Development and Effect of Self-regulated Learning Strategy Program for Elite College Athletes

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Abstract

The purpose of this study is to develop a self-regulated learning strategy program for college athletes and verify its effects. Elite college athletes are placed in an environment where their academic abilities are extremely limited due to competitions and training from their school days. To this end, a self-regulated learning strategy program for college athletes was developed according to the program development model proposed by Kim Chang-dae (2011). This program was composed of total 8 sessions with 120 minutes per session. The data collected in this study were analyzed using SPSS WIN 23.0, and self-regulated learning strategies, self-esteem, learning flow, learning motivation, and academic achievement of students participating in the program were compared before and after the implementation of the program. In order to supplement the quantitative results, the changes of participating students were qualitatively analyzed based on the program operation log for each individual student and session shown in the group's program activities. As a result, the self-regulated learning strategies, self-esteem, learning flow, learning motivation, and academic achievement of the next semester were found to be significantly improved after participating in the program.

Keywords: College Athletes, Motivated Strategies for Learning, Group Counseling, Academic Achievement, Program

1. Introduction

Elite college athletes in Korea are in a structure that focuses on competition performance rather than learning in an environment of triumphalism. Elite college athletes are placed in an environment where their academic abilities are extremely limited due to competitions and training from their school days, and class absence is serious but there is no structural support for this problem. Colleges should also provide normal educational opportunities, but recognizing students as athletes rather than learners, they focus their attention only on

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enhancing students' skills and competencies[1][2]. It can be said that this is why elite college athletes are placed in an environment where they have no choices about life but sports.

It is reported that student athletes' mind and body are tired due to excessive training even if they participate in class, and their level of learning is significantly different from that of general students, making it difficult for them to understand the learning content. Athletes who live in a college life with a lack of basic learning live in a vicious cycle in which learning motivation and academic achievement are lowered[3]. About 5% of student athletes grow into professional athletes, and the majority of them need to develop the skills required to live as a member of society at normal times by adapting well to the remaining school life and career when they quit exercising for any reason[4][5].

In particular, it is very important to improve self-regulated learning ability in college learning. Properly setting goals suitable for one's traits and abilities in learning can promote self-efficacy and learning motivation[6]. In addition, it was found that the experience of learning flow not only shortens learning time and promotes active participation in learning activities, but also positively affects academic achievement and increases self-esteem[4].

Elite college athletes are most likely to have had an excellent immersion experience in their sport. In learning, however, many of them may not be able to select an appropriate learning goal and to feel interest and value in the learning goal because they have little experience to consider the scope of their abilities. Therefore, it is necessary to improve learning motivation in the learning scene by helping elite college athletes have an interest in learning and the meaning of study, and approach learning with a strategy while being actively encouraged in areas that they want to do themselves in a learning scene and they are good at [3].

In the meantime, most of the learning strategy programs have been developed for general students[7-10]. Since there is no learning strategy program suitable for Korean elite college athletes, it is necessary to develop programs based on systematic development procedures. In addition, elite college athletes have been trying to endure hard training, set goals by identifying their strengths and weaknesses, encourage themselves and solve the goals they need to reach in their situation. Positive psychology, solution-oriented therapy, encouragement therapy are the examples of theories which are appropriate when constructing a self-regulated learning strategy program suitable for the psychological and environmental conditions of these elite college athletes. All of these theories are the latest ones in the field of counseling psychology and are interested in the present and future rather than the past, client's success experience and the relationship of mutual exchange to find a desired solution[11].

Therefore, this study was to design a program based on the rationale of positive psychology,

solution-oriented therapy, and encouragement therapy when trying to apply the self-regulated learning strategy program for elite college athletes and examine the effect. To this end, the researchers constructed specific goals and contents of the program based on the results of previous studies. After conducting the preliminary program for elite college athletes, the reaction in the program was reflected and supplemented to develop and implement a final output. In order to find out the effects of these programs, the self-regulated learning strategies, self-esteem, learning flow, learning motivation, and academic achievement of elite college athletes were examined whether or not they improved before and after participation in the program.

2. Method

2.1 Program Development

This study devised a program based on the program development model of Kim Chang-dae [12], which consists of four steps: goal setting, program composition, preliminary research, and program implementation. In step 1 goal setting, previous studies were analyzed to analyze the difficulties and demands of college athletes in learning. Based on the results, the goals of this program were set to four: ① improving self-regulated learning strategies of college student athletes, ② improving self-esteem in the learning scene, ③ exploring appropriate learning motivation, and ④ providing learning flow experiences.

In step 2, program composition, the rationale for the goals, and the sub-goals of each component of the program was reviewed. Researchers collected and developed data to analyze previous studies on learning strategy programs and to select program elements and activities.

The topic of Session 1 is the purpose of learning. Recognizing the importance of learning, the athletes searched for what could be their motivation for learning. To this end, they took a time to introduce themselves other than athletes and talked about the difficulties in training while learning in college. They had the time to make a presentation about what they want to get through participation in the program and the future they want after graduation. The first session was organized based on encouragement therapy and solution-oriented therapy (miracle questions) to design their own learning motivation. The topic of Session 2 is a success experience in learning. They were asked to recall success experiences in learning and recognize their psychological coping resources. To this end, the researchers talked about players preparing for a new leap forward, guided them about learning methods by personality type, and shared

what resources to use. In addition, they scaled their learning experiences to 10 points and were engaged in an activity to search for coping resources based on the experience of learning. Thus, it was constructed based on solution-oriented therapy (exception discovery questions, scale questions) and stress coping theory. The topics of Session 3 is an attention strategy. To this end, we shared the experience of succeeding in concentration and introduced the attention strategy. They were encouraged to imagine what a person who is good at both learning and exercising will look like and to practice while thinking about what to do. The purpose of Session 3 is to help them find small actions to get what they want through attention. Thus, it was constructed based on the encouragement therapy and individual constructivism theory. The topic of Session 4 is to explore the key topics. To this end, we explained the advantages when we first identified important points before acting and SQ3R. The college athletes read the summary of a book, freely found and presented the key topics. They compared the key topics that were found differently or equally, and wrote an essay based on them. Session 4 is to make them participate in learning more openly and actively by understanding that they can express their opinions with a key topic and present different opinions through the same materials. Thus, it was constructed based on the learning strategy (SQ3R) and encouragement therapy. The topic of Session 5 is an information search technology. Session 5 was composed of time to explore and search for necessary information with various resources. In the meantime, the method of solving the information in the task was shared, and the task order was determined based on the information finding using a smartphone and the information found. The contents of Session 5 were organized based on solution-oriented therapy (coping questions). The topic of Session 6 is a task completion strategy. To this end, we explained the method of dividing the task into (first-middle-end) and provided materials on how to construct the table of contents. Session 6 was organized based on learning strategies, encouragement therapy, and solution-oriented therapy (specific questions). The topic of Session 7 is creative learning. To this end, we used some pictures of books with creative ideas to share ideas, and explained how positive emotions in everyday life help this creative learning. We shared how to grow them through the optimism test, and completed the story behind the given materials. We had a time to share how they would like to solve their current learning tasks. Session 7 was composed based on solution-oriented therapy (relationship question), encouragement therapy, and positive psychology (optimism test). The topic of Session 8 is a strength-based learning strategy. Session 8 was organized to find their strengths and practice actions. To this end, the strength list was used to find each other's strengths and share the reasons. We had a time to set goals for assignments, exams, etc. of participating classes, and use the strengths to present

the learning plans. Finally, we had a time when the leader gives feedback on the students' changes. Session 8 was organized based on positive psychology (strength list) and solution-oriented therapy (praise-connection statement-task presentation).

In Step 3, preliminary research, the 1st program was conducted and evaluated. According to the main feedback from students, there were many opinions that it was unsatisfactory because the time of the program was short and that it would be better if the program was more intensive. What was good was talking to their friends a lot, having a lot of opportunities to make a presentation, and feeling proud when they saw themselves concentrating on writing something while writing. In this program, the time for each program session was supplemented from 90 minutes to 120 minutes to secure enough opinion and presentation time, and the program leader was able to provide feedback to each person on the activities. In addition, the students were able to prepare for actual learning tasks through the practice of creating their own report form while completing a report and producing the PPT according to Session 6 task completion strategy.

In Step 4, program implementation, the program was supplemented by session time, addition of opinion and presentation time, PPT production for Session 6 completion strategy, and the entire program was modified to 8 sessions in total and 120 minutes for each session, the final program was constructed and the second program was implemented. The program was modified based on the evaluation of students who participated in the 2nd program, and the supplemented program was applied to this study.

2.2 Subjects and Procedures

The students who participated in this study were elite athletes from the college located in City A. For this study, the researchers explained the self-regulated learning strategy program to the department in charge of students and selected the subjects as students recommended by the event leader or who expressed their desire to participate in person. A total of 48 elite athletes from 5 events participated. The preliminary research stage (1st program) was composed of 8 sessions once a week with 90 minutes per session from April 27, 2017 to June 16, 2017, and 20 students participated. The program implementation stage (2nd program) was composed of 8 sessions once a week with 120 minutes per session from November 2, 2017 to January 12, 2018, and 28 students participated.

Of total 48 students, it was found that 10 students failed to participate fully in the program for reasons of selection of as members of the national team and hospitalization due to injury,

and 17 students failed to participate in the post-examination because they joined the program late due to personal training and other reasons even after completing the program.

In this study, only the pre-post examinations of 21 people who participated in the entire program and completed all the pre-post examinations were used as analysis data. Of the 17 students who did not participate in the post-examination, 15 students were surveyed for satisfaction with participation in the program, and the results were used as additional analysis data.

A total of 48 students were divided into 4 groups, and the programs were operated for each event, and the programs were conducted after group and individual training time or by using free time. The director of this study (professor of the Graduate School of Education) managed the entire program, and the activities of each session were conducted by four small group leaders (two doctors in educational psychology and counseling and two masters in psychology). The small group leaders mutually assessed the program through periodic meetings after every two sessions to discuss participants' responses.

In order to verify the program effect of this study, self-regulated learning strategies, self-esteem, learning flow and learning motivation were organized into a single questionnaire, a survey was conducted before and after participation in the program, which took about 30 minutes. Also, the academic achievements of the semester before and after participation in the program were compared. Lastly, in order to measure the qualitative change of the elite college athletes participating in the program according to the program, the program leader wrote an operation journal about reaction of each session.

2.3 Measuring Tools

2.2.1 Motivated Strategies for Learning Questionnaire

The Motivated Strategies for Learning Questionnaire (MSLQ) used in this study is the scale modified by Lee Jin-ju[13]. These are 68 questions in total, including cognitive components (rehearsal, elaboration, organization, critical thinking), metacognitive components (intrinsic goal, extrinsic goal, task value, control beliefs, expectations for learning, test anxiety), resource management components (time and study environment, regulation of their own effort, peer learning, help-seeking), and the Cronbach's α value was found to be .96 in this study.

2.2.2 Self-esteem Scale

The self-esteem scale used in this study is Rosenberg-Guttman Scale, which was extracted from the study by Joo Hyung-yun[14] and selected 7 out of 10 questions, which measure the content of positive self-esteem. In this study, the Cronbach's α value was found to be .77

2.2.3 Learning Flow Scale

The learning flow scale used in this study was adapted from the study of Kim Jin-ho[15]. This scale consists of a total of 28 questions of four factors including concentration on task at hand, integration into learning tasks, learning action-awareness merge, and loss of self-consciousness. In this study, Cronbach's α value was found to be .87.

2.2.4 Learning Motivation Scale

The learning motivation scale used in this study was taken from the study by Yang Deok-soon[16]. This scale consists of 11 questions of 2 factors: intrinsic motivation and extrinsic motivation. In this study, the Cronbach's α value found to be .91.

2.4 Analysis Procedure

In this study, the same questionnaire was constructed before and after the program to see if the self-regulated learning strategies, self-esteem, learning flow and learning motivation of college athletes who participated in the program were improved. In order to find out the treatment effect of the collected data, the pre-examination was conducted, and then SPSS 23.0 was used to make an analysis by the dependent sample t-test. In order to complement the interpretation according to the statistical test, the program satisfaction was measured for 15 participating students in the preliminary research and program implementation steps who did not participate in the pre and post examinations, and we received a journal corresponding to the reaction and change of each student participating in the program from the leaders who operated the program and conducted the content analysis on the program operation journal.

3. Analysis

3.1 Results of the Satisfaction Survey of Participants in the Preliminary Research and Program Implementation Steps

A satisfaction survey with 6 questions consisting of a 5-point Likert scale was conducted for 15 students who participated in the preliminary research and program implementation steps, and the results were as follows: 'Program Help Level'(M=4.7), 'Operation Satisfaction' (M=4.7), 'Instructor Satisfaction' (M=4.8), 'Place Satisfaction' (M=4.3), 'Operation Hour Satisfaction' (M=4.3), 'Necessity of Future Program (M=4.9), Overall Program Satisfaction (M=4.6). Participating students expressed their opinions such as 'It was good to talk and know what materials to use for the assignment.', 'I came to know why I should study and how to do it', 'It was good to learn something other than exercise'.

3.2 Results of Pre-post Examinations in the Program Implementation Stage

In order to find out the effect of the self-regulated learning strategy program for elite college athletes, pre-post self-regulated learning strategies, self-esteem, learning flow, learning motivation, and academic achievement of 21 people among participating students in the program implementation stage were compared by the two dependent sample t tests, and the results are as shown in [Table 1].

[Table 1] Results of Pre-post Examinations for Each Sub-factor of the Program Implementation Stage (N=21)

Scale		Number of questions	Pre		Post		t
			M	SD	M	SD	
Cognitive	Rehearsal	4	2.96	.94	3.79	.76	-3.36**
	Elaboration strategies	6	2.82	.78	3.84	.68	-4.76***
	Organization strategies	4	2.61	.80	3.87	.61	-4.64***
	Critical thinking	4	2.67	.75	3.83	.66	-6.21***
Motivated strategies for learning	Intrinsic goal orientation	4	3.36	.82	4.18	.62	-3.37**
	Extrinsic goal orientation	4	3.76	.70	3.97	.56	-1.43
	Task value beliefs	6	3.11	.57	4.01	.58	-6.01***
	Control beliefs for learning	4	3.49	.53	3.74	.58	-1.81
	Expectations for learning	8	2.59	.62	3.84	.63	-6.89***
	Test anxiety	5	3.04	.60	2.96	.58	.51
	Resource management	Time and study environment	8	2.83	.65	3.53	.58
	Regulation of their own effort	4	2.82	1.02	3.71	.82	-3.43**

	Peer learning	3	2.65	.77	3.63	.78	-5.48***
	Help-seeking	4	2.83	.80	3.79	.70	-4.49***
total		68	2.96	.52	3.75	.56	-5.36***
Self-esteem	Positive self	7	3.86	.68	4.19	.64	-3.31**
	Concentration on task at hand	10	2.32	.65	3.33	.83	-3.97**
Learning	Integration into learning tasks	10	2.78	.60	3.58	.65	-4.71***
flow	Learning action-awareness merge	5	2.27	.69	3.38	.82	-4.24***
	Loss of self-consciousness	3	3.23	.67	3.84	.90	-2.24*
total		28	2.57	.52	3.48	.72	-4.35***
Learning	Intrinsic motivation	6	3.60	.74	3.96	.81	-2.05
motivation	Extrinsic motivation	5	3.64	.63	3.83	.68	-1.52
total		11	3.62	.66	3.90	.70	-2.16*
Academic achievement			2.53	.66	2.86	.49	-2.22*

*p<.05, **p<.01, ***p<.001

[Table 1] shows the statistical significance of the difference between before and after the program was tested. As a result, self-regulated learning strategy, self-esteem, learning flow, learning motivation, and academic achievement were analyzed to have a significant difference between pre-post. Based on each sub-factor, the self-regulated learning strategy showed that the cognitive components (rehearsal, elaboration, organization, critical thinking) had a significant difference between pre- and post-tests, and intrinsic goal, task value, expectations for learning of metacognitive components showed a significant difference between pre- and post-tests, and there were no significant differences in extrinsic goal, control beliefs, and test anxiety. In the resource management components (time and study environment, regulation of their own effort, peer learning, and help-seeking), it was found that there were significant differences between program pre- and post-tests. In the sub-factors of self-esteem (positive self) and learning flow (concentration on task at hand, integration into learning tasks, learning action-awareness merge, loss of self-awareness), it was found that there were significant differences between the program pre- and post-tests. Unlike measuring the entire learning motivation, the sub-factors of learning motivation (intrinsic motivation, extrinsic motivation) did not show any significant differences between program pre- and post-tests.

3.3 Results of the Content Analysis of the Operation Journal for Each Session of the Program Implementation Stage

In this study, 4 leaders who directly operated the program were asked to prepare an operation journal about reactions and changes by individual student and session in order to qualitatively analyze the effect on the program. During the program, students' responses were mutually

discussed through periodic meetings. For self-regulated learning strategies, self-esteem, learning flow, learning motivation, and students' participation attitude and changes to be achieved in this program, the general responses and specific changes of students according to the participation in each session and a summary of the main responses for each session based on the above was analyzed.

In Session 1, students were very unfamiliar, awkward, and complained of physical fatigue due to long training. In Session 2, they showed interest and curiosity about the contents of the program, but they were ashamed when participating in presentations or learning activities. In Session 3, they spent time trying to think, challenged themselves to learning and concentrated on the learning scene. In Session 4, they recalled the feelings they felt in the learning process, and tried to endure the given activity although it was difficult. In Session 5, some students observed each other for mutual modeling, and actively inquired about the counseling-related programs to program operating leaders, showing improved interest in themselves. In Session 6, they tried to realistically cope with various abilities required for class, and he participated with patience even though it was difficult. They also expressed regret for the end of the program and hoped that such a program would be provided continuously. In Session 7, they presented their hopes or solved the tasks in different ways according to the activity topic, being active in learning and coming up with ideas. In Session 8, encouraging each other was impressive, they wanted to collaborate and expressed honest feelings about what was difficult or enjoyable. In particular, students complained of physical fatigue every session throughout the program, but immersion, satisfaction, participation in program activities and improvement of learning strategies were found to be improved in general. It can be seen that students improved interest in themselves, their hopes and expectations for learning, and their desire to achieve realistic wishes through this program. This result can be said to be an advantage of a psychological counseling-based learning strategy program based on encouragement and strengths. The contents of the final self-regulated learning strategy program for elite college athletes are as shown in [Table 2].

[Table 2] Final Results of the Self-regulated Learning Strategy Program for Elite College Athletes

session	goal	program content	theoretical approach
1 (2h)	Purpose of learning	-talk about the difficulties in training while learning -Write about future	- Encouragement therapy - Solution-focused Brief Therapy, SFBT: Miracle Question
2 (2h)	A success experience in learning	-Recall the experience of success in learning -Explore their psychological resources	- SFBT: Exception Question, Scale Question - Stress and coping theory

		-Understanding stress	
3 (2h)	Attention-focus ed strategy	-Learn about the importance of attention - "If I was" (Fixed Role Therapy)	- Encouragement therapy - Personal construct therapy
4 (2h)	Explore the key topics	-Find key topics in a given data -A summary of the book -Write an essay	- SQ3R - Encouragement therapy
5 (2h)	Information search technology	-Using a mobile phone -How to use: Google, Naver, Wikipedia	- SQ3R - SFBT: Coping Question
6 (2h)	Task completion strategy	-Writing strategy -Write a report	- SQ3R - Encouragement therapy - SFBT: Materialization question
7 (2h)	Creative learning	-Read the story and speak freely -share how they would like to solve their current learning tasks -Positive emotions & creative learning -Sharing and encouraging each other	- SFBT: Relationship question - Positive Psychology: Optimism test
8 (2h)	Strengths-base d learning strategies	-List of 24 strengths -Talking about what changed	- Positive Psychology - SFBT: Give a task

4. Discussion

The significance and discussion of this study with a focus on the main results are as follows:

First, this study has significance in that it developed a program for elite college athletes through a systematic program development procedure. In the meantime, there has been no learning strategy group counseling program only for elite college athletes. Elite college athletes, who are not properly provided with learning experiences and learning environments, can enhance their learning motivation, confidence, and success experiences through these programs. These results can be understood in the same context as the results of previous studies that athletes who do both professional training and learning need a system that supports learning through appropriate time allocation in college life[1][4].

Second, this study is significant in that it constitutes the content of the program in consideration of positive psychology, solution-oriented therapy, encouragement therapy, learning strategy research results as well as academic aspects in order to improve academic achievement based on self-regulated learning ability of elite college athletes. This program can be a new model in the learning strategy program development research for elite college athletes as the program activity method was constructed and the effect was verified by applying an intervention strategy through a counseling psychological approach. These results can be

understood in the same context as the results of previous studies that developed learning and emotional programs according to the psychological characteristics of students[3][12][17].

Third, the result of this program implementation showed that the self-regulated learning strategies, self-esteem, learning flow, learning motivation, and academic achievement of the elite college athletes participating in the program were significantly improved. These results are consistent with previous studies that the higher the learning strategy of college students, the higher the academic achievement[18]. In addition, as shown in the results of previous studies reporting that academic achievement was not high even though college athletes perceived high achievement value for exercise, it can be seen that it is necessary to provide experiences that allow them immerse themselves in learning in the program by exploring more specifically ways to activate self-intrinsic motivation in expectations for learning itself and achievement of learning in order to help students athletes improve their academic ability[18][19]. Elite college athletes are less confident in learning other than sports, and are likely to feel intimidated emotions, and tend to be passive in dealing with social relationships in the learning scene. In college life, interaction with a variety of people is required. In addition to training-related experiences, it is necessary to experience interactions such as discussing with people and expressing their thoughts. To this end, encouraging, collaborating with each other within the program, and building social skills in the learning scene can help students learn appropriate social behavior and adapt to interpersonal relationships in college learning[20].

Fourth, this study is of significance in that the contents of the program were organized and conducted in consideration of the living environment and characteristics of elite college athletes. The program participation satisfaction was also high, as the students who have a lot of physical fatigue were talking to program leaders about life other than exercise by approaching them through encouragement therapy to help students slowly immerse themselves in program activities. It can be seen that these results are consistent with the findings of previous studies that the experience of finding the meaning of learning and immersing themselves in learning is related to academic achievement, and that dialogue with teachers improves the identity of the career[21][22].

Based on the above findings, suggestions for follow-up studies related to the self-regulated learning strategy program for elite college athletes are as follows:

First, we divided elite college athletes into experimental and control groups to verify the effect of the program, failing to conduct the effect verification. It was difficult to organize an experimental group and a control group because it was difficult to secure physical time due to preparation for competitions. Therefore, a follow-up study is needed to more closely verify the

effect of the program developed by this study.

Second, we divided the steps into preliminary research step and program implementation step to verify the effect of the program, failing to conduct the statistical analysis. Of all 48 students, 10 students (21%) failed to participate in the program to the end due to hospitalization due to injury, participation in a match or off-season training, 17 (35%) students participated 10-20 minutes after the start of the program due to training, and 21 (44%) participated in the entire program, completed pre- and post-examinations and completed all program session hours. Students who intend to participate in the program but have difficulty in making time physically were individually guided later to complete the program. In the future, it is expected that a learning support system for elite college athletes or physical time will be secured to urgently conduct a follow-up program study that conducted program pre-post examinations more closely. The self-regulated learning strategy program for elite college athletes is very important in that it considers not only academic problems but also the improvement of psychological factors. In addition, this program is significant in that it was possible to talk about various difficulties that occur in the life of athletes through small group operation.

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