

Psychological skills training as a strategy to improve mental health and reduce perceived stress in university athletes

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Abstract. This study examined the effectiveness of a one-month Psychological Skills Training (PST) program in improving mental health and reducing perceived stress among university athletes. Twenty-one student-athletes (15 males and 6 females) from six faculties participated in eight structured PST sessions covering goal setting, self-talk, mental imagery, energization, and relaxation techniques. The Perceived Stress Scale (PSS-10) was administered before and after the intervention. Results showed a significant reduction in stress levels, with mean scores decreasing from 24.14 (SD = 6.58) to 16.81 (SD = 3.88), $t(20) = 5.94$, $p < 0.001$, indicating a large effect size ($d = 1.30$). The proportion of athletes classified as high stress dropped from 38% to 4.8%, while low-stress levels increased from 5% to 19%. These findings suggest that even a short-term PST program can effectively enhance athletes' emotional regulation, self-awareness, and psychological stability. Integrating PST into coaching and sport-education curricula is recommended to support athletes' mental well-being and sustainable performance in higher education sport environments.

1 Introduction

Athletes in modern competitive environments face not only physical but also considerable psychological demands. The increasing frequency of competitions, higher public expectations, and the pressure to sustain peak performance have intensified psychological strain across all levels of sport participation [1]. High stress levels among athletes have been linked to performance decrements, emotional exhaustion, and an elevated risk of mental-health problems such as anxiety, burnout, and depressive symptoms [2]. A global meta-analysis by [3] reported that between 34–46 % of elite athletes experience clinically relevant psychological distress during their careers. When such mental-health challenges are not managed effectively, athletes may experience deteriorating motivation, disrupted focus, and an increased likelihood of premature withdrawal from sport.

Psychological Skills Training (PST) is widely recognized as an evidence-based framework designed to enhance both performance and mental well-being. PST consists of several core techniques—goal setting, self-talk, mental imagery, energization, and

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relaxation—that collectively foster self-regulation and emotional stability [4]. Numerous controlled studies and systematic reviews have demonstrated that PST significantly reduces competitive anxiety and perceived stress while improving self-confidence and concentration [5], [6]. For example, an 8-week PST training published in *Frontiers in Psychology* revealed that PST can help athletes better cope with psychologically disturbed situations during competition, by providing psychophysiological evidence through HRV changes [7].

Among PST components, self-talk has received particular attention for its dual function—motivational and instructional. Empirical findings suggest that motivational self-talk enhances self-efficacy and positive affect, whereas instructional self-talk directs attention to task-relevant cues, thereby refining technical execution [8]. A comprehensive meta-analysis by [8] confirmed that structured self-talk improves sport performance. Another research, reported that university athletes engaging in motivational self-talk exhibited higher emotional regulation and lower pre-competition anxiety. In a comparative study, [9] found that motivational self-talk produced greater accuracy in basketball free-throw performance than instructional self-talk, supporting its role in both cognitive and affective regulation. Such findings strengthen the theoretical assumption that self-talk mediates the relationship between stress perception and behavioral performance outcomes.

Despite the extensive research on PST as a performance enhancement tool, its potential contribution to mental-health protection remains underexplored, especially in developing sport systems. Studies by [10] emphasized that psychological-skills instruction is rarely integrated into early-stage coaching curricula, leaving young athletes vulnerable to unmanaged stress and emotional fatigue. In Indonesia, survey data among sports-coaching students showed that only 47 % had ever received any form of mental-skills training, while 31 % had never been introduced to psychological techniques, relying instead on authoritarian coaching methods [11]. This pedagogical gap indicates that many athletes still rely on physical intensity or punitive reinforcement as coping mechanisms rather than scientifically grounded psychological strategies.

Unaddressed mental strain can lead to long-term psychological deterioration such as burnout, decreased motivation, and disengagement from sport. In university athletes, the convergence of academic load, training volume, and social expectations amplifies these pressures, resulting in high perceived stress levels and compromised mental well-being. Without structured psychological-skills education, these individuals risk losing the self-regulatory resources necessary to balance performance demands and personal well-being.

Given these empirical gaps and the urgent need to safeguard athletes' mental health, this study investigates the effectiveness of a one-month Psychological Skills Training program—comprising goal setting, self-talk, mental imagery, energization, and relaxation—on reducing perceived stress among university athletes. By integrating internationally validated PST principles with local contextual adaptations drawn from researchers' applied research on self-talk and emotional regulation, this study aims to provide both theoretical and practical contributions to the advancement of athlete mental-health interventions in Southeast Asia.

2 Methods

2.1 Participants

The study involved 21 university student-athletes (15 males, 6 females; $M = 20.2 \pm 1.8$ years) enrolled at Universitas Negeri Makassar (UNM). Participants represented six faculties: the Faculty of Sport and Health Sciences (FIKK; $n = 16$), the Faculty of Economics and Business (FEB; $n = 1$), the Faculty of Social and Law (FISH; $n = 1$), the Faculty of Psychology (FPsi; $n = 1$), the Faculty of Education (FIP; $n = 1$), and the Faculty of Engineering (FT; $n = 1$).

Athletes specialized in 11 sports disciplines—including pencak silat, sepak takraw, petanque, cricket, volleyball, karate, archery, fencing, sport climbing, tennis, and chess. All participants were active competitors at local or provincial levels and trained at least three times per week. Inclusion criteria required that participants were (a) active students, (b) physically fit, (c) free from acute injury or diagnosed mental disorders, and (d) willing to complete all training sessions. Written informed consent was obtained from all participants.

2.2 Research Design

A quasi-experimental pretest–posttest one-group design was adopted to evaluate changes in perceived stress before and after the Psychological Skills Training (PST) intervention. This design enabled assessment of intra-individual improvement in mental-health indicators while maintaining ecological validity in a natural training environment.

2.3 Instruments

2.3.1 Perceived Stress Scale (PSS-10).

The Perceived Stress Scale was employed to assess perceived stress during the previous month. The 10-item version uses a five-point Likert scale ranging from 0 (never) to 4 (very often). Four positively worded items (4, 5, 7, 8) were reverse-scored prior to data collection; therefore, all values used in analysis were final scores. The total score ranges from 0 to 40, categorized as Low (0–13), Moderate (14–26), and High (27–40) stress levels.

2.3.2 Demographic Questionnaire

Participants provided demographic information including name, faculty, academic program, year of entry, gender, and primary sport discipline. These data were used for descriptive profiling and to contextualize psychological findings.

2.4 Intervention Procedure

The intervention comprised eight structured PST sessions conducted twice weekly over four consecutive weeks (60–75 minutes per session). Each session followed PST framework, emphasizing one key mental skill while reinforcing previously learned techniques.

All sessions were facilitated by a sport-psychology instructor with assistance from trained facilitators. Attendance exceeded 90 %. Pre-test assessments were conducted one day before the first session, and post-test assessments within three days after the final session.

Table 1. Session details

Session	Focus	Core Activities
1	Introduction to mental awareness	Psychoeducation on stress and mental readiness
2	Goal setting	Developing SMART goals for sport and academic contexts
3	Self-talk I (motivational)	Identifying and replacing negative internal dialogue
4	Self-talk II (instructional)	Using cue words during skill execution

5	Mental imagery	Guided visualization and sensory integration exercises
6	Energization control	Breathing and activation routines to optimize arousal
7	Relaxation	Progressive muscle relaxation and diaphragmatic breathing
8	Integration & reflection	Combined practice, experience sharing, and post-test administration

2.5 Data Analysis

Descriptive statistics (mean, SD, frequency) were computed for PSS scores and demographic variables. The Shapiro–Wilk test was used to verify data normality. A paired-sample t-test compared pre- and post-intervention scores, while Cohen’s d estimated effect size (0.2 = small, 0.5 = medium, 0.8 = large). A significance level of $p < 0.05$ was applied. All analyses were performed using IBM SPSS v.27.

3 Results and Discussion

3.1 Participant Characteristics

The study involved 21 university student-athletes ($M = 20.2 \pm 1.8$ years; 15 males, 6 females) enrolled at Universitas Negeri Makassar (UNM). Participants represented six faculties: the Faculty of Sport and Health Sciences (FIKK; $n = 16$), the Faculty of Economics and Business (FEB; $n = 1$), the Faculty of Social and Law (FISH; $n = 1$), the Faculty of Psychology (FPsi; $n = 1$), the Faculty of Education (FIP; $n = 1$), and the Faculty of Engineering (FT; $n = 1$).

Most participants majored in Sports Coaching Education or Physical Education, Health, and Recreation programs and were active athletes competing in sports such as pencak silat, sepak takraw, petanque, cricket, volleyball, karate, archery, fencing, climbing, tennis, and chess. All trained at least three times per week and had prior competitive experience at the provincial or national level. This demographic composition reflects a representative cross-section of UNM’s athletic population, with FIKK as the core faculty producing the majority of competitive student-athletes.

3.2 Descriptive Results

The Perceived Stress Scale (PSS-10) was administered before and after a one-month Psychological Skills Training (PST) program consisting of eight sessions. Table 1 presents the categorical distribution of stress levels using standard norms (0–13 = Low, 14–26 = Moderate, 27–40 = High).

Table 2. Distribution of Perceived Stress Categories (N = 21).

Category	Pre-test	Post-test
Low (0–13)	1 (4.8 %)	4 (19 %)
Moderate (14–26)	12 (57 %)	16 (76 %)
High (27–40)	8 (38 %)	1 (4.8 %)
Mean ± SD	24.14 ± 6.58	16.81 ± 3.88

The data reveal a marked decline in perceived-stress levels following the intervention. Eight athletes originally classified as “high stress” shifted to the moderate or low categories, and none exhibited increased stress. The narrowing standard deviation further indicates greater psychological stability across the group.

3.3 Inferential Analysis

Normality of difference scores was confirmed using the Shapiro–Wilk test ($W = 0.961, p = 0.482$). A paired-sample t-test showed a significant reduction in perceived-stress scores ($t(20) = 5.94, p < 0.001, \text{Cohen's } d = 1.30$), representing a large effect size. Thus, the PST program produced a statistically and practically meaningful decrease in stress perception among the athletes.

3.4 Discussion

The significant decline in PSS scores demonstrates that short-term Psychological Skills Training effectively improves mental health and emotional regulation in university athletes. The results align with prior evidence that PST enhances self-regulation, focus, and coping under competitive pressure [1], [8].

A. Mechanisms of Change

PST operates through cognitive-behavioral mechanisms: goal setting fosters task orientation, self-talk restructures negative cognition, and relaxation and imagery reduce physiological arousal. These combined techniques enable athletes to reinterpret stress as a manageable challenge rather than a threat—resulting in reduced perceived stress and more adaptive emotion control.

B. Self-Talk as a Core Regulator

Echoing findings by [8], [9], self-talk was instrumental in shaping athletes' confidence and composure. Motivational self-talk (e.g., “I can stay calm and focused”) and instructional cueing during drills improved attentional stability, supporting prior research that self-talk mediates the stress–performance relationship.

C. Structured Learning and Group Dynamics

Another factor that likely contributed to the success of this intervention was the structured delivery of the PST program, which was implemented through eight consecutive sessions over one month. The continuity and organization of these sessions allowed athletes to develop psychological safety, engage in open discussions, and share personal experiences related to training stress and competition anxiety. Such peer interaction encouraged collective reflection and social learning, where athletes recognized common challenges and collaboratively explored adaptive coping strategies. This dynamic learning environment aligns with findings from [1], [7], who emphasized that consistent, interactive, and reflective practice enhances the internalization of mental skills.

Similarly, [12] reported that structured and participatory interventions amplify self-awareness and self-efficacy, leading to stronger behavioural changes compared to isolated or one-time workshops. In this study, athletes demonstrated high levels of engagement and proactive learning, which likely accelerated the integration of self-talk, goal-setting, and relaxation techniques into their daily routines. Their collective enthusiasm reflected a heightened awareness of mental health as a determinant of performance quality [8]. Taken together, these observations suggest that the program's effectiveness stemmed not only from its technical content but also from the

social and reflective dimensions of the training process, which facilitated sustained cognitive and emotional growth among the participants.

D. Broader Implications for University Athletes

The predominantly sport-science cohort (76 % from FIKK) likely benefited from existing familiarity with sport-training structures, facilitating engagement with mental-skills exercises. Nevertheless, comparable improvements across the smaller groups from FEB, FISH, FPsi, FIP, and FT indicate that PST is effective beyond sport-related majors. Gender comparisons also showed consistent reductions among both male and female athletes, suggesting that PST techniques are universally applicable.

E. Integration within the Indonesian Sport-Education Context

This research highlights the pressing need to embed mental-skills education within university curricula. As noted by [11], Indonesian athletes often rely heavily on physical training while neglecting psychological conditioning. The present findings support institutional adoption of PST modules within coaching and athlete-development programs at FIKK and similar faculties nationwide.

4 Conclusion and Recommendations

4.1 Conclusion

This study provides empirical evidence that a one-month Psychological Skills Training (PST) program can significantly enhance the mental health of university athletes. The intervention—comprising goal setting, self-talk, mental imagery, energization, and relaxation—produced a marked reduction in perceived stress, with mean PSS-10 scores declining from 24.14 (SD = 6.58) to 16.81 (SD = 3.88) ($t(20) = 5.94, p < 0.001, d = 1.30^*$). The proportion of athletes in the high-stress category decreased from 38 % to 4.8 %, while those in the low-stress category increased from 5 % to 19 %. These findings confirm that even a short, structured PST program can substantially strengthen athletes' emotional regulation, concentration, and adaptive coping mechanisms.

The decline in both mean stress levels and score variability suggests improved psychological stability and normalization of stress perception—a key indicator of growing self-awareness and self-control. By providing athletes with cognitive and emotional tools to reappraise stressful demands as challenges rather than threats, PST promotes sustainable mental well-being and readiness for performance.

4.2 Practical Recommendations

1. **Integrate PST into Coaching and Sport-Education Curricula**
Faculties such as FIKK should embed PST modules within training courses to ensure that mental-skills instruction complements physical and technical preparation.
2. **Extend Program Duration and Individualization**
Longer-term PST interventions (8–12 weeks) with individualized feedback and practice assignments are recommended to reinforce skill retention and transfer to competition.
3. **Establish Comprehensive Mental-Health Monitoring**
University sport programs should implement continuous monitoring that goes beyond quantitative screening (e.g., PSS-10, SAS-2, ABQ). Integrating athlete diaries, structured observations, and semi-structured interviews allows facilitators to track emotional fluctuations, coping responses, and behavioral changes more

accurately. These qualitative insights help tailor subsequent sessions and identify early signs of psychological strain.

4. **Coach and Staff Capacity Building**
Coaches and administrators require foundational sport-psychology training to reinforce PST techniques during regular practice and to cultivate psychologically safe environments.
5. **Cross-Disciplinary Collaboration**
Partnerships among sport psychologists, lecturers, and medical or counselling staff will foster holistic athlete-support systems integrating physical, cognitive, and emotional components.

4.3 Future Research Directions

Future studies should employ larger and more diverse samples with control groups to strengthen causal inference. Longitudinal follow-ups are needed to examine the durability of PST benefits across competitive seasons. Integrating additional constructs—such as resilience, mindfulness, or burnout—could yield a more comprehensive understanding of mental-skills development. Furthermore, exploring culturally grounded adaptations, including spiritual self-regulation models, may enrich intervention frameworks for athletes in various contexts.

4.4 Closing Statement

In summary, Psychological Skills Training (PST) is a practical, evidence-based strategy for reducing stress and fostering mental wellness among university athletes. Embedding structured PST within higher-education sport programs will not only enhance athletic performance but also cultivate a generation of emotionally balanced, self-regulated, and resilient student-athletes—aligning academic excellence with holistic human development.

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