

Longitudinal Changes in the Acquisition of Life Skills for University Student Judo Athletes

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Abstract

[Introduction and Objectives] This study aims to investigate the longitudinal changes in life skills of university student athletes using a longitudinal approach, and to gain insights into educational coaching and support. [Methods] The survey was conducted three times in May, September 2017, and February 2018, targeting 29 first-year university judo athletes who had achieved excellent results in competitions. The survey content was the Appraisal Scale of Required Life Skills for College Student Athlete. This scale can evaluate the life skills required of athletes from 10 aspects (e.g. setting goal). The statistical processing was conducted with a focus on life skills and higher-order life skills. Specifically, a repeated-measures analysis of variance was conducted for each subscale of the Life Skills Scale. The same analysis was also conducted based on gender. [Results and Conclusion] Results of multiple comparisons after that, significant differences were found in the SG, TC, BH, and AO at different time points. In addition, a significant interaction was observed in MP. Multiple comparisons showed that the scores at Time 2 for SG and Time 3 for TC and BH were higher than those at Time 1. On the other hand, a significant difference was found in the PSS for higher-order life skills, with the score at Time 3 being significantly higher than that at Time 1. Furthermore, MP improved from the first to the second point in time for female only. From the above, it is suggested that each aspect of life skills in university judo athletes is acquired over time. Finally, the need for longitudinal study on the acquisition of life skills was suggested.

Keywords

University Athlete, Sports, Educational Support, Setting Goal, Longitudinal Study

1. Introduction

The acquisition of life skills, social skills, and emotional development through sports is one of the main goals of youth sports organizations (Gould & Carson, 2008). In particular, life skills education programs that involve sports activities have been developed and their effectiveness verified (e.g. Danish et al., 1998; Hellison, 2003). Recent studies have suggested that emphasizing the acquisition of life skills through sports activities may promote the development of decision-making (Crean, 2012), social emotions (Cronin & Allen, 2018), and personal and social responsibility (Walsh et al., 2010). The World Health Organization (WHO, 1997) defines life skills as “Life skills are the abilities to behave positively and adapt to challenges in everyday life” and “those skills that enable individuals to succeed in the different environments in which they live, such as school, home and in their neighborhoods” (Danish et al., 2004). These definitions indicate that life skills are necessary to enhance everyday life. In addition, according to Gould et al. (2013), “Life skills have been defined as internal personal assets, characteristics, and skills that can be facilitated or developed in sport and transferred for use in non-sporting settings” and the acquisition of life skills can be promoted in various situations in sports activities. de Subijana et al. (2022) conducted a cross-sectional study to confirm differences in the level of acquisition of life skills among former elite athletes depending on their educational background and training status. In addition, Navarro (2015) confirmed that the life skills acquired by athletes belonging to the National Collegiate Athletic Association (NCAA) differ depending on the sports discipline. Furthermore, a recent meta-analysis by Spruit et al. (2016) suggests that sports participation is effective in fostering moral behavior in adolescents. Several studies have suggested the effectiveness of acquiring life skills through sports activities (Danish et al., 2004; Hellison, 2003). It can thus be inferred that the various activities that athletes engage in to achieve their own records and win competitions may promote the acquisition of life skills.

Various previous studies on the life skills of college student athletes have reported the development and effectiveness of educational programs (e.g. Danish et al., 1998; Hellison, 2003). However, positive experiences during adolescence have been shown to be effective in acquiring life skills (de Subijana et al., 2022) and that acquiring life skills is positively related to psychological well-being (Cronin and Allen, 2018; Cronin et al., 2018). To examine the life skills of athletes, it is necessary to review the preceding factors in acquiring life skills and the influence of acquiring life skills on other variables.

The former includes the experience of participating in physical education at school and in sports (Shimamoto & Ishii, 2010), participation in life skills programs (e.g., Sandhya & Shivani, 2012), and the influence of coaches (Bean & Forneris, 2016; Camire, 2015). By contrast, the latter is associated with good competitive results (Shimamoto & Yonekawa, 2014; Yamamoto et al., 2018) and career acquisition (Shimizu et al., 2016; Yamamoto & Shimamoto, 2019). Based on the findings of these studies, the preceding factors in acquiring life skills for college

athletes are the experiences in their daily athletic lives. In addition, the fact that the acquisition of life skills impacts athletic performance and career acquisition will help college athletes spend their athletic lives. It is necessary to consider how the life skills of university athletes change in the long term in environments that promote the acquisition of these life skills. This research will help in providing effective coaching and support to college athletes. Furthermore, most previous research on the acquisition of life skills by college athletes has been cross-sectional; longitudinal research based on a long-term perspective is lacking.

Based on the above considerations, this study aims to investigate the longitudinal changes in the life skills of Japanese university student athletes using a longitudinal approach and gain insights into educational coaching and support. In addition, the target of the survey should be limited to specific sports to provide effective educational support (Shimizu et al., 2010). Therefore, this study focuses on the individual sport of judo, which was a popular sport at the recent Paris Olympics. In addition, university life is considered a transitional period to young adulthood, and there are concerns about mental health due to increased psychological stress (Knapstad et al., 2021; Sharp & Theiler, 2018). In particular, freshmen are expected to experience dramatic changes in their environment and new experiences, which may lead to changes in their skills. Therefore, this study focused on freshmen.

2. Method

2.1. Participants

The survey was conducted with 29 students (15 males, 14 females, number of years of competitive experience = 13.00 ± 2.20) who were first year university students and belonged to judo clubs at universities in Kanto and Kansai regions, and who had responded to all three surveys without any omissions (valid response rate 96.7%). The athletic achievements of the subjects of the survey during their high school years are shown in **Table 1**, and they also have high athletic achievements in university, such as participating in All-Japan competitions. In addition, the survey participants are training with the goal of winning prizes at the All-Japan Student Championships in June and October.

2.2. Survey Period

Based on the observation that acquiring life skills takes a long time (Gould & Carson, 2008), a certain interval was set between each survey period. In addition, the survey period was set independently in this study, taking into account the timing of the main competitions that the survey participants aimed to participate in. The first survey was conducted in May 2017, the second in September 2017, and the third in February 2018.

2.3. Procedure

The survey procedure was as follows: First, the purpose and content of the survey

was explained in advance to the judo club coaches at each university. The ethical considerations regarding participants' personal information were also explained. After obtaining cooperation, the survey was conducted by mail. When the survey was conducted, the instructions at the beginning of the survey form indicated that the survey results would not identify individuals and that participation in the survey was voluntary. This information was conveyed verbally by the survey administrator.

Table 1. Competitive results in high school for the survey participants.

University	Participants' initials	Competitive results from high school	University	Participants' initials	Competitive results from high school
A univ. (Men)	A·R	The highest-level competition in Japan—Prize-winning	B univ. (Women)	I·S	The highest-level competition in Japan—Prize-winning
	N·K	The highest-level competition in Japan—Prize-winning		N·M	The highest-level competition in Japan—Prize-winning
	N·H	Participation in the highest-level tournament in Japan		N·M	The highest-level competition in Japan—Prize-winning
	K·J	Participation in the highest-level tournament in Japan		Y·C	
	I·K	Participation in the highest-level tournament in Japan		F·M	The highest-level competition in Japan—Winner
	K·F			B·Y	The highest-level competition in Japan—Prize-winning
	Y·T	Participation in the highest-level tournament in Japan		N·N	The highest-level competition in Japan—Prize-winning
	I·K	The highest-level competition in Japan—Prize-winning		S·N	
	O·K	Participation in the highest-level tournament in Japan			
	T·Y			T·R	International Tournament Winner
	T·T	The highest-level competition in Japan—Prize-winning		N·Y	
	K·J	Participation in the highest-level tournament in Japan		K·H	The highest-level competition in Japan—Winner
	S·K			H·M	Participation in the highest-level tournament in Japan
	K·R	Participation in the highest-level tournament in Japan		D·K	
	K·Y	Participation in the highest-level tournament in Japan		K·Y	Participation in the highest-level tournament in Japan

2.4. Measures

2.4.1. Face Sheet

The face sheet at the beginning of the questionnaire asked respondents to provide their gender, grade, and number of experiences in sports.

2.4.2. The Appraisal Scale of Required Life Skills for College Student Athlete

A scale that can evaluate the life skills required of athletes from 10 subscales (4 items each, a total of 40 items) was developed by Shimamoto et al. (2013) based on the practical experience of coaches who have achieved excellent competitive results. The 10 subscales were as follows: setting goals: SG, communicating: C, stress management: SM, maintaining physical health and wellbeing: MP, always making one's best effort: BE, maintaining etiquette and manners: MEM, taking responsibility for one's own behavior: TRB, thinking carefully: TC, being humble: BH, and appreciating others: AO. Participants were asked to "Your daily life in general, including your activities in the judo club." The items were rated on a 4-point scale, ranging from 1 ("Strongly disagree") to 4 ("Strongly agree"). In this case, the higher the number, the better the life skills. The values of the inverted items are inverted during aggregation. Furthermore, the reliability and validity of this scale have been sufficiently confirmed by Shimamoto et al. (2013) through retesting, factor model fit, and construct validity.

2.5. Statistical Analysis

In this study, in addition to life skills, the focus was on higher-order life skills (Yamamoto & Shimamoto, 2019) for university judo athletes. Higher-order life skills are composed of four aspects: "social norm skills: SNS (MEM, BH, and AO)" that enable you to control your emotions and behavior and act appropriately as an athlete; "goal achievement skills: GAS (SG, MP, and BE)" that enable you to manage your own physical condition and work persistently to achieve your set goals; "communication skills: CS (C, and SM); "problem-solving skills: PSS (TRB, and TC)" necessary to come up with your own strategies and solutions to various problems and issues that arise.

The analysis was conducted by calculating the basic statistics (means, standard deviations, and correlation coefficients) of the participants' life skills and higher-order life skills at each time point. Next, to examine changes in the acquisition of life skills over time in university judo athletes, a repeated-measures analysis of variance was conducted for each subscale of life skills at each time point and for each aspect of higher-order life skills (Yamamoto & Shimamoto, 2019). In addition, in order to examine whether there are differences in the acquisition of life skills depending on individual factors, the same analysis was conducted based on gender. In the analysis, multiple comparisons were performed using the Bonferroni method when significant main effects were observed. All analyses were conducted using IBM SPSS 29 software.

3. Result

3.1. Units

The basic statistics for each subscale and higher-order life skills at each time point are presented in Table 2 and Table 3. Focusing on higher-order life skills, SNS

was significantly and positively correlated with all other aspects at all times ($r = .45 - .83, p < .05$) except for GAS at Time 3. In addition, there was a significant positive correlation between the GAS and CS ($r = .50$) and PSS ($r = .50$) at Time 2 ($p < .05$).

3.2. Longitudinal Changes in Life Skills and Higher-Order Life Skills

Next, to examine the changes over time in the acquisition of life skills and higher-order life skills among university judo athletes, a two-way (time \times gender) repeated-measures analysis of variance was conducted. As a result of Mauchly's sphericity test, sphericity was assumed for each aspect of life skills and higher-order life skills (SG: $p = .340$, C: $p = .065$, SM: $p = .162$, MP: $p = .108$, BE: $p = .187$, MEM: $p = .460$, TRB: $p = .504$, TC: $p = .469$, BH: $p = .320$, AO: $p = .071$, SNS: $p = .090$, GAS: $p = .188$, CS: $p = .217$, PSS: $p = .163$). As a result of further analysis (Table 4), significant differences were found in the SG ($F(2,56) = 6.91$), TC ($F(2,56) = 7.45$), BH ($F(2,56) = 3.30$), and AO ($F(2,56) = 3.71, p < .05$) at different time point. In addition, a significant interaction was observed in MP. Multiple comparisons showed that the scores at Time 2 for SG and Time 3 for TC and BH were higher than those at Time 1. On the other hand, a significant difference was found in the PSS for higher-order life skills, with the score at Time 3 being significantly higher than that at Time 1. Furthermore, MP improved from the first to the second point in time for female only. These findings indicate that some of the life skills of the survey subjects were acquired over time.

Table 2. Basic statistics for subscales of life skills (n = 29).

Sub scale		<i>M</i>	<i>SD</i>	Correlation coefficient (<i>r</i>)									
				2	3	4	5	6	7	8	9	10	
1: Setting goals	Time1	10.59	2.47	.16	.21	.37*	.43*	.44*	.46*	.53*	.47*	.47*	
	Time2	12.28	1.81	.20	-.08	.25	.25	.34	.22	.17	.22	.38*	
	Time3	11.79	2.40	.07	.39*	.02	.61*	.39*	.34	.43*	.13	-.09	
2: Communicating	Time1	12.72	2.05		.73*	.28	.41*	.29	.60*	.52*	.73*	.51*	
	Time2	12.72	1.77		.65*	.31	.70*	.39*	.19	.17	.39*	.35	
	Time3	12.97	1.99		.59*	-.10	.21	.36	-.05	.04	.35	.20	
3: Stress management	Time1	12.28	2.19			.03	.15	.19	.36	.30	.49*	.29	
	Time2	12.97	2.08			.30	.55*	.18	.16	.22	.51*	.22	
	Time3	13.17	2.14			.12	.22	.53*	.09	.42*	.46*	.40*	
4: Maintaining physical health and wellbeing	Time1	12.55	2.05				.54*	.39*	.32	.24	.35	.51*	
	Time2	12.59	1.68				.27	.38*	.13	.25	.44*	.50*	
	Time3	12.34	1.76				.16	-.10	-.13	-.02	-.00	.12	
5: Always making one's best effort	Time1	12.62	2.13					.45*	.68*	.61*	.50*	.65*	
	Time2	12.93	1.75					.28	.34	.35	.45*	.28	
	Time3	12.72	1.87					.22	.64*	.56*	.30	.13	
6: Maintaining etiquette and manners	Time1	13.41	2.78						.65*	.42*	.49*	.66*	
	Time2	13.62	1.78						.38*	.37	.40*	.58*	
	Time3	13.79	2.16						.25	.11	.37*	-.07	

Continued

7: Taking responsibility for one's own behavior	Time1	12.76	1.94		.69*	.69*	.77*
	Time2	12.62	1.59		.44*	.46*	.61*
	Time3	13.03	1.52		.60*	.56*	.26
8: Thinking carefully	Time1	11.72	1.71			.80*	.65*
	Time2	12.28	1.49			.68*	.40*
	Time3	13.07	1.67			.42*	.27
9: Being humble	Time1	12.41	1.82				.60*
	Time2	12.90	1.54				.55*
	Time3	13.31	1.67				.46*
10: Appreciating others	Time1	13.86	2.37				
	Time2	13.90	1.72				
	Time3	14.76	1.21				

† * $p < .05$; †† The top row in each subscale shows the scores for boys, and the bottom row shows the scores for girls.

Table 3. Basic statistics for each subscale of higher-order life skills (n = 29).

Sub scale		<i>M</i>	<i>SD</i>	Correlation coefficient (<i>r</i>)		
				2	3	4
1: General social skills (maintaining etiquette and manners, being humble, appreciating others)	Time1	39.69	5.96	.69*	.49*	.83*
	Time2	40.41	4.14	.62*	.45*	.69*
	Time3	41.86	3.62	.27	.63*	.47*
2: Goal achievement skills (maintaining physical health and wellbeing, always making one's best effort)	Time1	35.76	5.28		.28	.65*
	Time2	37.79	3.73		.50*	.40*
	Time3	36.86	4.36		.25	.49*
3: Communication skills (communicating, stress management)	Time1	25.00	3.94			.52*
	Time2	25.69	3.50			.24
	Time3	26.14	3.68			.17
4: Problem solving skills (taking responsibility for one's own behavior, thinking carefully)	Time1	24.48	3.36			
	Time2	24.90	2.61			
	Time3	26.10	2.86			

† * $p < .05$.

Table 4. Results of repeated measures variance analysis of life skills by time and gender factors (n = 29).

Sub scale	1: Time1		2: Time2		3: Time3		<i>F</i> value (2, 56)	Interactio n	Multiple comparisons
	male (n = 15)		male (n = 15)		male (n = 15)				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Setting goals	10.40	2.82	12.07	1.71	11.93	2.28	6.91*	.07	.38
	10.79	2.12	12.50	1.95	11.64	2.59			
Communicating	13.47	1.92	13.00	1.41	13.07	2.09	.32	1.83	1.76
	11.93	1.94	12.43	2.10	12.86	1.96			

Continued

Stress management	12.87	2.29	13.07	1.75	13.33	2.13	2.95	.82	.99	
	11.64	1.95	12.86	2.44	13.00	2.22				
Maintaining physical health and wellbeing	12.93	1.87	11.93	1.10	12.07	1.49	.27	.53	4.51*	female 2 > 1
	12.14	2.21	13.29	1.94	12.64	2.02				
Always making one's best effort	13.07	1.87	13.00	1.46	12.60	1.68	.33	.24	1.12	
	12.14	2.35	12.86	2.07	12.86	2.11				
Maintaining etiquette and manners	13.27	2.79	13.27	1.79	13.80	2.24	.28	.29	.28	
	13.57	2.87	14.00	1.75	13.79	2.15				
Taking responsibility for one's own behavior	13.00	1.73	12.27	1.67	12.60	1.24	.68	.68	2.17	
	12.50	2.18	13.00	1.47	13.50	1.70				
Thinking carefully	11.80	1.66	12.47	1.55	12.80	1.74	7.45*	.42	.98	3 > 1
	11.64	1.82	12.07	1.44	13.36	1.60				
Being humble	12.73	1.87	13.07	1.67	13.00	1.60	3.30*	.07	1.81	3 > 1
	12.07	1.77	12.71	1.44	13.64	1.74				
Appreciating others	13.87	1.41	13.27	1.83	14.67	1.23	3.71*	.09	1.83	3 > 2
	13.86	3.16	14.57	1.34	14.86	1.23				
General social skills (maintaining etiquette and manners, being humble, appreciating others)	39.87	4.97	39.60	4.48	41.47	3.36	2.65	.27	.57	
	39.50	7.07	41.29	3.71	42.29	3.97				
Goal achievement skills (maintaining physical health and wellbeing, always making one's best effort)	36.40	5.34	37.00	2.85	36.60	3.74	2.72	.05	1.41	
	35.07	5.31	38.64	4.43	37.14	5.07				
Communication skills (communicating, stress management)	26.33	4.03	26.07	2.84	26.40	3.72	1.75	1.40	1.85	
	23.57	3.41	25.29	4.16	25.86	3.76				
Problem solving skills (taking responsibility for one's own behavior, thinking carefully)	24.80	3.19	24.73	2.84	25.40	2.82	3.58*	.22	1.36	3 > 1
	24.14	3.61	25.07	2.43	26.86	2.80				

† * $p < .05$; †† The top row in each subscale shows the scores for male, and the bottom row shows the scores for female.

4. Discussion and Conclusion

This study examined changes in the acquisition of life skills through a longitudinal survey of Japanese university judo athletes.

First, focusing on each aspect of higher-order life skills, there was improvement in SNS, CS, and PSS from 1 to time 3, except for GAS (SG, MP, and BE). Therefore, it was shown that these SNS, CS and PSS gradually improved as time advanced. It has been pointed out that for first-year university students, the transition to a new environment can cause a great deal of stress in terms of their student life, including their studies and club activities (e.g. Cabras & Mondo, 2018). In addition, a

survey reported that 29% of first year university students freshman have feelings of mild anxiety (Ray et al., 2023). For this reason, the degree of adjustment of university students is considered to be one of the factors that determine whether their university life is a success or failure (Cabrera et al., 2005; Gairín et al., 2014). Although it was expected that each skill would decrease in first-year university students, the subjects of this study showed improvement in the relevant skills. As it has been suggested that athletes are more likely to acquire life skills (Shimamoto et al., 2013), it is thought that the survey subjects promoted the acquisition of each skill through engaging in rigorous training while receiving coaching and communicating with teammates in a new environment. In addition to acquiring skills, engaging in sports at university can also be cited as a benefit in terms of preventing unhealthy psychological behavior. On the other hand, the GAS improved from the first to the second point, and then declined to the third point. The GAS refers to the ability to maintain one's own physical condition, persistently continue to practice, and try to achieve the set goal (Yamamoto et al., 2018). The change in the score for this skill is thought to be mainly due to the timing of the target tournament for the survey subjects. The target tournament is held in June and October. The improvement in the score from point 1 to point 2 suggests that the subjects were working to improve their target skills through training for the target tournament. In addition, a tournament to select the players to be designated as All-Japan team players was scheduled for November. The subjects of this study were university judo players who were at the top level of their sport, and it is thought that they were working to improve their skills with an eye to selection tournaments. In addition, the decline in skill observed at the third time point is due to the fact that there were no large-scale domestic tournaments in February and March, and it was also the off-season. For this reason, it is thought that the main activities are seeking new goals and conditioning the mind and body.

Next, significant effects of time were observed for each aspect of life skills and higher-order life skills. First, the SG process involves visualizing a goal and setting it for each period. The improvement in the scores is thought to be partly due to the target tournament of the survey participants, as mentioned above. The participants in this study set high team goals and worked hard in their daily training. Multiple previous studies have shown a positive relationship between SG and improved performance (Williamson et al., 2024). Therefore, it is thought that the score for this skill improved because issues were set to ensure that the goals were achieved.

A significant improvement from the first to the third point can be considered to be mainly due to the way athletes and coaches think about competitive sports at universities. University athletes compete for many years. In particular, most of the participants of this study entered university through sports recommendations as athletes who achieved excellent results in high school. In addition, competitive sports at universities require that you think independently about the issues you need to solve to achieve your goals. From the coaching perspective, as described

by Sekiya (2008), it is preferable to provide less feedback to athletes who have mastered their athletic skills. As a result, the players themselves are taking the initiative to solve the issues necessary for improving their competitive ability as time passes, and this is likely the reason that the TC have improved.

Furthermore, the BH score, which is positioned as a social norm skill in higher-order life skills, was higher at Time Point 3 than at Time Point 1. Similarly, the score for Time 2 was higher than that Time 3 for AO. This suggests that they acquired the skills needed to demonstrate social norms over time. The BH shows that you can control yourself so that you do not get carried away. The AO shows that you can express feelings of gratitude towards the people around you. These skills are necessary for controlling one's own emotions and behavior, and for behaving appropriately as an athlete (Yamamoto & Shimamoto, 2019). The acquisition of these skills over time is thought to be due to changes in the environment in daily life, including the transition from high school to university and the transition to a competitive life. The university to which the survey subject belongs has a high level of competition that aims to win prizes at all-Japan student tournaments. While training at the university daily, it is likely that the athlete behaved appropriately as a high-level athlete. In addition, in a university judo club, you have to live in a dormitory and do things yourself in daily life. Therefore, the change in the environment, which is different from their previous life, seems to have improved their feelings of gratitude towards those around them.

Based on the above findings, it is suggested that each aspect of life skills is acquired over time by university judo athletes. Previous studies have shown that acquisition of life skills is positively associated with good athletic performance (Shimamoto & Yonekawa, 2014; Yamamoto et al., 2018) and career acquisition (Shimizu et al., 2016; Yamamoto & Shimamoto, 2019). The results of this study can therefore be considered meaningful for university athletes and coaches who aim to improve their athletic ability and human skills. In addition, the subjects of this study were first-year university students, and the results suggest that acquiring life skills may be an effective means of preventing maladjustment to student life in a new environment, a observed in first-year university students.

It is stated that the life skills acquired through a sports career can be a reliable resource during the transition to adulthood (Chalfin et al., 2015). From this, it can be concluded that acquiring life skills is meaningful as educational support for university students, who are in the final preparation stage of entering the workforce. For university athletes to acquire life skills, it is necessary to provide a suitable environment for competitive sports at the university as well as life skills education programs at the appropriate time. This will make it possible to promote the acquisition of life skills effectively. It would be effective to create a program based on the results of this study, with reference to programs for elite athletes (e.g. Hardcastle et al., 2015: Developing Champion Program). For example, focusing on goal setting, which showed improvement in this study, GOAL and SUPER programs have already been developed by Danish (2002), but it is considered necessary to

examine the content and methods appropriate for each sport in the future. Accumulating research results using a longitudinal approach would further clarify solid findings. Furthermore, examining the relationship with other variables, such as career acquisition longitudinally and obtaining more detailed findings, would provide support content and methods for university student athletes. Therefore, research that focuses on the acquisition of life skills is necessary.

Finally, future challenges will be discussed. First, the subjects of this study were college judo athletes, and the number of subjects was low. In the future, by expanding the number of subjects and the types of sports, it will be possible to provide clearer and more generalizable findings. Next, as mentioned above, sports activities are thought to influence career attainment. Therefore, a longitudinal survey will be conducted on awareness of life skills acquisition and career attainment, and the relationship and changes in both variables among college athletes will be continuously examined to clarify the potential of sports activities.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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