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**The Effects of Goal Setting on Volleyball Serving Performance, Anxiety and Self-Efficacy**

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**Abstract**

This study investigated the influence of The aim of this research was to examine goal setting in volleyball serving performance, state anxiety, and self-efficacy among female athletes. Thirty female volleyball players from Lahore College for Women University and Lahore University of Management Sciences, aged 19 to 25, participated. They were divided into an experimental group, which received goal-setting instruction through seminars and lectures, and a control group, which received coaching on serving tactics and skills. Standardized questionnaires, including the Competitive State Anxiety Inventory-2 (CSAI-2), Self-Efficacy Questionnaire, Serving Effort/Performance Questionnaire, and Goal Setting Questionnaire, were used for data collection. The findings revealed a significant increase in serving performance in the experimental group compared to the control group, indicating that the goal-setting intervention positively affected serving skills.

**Keywords:** Goal Setting, Volleyball, Performance, Self-Efficacy

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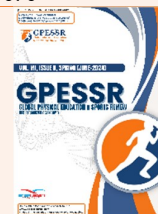
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### Title

## The Effects of Goal Setting on Volleyball Serving Performance, Anxiety and Self-Efficacy

### Abstract

This study investigated the influence of The aim of this research was to examine goal setting in volleyball serving performance, state anxiety, and self-efficacy among female athletes. Thirty female volleyball players from Lahore College for Women University and Lahore University of Management Sciences, aged 19 to 25, participated. They were divided into an experimental group, which received goal-setting instruction through seminars and lectures, and a control group, which received coaching on serving tactics and skills. Standardized questionnaires, including the Competitive State Anxiety Inventory-2 (CSAI-2), Self-Efficacy Questionnaire, Serving Effort/Performance Questionnaire, and Goal Setting Questionnaire, were used for data collection. The findings revealed a significant increase in serving performance in the experimental group compared to the control group, indicating that the goal-setting intervention positively affected serving skills.

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### Introduction

Two vastly differing coaching philosophies and hence styles exist within the coaching world, yet it should be remembered that the ultimate aim of the coach is to motivate an athlete, or group of athletes, towards optimal performance (Martens & Vealey, 2019). For optimal performance to take place, both skill and motivation must be present (Meece, 2023), goal setting

is showing promise as one method of motivating athletes toward optimal performance (Jeong et al., 2023). Coaches, as managers being their business sector counterparts, are always coming up with ideas to improve performance (Zuñiga-Collazos et al., 2019).

Specific, challenging, yet attainable goals bring about higher performance at work, school, or in other areas as compared to easy goals, general "do your best" goals, or



no goals. In fact, this positive impact of goal setting has been established in 90% of the studies under review (Grant, 2012; Urits et al., 2019).

Volleyball, a dynamic and exciting sport, demands a combination of technical proficiency, strategic insight, and mental strength (Shieh et al., 2023). Among the innumerable skills essential to success, serving stands out as a crucial element, often serving as the initial point of contact between the server and the opposing team (Chelladurai & Kim, 2020). The research proposal aims to form an in-depth analysis of the relationship between goal setting, serving performance, anxiety levels, and self-efficacy with respect to the volleyball game (Machado et al., 2023).

Volleyball is a fast game with a quick and furious rally, demanding on the part of a player to acquire a wide variety of diverse skills. It is the service that forms one of the most crucial fundamentals of the game from where flow and a pan of a match take place. Otherwise speaking, it is the first shot in every point and, at the same time, might work on the opponent's psychology. Effective serving has not much to do with athleticism; much of it, though, has to do with the mind of the player. One of the most common psychological strategies applied in sporting activities, goal setting can be effectively used to attain enhanced performances in several dimensions. SMART goal setting is considered a process projecting clear action toward the attainment of skills and finally an enhanced performance by an athlete. With this consideration, setting goals with respect to volleyball serving performance, anxiety, and self-efficacy remains fairly unexplored (Stafford, 2022). This research will be based on the possible positive contribution of goal setting to volleyball players with respect to serving performance, as averred. By knowing how specific goals for serving relate to state anxiety levels and self-efficacy, coaches, and athletes can modify their training programs accordingly for the best results in performance. Previous research has pointed to the effectiveness of goal setting in improving athletic performance. However, the peculiar dynamics of volleyball, with specific technical demands and psychological pressures, need focused exploration on their own. Serving requires precision, consistency, and mental toughness, for it is an individual game skill. Therefore, research into how goal setting is related to serving performance might produce information on training methodology or some particular intervention.

More than this, anxiety and self-efficacy are common features of the psychological makeup of an athlete. The

interaction of goal setting and these psychological factors is a key part of fully understanding the effect on overall performance. High anxiety will hurt optimal performance while self-efficacy what an athlete believes in regards to ability for success is at the very core center of executing athletic skills. This would require further research into how goal setting affects these psychological factors in order to complete the framework of athlete development.

## Research Methodology

The research study was based on an experimental research design with pre-test, post-test, and randomized groups. The setting for the study was conducted at Lahore College for Women University and Lahore University of Management Sciences. From the said population, thirty female subjects, from ages 18 to 25 years, with 1-3 years of playing experience at the university level, were chosen through purposive sampling. The sample mean was 21.42 kg/m<sup>2</sup> in BMI, 50.13 kg in weight, 19.47 years in age, and 170.89 cm in height. Fifteen participants were selected from each university. No formal sample size calculation was carried out, and ethical guidelines were followed with concern for informed consent and confidentiality. Participants were divided into two groups namely Group-1 (Goal Setting, n=15) and Group-2 (Control, Instructions only, n=15). One week before the study, the researcher approached the sports directors and coaches at LCWU and LUMS to explain the purpose of the study and to obtain the consent forms. The six-week training program ran for five days a week, for two hours a session, with coaches implementing a particular service training drill. Variables were assessed with pre-tests and post-tests that included the Competitive State Anxiety Inventory-2, Self-Efficacy Questionnaire, Serving Effort/Performance Questionnaire, and Goal Setting Questionnaire. The goal-setting group received extra lectures and seminars, while the control group received technical instructions. The procedures for the post-test measurement of game service performance and test service performance were the same as the baseline measures. All data analyses were conducted with SPSS version 16. First, tests of normality with the Shapiro-Wilk test were conducted, followed by the main analyses in the form of parametric tests consisting of paired and independent t-tests assessing the effects of goal setting on serving performance, anxiety, and self-efficacy.

Results

Table 1

Comparison of Pretest and Posttest Scores for Experimental Variables

Variables	N	Mean	SEM	t	P value
Experimental Self-Efficacy Pretest	15	32.66	.85		
Experimental Self-Efficacy Posttest	15	36.00	1.23	-1.48	.02
Experimental Competition State Anxiety Inventory Pretest	15	28.13	.49		
Experimental Competition State Anxiety Inventory Posttest	15	24.53	.58	5.12	.000
Experimental Service Effort Expenditure pretest	15	3.40	.30		
Experimental Service Effort Expenditure posttest	15	6.40	.19	-9.26	.000
Experimental Service Task Difficulty Pretest	15	5.73	.20		
Experimental Service Task Difficulty Posttest	15	3.46	.32	6.10	.000
Experimental Service Task Commitment Pretest	15	3.80	.32		
Experimental Service Task Commitment Posttest	15	6.00	.21	-4.58	.000
Experimental Goal Difficulty Pretest	15	6.00	.29		
Experimental Goal Difficulty Posttest	15	3.00	.27	8.21	.000
Experimental Goal Commitment Pretest	15	3.53	.43		
Experimental Goal Commitment Posttest	15	6.20	.22	-5.29	.000
Experimental Goal Effort Expenditure Pretest	15	3.53	.25		
Experimental Goal Effort Expenditure Posttest	15	6.13	.23	-7.17	.000
Experimental Goal Setting Pretest	15	8.20	.76		
Experimental Goal Setting Posttest	15	12.73	.77	-4.51	.000
Experimental Service pretest	15	5.66	.72		
Experimental Service posttest	15	10.20	.69	-6.00	.000

Table 1 shows that results indicate significant improvements in the experimental group's performance across various psychological and behavioral metrics after the intervention. Specifically, there was a notable increase in self-efficacy scores (pretest mean = 32.67, posttest mean = 36.00,  $t = -1.481$ ,  $p = .02$ ) and a significant reduction in competition state anxiety (pretest mean = 28.13, posttest mean = 24.53,  $t = 5.125$ ,  $p = .000$ ). Additionally, participants demonstrated substantial increases in service effort expenditure (pretest mean = 3.40, posttest mean = 6.40,  $t = -9.269$ ,  $p = .000$ ), goal setting (pretest mean

= 8.20, posttest mean = 12.73,  $t = -4.515$ ,  $p = .000$ ), and overall service performance (pretest mean = 5.67, posttest mean = 10.20,  $t = -6.004$ ,  $p = .000$ ). Conversely, there were significant decreases in perceived service task difficulty (pretest mean = 5.73, posttest mean = 3.47,  $t = 6.107$ ,  $p = .000$ ) and goal difficulty (pretest mean = 6.00, posttest mean = 3.00,  $t = 8.216$ ,  $p = .000$ ). These findings collectively suggest that the intervention was effective in enhancing self-efficacy, reducing anxiety, increasing effort and performance, and decreasing perceived difficulty among the participants.

Table 2

Comparison of Pretest and Posttest Scores for Control Variables

Variables	N	Mean	SEM	t	P value
Control Self-Efficacy Pretest	15	19.93	1.92		
Control Self- Efficacy Posttest	15	19.73	.94	.155	.879
Control Competition State Anxiety Inventory Pretest	15	26.73	.66	-	
Control Competition State Anxiety Inventory Posttest	15	26.66	.87	2.288	.087
Control Service Effort Expenditure Pretest	15	3.80	.27		
Control Service Effort Expenditure Posttest	15	3.80	.27	.000	1.000
Control Service Task Difficulty Pretest	15	4.53	.35		
Control Service Task Difficulty Posttest	15	4.53	.35	.000	1.000
Control Service Task Commitment Pretest	15	6.26	.26	.642	.531

Variables	N	Mean	SEM	t	P value
Control Service Task Commitment Posttest	15	6.06	.30		
Control Service Pretest	15	7.53	.96	-	
Control Service Posttest	15	7.46	.70	3.532	.785

Table 2 shows that data for the control group shows no significant changes in most of the measured variables from the pretest to the posttest. Self-efficacy scores remained stable (pretest mean = 19.93, posttest mean = 19.73,  $t = .155$ ,  $p = .879$ ), indicating no improvement. Similarly, competition state anxiety inventory scores showed no significant change (pretest mean = 26.73, posttest mean = 26.67,  $t = -2.288$ ,  $p = .087$ ). Service effort expenditure (pretest and posttest mean = 3.80,  $t = .000$ ,  $p = 1.000$ ) and service task

difficulty (pretest and posttest mean = 4.53,  $t = .000$ ,  $p = 1.000$ ) also remained unchanged. There was no significant difference in service task commitment (pretest mean = 6.27, posttest mean = 6.07,  $t = .642$ ,  $p = .531$ ) or overall service performance (pretest mean = 7.53, posttest mean = 7.47,  $t = -3.532$ ,  $p = .785$ ). These results suggest that the control group did not experience significant changes in self-efficacy, anxiety, effort, or performance over the course of the study.

**Table 3**

*Posttest Comparison of Self-Efficacy, Anxiety, and Service Variables Between Experimental and Control Groups*

Variables	N	Mean	SEM	t	P value
Experimental Self-Efficacy Posttest	15	35.0	1.23		
Control Self-Efficacy Posttest	15	19.73	.94	9.80	.000
Experimental Competition State Anxiety Inventory Posttest	15	24.53	.58	-	
Control Competition State Anxiety Inventory Posttest	15	27.66	.87	2.98	.003
Experimental Service Effort Expenditure Posttest	15	6.40	.19	7.69	.000
Control Service Effort Expenditure Posttest	15	3.80	.27		
Experimental Service Task Difficulty Posttest	15	2.46	.32	-	
Control Service Task Difficulty Posttest	15	4.53	.35	2.24	.03
Experimental Service Task Commitment Posttest	15	6.0	.21	-.18	.003
Control Service Task Commitment Posttest	15	2.06	.30		
Experimental Service Posttest	15	15.20	.69	.74	.04
Control Service Posttest	15	9.46	.70		

Table 3 shows that a comparison of post-test scores between the experimental and control groups reveals significant differences in several key areas. The experimental group showed a markedly higher mean self-efficacy score (mean = 35.00, SEM = 1.234) compared to the control group (mean = 19.73, SEM = 0.949), with a t-value of 9.807 and a p-value of .000, indicating a significant improvement in self-efficacy. The experimental group also had significantly lower scores on the competition state anxiety inventory (mean = 24.53, SEM = 0.584) than the control group (mean = 27.67, SEM = 0.871), with a t-value of -2.987 and a p-value of .003, suggesting reduced anxiety. Furthermore, the experimental group demonstrated greater service effort expenditure (mean = 6.40, SEM = 0.190) compared to the control group (mean = 3.80, SEM = 0.279), with a t-value of 7.691 and a p-value of .000.

They also reported lower service task difficulty (mean = 2.47, SEM = 0.322) than the control group (mean = 4.53, SEM = 0.350), with a t-value of -2.244 and a p-value of .03. The experimental group showed higher service task commitment (mean = 6.00, SEM = 0.218) compared to the control group (mean = 2.07, SEM = 0.300), with a t-value of -0.180 and a p-value of .003. Lastly, the overall service performance was significantly higher in the experimental group (mean = 15.20, SEM = 0.691) than in the control group (mean = 9.47, SEM = 0.703), with a t-value of 0.744 and a p-value of .04. These results collectively indicate that the experimental intervention was effective in enhancing self-efficacy, reducing anxiety, increasing effort and commitment, and improving overall performance compared to the control group.

## Discussion

The present study was conducted to assess the effectiveness of goal-setting skills, techniques, and strategies on the serving skill, state anxiety, and self-efficacy level of female volleyball university players. A total of 30 players from Lahore College for Women University (n=15) and Lahore University of Management Sciences (LUMS) (n=15) were selected. The participants were further divided into Goal Setting as an experimental group and Instructions Group as a Control Group.

## Serving Skill

The first objective of the study was to establish whether goal-setting lectures offered any significant difference in the effectiveness of the volleyball serving performance of the participants. The results indicated that, indeed, the process of goal setting significantly improved the serving ability of players in the experimental group.

Goal setting is perhaps, among the most significant psychological strategies for the enhancement of athletic performance. With their Goal Setting Theory, Locke and Latham (2013) that specific and challenging goals present higher levels of performance compared to vague or easy goals. It postulates that goal-setting effects emanate from mechanisms like increased motivation, effort, and perseverance. In, Bandura and Cervone (1983) researched the self-regulation mechanisms underlying goal setting and its effect on performance. Their findings were that people who had set explicit performance goals far outperformed those who did not, with high self-efficacy. It is relevant to the volleyball serving case that specific goals would have oriented attention and efforts in ways to improve serving accuracy and power. In a study by Weinberg, Butt, and Knight (2001), it was assessed how goal setting impacted the performance of college volleyball players. The research showed that, over the course of one season, those participants who set specific and challenging goals for their serves dramatically improved their serving accuracy and consistency compared to those participants setting general or no goals. This study underlined the role of goal specificity and challenge in optimizing serving performance. In Kingston and Hardy (1997), some conclusions regarding the relationships between goal setting and anxiety levels were made by volleyball players. The study indicated that goal setting can reduce competitive anxiety, which enabled the players to give serves more effectively under pressure. This may indicate that goal setting influences areas other than technical performance; it is, in fact, better psychological

preparation. In the study conducted by Tenenbaum et al. (2004), volleyball serving goal setting was taught to the volleyball players in both short- and long-term goals of serving performance. Results indicated that the goal-setting intervention effectively impacted serve speed and accuracy. The researchers concluded that structured goal-setting programs can be a very powerful tool in promoting skill acquisition and performance enhancement in volleyball serving. Zimmerman and Kitsantas (1997) explored the interaction between the processes of self-regulation and goal-setting effectiveness in volleyball players. Evidence showed that compared with controls, the process of self-regulating goal setting by using functions such as self-monitoring and self-reflection significantly improved serving accuracy and tactical decision-making. This study shows how goal-setting and self-regulation combine to improve performance in volleyball. These studies provide an exceptionally strong evidence base for goal setting in enhancing volleyball serving performance. In general, what could be taken from these studies is that clearly defined and challenging goals linked favorably to improve service accuracy, speed, and consistency. The final point on goal setting would seem to promote better psychological readiness, alleviating anxiety, and promoting self-regulation.

## State Anxiety

The second objective of the study was to find out whether goal setting would affect state anxiety levels in volleyball players of the experimental group, compared with players of the control group, before performing service. This setting, regarding the goal, therefore prominently improved the anxiety level of the players of the experimental group in this study.

Goal setting is an already established psychological strategy in anxiety management among athletes. By giving clear, achievable goals, goal setting enables an athlete to focus effort on the tasks ahead of him, avoiding uncertainty and stress. Kingston and Hardy (1997) considered the goal-setting strategy in relation to anxiety in athletes. Their findings showed that competitive anxiety was minimized when athletes set specific and challenging goals; hence, there was improved performance. The finding underpins the potential for goal setting to influence psychological readiness in pressurized environments. Burton (1998) tested the effects of goal-setting interventions on state anxiety and performance during athletics competitions with collegiate athletes. Results indicated that specific, challenging goal-setters reported lower levels of state anxiety and better performance outcomes compared to

general or no goal-setters. This study places much emphasis on goal specificity and challenge as the basis of anxiety reduction. Hanton et al. (2004) conducted a study on the effectiveness of goal setting with regard to anxiety and coping strategies among elite athletes. The findings were that goal setting not only reduced anxiety but also improved the use of effective coping mechanisms during competition. This is where the volleyball players would doubly benefit from the management of their psychological demands associated with competition.

Thelwell and Greenlees (2003) examined the effect of goal-setting interventions on psychological and performance outcomes in soccer players. The findings presented that "goal-setting strategies resulted in significant pre-competition anxiety reductions and improvements in performance consistency". This study provided further evidence of the generalizability of goal-setting in other sports and performance environments. Intervention research into goal-setting programs was implemented on volleyball players by Tenenbaum et al. (2004). They found that, in this case, structured goal-setting interventions decreased state anxiety levels while increasing skill acquisition and performance. Therefore, the study provides direct proof of the efficacy of goal setting within volleyball.

### Self-Efficacy

The third objective of this study was to find out if there would be any change in the self-efficacy level of volleyball players under goal-setting interventions. In this regard, our results depicted that there were significant differences between the self-efficacy levels in the Goal-Setting experimental group and those in the Instructional Group/Control Group.

Self-efficacy is defined as the belief in one's capacity to fulfill demands by performing tasks effectively; this is one of the most pivotal mechanisms that determines athletic performance. Goal setting makes one effective because clear, achievable, and specific targets are established and achieved. Bandura and Cervone (1983) studied the mechanism behind setting and the effect it has on one's performance. The results showed that subjects who set clear goals of performance performed better and had higher self-efficacy than those who did not. This is rather very applicable to the case of volleyball, where specific goals could be set in order to increase the confidence of players in serving. Another study identical to the experiment conducted by Weinberg et al. (2004) was completed based the experiment upon approximately two years after this

group's research. The study was conducted on college volleyball participants engaging in games of volleyball, measuring game performance and self-efficacy, in this case in relation to goal setting. The performativity result was that, compared to groups that either did not set goals or set general goals, the players who set serve goals that were specific, difficult goals increased dramatically in self-efficacy, as well as performances for consistency during the season. Thelwell and Greenlees (2003) studied the impact of goal-setting interventions on self-efficacy and subsequent performance in a sample group of soccer players. The outcome of their experiment showed that self-efficacy relied most on using goal-setting strategies systematically since the nature of goals set leads to performance consistency. The results from this study make one referent base for the concept of goal setting in the context of other sporting activities. Gao et al. (2012) examined goal setting and the corresponding relationship it holds with self-efficacy and performance in the context of youth sports. The study by Gao et al. (2012) established a positive relationship between goal setting and self-efficacy and improvements in performance, thus underpinning the potential of goal setting to boost the athletes' confidence and their skills. Li et al. (2005) tested the effects of goal setting on self-efficacy and performance in physical education settings. Interesting is the result formed in the frame when students set specific, challenging goals as they reported more self-efficacy and better performance compared to general or no goals. This study gives an educational stricture on how to set goals for the enhancement of self-efficacy.

### Conclusion

The current research provided some strong evidence that goal-setting techniques were effective in enhancing self-efficacy and reducing state anxiety among female university volleyball players. The general literature on goal setting, self-efficacy, and anxiety management supports these findings within sports. Indeed, a synthesis of studies into goal setting argues for its effectiveness in enhancing athletic performance through enhanced feelings of success and increased confidence. Challenging and specific goals are likely to increase serving accuracy, consistency, and overall performance in volleyball. Structured goal setting may also have some potential benefits with regard to state anxiety management, performance optimization under pressure, and psychological readiness. Structured goal-setting interventions by a coach or sports psychologist could therefore also be applied with regard to building confidence, anxiety management, and performance

optimization with athletes. Enhancements such as these in goal setting could be attained by having SMART goals and having in place procedures of self-regulation, of which self-monitoring and reflection are examples. In the future, the detailed mechanisms of how goal setting affects various parameters of sports performance should continue to be looked into in more specific skill sets and competitive contexts. This will enable the development of sport- and level-specific interventions to address these special needs of athletes.

### **Recommendations**

Based on the results of this study, a few recommendations can be made concerning the best use of goal-setting techniques in order to induce enhancement in self-efficacy, and decrease state anxiety, of female university volleyball players:

**Goal setting as an intervention in training programs:** Coaches and sports psychologists should introduce standardized goal-setting interventions within standard training programs. This comprises setting SMART goals in athletic performance and psychological well-being domains.

**Individualization of goal setting:** Even though the goal setting intervention will bring out the best in each individual athlete, it will turn out most effective if it is individualized according to his or her potential and needs. The goal, when individualized, should be very difficult yet feasible to reach for the sake of instilling a sense of accomplishment and thereby enhancing self-efficacy.

**Better Self-Regulation Skills:** Activities such as self-monitoring and reflection allow athletes to practice self-regulation. At this stage, the athlete shall independently keep him or herself up to date with his or her progress toward set goals, make effective adjustments if necessary, and remain motivated over time.

One has to consider issues of performance and psychological preparedness: Goal setting needs to have

its intervention aimed at both enhancing technical skills, like serving accuracy and consistency and the psychological components that include self-efficacy and state anxiety management. Holistic training in this regard can optimize total performance under pressure.

**Follow-up Feedback and Supports:** The effectiveness of the benefits derived from goal-setting interventions is further enhanced through follow-up feedback and support from coaches and peers. It is through such helpful feedback that the athlete is able to realize the gains made and where to improve, hence increasing the level of confidence and performance accordingly.

**Educate Athletes about the Benefits of Goal Setting:** If athletes are made aware of the psychological and performance benefits accrued from the adoption of goal setting, they will become more involved and dedicated to the process. If they know the real value of goal setting, then and only then will they be motivated enough to set and chase relevant and meaningful goals.

**Longitudinal studies:** Future studies should be based on longitudinal studies that would identify the long-term effects of goal-setting interventions on self-efficacy, anxiety, and performance. Such studies may yield valuable information about the lingering effects of goal setting on athletic development.

**Explore Different Athletic Contexts:** The efficacy of goal-setting techniques in many sports and competitive situations is what future research should look into. This would, in the long term, provide strategies that are sport-specific to overcome specific problems and needs of the diverse athletic environments.

Such recommendations could be inculcated into practice with goal-setting techniques, which coaches, sports psychologists, and athletes can apply to increase self-efficacy, decrease anxiety, and ensure optimal performance.

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