

Effectiveness of Psychological Skills Training on Resilience and Grit Among Basketball Players

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Abstract

The present study aimed to study the effectiveness of psychological skill training (mental imagery and self-talk) on resilience and grit among college basketball players. The sample targeted was the college basketball team – male: 12 and female: 12 for the pre-test. The age range of the participants were 18-25 years. Tools used for the study were Brief Resilience Scale to measure the resilience and The Grit-O Scale to measure the grit. The Sport Imagery Ability Questionnaire was used in the pre-test to measure the ability of imaging of the participants. Based on the results of the pre-test the participants with low or normal resilience and grit and high sport imagery ability were selected for the 3-week intervention. The statistical technique of Paired Sample t-test, Pearson correlation coefficient, independent samples t-test and Analysis of Variance (ANOVA) was used to find the effect of the PST on the participants, to find the relationship between Resilience and Grit, to find if there is any difference between males and females in Resilience and Grit and to understand the Resilience and Grit levels based on the duration of everyday practice. The findings of the study reveal that there was no effect of the PST on resilience and grit. There is an insignificant relationship between resilience and grit. It also shows there is insignificant difference on the variables among male and female basketball players in resilience and grit. Finally, it results in no significant difference in resilience and grit among the basketball players.

Keywords: Psychological Skill Training, Resilience, Grit, Mental Imagery, Self-Talk

1. Introduction

Long taboo in the world of sports, mental health issues are now progressively being discussed, and psychologists and mind trainers are entering the Indian sporting community. The provision of sport psychology services utilises mental techniques for the improvement of performance and the development of mental skills, which occupy a significant portion of the sport psychology knowledge base [1]. As a society, we have come a long way in removing the stigma attached to mental health. Unfortunately, a lot more work still has to be done. Several prominent athletes have recently spoken up about their struggles with mental illness and how it has impacted their performance. However, elite athletes like Ben Stokes, Chris Gayle, Naomi Osaka, Simone Biles, and Naomi Osaka have publicly declared that they would put their mental health before their careers in sport, which was a huge step. For fear of losing their position on the team, athletes have struggled with mental health difficulties for years in secret.

It is a recent development for Indian athletes to disclose health issues that affect performance and seek aid. Some sportsmen struggle with issues like bipolar disorder, while others are going through divorce or

breakups. They are now starting to talk about their anxieties and private matters [2]. While determining the significance of psychological intervention in sports, it is necessary to comprehend how sport psychology has evolved in the Indian context. The negative consequences that high stakes tournaments might have on an athlete's performance have been one of the main concerns in sports psychology. A player can succeed in sports if they use their potential to the fullest extent possible. First of all, preparing for a competition based on results, or preparing with a winning-oriented mentality solely, can stop the player from thinking clearly and displaying his or her ability. The impact of numerous elements on players' on-site performances has long been recognised. The most crucial ones could include: the opponent's situation, the significance of the game, the cheers of the crowd and traumatophobia. Dealing with all of them involves reminding and implying that everything is in their own hands and that they have control over their success or failure while the players are preparing psychologically [3].

1.1 Resilience

Resilience is a key psychological factor in sports activities, according to sports psychology. The process and result of overcoming tough or demanding life situations, particularly through mental, emotional, and behavioural flexibility and adaptability to internal and external expectations. According to Bryan et al., [4] resilience is an interdisciplinary concept that is commonly defined broadly and can refer to both a static feature and a dynamic capacity that helps people deal with and adapt well to adversity. Resilience is important because it allows us to devise plans for protecting ourselves against catastrophic events; it aids us in maintaining our composure in the face of trauma and stress; and it protects us from significant mental health problems like depression and suicide. What gives us meaning is understanding how we fit within and can be of service to something bigger than ourselves. The things that happen to us and the way we see and interact with other people are both influenced by our purpose. Kegelaers et al. [5] wanted to evaluate a resilience training intervention based on pressure exposure during practise with a female elite basketball academy. The mixed-methods evaluation included semi-structured interviews with athletes and coaches along with measures of individual and team resilience. According to the findings, both players and coaches thought the team became more resistant to in-game pressures and less prone to team-level weaknesses.

1.2 Grit

'Our potential is one thing. What we do with it is quite another'. Grit (i.e., passion and perseverance towards long-term goals) is one such concept that has recently gained traction in the sports domain [6]. In sports resilience is associated with qualities such as optimism, perseverance, and conscience, are other traits seen in an athlete or a sports player [7]. According to American psychologist Angela Lee Duckworth, who is now heading some important studies into the relevance of grit in performance, "grit is passion and endurance for very long-term goals." She asserts, "Having grit means having endurance. Grit is the ability to persevere day in and day out, not just for the week or the month but for years, according to one person. In the year 2021, Landon Braun carried out a study to determine the association between teaching approach and grit in athletes as perceived by both athletes and coaches. This study evaluated athletes' and coaches' opinions of coaching traits that are related to the personality trait grit in order to better show the interaction between a coach and a player. There were 75 college athletes and 26 NCAA coaches present. College coaches and athletes completed online surveys that included a grit and leadership attribute assessment. Significant results showed a connection between athletes' assessments of their coaches' encouragement, social support, and training and teaching, as well as their grit tenacity [8].

1.3 Psychological Skills Training

A Psychological Skills Training (PST) is one such essential method to improve the mental health preparation. PST is a custom-tailored mix of techniques chosen to meet psychological skill requirements [9]. Many of the early studies using prescriptive PST programmes used only one PST method and evaluated its success [10]. The PST program will focus on optimising performance by improving self-efficacy and emotional control. The primary types of Psychological Skills Training that is given to the sportsmen are usually focused on their particular sport and the psychological skill the athlete wants to improve on [11]. Some of the predominant PST given to the sportsmen are as follows:

1. **Goal Setting:** To best boost performance, a combination of outcome, process, and performance goals will be used, and the athlete will be informed of the benefits of creating "smarter" goals [12]. Short-term and long-term goals will be discussed in order to properly inform the athlete about how goals should be implemented [13]. By deciding on a timed endpoint for their action, setting goals helps people maintain focus and guide their attention.
2. **Imagery Session:** "Vicarious experiences" are the second most effective method to increase self-efficacy, according to Bandura (1977). Sports psychologists use visualisation and observation as methods to encourage these fictitious experiences. There will be use of both internal (imagination) and exterior (video displays of performances) imaging sessions. The only focus of every session will be on achieving the best possible results. The participant will be encouraged to use both real-time and slow-motion footage. In particular, if the athlete is utilising a particular technique incorrectly, it will be advised to envision things moving slowly. As a result, they will be able to see themselves completing the work correctly and applying all the teaching tools. The athlete will be urged to design a practise session specifically for the event. Both before and during the competition, this session will see intense practise.
3. **Relaxation Session:** Athletes' emotional control is enhanced by relaxation. Bandura (1977) asserted that "emotional control" has a direct impact on an athlete's sense of self-efficacy. Although relaxation and energising techniques are ranked as the fourth most useful tool for boosting self-efficacy, they were included in the PST programme to have a good impact on anxiety control. Relaxation techniques predominantly focus on muscle relaxation or breathing. Some Techniques include – Diaphragmatic breathing and Box breathing. Box breathing is a breathing method that can be used to help people manage their stress before, during, or after stressful circumstances. Only four simple processes are involved in box breathing. The purpose of the exercise's naming is to help the patient visualise a box with four equal sides as they complete the activity. This practise can be done in a variety of environments, but it is ineffective in a tranquil one.

The PST program consists of three main phases:

1. **Educational Phase** - Developing the understanding and importance of PST and its effect on performance. It explains the possible advantages of psychological abilities wherein particular abilities (like imagery) are introduced.
2. **Acquisition Phase** - The strategies and methods for developing the various psychological skills are the main focus of this phase. The demands of the person must be taken into

account while designing this component of the training programme. PST techniques are taught to athletes, along with the most effective ways to employ them.

3. Practice Phase - This stage involves transferring psychological expertise from simulated settings and practise tournaments. Making the psychological skills automatic should be the main goal. Sportsmen put in the time and effort necessary to practise and compete well (PST).

1.4 Mental Imagery

The mental imagery is mental images considered collectively, or the particular type of imagery characteristic of an individual, such as visual imagery. Mental imagery involves the cognitive rehearsal of a task in the absence of overt physical movement. Intense imagined experiences, according to the psycho-neuromuscular theory, create innervations in our muscles that are identical to those caused by the event being physically carried out [13]. British psychologist William Benjamin Carpenter initially put forth this notion in 1874. It is a hypothesis that contends using mental imagery might enhance the subsequent motor execution of an activity. He said that since visualisation involves specific neuromuscular activity patterns, it makes acquiring motor skills easier. This theory contends that while athletes are performing movements associated with their sport, their brains are continually sending signals to the muscles to carry out the activity. Pakulanon sought to review and examine the use of effective imagery in athletes based on the five categories identified by Paivio (1985) and Hall et al. (1998). According to the review papers, MG-M and CS images were the most helpful and often employed, with CS improving skill learning and MG-M boosting athletic confidence. It is suggested that CS and MG-M imagery be employed as the main imaging technique, and that athletes should combine the MG-A technique with the MG-M and CS technique in particular. However, it is important to carefully evaluate individual differences such as sport type, skill level, goal-oriented style, sex, and athletes' perception of competitive anxiousness before applying imaging techniques.

1.5 Self-Talk

Self-instructional methods have seen a surge in use in sport psychology, with the term "self-talk interventions" being used to promote learning and performance. Cognitive-behavioural therapies aim to change people's beliefs, perceptions, and actions through self-talk, which was one of the principles behind the development of cognitive-behavioural therapies. Positive self-talk can be employed to prompt desirable behaviours, offer self-reward, improve effort, control attention, anxiety, and arousal, and even help with injury rehabilitation [17]. There is a dearth of empirical research on the benefits of self-talk for experienced performers. In order to address this gap in the literature, [Adboli et al.](#), compared the impact of instructional and motivating self-talk on the accuracy of basketball free throw shooting and salient movement kinematics in the year 2018. Twenty professional basketball players were enlisted to take part in our 2 x 2 pre/post experiment. Recordings of movement patterns and free throw accuracy were utilised to determine the variability of elbow-wrist coordination. Findings showed that instructional self-talk improved shooting accuracy and decreased movement coordination variability when compared to baseline conditions, whereas motivating self-talk showed no effects. The results concluded assist practitioners in better teaching experienced performers how to employ self-talk, an area that requires further study now more than ever.

2. Methodology

2.1 Research Design

The present study employed an experimental design, which included the pre-test and post-test involving the resilience, grit, mental imagery and self-talk.

2.2 Statement of the problem

The present study aims to explore the effectiveness of Psychological Skills Training on resilience and grit of sports athletes.

2.3 Objectives

1. To study the effectiveness of psychological skills training on resilience and grit among college basketball players.
2. To study the gender difference on the effectiveness of psychological skills training on resilience and grit among college basketball players.
3. To study the relationship between resilience and grit among college basketball players.
4. To study the resilience and grit among college basketball players based on their duration of practice.

2.4 Hypothesis

1. There is no significant effect of psychological skill training on resilience and grit among college basketball players.
2. There is no significant relationship between resilience and grit among college basketball players.
3. There is no significant gender difference on resilience and grit among college basketball players.
4. There is no significant difference on resilience and grit among college basketball players based on effect of duration of everyday practice.

2.6 Variables

Dependent Variable: Resilience and Grit

Independent Variable: Psychological Skill Training – Mental Imagery and Self-Talk

2.7 Demographical variables

Gender

Sports experience

Duration of everyday practice of the sport

2.8 Inclusion Criteria

1. The participant should be active in the game.
2. The participant should be competitive and want to grow in the game.
3. The participant should have not undergone any Psychological Skills Training earlier.

2.9 Exclusion Criteria

1. The sport should not be a hobby.
2. The sport should not have any mental illness.
3. The sport should not be under medication or therapy.

2.10 Procedure

The population for the study was college basketball players and the researcher used purposive sampling method to select the sample. The sample was selected based on the results of a pre-test on resilience and grit and the Sport Imagery Ability questionnaire. The participants were selected based on high sport imagery ability and low or normal resilience and grit levels. The PST sessions were held over zoom meeting everyday post the college and physical training for 3 weeks. The first couple of days consisted of psychoeducation to the participants regarding the PST and the objective behind the training.

The experimenter introduced herself and briefed the participants about the purpose of the sessions. The next two days consisted of the educational phase (psycho-education) where the experimenter gave an orientation to the purpose of using PST and its importance. Post this, the sessions of mental imagery and self-talk were conducted on alternative days. The most important details in this text are that the participants were made to understand the importance of regular PST training and the sessions lasted for about 40 minutes. The next fifteen days were the acquisition phase, where the sessions focused on motivational general-arousal (MG-A) and motivational and instructional self-talk.

The level of difficulty in the PST increased as the participants got comfortable with the activities being done. The last week of the PST was the practice phase, where the participants had started to practice the imagery and self-talk strategies and were suggested to try taking up an imagery or self-talk session all by themselves. The feedback of the training and the experimenter was taken through google forms.

2.11 Tools

The tools used were The Brief Resilience Scale (BRS) was developed by Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008) to assess the ability to bounce back or recover from stress. The Grit-O Scale by Angela Duckworth (2007) evaluated how well people can remain interested and focused while working towards long-term objectives. The Sport Imagery Ability Questionnaire was developed by Dr Sarah E Williams and Dr Jennifer Cumming (2014) to evaluate an athlete's imagery ability. The scale has an internal reliability above 0.76 for the different subscales and factorial validity - CFI value of 0.96.

3. Results and Discussion

3.1 Results

Table 1: Shows the Socio-demographic details of the participants

Demographic variables	Categories	N
Age	18-25	10
Gender	Males	5
	Females	5

Educational Qualification	Undergraduate	10
	Bachelors of Business Administration	4
	Bachelors of Science Biotechnology & Biochemistry	2
	Bachelors of Science in Forensic Science	2
	Bachelors of Arts in Visual Communication	1
Duration of everyday practice (in hours)	2	3
	3	2
	4	4

Table 2: Indicates the mean score, and paired sample t-test for the pre-test and post-test in resilience and grit of the psychological skill training

Variables	Conditions	<i>M</i>	<i>N</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Resilience	Pre-test	17.30	10	1.49	-1.35 ^{NS}	0.20
	Post-test	19.10	10	3.87		
Grit	Pre-test	39.00	10	5.09	0.23 ^{NS}	0.82
	Post-test	38.50	10	6.22		

M=Mean, SD=Standard Deviation, NS= Not significant, $p < 0.05$

Table 2 revealed the mean of the pre-test and post-test in resilience and grit. The findings indicated that there is no significant effect of psychological skill training on the resilience and grit of the basketball players with t (pre-test resilience and grit) = -1.35, $p > 0.05$. Results showed that the mean scores in the pre-test for resilience ($M = 17.30$, $SD = 1.49$) had no significant difference when compared with the post-test for resilience ($M = 19.10$, $SD = 3.87$). Results showed that the mean scores in the post-test for grit ($M = 38.50$, $SD = 6.22$) had a slight decrease in the level of grit than in the pre-test ($M = 39$, $SD = 5.09$). Hence, as the H_{01} states, there is no significant effect of psychological skill training on resilience and grit among college basketball players is accepted.

Table 3: Indicates the Pearson correlations coefficient for the pre-test in resilience and grit

Variables	Conditions	<i>N</i>	<i>M</i>	<i>SD</i>	<i>r</i>	<i>p</i>
Resilience	Pre-test	10	19.10	1.49	0.13	0.71
Grit	Pre-test	10	38.50	5.09		

M=Mean, SD=Standard Deviation, $p < 0.05$

Table 3 revealed the Pearson product-moment correlation coefficient scores for the relationship between resilience and grit among the basketball players in the pre-test. The findings indicated that there is no significant correlation between the variables ($r = 0.13$, $p > 0.05$). Hence, as the H_{02} states, there is no significant relationship between resilience and grit among college basketball players is accepted.

Table 4: Indicates the Pearson correlations coefficient for the post-test in resilience and grit.

Variables	Conditions	N	M	SD	r	p
Resilience	Post-test	10	17.30	3.87	0.60	0.06
Grit	Post-test	10	0.13	6.22		

M=Mean, SD=Standard Deviation, $p < 0.05$

Table 4 revealed the Pearson product-moment correlation coefficient scores for the relationship between resilience and grit among the basketball players in the post-test. The findings indicated that there is no significant correlation ($r = 0.60, p < 0.05$) between resilience and grit.

Hence, as the H_{02} states, there is no significant relationship between resilience and grit among college basketball players is accepted.

Table 5: Indicates the independent sample t-test findings for the pre-test and post-test in resilience and grit of the participants

Variables	Conditions	Gender	M	SD	t	p
Resilience	Pre-test	Male	17.80	1.09	1.06 ^{NS}	0.53
		Female	16.80	1.78		
	Post-test	Male	38.40	4.15	-0.35 ^{NS}	0.65
		Female	39.60	6.34		
Grit	Pre-test	Male	20.40	4.77	1.07 ^{NS}	0.18
		Female	17.80	2.58		
	Post-test	Male	39.80	7.22	0.63 ^{NS}	0.27
		Female	37.20	5.54		

M=Mean, SD=Standard Deviation, NS=Not significant, $p < 0.05$

Table 5 revealed the scores of an independent sample t-test that was conducted to compare resilience and grit before and after the experiment for males and females. The mean of males ($M = 17.80, SD = 1.09$) was slightly higher than the females ($M = 16.80, SD = 1.78$) in the pre-test for resilience. The post-test resilience ($t = -0.35, p = 0.65$) was slightly lower than the females ($M = 39.60, SD = 6.34$). The pre-test grit ($t = 1.07, p = 0.18$) was slightly lower than that of the females ($M = 17.80, SD = 2.58$). The post-grit ($t = 0.63, p = 0.27$) was slightly higher than the females ($M = 37.20, SD = 5.54$). Hence, as the H_{03} states, there is no significant gender difference on resilience and grit among college basketball players.

Table 6: Indicates the one-way ANOVA findings for the pre-test and post-test in resilience and grit of the basketball players based on the duration of everyday practice.

No. of hours		2		3		4			
Variables	Conditions	M	SD	M	SD	M	SD	F	p
Resilience	Pre-test	17.67	1.15	17.50	2.12	17	2	0.97 ^{NS}	0.95
	Post-test	23.33	3.05	17.50	0.70	18	2.94	1.75 ^{NS}	0.25
Grit	Pre-test	37	2.64	45	0.70	38	6.05	3.97 ^{NS}	0.71
	Post-test	43.67	6.65	39.50	4.95	35.75	5.18	1.59 ^{NS}	0.28

M=Mean, SD=Standard Deviation, NS=Not significant, $p < 0.05$

Table 6 revealed the scores of the analysis of variance if resilience and grit differ among basketball players based on the effect of the duration of everyday practice. The number of hours were in 4 categories i.e., 1 hour to 4 hours of practice every day. The ANOVA results for resilience suggest that the participants having 2 hours of everyday practice ($M = 16.67$, $SD = 1.15$), 3 hours of practice ($M = 17.50$, $SD = 2.12$) and 4 hours of practice ($M = 17$, $SD = 2$) in the pre-test ($F = 0.97$, $p < 0.05$) has no significant difference between the post-test ($F = 1.75$, $p < 0.05$) in 2 hours of practice ($M = 23.33$, $SD = 3.05$), 3 hours of practice ($M = 17.50$, $SD = 0.70$) and in 4 hours of practice ($M = 18$, $SD = 2.94$). The ANOVA results for grit suggest that the participants having 2 hours of everyday practice ($M = 37$, $SD = 2.64$), 3 hours of practice ($M = 45$, $SD = 0.70$) and 4 hours of practice ($M = 38$, $SD = 6.05$) in the pre-test ($F = 3.97$, $p < 0.05$) has no significant difference between the post-test ($F = 1.59$, $p < 0.05$) in 2 hours of practice ($M = 43.67$, $SD = 6.65$), 3 hours of practice ($M = 39.50$, $SD = 4.95$) and in 4 hours of practice ($M = 35.75$, $SD = 5.18$). Hence, as the H_{04} states there is no significant difference on resilience and grit among college basketball players based on effect of duration of everyday practice is accepted.

3.2 Discussion

The results of a paired sample t-test indicate that there was no significant effect of the 3-week PST on resilience and grit among college basketball players. There are a few studies that use PST to improve other variables, such as Zandi et al.'s 2014 semi-experimental study on the effects of psychological training on mental skills with female basketball players. The mode of conduction of the intervention was through online platform (Zoom meetings) which play a vital role in the effectiveness of the intervention, along with the participants being irregular to the sessions. The results of the Pearson product-moment correlation and independent sample t-test indicated that there was no significant relationship between resilience and grit among college basketball players. Gupta and Sudhesh (2018) found that there was a moderate positive correlation between resilience and grit, which was not significant.

The results of the independent sample t-test indicated that there were no differences between males and females' college basketball players in resilience and grit. Finally, the results of ANOVA indicated that there was no difference in resilience among the college basketball players based on the duration of everyday practice ($F = 0.97$, $p < 0.05$) in the pre-test and ($F = 1.75$, $p < 0.05$) in the post-test. The practice of each of the participants ranged from 2 hours to 4 hours every day.

3.3 Participant feedback

Though there is no significant effect of the PST on resilience and grit among the participants, when the feedback was taken after the intervention, the participants gave positive feedback on how mental imagery and self-talk had helped them just before their practice and moments before the tournament. Some of the feedbacks stated that imagery was really helpful to visualize the gaming techniques that the participant would adapt before the game. "Imagery was good for I was able to visualize my gaming techniques and how I am going to play my game". Some participants also suggested that the PST should be given to the players more often and if possible as a part of the practice "This intervention was great, we want this practice to be continued every year". And how importance should be given to mental health as giving to the physical health; "I learnt how we should give importance to our body both physically and mentally".

4. Summary and Conclusion

4.1 Findings

According to the results of the study, the following hypotheses which were studied found to be:

1. The null hypothesis H01 - There is no significant effect of psychological skill training on resilience and grit among college basketball players was accepted.
2. The null hypothesis H02 - There is no significant relationship between resilience and grit among college basketball players was accepted.
3. The null hypothesis H03 – There is no significant gender difference on resilience and grit among college basketball players was accepted.
4. The null hypothesis H04 – There is no significant difference on resilience and grit among college basketball players based on effect of duration of everyday practice was accepted.

4.2 Limitations of the study

1. The sample chosen for the intervention study was relatively small.
2. The other team games such as football, volleyball, throwball were not considered in the present study.
3. The intervention was conducted through an online mode which might have played a vital role in the effectiveness of the PST if taken offline.
4. The effect might have been less considering the regularity of the participants who attended the sessions as it was held post the college hours.
5. There was no control of extraneous variables such as the academic home-works, assignments and the probability of the disclosure of the intervention to the control group as it was conducted online.

4.3 Conclusion

This study aimed to identify if there was an effect of the Personal Strength Training (PST) on resilience and grit among college basketball players. The findings showed that there was no significant correlation between resilience and grit, and no significant difference of gender in both variables. The variance results showed that there was no significant difference in resilience and grit based on the duration of practice every day. The implications of the present study would be that the PST could be held offline and for a longer period, as most of the studies done earlier have a duration of more than 3 weeks of PST. The limitations of this study should be considered before doing any further studies on the same matter.

4.4 Scope for future research

1. While conducting PST, the sample size and the number of games (individual or team games) being focused can be increased.
2. The duration of the PST can be for a longer period to expect effectiveness of the training sessions.

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