' beliefs in their own capabilities to achieve something. In school contexts, prior data suggests that youngsters participating in extracurricular sport scored higher in self-efficacy than their peers participating in other organized activities programs or with no participation in these activities (arts activities, academic clubs, service activities; Carreres-Ponsoda et al., 2012; Larson et al., 2006). In particular, youth sport participation has shown a positive association with different dimensions of perceived self-efficacy, such as overcoming doubts and challenges, social competencies, and goal setting (Beenackers et al., 2011; Brusokas & Malinauskas, 2014; Fuller et al., 2013; Kamphuis et al., 2008; Koparan et al., 2009).

Available resources to implement youth sports programs have increased worldwide, but available data about the effectiveness and impact of these programs is sparse, particularly in developing countries (Coalter & Taylor, 2010; Giorgio, 2011). For instance, Brazil has one of the broadest public-funded sport programs for youth, now entering its second decade. The last decade in Brazil was marked by the organization of two mega events, the Soccer World Cup (2014) and the Rio Olympic Games (2016). Public policies associated with those mega events included launching several programs aimed at developing youth sports participation. The "Programa Segundo Tempo—PST" (second half program) was the most ambitious. PST was proposed and funded by the Brazilian Federal Government to provide sport activities to children and adolescents in situations of social vulnerability. Also the program aimed to democratize sport and leisure access for underserved youth. Between 2003 and 2015, the PST mobilized 3,605,345 children and adolescents all over the country, through 720 memoranda of understanding signed between the Federal Government and local authorities (Brasil, 2015). Data of PST are limited and focused on contextual factors, rather than effects on the people involved (Reis, Vieira, & Sousa-Mast, 2015; Souza, Castro, & Vialich, 2012; Vianna & Lovisolo, 2011). To the best of our knowledge, there is no available data considering the biopsychosocial dimension of sport participation within this program.

If sport participation programs aim to promote PYD, it is important to know and understand how the experience of sport participation impacts people (Erickson & Côté, 2016; Holt et al., 2017; Larson & Rusk, 2011; McCarthy, Jones, & Clark-Carter, 2008). Studies about the participation of youth in sport should in fact combine perception variables (i.e., knowledge and skills, motivation, experiences, and self-efficacy), length of exposure to sports, and social factors. This multidimensional approach to research can add new contributions

to the understanding of PYD through sport. Considering the preceding observations, the present study examined the relationships between duration of participation in extracurricular sports, developmental context in which they are inserted, and the adolescents' perceptions of positive experiences in sports and perceived self-efficacy. We hypothesized that positive experiences combined with the time of exposure to sport would foster a rise in perceived self-efficacy levels.

Methods

Participants

A total of 821 adolescents, male ($n=588$) and female ($n=233$), mean age 13.6 ± 1.5 , engaged in extracurricular sport programs and participated in the study. All PST sites were invited to attend. The difference in the number of males and females reflects the proportion of participants of each sex participating in the PST in the investigated spaces. Out of the existing 498 collaborative agreements between the Brazilian Federal Government and the local authorities in the implementation of PST from 2003 to 2013, five were selected for data collection. These five were the municipalities with programs of the longest duration (8.8 ± 1.3 years). These five municipalities that matched the inclusion criteria are in the northern, central, and Southern Brazil. The study was approved by the Ethics Committee for Research in Humans of the Faculty of Medical Sciences of the University of Campinas (CAAE: 34480114.1.0000.5404).

Measures. We used a Portuguese validated version of YES-S for Brazil by Rigoni (2014). The version has 18 items, with four subscales (personal and social skills, cognitive skills, goal setting, and initiative), representing the main component of the positive experience of youth in sport. The questionnaire is based on a 4-point Likert-type scale ranging from 1 (*not at all* and *strongly disagree*) to 4 (*yes definitely* and *strongly agree*). We used the dimension with the largest component, considered acceptable (Bruner et al., 2014; MacDonald et al., 2012; Vella et al., 2013), based on Cronbach α of .85.

The Self-efficacy General Scale (GSES-12) version (Bosscher & Smit, 1998) with 12 items based on a four point Likert-type scale ranging from 1 (*not at all* and *strongly disagree*) to 4 (*yes definitely* and *strongly agree*) was used in this study. The scale has three subscales: initiative ($\alpha = .68$), effort ($\alpha = .61$), and persistence ($\alpha = .52$). The Cronbach α for the total scale was .68. The alpha scores are considered acceptable (Bosscher & Smit, 1998; Nel & Boshoff, 2015).

Both instruments start from personal dimensions (strengths, resources, demands), experiences (personal and interpersonal), and dispositions able to influence positively or negatively the development process (Bronfenbrenner & Morris, 2007). The use of these instruments has been reported in prior literature

and applied in different activities, cultures, and ecologies of practice, presenting good reliability across contexts (Bosscher & Smit, 1998; Bruner et al., 2014; Coalter, 2013a; Coalter & Taylor, 2010; Gould et al., 2012; Herrero et al., 2014; Rigoni, 2014; Sullivan, LaForge-MacKenzie, & Marini, 2015).

The Human Development Index (HDI) was used as an indicator of human development. The information access is public at the Atlas of Human Development in Brazil website (<http://www.atlasbrasil.org.br/2013/>). Participants were grouped into the high human development group when HDI was between 0.70 and 0.79 or into the average or low human development group when HDI was between 0.60 and 0.69. The HDI uses longevity, education, and income variables (Brasil, 2013). Age, sex, and years of participation in the program were obtained by interview. The time needed for participants to complete the two questionnaires was 15 to 25 minutes. Adult support was not allowed during questionnaire completion, and data from participants who required more than 25 minutes to respond were not kept for analysis.

Data collection procedures. Contact was made with the Federal Government (Ministry of Sport) and local authorities in order to schedule visits. In the municipalities, meetings were held with the teachers, during which procedures for collecting data were explained, and all became conversant with the characteristics of the spaces and the types of sporting activities programs. At the site of the sports activity sessions, a quiet space was reserved for use by the youngsters in answering the questionnaires.

The questionnaires were administered at the beginning of the sports activities session, after the young people had been oriented on how to respond. Participants were asked to pay utmost attention and to be as sincere as possible in responding to the questions. During questionnaire administration, there was no researcher intervention. To standardize procedures and ensure ethical and scientific standards, the research team was trained on data collection procedures.

Data analysis. Descriptive statistics for all measures are presented as means and standard deviations. We used a series of multilevel regression analyses to explore the influence of age, sex, years of participation in extracurricular sport, perceived positive experience in sport, and HDI on self-efficacy variations among adolescents participating in the PST. Participants were nested into two levels by HDI category (Level 1 and Level 2). A null model, the simplest two-level model which includes only the random parameters, was used initially to measure the proportion of the total variance between HDI categories (i.e., variance partition coefficient). Variance partition coefficients derived from multilevel null models (i.e., variance partition coefficient > 0.05) indicated a substantial variation by HDI category. Furthermore, a nonzero variance partition coefficient indicates that procedures such as “ordinary least squares” used, for example, in multiple

regression, are inapplicable and can lead to incorrect inferences (Goldstein, 2011).

Afterwards, we added age, perceived positive experience in sport scores, years of participation in extracurricular sport (dummy variable: 0 to 1 year of participation coded as 0; more than 1 to 2 years of participation coded as 1; more than 2 years of participation coded as 2), and sex (dummy variable: boy coded as 0; girls coded as 1) to the null model, allowing the intercept to vary randomly at both Levels 1 and 2 (Snijders & Bosker, 2012). The model allowed calculations of variance accounted for by age, sex, years of participation in extracurricular sport, and perceived positive experience in sport within each HDI category (i.e., random effect ANCOVA) on the dependent variable (self-efficacy).

Validity of the models was examined using deviance statistics and the Akaike information criterion, which consider the different number of fitted parameters in the two-model structures to be compared and by inspection on nonuniformity of residuals distribution in plots of residual *versus* predicted values. Unknown parameters were estimated using maximum likelihood method. Multilevel regression models were explored using “name” package (Pinheiro & Bates, 2000), available as a package in the R statistical language (<http://cran.r-project.org>). We used a multilevel model due to the existence of predictive variables of different levels (Bruner et al., 2014; Gonçalves, Carvalho, & Diogo, 2014; Marlier et al., 2014), and the importance of investigating the interaction between these variables (Blomfield & Barber, 2011).

Results

Descriptive statistics for the sample, grouped by HDI, are summarized in Table 1. Considering the characteristics of the variables based on Likert-type scale, the inspection of residual plots showed normal distribution of the residuals (data not shown), indicating that the multilevel modeling was effective to describe the data. It was observed that individuals belonging to municipalities with higher HDI tended to stay longer in the program. Nonzero variance partition coefficient values suggest that variation tends to present a small aggregation by HDI for positive experience and persistence (self-efficacy). Any correction value other than zero indicates differences between the groups.

Table 2 presents the multilevel linear regression models to examine the relative contributions of age, sex, and years of engagement in the program and perceived positive experience in sport on self-efficacy, considering random variation of intercept at Level 1 (interindividuals) and at Level 2 (interindividuals grouped by HDI). Positive and significant ($\beta_{ij}=0.32$, standard error=0.05 for Initiative; $\beta_{ij}=0.32$, standard error=0.05 for Effort; $\beta_{ij}=0.13$, standard error=0.05 for Persistence; $p < 0.01$; $p < 0.01$) influence of perceived positive experience in sports on self-efficacy were observed. Additionally, a positive significant relative contribution of years of engagement in the program was

Table 1. Descriptive Statistics for the Total Sample and Grouped by Human Development Index.

	All sample	Human development index		Variance partition coefficient
		Low	High	
Age (years)	13.6 (1.5)	13.8 (1.6)	13.5 (1.5)	–
Years of participation in extracurricular sport				
0–1 years	479	261	218	–
1–2 years	131	30	101	–
>2 years	211	31	179	–
Positive experience in sport	3.20 (0.49)	3.25 (0.43)	3.17 (0.53)	0.013
Self-efficacy				
Initiative	3.05 (0.66)	3.01 (0.63)	1.08 (0.67)	0.002
Effort	2.97 (0.52)	2.96 (0.50)	2.97 (0.54)	0.000
Persistence	2.64 (0.59)	2.54 (0.56)	2.67 (0.61)	0.011

Note. Mean and Standard Deviation: Age, positive experience in sport and dimensions of perceived self-efficacy.

Table 2. Multilevel Regression Analysis With Youngsters Grouped by Human Development Index (Level 2) to Explore the Relative Contribution of Age, Sex, and Years of Participation in Extracurricular Sport Positive Experiences in Sports on Self-Efficacy.

	Self-efficacy		
	Initiative	Effort	Persistence
Fixed explanatory effects (standard error of estimation)			
Intercept	3.37 (0.29)**	3.35 (0.22)**	1.88 (0.27)**
Positive experience in sport	0.32 (0.05)**	0.32 (0.05)**	0.13 (0.05)**
Age	0.02 (0.02)	–0.02 (0.01)	0.02 (0.02)
Years of participation in extra-curricular sport (0–1 year as reference)			
1–2 years	0.09 (0.07)	0.09 (0.05)	0.08 (0.07)
>2 years	0.17 (0.06)*	–0.06 (0.04)	0.15 (0.06)**
Sex (boys as reference)			
girls	0.06 (0.05)	0.01 (0.04)	0.10 (0.05)#
Random intercept effects			
Level-1 standard deviation	0.641	0.483	0.599
Level-2 standard deviation	0.003	0.023	0.055
Akaike’s Information Criterion	1329.7	939.9	1227.8
Bayesian Information Criterion	1365.6	975.6	1263.6

***p* < .01. **p* < .05. #*p* < .10.

observed when examining the influence of perceived positive experience in sports on initiative ($\beta_{ij} = 0.17$, standard error = 0.06) and persistence ($\beta_{ij} = 0.15$, standard error = 0.06). A positive relative contribution to persistence score ($\beta_{ij} = 0.10$, standard error = 0.05, $p < 0.05$) was identified for sex.

Discussion

Literature has shown strong evidence of various relationships between positive experiences in sport and different dimensions of human development. However, prior studies of contextual influences on personal experiences focused on passive athletes, exposed to a given environment (Reis et al., 2015; Souza et al., 2012). In the present study, we proposed that as individuals are active agents in their own development process, the youngsters' sport experiences have a significant effect on internal dispositions (i.e., curiosity, willingness to engage in activities, self-initiative) toward personal development (Bronfenbrenner, 2011; Lerner, 2015). The results of the present study highlight that positive experience interacts with the time of participation in the program to foster higher levels of perceived self-efficacy.

The three dimensions of perceived self-efficacy we selected (initiative, effort, and persistence) were significantly and positively influenced by the youngsters' positive sport experiences. Previous studies suggested that participation in sport is a suitable context for the development of self-efficacy, and that it is a predictor of positive experiences (Beenackers et al., 2011; Coalter, 2013a; Fuller et al., 2013; Graham, Schneider, & Dickerson, 2011). Perceived self-efficacy is enhanced by personal competencies and by the performance of different tasks during the life span (Bandura, 2012; Coalter, 2013a; Tsang, Hui, & Law, 2012).

Positive experiences and self-efficacy are linked to internal dispositions to engage in new and challenging tasks, and to personal effort and persistence to attain established goals, in and outside of sport (Beenackers et al., 2011; Carreres-Ponsoda et al., 2012; Coalter, 2013a; Koparan et al., 2009). Self-efficacy in sport experiences has been associated with an improvement in self-esteem, social relationships, and goal achievement (Koparan et al., 2009). Additionally, sport participation has been shown to raise the level of self-efficacy among people living in neighborhoods perceived as insecure (Beenackers et al., 2011). Also, it has been reported that young people who participate in extra-curricular sport programs tend to have higher values of self-efficacy than their nonparticipant peers (Carreres-Ponsoda et al., 2012).

We argue that it is the meaning of sport, that is, the nature of the activity itself, that may explain positive experiences and self-efficacy. Sport is an activity focused on task completion and volunteer participation (Bruner et al., 2014; Gould et al., 2012; Larson et al., 2006; MacDonald et al., 2012). Competencies and skills are mobilized to solve motor problems, allowing young athletes to attain diverse masteries in physical, cognitive, and emotional

functioning. Sport creates unpredictable situations at increasing levels of complexity, with conflicting goals, demanding that the athlete overcome her or his own limits and comfort zones (Coalter, 2013a; Coalter & Taylor, 2010). Hence, sport is an important context in which young people can explore the interaction between their personal dispositions and the social complexity of the environment (Blomfield & Barber, 2011; Bruner et al., 2014; Camiré, 2014; MacDonald et al., 2010; MacDonald et al., 2011; Vella et al., 2013). However, all dimensions of personal development need to be scrutinized in the context of time and environment characteristics (Bronfenbrenner & Morris, 2007).

In the present study, the youngsters with longer participation in the program had higher positive experience and self-efficacy, particularly initiative and persistence. These results support the argument that positive effects are a function of sport exposure continuity. Noteworthy is the influence of age as a covariate. Time as a variable, either as frequency or duration of exposure to sport, or as a changing pattern during participation is still not consistently considered in research designs (Camiré, 2014; Coalter, 2013b; Gould & Carson, 2008). Developmental processes are characterized by dynamic changes and are also crucial to understanding the long-lasting effects of sport participation on personal development (Bronfenbrenner & Morris, 2007; Davis & Menard, 2013; Gould et al., 2012; Pfeifer & Cornelißen, 2010; Rees & Sabia, 2010).

The influence of time on the perception of young people's positive experience in sport and self-efficacy raises another important point. In this study, greater lengths of time spent in the program offered more opportunities to demonstrate personal acquisitions (abilities, skills, and knowledge), further reinforcing a belief in self-efficacy (Brusokas & Malinauskas, 2014; Coalter, 2013a). The opportunity to demonstrate abilities, skills, and knowledge is a fundamental aspect of personal development (Bronfenbrenner & Morris, 2007), making time an important variable (duration, frequency, interruption, stability). But this point needs to be better investigated in sport participation in the context of the quality of young people's interpersonal relationships, activities, family, and community (Bruner et al., 2014; Felfe, Lechner, & Steinmayr, 2016; Gould et al., 2012).

Regarding context, participants from the highest HDI level managed to stay longer in the program, thus enhancing the chance to gain larger benefits. Participants from lower HDI contexts expressed higher positive sport experience values, but also showed lower persistence values compared with their peers in localities with a high HDI. Overall, these results are consistent with the literature (Beenackers et al., 2011; Coalter, 2013a; Kamphuis et al., 2008).

Youngsters living in environments with high social risk express higher perceived self-efficacy values than their peers living in environments perceived as less vulnerable (Beenackers et al., 2011; Coalter, 2013a). Frustration and the needs to overcome challenges and take control of their lives while still very young are some of the factors associated with better perception of positive

experience by young people in sports (Agans et al., 2014; Blomfield & Barber, 2011). Hence, sport may be one of the few possibilities for a positive experience for youngsters living in environments with high social risk.

The influence of sex on interindividual variation was evident only for persistence, which can be associated with the activity itself (Coalter, 2013a; Souza et al., 2013), to context factors (Gould & Carson, 2008; Graham et al., 2011; Holt et al., 2009) or biopsychosocial markers, especially evident during adolescence (Laborda, Caroli, & Sagone, 2014; Souza et al., 2013). Studies by Coalter (2013a) and Souza et al. (2013) highlight the sex differences, suggesting association with the type of activity. Laborda et al. (2014), in a study with school pupils, found that boys expressed higher scores in self-efficacy than girls.

Assessing the outcomes and impact of the activity in youth sports programs has been an important research weakness, probably due to lack, or inadequacy of reliable markers and parameters of evaluation. The findings in the present study indicate that positive sport experiences and perceived self-efficacy can be used as suitable markers to evaluate the outcomes and the impact of youth sports programs. Furthermore, time variables (chronological and biological) and context of sports programs need to be considered in a comprehensive (holistic) approach to understanding youth participation in sport.

Limitations and Future Directions

In the present study, time was considered retrospectively, limiting a more accurate mapping of the role of sport experiences in the development process. Future research should consider a prospective longitudinal approach. Furthermore, other variables like maturational status, anthropometry, and functional parameters might be included in the regression model. The interaction of these variables and the context were not studied in this project. The quality of information about the participants and the development process might also be better studied in order to best guide and assess the content and goals of programs developed for underserved youth. Researchers and practitioners need to fully consider the influence of contextual constraints on the development of such positive personal characteristics as self-efficacy, competence, and skill capacities, associated with youth exposure to sports programs.

Summary

Positive sport experiences significantly influenced participants' perceived self-efficacy. The duration of the period of participation was an associated predictor of positive experiences on initiative and persistence. The youngsters that participated in the program for more than two years had greater self-efficacy benefits through this longer sport exposure. Thus, program continuity is a key factor for positive personal development through sport participation, due to more frequent

opportunity for young people to demonstrate skills, abilities, and knowledge acquisitions achieved in sport.

Children and adolescents living in localities with high HDI are those who managed to remain longer in the program, with larger benefits related to sport participation. These results expose a structural social problem. In order for low HDI young people to remain permanently in the program, there must be a policy to provide needed financial, technical, and human resources, taking into account both local characteristics and macrostructural factors (Côté & Hancock, 2014; Reverdito et al., 2016). Developing and qualifying an institutional collaborative network (i.e., school, public safety, transport, social assistance) to support young people in the municipality can help ensure that young people remain in the program.

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