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The Effectiveness of Resilience Training in Reducing Academic Stress Among Student-Athletes at The Faculty of Sports Science State University of Medan

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ABSTRACT

Student-athletes face concurrent academic and sport demands and therefore need adaptive capacities when dealing with pressure. This study examined changes in academic stress following a resilience training program based on cognitive behavior therapy (CBT), while also evaluating the module's content validity and participant acceptance. A pre-experimental one-group pretest-posttest design was used. Participants were 20 student-athletes enrolled in the Physical Education, Health, and Recreation Study Program at State University of Medan, comprising 12 men and 8 women aged 19–20 years. The training consisted of eight sessions delivered over two days. Two validators evaluated the module using Aiken's V. Academic stress was measured immediately before and after training using an adapted Academic Stress Inventory. Descriptive statistics, a paired-samples t test, effect sizes, satisfaction ratings, and thematic analysis of participant reflections were used. All 53 module items obtained V values ranging from 0.875 to 1.000, with an overall mean of 0.974. Mean academic stress decreased from 159.40 (SD=30.693) to 140.60 (SD=37.883). The paired-samples test indicated a significant difference, $t(19)=-5.255$, $p<.001$, Cohen's $dz=-1.175$. Participant satisfaction reached 100%, while reflections highlighted teamwork, cognitive and emotional regulation, relaxation, and perseverance. The training was associated with an immediate reduction in academic stress in this group; however, causal inference and the durability of the change remain limited by the absence of a control group and follow-up assessment.

Keywords: Resilience Training, Academic Stress, Student-Athletes

INTRODUCTION

Students who simultaneously fulfill the role of athletes face concurrent demands. As students, they must meet class schedules, complete assignments, take theoretical and practical examinations, and achieve study-completion targets. As athletes, they also participate in training, selection, competitions, performance evaluations, and recovery. When these demands are perceived to exceed the available resources, the resulting pressure may develop into academic stress, manifested in cognitive, emotional, behavioral, and physiological responses.

The dual-career context requires stress management to account for the relationship between academic and athletic activities. Ineffective time management, scheduling conflicts, concerns about outcomes, fatigue, and negative appraisals of one's abilities can reinforce one another. (Adera et al., 2025) showed that student-athletes use various coping strategies and support mechanisms to manage the pressures of combining elite sport with higher education. Changes or disruptions to academic activities may also be a meaningful source of stress for college athletes (Lassiter, 2022). Interventions for student-athletes should therefore use examples, exercises, and strategies relevant to both roles rather than separating academic pressure from athletic experience.

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Resilience is understood as the dynamic capacity to adapt, maintain functioning, and resume one's roles effectively when facing adversity. It is neither a fixed trait nor a guarantee that an individual will not experience stress. In sport, this process involves interactions among appraisals of pressure, personal resources, coping strategies, and environmental support (Galli & Gonzalez, 2015; Zhong, 2025). In the training program, resilience was operationalized as the ability to recognize pressure, appraise situations more objectively, regulate emotional responses, solve problems, use social support, and continue taking goal-relevant action.

Cognitive behavior therapy (CBT) provides a practical framework because it emphasizes the reciprocal relationships among thoughts, emotions, physiological responses, and behavior. Participants are trained to identify unhelpful automatic thoughts, examine the evidence, formulate more realistic responses, practice adaptive behaviors, and use regulation techniques such as breathing and relaxation (Curtiss et al., 2021). Experimental research involving university students has also shown that structured stress-management interventions can help reduce distress or perceived stress, although the forms of intervention, duration, and participant characteristics have varied (Mansuroglu, 2025).

The development of a training program intended as an intervention requires an assessment of content validity. Aiken's V coefficient can be used to summarize validators' agreement regarding the relevance of each component to the training objectives (Darisman et al., 2026). After the module was evaluated and revised, changes in outcomes were tested using appropriate analyses. This study aimed to: (1) assess the content validity of a CBT-based resilience training module for student-athletes; (2) analyze differences in academic stress before and immediately after the training; and (3) describe participant satisfaction and reflections. The research hypothesis was that academic stress scores would be lower after the training than before the training.

METHOD

Design and Participants

This quantitative study used a pre-experimental one-group pretest-posttest design following the O_1-X-O_2 pattern. O_1 represented the measurement of academic stress before training, X represented the resilience training, and O_2 represented the measurement immediately after training. The participants were 20 students from the 2025 Class B cohort of the Physical Education, Health, and Recreation Study Program, Faculty of Sports Science, State University of Medan. They comprised 12 men and 8 women aged 19-20 years. The selection criterion was enrollment as a student while actively participating as an athlete, thereby fulfilling dual roles. All participants received the same training and served as their own controls across the two measurement points.

Module Development and Validation

The module was developed based on the needs of student-athletes and comprised eight sessions delivered over two days. The content covered orientation and psychological safety, an introduction to stress and resilience, the thought-emotion-behavior relationship, identification of automatic thoughts, cognitive restructuring, breathing and relaxation, problem-solving and social support, and action planning and evaluation. The module distinguished participant materials from facilitator instructions and emphasized that the training was not a substitute for professional assessment or treatment.

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Two validators rated 53 items on a 1-5 scale. Content validity was calculated using $V=\Sigma s/[n(c-1)]$, where $s=r-l_0$, r is the validator's rating, l_0 is the lowest possible rating, n is the number of validators, and c is the number of rating categories. The operational acceptance threshold was set at $V\geq0.80$. Because two validators and five categories produced increments of 0.125, the lowest value meeting this threshold was 0.875.

Table 1. Training Session Content

Session	Main focus
1	Orientation, learning agreement, and psychological safety
2	Introduction to academic stress and resilience
3	Relationships among thoughts, emotions, physiological responses, and behavior
4	Identification of automatic thoughts in academic and sport situations
5	Evidence examination and cognitive restructuring
6	Breathing, relaxation, and emotion regulation
7	Problem-solving, demand management, and social support
8	Action planning, commitment, reflection, and evaluation

Each session combined brief explanations, student-athlete case examples, individual exercises, group discussions, games or activities, reflection, and meaning-making. Facilitators used nonjudgmental language and did not compel participants to disclose personal experiences. The activities were designed to develop practical skills rather than establish clinical diagnoses. The safety materials explained the boundaries of the training service and referral procedures for participants requiring professional assistance.

Research Instruments

Academic stress was measured using an adaptation of the Academic Stress Inventory based on Sari et al. (2024). The analyzed version consisted of 52 items, with 26 items each for the stressor and reaction dimensions. Program acceptance was measured using four satisfaction items rated on a 1-5 scale, a question about the appropriateness of the duration, and open-ended reflection questions. Participants were asked to describe their key learning, strategies they intended to apply, challenges, and feelings after completing the training.

Procedure and Data Analysis

The study involved needs identification, module development, validation and revision, a pretest, delivery of the training on April 22-23, 2026, at the Multipurpose Field Pavilion of State University of Medan, a posttest, evaluation, analysis, and reporting. The training was facilitated by a sport psychology lecturer with a master's degree in psychology and a psychologist experienced in conducting training programs.

Table 2. Research Stages and Evidence of Implementation

Stage	Evidence of achievement
Needs identification	Participant characteristics and stress-management needs informed the study design
Training module development	Participant module, facilitator guide, eight sessions, and evaluation tools developed
Validation and revision	Ratings from two validators were analyzed using Aiken's V and used to review the module
Implementation	Two-day training for 20 student-athletes
Measurement	Pretest and posttest data analyzed descriptively and inferentially

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Evaluation and reporting	Satisfaction, reflections, indicator achievement, and limitations reported

Data are presented as minimum, maximum, mean, and standard deviation. Pretest-posttest differences were examined using a paired-samples t test at $\alpha=0.05$, accompanied by 95% confidence intervals and Cohen's dz. The relevant assumption was the normality of the difference scores. The evaluation analysis used the percentage of the actual score relative to the maximum score. Open-ended responses were grouped thematically; a single response could contain more than one theme.

A negative posttest-pretest difference indicates a decrease in scores. The magnitude of relative change was calculated by dividing the mean decrease by the pretest mean and multiplying by 100%. For the reflection data, thematic frequencies were used to describe occurrences rather than as statistical tests or measures of prevalence.

RESULTS AND DISCUSSION

Module Content Validity

Aiken's V values for all items ranged from 0.875 to 1.000. A total of 42 items obtained V=1.000, and 11 items obtained V=0.875. No item fell below the operational threshold of 0.80. The overall mean was 0.974, indicating a high level of agreement between the validators regarding the relevance of the module content.

Table 3. Mean Aiken's V by Aspect

Aspect	Mean V
Relevance and scientific basis	0.958
Student-athlete context	0.975
Design and sequence	0.958
Participant materials	1.000
Facilitator guidelines	0.979
Quality of CBT techniques	0.979
Ethics and safety	1.000
Program evaluation	0.979
Language and presentation	0.938
Overall	0.974

The participant materials and ethics and safety aspects received the maximum scores. Language and presentation had the lowest mean, at 0.938, but still met the criterion. These results constitute evidence of content validity, not construct validity or effectiveness. Only two validators were involved; therefore, the range of expert perspectives represented was limited. Further development should involve more experts and examine the module's usability in broader groups.

The $V \geq 0.80$ threshold was used as an operational criterion for this study, not as a universal cutoff applicable without considering the number of validators, the number of categories, and the purpose of the assessment. With two validators and five rating options, the coefficient cannot yield exactly 0.80; the nearest possible value above the threshold is 0.875.

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Changes in Academic Stress

Table 4. Descriptive Statistics for Academic Stress

Measurement	N	Min.	Max.	M	SD
Pretest	20	99	221	159.40	30.693
Posttest	20	81	227	140.60	37.883

Mean academic stress decreased by 18.80 points, from 159.40 at pretest to 140.60 at posttest. The decrease relative to the baseline mean was approximately 11.79%. The standard deviation increased after the training, indicating greater variability in responses across participants. The maximum posttest score was higher than the maximum pretest score; therefore, the decrease in the group mean does not indicate that every participant experienced a reduction.

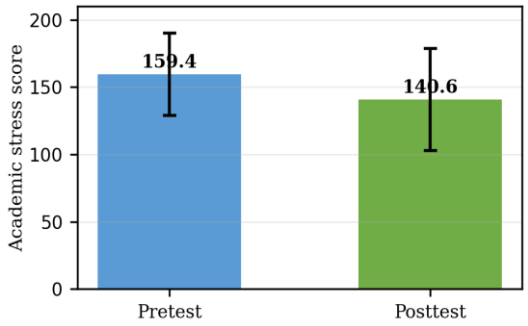


Figure 1. Pretest and Posttest Means with Standard Deviations

Table 5. Paired-Samples t-test and Effect Size

Statistic	Result
Posttest-pretest difference	-18.800
95% CI of the difference	-26.288 to -11.312
t(df)	-5.255 (19)
Two-tailed p	<0.001
Cohen's dz	-1.175; 95% CI [-1.740, -0.592]
Corrected Hedges' g	-1.152; 95% CI [-1.706, -0.580]

The paired-samples t test showed a significant difference, t(19)=-5.255, p<.001. The confidence interval did not cross zero. Cohen's dz=-1.175 indicated a statistically large within-group change; the negative sign indicates lower posttest scores. The available Shapiro-Wilk tests were conducted separately only for the pretest (p=1.000) and posttest (p=.183). The immediate reduction after the training may be understood in terms of the training mechanisms. Participants identified automatic thoughts, examined excessively negative appraisals, formulated realistic responses, regulated their breathing and emotions, solved problems, and used group support. These components align with the CBT principle that changes in how situations are appraised and acted upon can influence emotional responses (Beck, 2021;S.P & Gayatridevi, 2025). This finding is consistent with an intervention trial among university

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students that reported benefits from structured stress-management training (Galante et al., 2017; Chen & Qi, 2025), although the programs and designs were not identical.

The relevance of the intervention is further supported by comparison with studies conducted specifically among college athletes. (Sullivan et al., 2023) evaluated a resilience training program for student-athletes in a pilot study, whereas Chandler, Kalmakis, Chiodo, and Helling (2019) used mixed methods to examine a resilience intervention among diverse, at-risk college athletes. Both studies support the feasibility of resilience training as an approach to psychological skill development in college-athlete populations. However, comparisons among findings must account for differences in participant characteristics, program content, duration, instruments, and evaluation designs.

The student-athlete context gives these mechanisms particular significance. Automatic thoughts may arise when training schedules conflict with assignments, when athletic performance declines before an examination, or when participants interpret a single failure as evidence of overall inadequacy. CBT training does not aim to replace thoughts with invariably positive statements; rather, it helps participants develop proportionate, actionable appraisals. This strategy was then linked to time planning, problem-solving, supportive communication, and small actions within participants' control.

The increase in the standard deviation from 30.693 to 37.883 indicates heterogeneity in change. Some participants may have benefited more, whereas others may not have changed. The magnitude of the effect size does not definitively establish causality. Without a control group, the change may have been influenced by other events, repeated-measurement effects, regression to the mean, or participant expectations. The absence of follow-up also means that the durability of the change is unknown. Therefore, the result is most appropriately described as a significant immediate reduction following training within the study group.

Participant Evaluation and Reflections

Table 6. Evaluation of Training Implementation

Aspect	M	SD	Percentage
Content relevance	5.00	0.00	100%
Clarity of delivery	5.00	0.00	100%
Facilitator quality	5.00	0.00	100%
Effectiveness of techniques	5.00	0.00	100%
Appropriate duration	—	—	20/20 (100%)

All participants gave the highest score on the four evaluation aspects and indicated that the duration was appropriate. The actual score of 400 out of a maximum of 400 yielded 100% satisfaction, exceeding the 80% target.

The reflection analysis identified themes of teamwork and cohesion (8 occurrences), gratitude and positive thinking (6), self-awareness and self-acceptance (4), concentration (4), and stress and emotion management (4). Strategies that participants intended to apply included games or group activities (6), affirmations and self-belief (5), and breathing and relaxation (4). The most frequently mentioned challenges were assignments, time management, and dual-role demands (7), followed by negative thoughts, emotions, and self-confidence (6).

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Table 7. Themes in Participant Reflections

Focus	Theme	f
Learning	Teamwork and cohesion	8
Learning	Gratitude and positive thinking	6
Learning	Self-awareness and self-acceptance	4
Learning	Concentration and focus	4
Learning	Stress and emotion management	4
Strategy	Group activities and exercises	6
Strategy	Affirmations and self-belief	5
Strategy	Breathing and relaxation	4
Challenge	Assignments, time, and dual roles	7
Challenge	Negative thoughts, emotions, and self-confidence	6

The reflections reinforced the relevance of the training to student-athletes' lives. Participants reported not only positive feelings but also concrete strategies that could be applied to coursework, training, practical examinations, and performance evaluations. Nevertheless, the reflections were collected immediately after the activity and were self-reported; thus, these findings describe perceived benefits rather than lasting objective changes.

Challenges involving conflicting assignments and training schedules, time management, emotions, and self-confidence are consistent with the student-athlete stressors described by Cosh and Tully (2015). These findings emphasize that academic stress among student-athletes does not occur in isolation but interacts with training, competition, recovery, and performance demands. Therefore, the case examples and action plans in the module should remain centered on dual-career management.

Outcomes, Implications, and Limitations

The stages of module development, content validation, delivery of eight sessions, pretest-posttest measurement, satisfaction evaluation, reflection analysis, and reporting were completed. The targets for content validity, score differences, satisfaction, and appropriateness of duration were achieved.

Table 8. Achievement of Research Indicators

Indicator	Target	Result
Content validity	V≥0.80	0.875-1.000; achieved
Implementation	8 sessions	two days; achieved
Satisfaction	≥80%	100%; achieved
Duration suitability	≥80%	100%; achieved
Change in stress	$p<0.05$	$p<.001$; achieved

In practice, the training module may be used as a promotive and preventive program to help student-athletes manage pressure, provided that facilitators understand sport psychology, professional boundaries, confidentiality, and referral procedures. The module is not a substitute for professional assessment or therapy. Participants exhibiting severe distress, functional impairment, or safety risks should be referred to a psychologist or mental health service.

Intensive delivery over two days enabled all eight sessions to be completed within a limited period but may have increased learning density and fatigue. Future programs could

compare an intensive format with a spaced format to allow participants to practice skills between sessions. Brief practice assignments, structured reminders, or booster sessions could support skill generalization, provided that data security and service boundaries are maintained. From an evaluation perspective, program success should be differentiated into implementation, acceptance, learning, changes in psychological outcomes, and sustainability. This study provides data on content validity, immediate changes in stress, satisfaction, and reflections. Future research should use a comparison group and a larger sample.

CONCLUSION

The CBT-based resilience training module met the content validity criterion based on ratings from two validators, with item-level Aiken's V values ranging from 0.875 to 1.000 and an overall mean of 0.974. After eight training sessions delivered over two days, mean academic stress among the 20 student-athletes decreased from 159.40 to 140.60. The difference was significant, $t(19)=-5.255$, $p<.001$, with Cohen's $dz=-1.175$. Participants reported 100% satisfaction and identified learning themes related to teamwork, thought and emotion management, relaxation, and perseverance. The findings support the use of resilience training to help reduce academic stress among student-athletes at the Faculty of Sports Science, State University of Medan.

REFERENCES

Adera, S., Anjani, N., Komarudin, K., & Saputra, M. Y. (2025). The struggles behind success: a case study on athletic identity and burnout among university student-athletes in taekwondo Shavilla. 7(2), 61–66.

Chen, S., & Qi, X. (2025). A randomized controlled trial of mindfulness : effects on academic stress , academic burnout , and psychological resilience in university students. November. https://doi.org/10.3389/fpsyg.2025.1722669

Curtiss, J. E., Ph, D., Levine, D. S., Ander, I., Baker, A. W., & Ph, D. (2021). Cognitive-Behavioral Treatments for Anxiety and Stress-Related Disorders. 19(2). https://doi.org/10.1176/appi.focus.20200045

Darisman, E. K., Hanafi, M., & Utomo, G. M. (2026). Content validity of reflective mental training cards for student-athletes : a content validation study. 16(1), 1–15.

Lassiter, J. W. (2022). Journal of Issues in Intercollegiate Athletics The Impact of Academic Disruption on Stress Among College Athletes. 15(1).

Mansuroglu, S. (2025). The effectiveness of stress management training given to first-class health major students in perceiving and coping with stress and developing resilience : A randomized controlled trial. February, 1–21. https://doi.org/10.1111/aphw.70014

S.P, A., & Gayatridevi. (2025). Acceptance and Commitment Therapy and Psychological Well-Being : A Narrative Review. 17(1), 1–7. https://doi.org/10.7759/cureus.77705

Sullivan, L., Carter, J. E., Houle, J., Ding, K., Yang, J., Sullivan, L., Carter, J. E., Houle, J., & Ding, K. (2023). Evaluation of a resilience training program for college student-athletes : A pilot study. Journal of American College Health, 71(1), 310–317. https://doi.org/10.1080/07448481.2021.1891083

Zhong, Y. (2025). The effect of digital media on college students ' sports participation : The mediating role of sports cognition and the moderating role of self-efficacy. 1–19. https://doi.org/10.1371/journal.pone.0330445