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An Iranian study of life skills development in youth sport based on self-determination theory

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Abstract

Introduction. Sport provides a platform for positive youth development by allowing young people to acquire essential life skills. Aim of Study. This study examined how participants' life skills development in sport is influenced by the length of their experience in sport, weekly participation hours, and satisfaction of their three basic psychological needs. Material and Methods. The study included 317 Iranian university students (M_{age} = 22.3 years; females = 222, males = 95) engaged in sport or exercise. Two validated measures assessed participants' basic psychological needs satisfaction and life skills development in sport, with the data collected via an online questionnaire and analyzed using SPSS 28.0. Hierarchical multiple regression analysis included length of experience in sport and weekly participation hours as predictors in block 1, and autonomy, competence, and relatedness satisfaction as predictors in block 2. Results. The results indicated that both length of experience in sport and weekly participation hours were positively associated with participants' development of eight different life skills. After controlling for length of experience in sport and weekly participation hours, satisfaction of autonomy, competence, and relatedness were positively related to all eight life skills. Of the three basic psychological needs, autonomy satisfaction had the strongest positive relationships with participants' life skills development. Conclusions. Coaches and parents should encourage consistent participation in order to maximize the life skills benefits of sport, and create supportive environments that fulfill participants' three basic psychological needs.

KEYWORDS: self-determination theory, life skills, youth sport.

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Introduction

Researchers and practitioners have highlighted the positive youth development (PYD) framework as a conceptual approach to ensuring that young people make healthy choices and engage in desirable behaviors throughout their lives [44]. When one refers to youth, the World Health Organization (WHO) [45] and the United Nations (UN) [39] define youth as those between 15 and 24 years of age. PYD is a strength-based approach to developmental research, where youth are seen as 'resources to be developed' [20]. PYD focuses on three primary areas: (1) the development of young people's life skills, (2) enhancing young people's health and well-being, and (3) creating and improving youth development programs [22].

Sport is viewed as an environment where young people can experience PYD [33]. In this regard, Holt et al. [19] suggested that adult relationships (e.g., with leaders, coaches, and teachers), peer relationships, and parental involvement are considered important characteristics of the PYD climate in sport. The results of Holt et al.'s research [19] also highlighted that participation in sport has personal, social, and physical benefits. For example, through sport participation young people can increase

their self-confidence, become diligent and hardworking, learn to respect others, meet new people, create new friendships, enhance their communication skills, develop their fundamental movement skills, and learn health-promoting and active lifestyle skills. However, the critiques of this perspective suggest that these outcomes are not universally experienced and negative outcomes can be experienced in sport [6]. Factors such as the competitive nature of sport, inequitable access to quality sports environments, increased anxiety and stress [12] can potentially negate or limit developmental benefits [33].

Despite such critiques, the development of life skills in sport is viewed as a key aspect of PYD. It is important to note that the term life skills has often been used interchangeably for other terms such as assets, competencies, or developmental outcomes [44]. A person's life skills include the ability to deal with challenges and demands encountered throughout their life in an efficient and rational manner, as well as the behavioral, emotional, and cognitive skills that make life more fulfilling and enjoyable [1]. Teamwork, goal setting, communication, leadership and problem solving are all examples of life skills [9]. Researchers suggest that such life skills can be learned, built, refined, and applied to a variety of life domains including education, social relationships, one's home life, the community and employment [28].

In terms of assessing life skills, researchers have developed various tools to measure life skills development in sport. One such measure is the youth experiences survey for sport (YES-S) [25] which assesses personal and social skills, initiative, goal setting, and cognitive skills. More recently, Cronin and Allen [10] developed the life skills scale for sport (LSSS) which assesses the development of the following life skills: teamwork, leadership, social skills, problem solving and decision making, interpersonal communication, time management, emotional skills, and goal setting. Researchers can use this scale to determine the extent to which young people develop eight different life skills through sport and also look to explain both the antecedents and consequences of life skills development in sport.

Along with measuring the extent to which young people develop their life skills in sport, the research literature has enhanced our knowledge of how we can develop student athletes' life skills [1]. One common research finding within the literature is that life skills development can occur through appropriately structured sports environments [33]. In this regard, Gould and Carson [14] developed a model for coaching life skills through sport which included internal and external assets, coach characteristics, teaching strategies, and life skill explanations. In terms of theory, few theory-informed studies have investigated life skills development in sport [23, 46]. Nevertheless, one of the theories which has been used to explain the development of life skills in youth sport is self-determination theory (SDT) [32]. One aspect of SDT [11] which has been researched in relation to life skills development is the satisfaction of participants' three basic needs for autonomy (i.e., feeling a sense of will and self-endorsement in one's behavior), competence (i.e., feeling effective and capable within one's environment), and relatedness (i.e., relating well to others and feeling a sense of belonging). Vansteenkiste and Ryan [41] suggested that the satisfaction of these three needs fosters people's development. Within their conceptual model for life skills development in sport, Hodge et al. [17] argued that if development is to occur, sports environments must be designed to directly support the satisfaction of the three basic psychological needs. Testing such an idea, Bean et al. [3] found positive associations between basic need satisfaction and the development of life skills such as initiative, person and social skills, emotional regulation, leadership, and goal setting. Recently, Cronin et al. [8] found that total need satisfaction (autonomy, competence and relatedness satisfaction combined) mediated the associations between coach autonomy support and participants' development of the following life skills within youth sport: teamwork, social skills, leadership, interpersonal communication, problem solving and decision making, emotional skills, time management, and goal setting. These researchers also investigated which of the three basic psychological needs had the strongest association with participants' life skills development. Specifically, they found that autonomy satisfaction had the strongest positive association with time management and goal setting skills; relatedness satisfaction had the strongest positive relationships with teamwork, social skills, leadership, interpersonal communication, problem solving and decision making, and emotional skills; and competence satisfaction did not have the strongest relationship with any of the eight life skills. These findings were the first to highlight that one of the three basic psychological needs may be more important than the others when assessing the development of certain life skills.

While research has been conducted on how SDT can be used to explain life skills development in sport, studies examining life skills development outside of

Western English-speaking contexts remain far less prevalent within the literature [29, 34]. Aditionally, reviews and meta-analyses conducted on SDT in sport and physical education highlight that the literature is strongly dominated by Western countries [35, 42]. Our study addresses this gap in the literature by providing an insight into life skills development in Iranian youth sport. This is an important contribution given that in their review of personal and social development through sport and PE, Opstoel et al. [29] highlighted that as sport is contingent upon historical, social, and political factors, more research is needed into the positive developmental effects that sport can have in continents, countries, and cultures outside of North America and Europe. It may be the case that cultural factors such as Iran being a collectivistic society [26], might impact SDT variables such as relatedness, and in turn, the development of life skills such as teamwork, interpersonal communication, and social skills.

Along with conducting theory-based studies on life skills development, researchers can investigate whether the amount of time someone has been participating in sport (i.e., years of experience in sport and hours of participation per week) is associated with participant's life skills development. Some researchers have shown that the amount of time young people spend on an activity effects the extent of their developmental benefits [16]. For instance, Hansen and Larson [16] conducted a study on 1,822 American high school students and their results showed that the amount of time spent in an organized activity can lead to an increase in developmental experiences. Additionally, in their youth sport study, Mossman and Cronin [27] highlighted how the small amount of participation hours per week might have affected participants' lower level of life skills development, when compared to research studies where participants spent more hours per week in their sport and developed their life skills to a greater extent. Notwithstanding these findings, the length of experience in sport and hours of participation per week are seldom examined (or controlled for) alongside SDT-based variables when investigating life skills development in sport. As such, a novel contribution of our study is to include these variables in order to provide a more thorough understanding of participants' life skills development in sport.

Aim of Study

This study examined how participants' life skills development in sport is influenced by their length of experience in sport, weekly participation hours, and satisfaction of their three basic psychological needs. By doing so, this research sought to provide actionable insights for coaches, sports administrators, and policymakers to help maximize the developmental impacts of sport. Based on past research [16, 27], we firstly hypothesised that experience in sport (e.g., length of experience in sport and participation hours per week) would be positively associated with participant's life skills development. This was an important hypothesis to test as few studies assess whether experience in sport is related to life skills development or control for it in their analyses. In line with past research [3], we secondly hypothesised that after controlling for the length of experience and participation hours per week in sport, the satisfaction of the three basic psychological needs combined would be positively related to participant's life skills development. Such a hypothesis aligned with Vansteenkiste and Ryan's [41] SDT-based proposition that basic need satisfaction fosters people's development, and with Hodge et al.'s [17] reiteration of such a point in their conceptual model for life skills development in sport. Based on the findings of Cronin et al. [8], we thirdly hypothesised that of the three basic psychological needs, relatedness satisfaction would have the strongest positive relationship with teamwork, social skills, problem solving and decision making, emotional skills, leadership, and interpersonal communication; autonomy satisfaction would have the strongest positive association with goal setting and time management skills, and competence satisfaction would not have the strongest association with any of the eight life skills. It is important to note that the Cronin et al. [10] study was the only research we could be guided by when formulating this hypothesis. Nonetheless, past meta-analytic research in physical education [42] has shown that the strength of the associations between each of the three basic psychological needs and positive outcomes in physical education can vary.

Methods

Participants

The sample included 317 Iranian university students (females = 222, males = 95), with an average age of 22.3 years (SD = 4.11). These participants were studying for bachelors (n = 288), masters (n = 24), and doctoral (n = 5) degrees in sport science (n = 189) and other subjects (n = 128). The participants had been participating in their sport for an average of 6.21 years (SD = 4.31) and took part in the following sports: track and field (n = 8), badminton (n = 8), basketball

(n = 21), general fitness training (n = 62), football (n = 48), judo (n = 2), table tennis (n = 14), taekwondo (n = 36), volleyball (n = 47), wrestling (n = 5), wushu martial arts (n = 29), and swimming (n = 29). In terms of participation hours per week, the participants could be categorised as follows: less than 2 hours per week (n = 65), between 2-6 hours per week (n = 164), and more than 6 hours per week (n = 88).

Measures

Basic Psychological Needs Satisfaction: The Persian version [30] of the Basic Psychological Needs in Exercise Scale [43] was used to assess participants' perceptions regarding their basic psychological need satisfaction. This 12-item scale assesses the satisfaction of the needs for autonomy (4 items; e.g., "I feel that I have the opportunity to make choices with regard to the way I exercise"), competence (4 items; e.g., "I feel exercise is an activity which I do very well"), and relatedness (4 items; e.g., "My relationships with the people I exercise with are close"). Each item is answered on a scale ranging from 1 (totally disagree) to 5 (very strongly agree). Past studies (e.g., Vlachopoulos and Michailidou [43]; Rezasoltani et al. [30]) have provided evidence for the validity and reliability of this scale. Within the current study, the Cronbach's alpha coefficients for each subscale ranged from 0.77 to 0.86, which provided adequate support for the internal consistency reliability of the measure.

Life Skills Development: The Persian version [40] of the Life Skills Scale for Sport [10] was used to assess participants' perceptions of their life skills development. This 43-item measure assesses the following eight life skills: teamwork (7 items; e.g., "help build team/group spirit"), goal setting (7 items; e.g., "set specific goals"), social skills (5 items; e.g., "start a conversation"), problem solving and decision making (4 items; e.g., "evaluate a solution to a problem"), emotional skills (4 items; e.g., "notice how I feel"), leadership skills (8 items; e.g., "know how to motivate others"), time management (4 items; e.g. "control how I use my time"), and communication skills (4 items; e.g. "speak clearly to others"). The item stem which precedes each item is "this sport/exercise has taught me to…" and each item is responded to on a 1 (not at all) to 5 (very much) response scale. Past research has provided evidence for the validity and reliability of this scale in English [10] and Persian [40]. In the present study, the Cronbach's alpha coefficient for each subscale ranged from 0.77 to 0.87, which provided adequate support for the internal consistency reliability of the scale.

Procedures

To begin with, ethical approval for the research to take place was granted by the lead author's university research ethics committee. The inclusion criteria for taking part in the study was that students must have been a member of a sports team/club or be exercising at least twice per week. Data was collected using an online questionnaire platform used in Iran called Porsline (survey.porsline.ir). The recruitment of participants for the study and the promotion of the questionnaire link was done with the cooperation of university professors and sports coaches from 10 different Iranian universities. The universities were from different geographical regions that were mostly in the center and north of Iran. Before sharing the questionnaire link, the purpose of the study and the online survey were verbally explained to the participants. Students completed the online questionnaire after a sport/exercise session. Participants were directed to answer questions as honestly as possible and reassured that their responses would be both anonymous and confidential.

The online questionnaire comprised of four main sections. The first section included details of the study (e.g., objectives of the study and assurances of confidentiality) and an informed consent form which participants completed in order to take part in the research. The second section included demographic information such as gender, age, education level, degree program, sport or exercise engaged in, length of participation, and weekly participation hours. The third section contained the Life Skills Scale for Sport [3] and the fourth section included the Basic Psychological Needs in Exercise Scale [41]. Detailed instructions are provided within each of these scales on how to complete them. Upon completing the questionnaire, participants received a message expressing appreciation and gratitude for their participation. Lastly, it is important to note that the online questionnaire was designed to prevent the participants from leaving answers blank and to restrict individuals from completing the questionnaire multiple times.

Statistical analysis

Preliminary analysis, descriptive statistics, correlations, and hierarchical multiple regression were conducted in SPSS 28.0. All major assumptions of statistical tests conducted were met. For the hierarchical multiple regression, 'years of experience in sport' and 'weekly participation hours' were entered as the predictor variables in block 1, and autonomy, competence, and relatedness satisfaction were entered as the predictor variables in block 2. In terms of the hierarchical multiple regression

analyses, all VIF values were below 5 (VIF value range = 1.17 to 2.68), which indicates that multicollinearity was not an issue with the study variables [15]. For interpreting the size of any effects, the R^2 values (i.e., the variance explained) for each outcome variable in the hierarchical multiple regression analyses were converted to Cohen's f^2 (an effect size measure) using the following formula (R^2 divided by $1 - R^2$) and can be judged as small ($f^2 \geq 0.02$), medium ($f^2 \geq 0.15$), or large ($f^2 \geq 0.35$) based on Cohen's guidelines [7].

Results

Preliminary analysis

Missing value analysis indicated that there were no missing values within the dataset. To assess the normality of the data, skewness and kurtosis values were calculated for each study variable. Skewness values ranged from –0.74 to –0.23 and kurtosis values ranged from –0.52 to 0.44, which indicated that the data was normally distributed.

Descriptive statistics and correlations

The mean scores for the satisfaction of participants' basic psychological needs on the 1-5 response scale were as follows: autonomy satisfaction (3.58), competence satisfaction (3.69), and relatedness satisfaction (3.77). On the 1-5 response scale, participants mean scores for the eight life skills were as follows: teamwork (3.76), goal setting (3.99), social skills (3.58), problem solving and decision making (3.74), emotional skills (3.69), leadership (3.73), time management (3.77), and interpersonal communication (3.73).

The correlations between the study variables are displayed in Table 1. These correlations indicated that the demographic variables of years of experience in sport and participation hours per week were positively associated with participants' basic psychological needs satisfaction and life skills development in sport (r range = 0.15 to 0.36, all p values < 0.01). The only exception was a non-significant relationship between participation hours per week and participants' development of social skills. In terms of the main study variables, the satisfaction of each of the three basic psychological needs was positively associated with the development of all eight life skills (r range = 0.26 to 0.48, all p values < 0.001).

Hierarchical regression analysis

Hypothesis 1

In line with hypothesis 1, the hierarchical multiple regression analysis revealed that years of experience

Table 1. Summary of correlations between the study variables (n = 317)

		1	2	3	4	5	6	7	8	9	10	11	12	13
1.	Experience in sport	–												
2.	Participation hours per week	0.36***	–											
3.	Autonomy	0.16**	0.22***	–										
4.	Competence	0.21***	0.25***	0.78***	–									
5.	Relatedness	0.19***	0.19***	0.51***	0.51***	–								
6.	Teamwork	0.23***	0.18**	0.30***	0.31***	0.36***	–							
7.	Goal setting	0.30***	0.36***	0.38***	0.44***	0.26***	0.29***	–						
8.	Social skills	0.18***	0.09	0.39***	0.34***	0.37***	0.57***	0.38***	–					
9.	Problem solving	0.36***	0.22***	0.39***	0.37***	0.28***	0.42***	0.62***	0.52***	–				
10	Emotional skills	0.23***	0.22***	0.36***	0.37***	0.32***	0.36***	0.54***	0.46***	0.60***	–			
11.	Leadership	0.30***	0.22***	0.46***	0.48***	0.45***	0.67***	0.50***	0.68**	0.64***	0.59***	–		
12.	Time management	0.23***	0.23***	0.43***	0.41***	0.28***	0.32***	0.52***	0.42***	0.55***	0.53***	0.53***	–	
13.	Communication	0.26***	0.15**	0.48***	0.46***	0.42***	0.49***	0.47***	0.69***	0.58**	0.54***	0.71***	0.56***	–

Note: autonomy – autonomy satisfaction, competence – competence satisfaction, relatedness – relatedness satisfaction, problem solving – problem solving and decision making, communication – interpersonal communication

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

in sport and exercise hours per week (i.e., the block 1 model) explained a significant amount of variance in all eight life skills: teamwork ($R^2 = 0.06$, $p < 0.001$), goal setting ($R^2 = 0.17$, $p < 0.001$), social skills ($R^2 = 0.04$, $p < 0.01$), problem solving and decision making ($R^2 = 0.14$, $p < 0.001$), emotional skills ($R^2 = 0.07$, $p < 0.001$), leadership ($R^2 = 0.10$, $p < 0.001$), time management ($R^2 = 0.08$, $p < 0.001$), and interpersonal communication ($R^2 = 0.07$, $p < 0.001$). The percentage of variance explained by these two independent variables ranged from 4% to 17%. After calculating Cohen's f^2 using the formula presented in the methods section, results indicated that the independent variables had small sized relationships with teamwork, social skills, emotional skills, leadership, time management and interpersonal communication skills (f^2 values ranged from 0.04 to 0.11) and medium sized relationships with goal setting and problem solving and decision making (f^2 values ranged from 0.16 to 0.20).

Hypothesis 2

As can be seen in Table 2, the hierarchical multiple regression analysis revealed that the model as a whole (i.e., the block 2 model including the variables from both blocks) explained a significant amount of variance in all eight life skills: teamwork ($R^2 = 0.17$, $p < 0.001$), goal setting ($R^2 = 0.29$, $p < 0.001$), social skills ($R^2 = 0.20$, $p < 0.001$), problem solving and decision making ($R^2 = 0.25$, $p < 0.001$), emotional skills ($R^2 = 0.19$, $p < 0.001$), leadership ($R^2 = 0.32$, $p < 0.001$), time management ($R^2 = 0.23$, $p < 0.001$), and interpersonal communication ($R^2 = 0.31$, $p < 0.001$). The percentage of variance explained by all five independent variables ranged from 17% to 32%. After calculating Cohen's f^2 using the formula presented in the methods section, we can see from Table 2 that the independent variables had a medium sized relationship with five of the life skills (f^2 values ranged from 0.20 to 0.33) and a large sized relationship with three of the life skills (f^2 values ranged from 0.41 to 0.45).

Supporting hypothesis 2, the R^2 change values from block 2 (which were all statistically significant) indicated that even after controlling for years of experience in sport and exercise hours per week, satisfaction of the three basic psychological needs explained additional variance in teamwork (R^2 change = 0.11), goal setting (R^2 change = 0.12), social skills (R^2 change = 0.17), problem solving and decision making (R^2 change = 0.11), emotional skills (R^2 change = 0.12), leadership (R^2 change = 0.23), time management (R^2 change = 0.15), and interpersonal communication (R^2 change = 0.24). The percentage of additional variance explained by the three basic psychological needs ranged from 12% to 24%.

Hypothesis 3

In terms of the three basic psychological needs, as can be seen in Table 2, autonomy satisfaction was the strongest positive predictor of social skills ($\beta = 0.26$, $p < 0.05$), time management ($\beta = 0.28$, $p < 0.05$), interpersonal communication ($\beta = 0.26$, $p < 0.05$), and problem solving

Table 2. Autonomy, competence and relatedness satisfaction as predictors of life skills development in sport (n = 317)

Predictor variables	Teamwork β	Goal setting β	Social skills β	Problem solving β	Emotional skills β	Leadership skills β	Time managemen β	Interpersonal communication β
Experience in sport	0.14*	0.15**	0.12*	0.28***	0.12*	0.18***	0.12*	0.16**
Exercise hours per week	0.05	0.22***	–0.05	0.04	0.09	0.03	0.08	–0.03
Autonomy satisfaction	0.08	0.09	0.26***	0.24**	0.14	0.16*	0.28***	0.26***
Competence satisfaction	0.08	0.29***	0.02	0.09	0.14	0.21**	0.13	0.14
Relatedness satisfaction	0.24***	–0.01	0.21***	0.05	0.14	0.22***	0.03	0.19***
R^2	0.17	0.29	0.20	0.25	0.19	0.32	0.23	0.31
R^2 change	0.11	0.12	0.17	0.11	0.12	0.23	0.15	0.24
F change	13.81***	17.35***	21.86***	15.16***	15.02***	34.83***	20.20***	35.06***
f^2 effect size measure	0.20	0.41	0.25	0.33	0.23	0.47	0.30	0.45

Notes: β – standardized regression coefficient, problem solving – problem solving and decision making, f^2 = Cohen's f^2 effect size measure
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

and decision making ($\beta = 0.24$, $p < 0.05$). Competence satisfaction was the strongest positive predictor of goal setting ($\beta = 0.29$, $p < 0.05$). Relatedness satisfaction was the strongest positive predictor of teamwork ($\beta = 0.24$, $p < 0.05$) and leadership skills ($\beta = 0.22$, $p < 0.05$). None of the three basic psychological needs were a positive predictor of emotional skills. Such findings provided partial support for our hypothesized relationships (i.e., 3/9 of our predicted hypotheses were correct).

Discussion

In this study, we were investigating how participants' life skills development in sport is influenced by their length of experience in sport, weekly participation hours, and satisfaction of their three basic psychological needs. The findings revealed that the length of experience in sport and weekly participation hours combined were positively related to participants' development of all eight life skills. Such results are consistent with the findings of past youth development research [16]. According to Hansen and Larson [16], youth who participated more frequently and spent more hours per week in extracurricular activities (including sport) reported higher rates of developmental experiences (e.g., emotional regulation, teamwork and social skills). Similarly, research has indicated that the amount of time youth spend participating in sport each week [36] and their participation stability/duration across adolescence [48], plays a role in how sport participation is linked to youth development. An explanation of our finding may come from Larson et al. [24] who suggested that prolonged and greater frequency of participation in sport helps to facilitate skill mastery and comprehensive knowledge. For example, a lengthy duration of sport participation provides conditions for participants to interact more with each other and grow their teamwork, communication, and social skills. Nonetheless, future longitudinal studies should further investigate the processes by which young people develop their life skills during their time in sport.

Another key finding of the present study was that even after controlling for the length of experience in sport and weekly participation hours, the satisfaction of the three basic psychological needs was positively associated with participants' development of all eight life skills. This was an important finding as to our knowledge no studies have controlled for these variables when investigating SDT and life skills development in sport. Broadly speaking, our finding supports the idea that the environment within sport can have a positive effect on the development of participants' life skills [3]. Other studies in Western countries such as Britain and Canada, have found similar associations between total basic psychological needs satisfaction and participants' life skills development [3, 8]. Therefore, it was important to see that such a finding could be replicated within a West Asian country. Thus, there is now further evidence available to support Hodge et al.'s [17] contention that SDT [32], and the basic psychological needs in particular, can help explain and facilitate life skills development within youth sport. In practical terms, coaches should seek to create an environment that satisfies participants' basic psychological needs as a whole in order to develop their life skills in sport.

In terms of the three basic psychological needs, autonomy satisfaction had the strongest positive relationship with social skills, time management, interpersonal communication, and problem solving and decision making. It is important to note that the findings of the current study regarding autonomy satisfaction had some similarities and differences with Cronin et al.'s [10] findings with British youth sport participants. Similarly, these researchers found that of the three basic psychological needs, autonomy satisfaction had the strongest positive association with time management skills. In contrast to the current study, Cronin et al. [10] showed that autonomy satisfaction also had the strongest positive relationship with goal setting skills. Given such similarities and differences, future studies could further explore the effect that autonomy satisfaction has on different life skills. Such research would help to uncover if the findings are consistent across the research literature or whether contextual or cultural differences may account for the differences between studies.

In terms of explaining the above findings for autonomy satisfaction, it is firstly important to note that autonomy is key to understanding the quality of people's behavioral regulation. In essence, when a person can regulate their own behaviors and feel autonomous in their actions, they ought to feel comfortable engaging in social situations, have the ability to manage their time effectively, communicate well with others, and solve problems and make decisions. Regarding social skills, past research outside of sport has shown that supporting a young person's autonomy can help enhance their social skills [37]. These authors [37] highlighted that an explanation for such a link could be that autonomy helps facilitate young people's exploration of and adaptation to society – which is a key part of developing one's social skills. Regarding time management, research with American school students has shown a positive association between supporting a young person's autonomy and

their time management skills [47]. The relationship between these two variables may be down to the fact that both autonomy satisfaction and time management involve the self-regulation of one's own actions [5, 32]. Regarding interpersonal communication, when individuals feel satisfied with their level of autonomy, Deci and Ryan [11] suggested that they are more likely to engage in open communication with others as they feel confident in their ability to express themselves. Such a proposition has been supported by research with American university students [21]. Regarding problem solving and decision making, it can be stated that autonomy satisfaction can contribute to the development of such a skill by encouraging individuals to take initiative, think critically, explore alternative solutions, and make decisions that align with their values and preferences. Past research by Gagné and Deci [13] also found that autonomy satisfaction was positively related to problem solving abilities in a sample of university students. These researchers suggested that when individuals feel autonomous, they are more likely to engage in active problem solving strategies, such as seeking out information and considering multiple solutions. The above explanations for our findings in relation to autonomy satisfaction should be further explored within the context of youth sport.

Findings from the current study showed that competence satisfaction had the strongest positive association with goal setting. This contrasted with the findings of Cronin et al. [8] who found that competence satisfaction was not the strongest positive predictor of any of the eight life skills. However, there are plausible reasons why competence satisfaction had the strongest positive relationship with goal setting in the present study. To begin with, past research has explored the connection between competence and goal setting. For example, Bandura et al. [2] stated how a strong sense of competence and self-efficacy can positively impact goal setting and goal achievement. Overall, a strong sense of competence empowers individuals to set ambitious goals, maintain motivation in the face of obstacles, and take effective actions to attain their desired outcomes. In effect, those who feel a sense of competence are likely to develop their goal setting skills to further promote their competence. Future research could explore the potential reciprocal relationships between competence satisfaction and goal setting skills.

Findings from the current study showed that relatedness satisfaction had the strongest positive association with teamwork and leadership skills. This finding aligns with Holt et al.'s [20] proposition that social interactions in sport greatly influence young people's life skills development. Consistent with our specific findings, Cronin et al. [8] found that relatedness satisfaction was the strongest positive predictor of the teamwork and leadership skills in their study with British youth sport participants. Nonetheless, in contrast to the present study, these researchers found relatedness satisfaction was also the strongest positive predictor of social skills, problem solving and decision making, emotional skills, and interpersonal communication. In terms of our finding for teamwork, Ryan and Deci [31] highlighted that individuals who perceive high levels of relatedness with others in their social environment show adaptive patterns of behavior such as teamwork. This makes logical sense as relating well with others is an integral aspect of teamwork. In terms of relatedness satisfaction and leadership, to the best of our knowledge, no past studies have examined how relatedness satisfaction might be associated with the development of leadership skills. A tentative explanation for such a finding is that relating well to one's peers is a prerequisite for wanting to develop and show leadership skills within that group (i.e., we generally want to lead people that we have a positive relationships with). As such, future qualitative studies should seek to research in greater detail why relatedness satisfaction might impact upon the development of sport participants' leadership skills.

The current study had some limitations which must be noted. The first limitation was the gender ratio of the students, as there was a far greater number of females in the study as compared to males. As such, future studies should assess if the findings remain the same across a balanced sample of female and male participants. Additionally, as gender differences have been seen in sport for perceptions of coaches' behaviors and task cohesion [18, 38], future studies could assess potential gender differences for how SDT variables relate to participants' life skills development in sport. The second limitation was related to the geographical scope of the research. The participants in this research were mostly from universities in the northern and central areas of Iran. Given that there is a lack of SDT and life skills research in sport across continents, countries, and cultures [29, 34, 42], future studies could look to replicate the findings in different countries across the world. The third limitation was the cross-sectional nature of the research design, which only allows for the assessment of associations between variables. It is suggested that future research examine the direction of the relationships between the study variables using a longitudinal research design. This is particularly

the case as some researchers have suggested that life skills development is best studied longitudinally (e.g., Bengoechea and Johnson [4]). The fourth limitation was related to the independent variables chosen for the current study. In this regard, other SDT variables could have been assessed such as coach autonomy support, competence support, and relatedness support, along with the different types of motivation as theorized by SDT. Moreover, cultural factors such as collectivism vs individualism or long-term orientation vs short-term orientation [26] should be investigated in future studies to provide cultural insights into life skills development in sport. Overall, examining a wider variety of variables will provide researchers with a fuller picture of what impacts young people's life skills development in sport.

Conclusions

The findings from the present study highlighted that the experience in sport and hours of participation per week are positively associated with participants' life skills development. Another key finding was that the satisfaction of the three basic psychological needs for autonomy, competence, and relatedness provides individuals with a supportive psychological environment that promotes their life skills development. In practice, the findings highlighted that coaches and parents need to ensure that participants maintain consistent participation in sport to ensure that they reap the life skills benefits of their sport. Additionally, coaches can look to create an environment where athletes' basic psychological needs are satisfied in order to promote their life skills within sport.

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Conflicts of Interest

The authors declare no conflict of interest.

References

1. Bae J-S, Cho E-H, Lim T-H. Examining the role of life skills in mediating the relationship between the basic psychological needs and subjective well-being of taekwondo student-athletes. Int J Environ Res Public Health. 2021;18(21):11538. https://doi.org/10.3390/ijerph182111538
2. Bandura A, Freeman WH, Lightsey R. Self-efficacy: the exercise of control. Springer; 1997.
3. Bean C, Rocchi M, Forneris T. Using the learning climate questionnaire to assess basic psychological needs support in youth sport. J Appl Sport Psychol. 2020;32(6):585-606. https://doi.org/10.1080/10413200.2019.1571537
4. Bengoechea E, Johnson G. Ecological systems theory and children's development in sport: toward a process-person-context-time research paradigm. Avante Ontario. 2001;7(1):20-31.
5. Claessens BJ, Van Eerde W, Rutte CG, Roe RA. A review of the time management literature. Pers Rev. 2007;36(2):255-276. https://doi.org/10.1108/00483480710726136
6. Coakley J. Positive youth development through sport: myths, beliefs, and realities. In: Holt NL, editor. Positive youth development through sport, 2nd ed. Abingdon, New York: Routledge; 2016. pp. 21-33.
7. Cohen J. Statistical power analysis for the behavioural sciences, 2nd ed. New Jersey, NJ: Erlbaum; 1988.
8. Cronin L, Ellison P, Allen J, Huntley E, Johnson L, Kosteli MC, et al. A self-determination theory based investigation of life skills development in youth sport. J Sports Sci. 2022;40(8):886-898. https://doi.org/10.1080/02640414.2022.2028507
9. Cronin L, Marchant D, Johnson L, Huntley E, Kosteli MC, Varga J, et al. Life skills development in physical education: a self-determination theory-based investigation across the school term. Psychol Sport Exerc. 2020;49:101711. https://doi.org/10.1016/j.psychsport.2020.101711
10. Cronin LD, Allen J. Development and initial validation of the Life Skills Scale for Sport. Psychol Sport Exerc. 2017;28:105-119. https://doi.org/10.1016/j.psychsport.2016.11.001
11. Deci EL, Ryan RM. Handbook of self-determination research. Rochester, NY: University of Rochester Press; 2004.
12. Dworkin J, Larson R. Adolescents' negative experiences in organized youth activities. J Youth Dev. 2006;1(3):1-19. https://doi.org/10.5195/jyd.2007.373
13. Gagné M, Deci EL. Self-determination theory and work motivation. J Organ Behav. 2005;26(4):331-362. https://doi.org/10.1002/job.322
14. Gould D, Carson S. Life skills development through sport: current status and future directions. Int Rev Sport Exerc Psychol. 2008;1(1):58-78. https://doi.org/10.1080/17509840701834573
15. Hair JF Jr., Black WC, Babin BJ, Anderson RE. Multivariate data analysis. Boston, MA: Pearson; 2014.
16. Hansen DM, Larson RW. Amplifiers of developmental and negative experiences in organized activities: dosage, motivation, lead roles, and adult-youth ratios. J Appl Dev Psychol. 2007;28(4):360-374. https://doi.org/10.1016/j.appdev.2007.04.006
17. Hodge K, Danish S, Forneris T, Miles A. Life skills and basic psychological needs: a conceptual framework for

life skills interventions. In: Holt NL, editor. Positive youth development through sport, 2nd ed. Abingdon, New York: Routledge; 2016. p. 45-56.
18. Hollembeak J, Amorose AJ. Perceived coaching behaviors and college athletes' intrinsic motivation: a test of self-determination theory. J Appl Sport Psychol. 2005;17(1): 20-36. https://doi.org/10.1080/10413200590907540
19. Holt NL, Deal CJ, Pankow K. Positive youth development through sport. In: Tenenbaum G, Eklund RC, editors. Handbook of sport psychology: Social perspectives, cognition, and applications, 4th ed. Hoboken, NJ: John Wiley & Sons Inc.; 2020. pp. 429-446. https://doi.org/10.1002/9781119568124.ch20
20. Holt NL, Sehn ZL, Spence JC, Newton AS, Ball GDC. Physical education and sport programs at an inner city school: exploring possibilities for positive youth development. Phys Educ Sport Pedagogy. 2012;17(1): 97-113. https://doi.org/10.1080/17408989.2010.548062
21. Jiao J. Autonomy and parent-child relationship satisfaction: the mediating role of communication competence. Commun Res Rep. 2020;37(3):99-109. https://doi.org/10.1080/08824096.2020.1768060
22. Jones MI, Dunn JG, Holt NL, Sullivan PJ, Bloom GA. Exploring the '5Cs' of positive youth development in sport. J Sport Behav. 2011;34(3):250-268.
23. Jørgensen H, Lemyre P-N, Holt N. Multiple learning contexts and the development of life skills among Canadian junior national team biathletes. J Appl Sport Psychol. 2020;32(4):392-415. https://doi.org/10.1080/10413200.2019.1570570
24. Larson RW, Hansen DM, Moneta G. Differing profiles of developmental experiences across types of organized youth activities. Dev Psychol. 2006;42(5):849-863. https://psycnet.apa.org/doi/10.1037/0012-1649.42.5.849
25. MacDonald DJ, Côté J, Eys M, Deakin J. Psychometric properties of the youth experience survey with young athletes. Psychol Sport Exerc. 2012;13(3):332-340. https://doi.org/10.1016/j.psychsport.2011.09.001
26. Hansen M, Kaasa A. Do dimensions of culture exist objectively? A validation of the revised Minkov-Hofstede model of culture with World Values Survey items and scores for 102 countries. J Int Manag. 2022;28(4):100971. https://doi.org/10.1016/j.intman.2022.100971
27. Mossman GJ, Cronin LD. Life skills development and enjoyment in youth soccer: the importance of parental behaviours. J Sports Sci. 2019;37(8):850-856. https://doi.org/10.1080/02640414.2018.1530580
28. Nascimento Junior JRA do, Freire GLM, Quinaud RT, Oliveira DVd, Cronin LD. Life skills development through sport in Brazil: a study based on self-determination theory. Percept Mot Skills. 2021;128(3):1017-1036. https://doi.org/10.1177/00315125211000860
29. Opstoel K, Chapelle L, Prins FJ, De Meester A, Haerens L, van Tartwijk J, et al. Personal and social development in physical education and sports: a review study. Eur Phys Educ Rev. 2020;26(4):797-813. https://doi.org/10.1177/1356336X19882054
30. Rezasoltani N, Gharayagh zandi H, Khabiri M. Validity and reliability of the Basic Psychological Needs in Exercise Scale (BPNES). JSMDL. 2017;8(4):607-626. https://doi.org/10.22059/jmlm.2017.61031
31. Ryan RM, Deci EL. A self-determination theory approach to psychotherapy: The motivational basis for effective change. Can Psychology. 2008;49(3):186-193. https://psycnet.apa.org/doi/10.1037/a0012753
32. Ryan RM, Deci EL. Self-determination theory: Basic psychological needs in motivation, development, and wellness. New York–London: The Guilford Press; 2017.
33. Sabourin C, Trottier C, Frenette E, Camiré M, Drapeau V, Goulet C, et al. French adaptation of the short form youth experiences survey for sport and life skills scale for sport. Meas Phys Educ Exerc Sci. 2020;24(1):33-48. https://doi.org/10.1080/1091367X.2019.1663351
34. Santos FdSFd, Camiré M, Campos PHdF. Youth sport coaches' role in facilitating positive youth development in Portuguese field hockey. Int J Sport Exerc Psychol. 2018;16(3):221-234. https://doi.org/10.1080/1612197X.2016.1187655
35. Sierra-Díaz MJ, González-Víllora S, Pastor-Vicedo JC, López-Sánchez GF. Can we motivate students to practice physical activities and sports through models-based practice? A systematic review and meta-analysis of psychosocial factors related to physical education. Fron Psychol. 2019;10:2115. https://doi.org/10.3389/fpsyg.2019.02115
36. Simpkins SD, Ripke M, Huston AC, Eccles JS. Predicting participation and outcomes in out-of-school activities: similarities and differences across social ecologies. New Dir Youth Dev. 2005;(105):51-69,10-1. https://doi.org/10.1002/yd.107
37. Su-Russell C, Russell LT. Maternal autonomy support and children's social competencies, academic skills, and persistence: social determinants and mediation. J Child Fam Stud. 2021;30(3):757-70. https://doi.org/10.1007/s10826-020-01869-0
38. Thompson S, Albinson J. An investigation of factors affecting the development of cohesion among intercollegiate rowers. Canadian Psychomotor Learning and Sport Psychology Conference, London, Ontario; 1991.

39. United Nations. Available from: https://www.un.org/esa/socdev/documents/youth/fact-sheets/youth-definition.pdf
40. Vahdani M, Cronin L, Rezasoltani N. Cross-cultural adaptation and psychometric properties of the Persian version of the Life Skills Scale for Physical Education. J Teach Phys Educ. 2024;43(2):292-301. https://doi.org/10.1123/jtpe.2023-0030
41. Vansteenkiste M, Ryan RM. On psychological growth and vulnerability: basic psychological need satisfaction and need frustration as a unifying principle. J Psychother Integr. 2013;23(3):263-280. https://psycnet.apa.org/doi/10.1037/a0032359
42. Vasconcellos D, Parker PD, Hilland T, Cinelli R, Owen KB, Kapsal N, et al. Self-determination theory applied to physical education: a systematic review and meta-analysis. J Educ Psychol. 2020;112(7):1444. https://doi.org/10.1037/edu0000420
43. Vlachopoulos SP, Michailidou S. Development and initial validation of a measure of autonomy, competence, and relatedness in exercise: The Basic Psychological Needs in Exercise Scale. Meas Phys Educ Exerc Sci. 2006;10(3):179-201. https://doi.org/10.1207/s15327841mpee1003_4
44. Weiss MR, Bolter ND, Kipp LE. Assessing impact of physical activity-based youth development programs: validation of the Life Skills Transfer Survey (LSTS). Res Q Exerc Sport. 2014;85(3):263-278. https://doi.org/10.1080/02701367.2014.931558
45. WHO. Available from: https://www.who.int/southeastasia/health-topics/adolescent-health
46. Williams C, Neil R, Cropley B, Woodman T, Roberts R. A systematic review of sport-based life skills programs for young people: the quality of design and evaluation methods. J Appl Sport Psychol. 2022;34(2):409-435. https://doi.org/10.1080/10413200.2020.1792583
47. Won S, Yu SL. Relations of perceived parental autonomy support and control with adolescents' academic time management and procrastination. Learn Individ Differ. 2018;61:205-215. https://doi.org/10.1016/j.lindif.2017.12.001
48. Zaff JF, Moore KA, Papillo AR, Williams S. Implications of extracurricular activity participation during adolescence on positive outcomes. J Adolesc Res. 2003;18(6):599-630. https://doi.org/10.1177/0743558403254779