



A Single-Case Study Examining the Impact of Psychological Skills Training on a Student Baseball Player

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Abstract

This single-case study explored the impact of eight sessions of psychological skills training to improve the performance of a student basketball player struggling with high negative emotions and underperforming due to limited psychological skills. The study participant underwent three baseline assessments of mood state, sports performance strategies (test of performance strategies), and perceived performance (perceived performance inventory and interview) before embarking on the A-B design intervention. Following the eight-week training program, consisting of 50-60 minute sessions encompassing MBTI/self-analysis, goal setting, relaxation/imagery training, self-talk training, concentration training, and routine training, assessments were repeated at four and eight weeks post-intervention. The quantitative data gathered from inventory scores were analyzed using Excel, and presented in a table. Qualitative data from interviews produced further insights into the patient's experience. This study suggests that eight sessions of psychological skills training can effectively improve mood state, sports performance strategies, and perceived performance in student baseball players. This highlights the potential of such interventions to enhance athletic performance and well-being in individuals struggling with psychological barriers.

Key words: psychological skills training, mood state, sports performance strategies, perceived performance, single case design

Introduction

In order to achieve peak performance in sports, physical factors, motor skills factors, psychological skills factors, and environmental factors of players must be in harmony. In addition, as players moved into elite or professional sports, there was no significant difference in physical factors or motor skills, so psychological skills of players determined performance

(Jeong, 1997). Dorfman (1989) called baseball a mental game and argued that a player's mental and psychological skills had a significant effect on game performance.

Athletes in their adolescence faced psychological difficulties due to excessive competition for rankings, excessive training, school life problems, career problems, and problems with the opposite gender (Kim, 2010). In particular, student baseball players had experienced negative emotion, low self-esteem (Shin & Kim, 2021; Shin & Yoo, 2021), stress (Shin & Kim, 2021), and difficulty choosing a career (Huh

& Ko, 2019).

Meanwhile, when adolescent student-athletes worry about career, interpersonal relationships, psychological skills, and performance issues, they need advice to help them think positively (Kang & Jang, 2022). However, because student athletes were not provided with psychological skills training and appropriate counseling and do not had time to ask about personal difficulties and concerns about sports, the psychological exhaustion experienced by individuals also affected their performance (Kim, 2018). Therefore, sports psychological counseling and psychological skills training should be provided to student athletes so that they can find their own coping methods when they encounter various problems in the process of growth and development (Mamassis & Doganis, 2004; Park & Hwang, 2020; Rejeski & Brawley, 1988; Son & Ryu, 2007).

In particular, due to the nature of baseball, where psychological factors were emphasized, players must effectively cope with negative psychological states experienced in game situations through self-regulation and maintain optimal performance. One of these attempts to improve the psychological functions of athletes was psychological skills training. Psychological skills training (PST) referred to a technique or strategy that practiced and trained psychological skills that were helpful in playing the game with a positive attitude for the purpose of improving performance (Vealey, 1988). It has been reported that psychological skills training not only improved performance but also helped in personal growth (Murphy & Jowdy, 1992; Son & Yoo, 2007; Sullivan & Nashman, 1998), and even in baseball, psychological skills training helped to improve players' emotion. It has been confirmed that it has a positive effect on emotion, self-esteem, and perceived performance (Shin & Yoo, 2021). In particular, a study by Park, Kwon, & Lee (2012) also confirmed that psychological skills training had a positive effect on baseball players' performance strategies and team cohesion.

As stated in the introduction, the psychological

factors of the player was very important in baseball, and as young players tended to focus only on physical skill training, it was time to conduct research to determine the effects of applying PST. Park and Hwang (2020) suggested that most participants in psychological skills training were biased towards adult athletes and that it needed to be applied to youth and adolescent athletes. In addition, case studies on baseball players mainly focused on improving psychological skills and performance following PST, and there was a lack of research examining the emotion, performance strategies, and perceived performance of student baseball players who experienced low performance, slumps, and stress.

Meanwhile, studies verifying the effectiveness of psychological skills training often simply compared pretest and post-test measurements without using the case study design type recommended in research methodology (Han, 2017). Lee and Yoo (2020) proposed an A-B design as a type of PST case study, considering the realistic problems that if the research period was long, distortion of the research subjects' responses might occur in the inventory measurements and cooperation between coaches and players was difficult. In this regard, the purpose of this study was to analyze the effect of PST on mood state, sports performance strategies, and perceived performance of a student baseball player using single case study design (A-B).

Method

Participant

The study participant was a baseball player who had high negative emotions and was unable to demonstrate his performance during competition due to low psychological skills. The study participant was an 18 year old pitcher who was given a consent form after explaining the content of the study.

Measures

The POMS (profile of mood state), TOPS (test of performance strategies), perceived performance inventory, and interview were used to verify the effectiveness of psychological skill training. The measures were used after the content validity was verified through the expert consultation and then modified to fit the purpose of the study.

Mood State (Total Mood Disturbance)

Mood State Scale to evaluate the mood state of research participant, the Mood State Scale (K-POMS) developed by McNair, Lorr, & Droppleman (1988) and adapted by Kim et al. (2003) was used. This inventory which measured six subfactors of anxiety, depression, anger, vigor, fatigue, and confusion, consisted of a total of 58 questions on a 5-point Likert scale (4 points very much to 0 points not at all). Total emotional disorder (anxiety+depression+anger+fatigue+confusion-vigor) calculated from the standard scores of the subfactors of this scale was used as quantitative data, and the lower this index was, the better it was considered.

Korean Version TOPS

The Test of Performance Strategies (TOPS) developed by Kim & Oh (2002) consisted of a total of 24 items, measuring five subscales; (self-talk, conditional control, imagery & goal setting, relaxation, emotional control). Items were measured on a 5-point Likert scale.

Perceived Performance Inventory

Perceived performance inventory was a set of 8 questions, each related to a different aspect of a baseball player performance (Mamassis & Doganis, 2004). The participant was asked to appraise performance on a 5-point scale on the following aspects: 1) his physical feelings; 2) quality of technique; 3) timing and rhythm; 4) concentration; 5) amount of effort exerted; 6) mental

attitude and thoughts; 7) level of self-confidence during the match; and 8) comparison of his or her performance with what he was expected to play. An overall performance score was obtained from the sum of all these 8 items.

Interview

Interview was conducted after psychological skills training to analyze the effects of PST program on mood state, performance strategy and perceived performance of a baseball player. The interview contents were analyzed by PST program effect.

Psychological Skills Training Program

Psychological skills training for the participant was developed by data based on previous literatures (Han, 2017; Kim & Chun, 2017; Lee & Shin, 2017; Lee & Yoo, 2020; Lee et al., 2022; Park & Hwang, 2020; Shin & Ko, 2019; Vealey, 1990), interview, psychological test data, and sports psychologists consultation. Both qualitative and quantitative techniques were used to develop the PST program for the participant. Participants was trained in the PST program during PST period (8 sessions). In the process, participants practiced and acquired psychological skills programs and they applied their PST programs to practice competitions. After providing the final version of the PST program, the quantitative and qualitative measures was administered to examine mood state, performance strategies, and perceived performance at the post-PST.

Data Analysis

The collected quantitative data were calculated using the Excel program. The changes in scores for each factor on the scales were analyzed graphically at the 3rd stage of baseline, the 4th session of PST and the end of PST. The qualitative data were collected by in-depth interviews. The semi-structured interview was conducted within 40

Table 1. Psychological skill training program

PST	Contents	References
1	Orientation(PST program, application), baseline test(POMS, TOPS, perceived performance inventory)	Vealey (1990) Park & Hwang (2020) Lee et al. (2022)
2	MBTI/Self analysis Recognizing and reinforcing your strengths	Lee & Shin (2017)
3	Goal setting: SMART technique	Lee & Yoo (2020) Park & Hwang (2020)
4	Relaxation, imagery training, psychological test	Kim & Chun (2017)
5	Self-talk	Lee et al. (2022)
6	Contentrion training: Attention Cues	Lee & Yoo (2020)
7	Routine Training	Park & Hwang (2020) Cohn (1990)
8	PST program summary and feedback, posttest	Lee & Yoo (2020)

minute. Data from the interviews were recorded and transcribed verbatim by the researcher. The collected qualitative data was analyzed in an integrated manner along with the quantitative data.

Results

Mood State (TMD; Total Mood Disturbance)

As showed in Table 2, the total mood disturbance score of participant showed high emotional disorder in all three stages (123-121-125) at baseline but a positive change was gradually lowered by PST(98-77). These

results suggested that psychological skills training had positive effect on mood state of participant.

Performance Strategies

Self-Talk

As showed in Table 3, self-talk score of participant showed low level in all three stages (8-9-10) at baseline but a positive change was gradually increased by PST (13-16). These results suggested that psychological skills training had positive effect on self-talk of participant.

Table 2. The effect of psychological skill training program on emotion

TMD	Baseline1	Baseline2	Baseline3	4Th session of PST	8Th session of PST
Score	123	121	125	98	77

Table 3. The effect of psychological skill training program on self-talk

TMD	Baseline1	Baseline2	Baseline3	4Th session of PST	8Th session of PST
Score	8	9	10	13	16

Table 4. *The effect of psychological skill training program on condition control*

TMD	Baseline1	Baseline2	Baseline3	4Th session of PST	8Th session of PST
Score	16	17	17	22	25

Table 5. *The effect of psychological skill training program on imagery and goal setting*

TMD	Baseline1	Baseline2	Baseline3	4Th session of PST	8Th session of PST
Score	13	13	12	16	20

Table 6. *The effect of psychological skill training program on relaxation*

TMD	Baseline1	Baseline2	Baseline3	4Th session of PST	8Th session of PST
Score	9	11	10	12	15

Table 7. *The effect of psychological skill training program on emotion control*

TMD	Baseline1	Baseline2	Baseline3	4Th session of PST	8Th session of PST
Score	10	9	11	14	17

Table 8. *The effect of psychological skill training program on perceived performance*

TMD	Baseline1	Baseline2	Baseline3	4Th session of PST	8Th session of PST
Score	16	18	18	24	31

Condition Control

As showed in Table 4, condition control score of participant showed low level in all three stages (16-17-17) at baseline but a positive change was gradually increased by PST (22-25). These results suggested that psychological skills training had positive effect on condition control of participant.

Imagery and Goal Setting

As showed in Table 5, imagery and goal setting score of participant showed low level in all three stages (13-13-12) at baseline but a positive change was gradually increased by PST (16-20). These results suggested that psychological skills training had positive effect on imagery and goal setting of participant.

Relaxation

As showed in Table 6, relaxation score of participant showed low level in all three stages (9-11-10) at baseline but a positive change was gradually increased by PST (12-15). These results suggested that psychological skills training had positive effect on relaxation of participant.

Emotion Control

As showed in Table 7, emotion control score of participant showed low level in all three stages (10-9-11) at baseline but a positive change was gradually increased by PST (14-17). These results suggested that psychological skills training had positive effect on emotion control of participant.

Perceived Performance

As showed in Table 8, perceived performance score of participant showed low level in all three stages (16-18-18) at baseline but a positive change was gradually increased by PST (24-31). These results suggested that psychological skills training had positive effect on perceived performance of participant.

Qualitative Data; Interview

A participant perception on psychological skills program through interview showed that PST had positive effects on mood state, performance strategies, and perceived performance of the participant.

Emotion: Total Mood Disturbance

Through PST, athletes can control their anxiety level through training to recognize their level of anxiety and deal with anxiety. I was able to lower my tension through relaxation training, and when I was anxious, I was able to do my performance by focusing on attentional focus cues. Focusing on the routine helped control anxiety when I was anxious.

Performance Strategies

Performance routines, established through routine training, helped with performance strategies. Also, the focus cues of the attention were very helpful in pitching and hitting. PST was able to solve many difficult problems in practice. In particular, routine, image training, and attention-focused training were very helpful in performance strategies.

Perceived Performance

I can learn how to understand and improve your performance via PST. PST gave me the opportunity to look back. Goal setting, image, and routine training seemed to help my performance. Thanks to PST, I was able to recognize my performance, and I felt that my

performance could be improved by developing my strengths and supplementing my weaknesses.

Discussion

The purpose of this study was to investigate the effect of 8 sessions of psychological skills training on mood state, sports performance strategies, and perceived performance of a baseball player. The study participant was a baseball player who had high negative emotions and was unable to demonstrate his performance during competition due to low psychological skills. Psychological skills training consisted of MBTI/self analysis, goal setting training, relaxation training/imagery training, self-talk training, concentration training, and routine training for 50-60 minutes once a week. A discussion on the results of this study was as follows.

Firstly, PST had a significant positive effect on mood state of a student baseball player. This finding was consistent with findings from previous researches (Lee et al., 2022) that PST had positive effect of mood state (TMD). The results of this study were consistent with the study of Ko and Heo (2021), which showed that vigor increased and anxiety, depression, anger, fatigue, and confusion decreased after 16 weeks of PST intervention for golf players complaining of yips symptoms. A case study in which 12 sessions of PST was administered to a female archer with learned helplessness showed that vigor increased and anxiety, depression, anger, fatigue, and confusion decreased (Han, 2012).

These results suggest that psychological skills training is a very necessary program in that it improves positive emotions and reduces negative emotions for athletes who experience serious psychological difficulties such as slump symptoms, learned helplessness symptoms, and Yips symptoms. In follow-up research, it is judged necessary to develop and apply a program to determine whether psychological skills training is effective for athletes returning to sports during and after rehabilitation.

Secondly, PST had significant positive effects on all sub-factors of performance strategies of a student baseball player. These findings were consistent with findings from previous researches (Jang & Chung, 2017; Kim et al., 2013) that PST had positive effect of performance strategies. In a study that applied a total of 8 sessions of PST to 20 shooting athletes (Jang et al., 2018), positive changes were confirmed in self-talk, emotion regulation, automatic performance, goal setting, imagery, relaxation, and negative thinking.

In particular, Park and Hwang (2020) confirmed that psychological skills training had a positive effect on the psychological skills of high school canoe players and suggested that psychological skills training should be applied to young students such as student athletes, youth, and adolescents. In this regard, it is deemed necessary to develop a psychological skills training program for young students such as elementary and middle school students and conduct research to verify its effectiveness. In addition, because performance strategy is a variable that affects performance, it is believed that research is needed to also investigate the relationship between performance strategy and actual performance.

Lastly, PST had a significant positive effect on perceived performance of a student baseball player. These findings were consistent with findings from previous research (Feltz & Landers, 1983; Lee & Yoo, 2020; Ma & Kim, 2011; Shin & Yoo, 2021; Weinberg & Gould, 2015; Yang et al., 2015) that PST had positive effect of perceived performance. Actual performance is important but since sports performance varies depending on the characteristics of the opposing team, environmental factor, and the level of my team, measuring perceived performance may be a more accurate way to measure the effectiveness of psychological skills training. In this regard, follow-up research is needed to develop a scale that can measure the perceived performance of baseball players.

In this study, we explored through interviews that psychological skills training had a positive effect on

emotions, performance strategies, and perceived performance. This was consistent with a previous study (Park & Hwang, 2020) that verified the qualitative effects of psychological skills training through interviews.

Conclusion and Suggestion

This study investigated the effects of psychological skills training on mood state, performance strategies, and perceived performance of a student baseball player. Through eight sessions of psychological skills training and interview, changes in total mood disturbance (TMD), performance strategies, and perceived performance were analyzed using an AB design. The results of this study were as follows.

Firstly, psychological skills training was found to have a positive effect on the mood state of a student athletes. In other words, the athlete's TMD decreased through psychological skills training. Second, psychological skills training was found to have a positive effect on performance strategies of a student baseball player. In other words, psychological skills training was found to have a positive effect on players' self-talk, condition control, imagery and goal setting, relaxation, and emotional control. Third, psychological skills training was found to increase perceived performance of a student baseball player. Lastly, qualitative data obtained through interviews also confirmed that psychological skills training had a positive effect on mood state, performance strategies, and perceived performance of a student baseball player.

A summary of this study's method, result, and limitations was as follows. Firstly, because this study confirmed the effect of PST with a single-subject/case design, it was difficult to generalize the effect of psychological skills training. In this regard, it was necessary to secure sufficient research participants and conduct research to verify the effectiveness of psychological skills training with a control group. Secondly, Weinberg and Williams (2001) stated that

practical effects could be achieved only when psychological skills training was conducted over a long period of time. In this respect, research was needed to develop a program that periodically conducts psychological skills training on an annual or quarterly basis and verified its effectiveness. Thirdly, in this study, the effect of psychological skills training could not be confirmed through actual performance. In sports where it is difficult to measure actual performance, measuring perceived performance can be effective. However, it is necessary to verify the effect of psychological skills training by setting both perceived performance and actual performance as variables.

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Author Contribution

Because this study was an independent study, the research topic, introduction, research method, data analysis, results, discussion, and suggestions were all carried out by the researcher.

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