

Impact of Zumba Dance on Selected Psychological Variables among Women NCC Cadets

¹M. Sukanya, ²Dr. C. Ramesh

¹PhD scholar, Department of Physical Education, Madurai Kamaraj University, Madurai, Tamilnadu, India.

²Assistant Professor & Head, Department of Physical Education, Madurai Kamaraj University, Madurai, Tamilnadu, India.

Abstract: This study aimed to investigate how Zumba dance training impacts specific psychological factors within a cohort of women National Cadet Corps (NCC) members. The research focused primarily on evaluating levels of stress and anxiety. Forty participants, aged between 18 and 22 years, took part in this project. These individuals were split up into two distinct cohorts of twenty, designated as the Experimental Group and the Control Group. The Experimental Group took part in a rigorous twelve-week Zumba dance programme. These sessions were carried out five days a week, with each session lasting for sixty minutes. Conversely, the Control Group held off on any specialized training during the research period. These participants simply carried on with their typical, routine activities. To determine the psychological impact, researchers made use of standardized assessment tools. The Perceived Stress Scale (PSS) was utilized to measure stress, while a standardized anxiety inventory was employed to track anxiety levels. Upon the completion of the training, the collected data were worked out through a t-ratio analysis, with the significance level pinned at 0.05. The findings turned up a distinct contrast between the two groups. Following the completion of the Zumba sessions, the Experimental Group experienced a notable drop in stress. Similarly, anxiety levels fell off significantly within this group. In contrast, the Control Group showed no meaningful change in their psychological markers. This study indicates that Zumba dance training stands out as a highly effective intervention for building up the psychological well-being of women NCC cadets.

Keywords: Zumba Dance, Stress, Anxiety, NCC Cadet.

Introduction

Psychological health forms a major part of total well-being. This need becomes stronger among young adults who pass through disciplined and structured training systems such as NCC training. Women NCC cadets have to keep up with physical practice, academic duties, social expectations, and emotional demands. These demands may build up pressure over time. Stress and anxiety may then turn into common psychological concerns. Such concerns may affect performance, concentration, confidence, decision-making ability, and emotional stability. Stress usually builds up when demands appear greater than the available coping resources. Anxiety may grow out of worry, fear, nervousness, or uncertainty. Both conditions can hold back effective participation in training. Both conditions can also bring down the quality of daily functioning. A suitable physical activity programme may help cadets work through these difficulties. Regular exercise has been linked with improved mood, better emotional balance, and greater mental freshness. Dance-based exercise can add enjoyment to the same process.

Zumba dance is a fitness-based aerobic exercise. The activity brings together music, rhythm, body movement, and continuous physical effort. Zumba sessions often include lively steps, coordinated movements, and repeated rhythmic actions. These features may help participants loosen up, stay active, and take part with interest. The enjoyable nature of Zumba dance may also help participants carry on the activity for a longer period. Music and movement can work together to lift mood and ease psychological distress. In physical education and training settings, Zumba dance can be brought into regular fitness programmes without heavy equipment. The activity can be carried out in groups. The group setting may build up social involvement and motivation. For women NCC cadets, such a programme may help in reducing stress and anxiety while also supporting physical fitness.

Therefore, adding Zumba dance to physical training programmes may help in strengthening mental health among NCC cadets.

Statement of the Problem

This research focuses on the influence of a structured Zumba dance regimen on specific psychological markers within a cohort of female NCC cadets. The primary investigation centers on evaluating fluctuations in stress and anxiety levels. The inquiry seeks to determine if a systematic Zumba dance initiative can effectively mitigate stress and anxiety. These findings are measured against a Control Group, which follows no specialized physical training throughout the duration of the study. The core objective involves examining how consistent engagement in Zumba dance impacts the mental well-being of the selected female participants. The study aims to tease out the potential benefits of this rhythmic exercise on internal psychological states. The investigation set out to figure out whether a designed Zumba dance training program could knock down stress and anxiety levels. The methodology relies on a comparative analysis. A group of women NCC cadets underwent the Zumba training, while a separate Control Group kept up with their regular routines, skipping any extra training sessions.

Researchers aim to look into the data to see if the training regimen holds up under scrutiny. The study is put together to build a clear picture of the psychological shifts that might crop up. By keeping an eye on both the experimental group and the Control Group, the analysis intends to map out any significant changes in emotional health. The project is driven by the need to find out if aerobic dance routines can help participants deal with pressure. It serves to clear up whether such interventions can foster a more balanced mental state. Throughout the process, the focus remains on tracking whether the Zumba intervention can calm down the cadets and help them tide over feelings of anxiety. The study is expected to bring to light how physical activity can act as a buffer against psychological strain.

Objectives of the Study

1. To find out the effect of Zumba dance on stress among women NCC cadets.
2. To find out the effect of Zumba dance on anxiety among women NCC cadets.

The objectives were framed to bring out the psychological value of Zumba dance training. The focus was placed on stress and anxiety because these variables may directly influence training participation, concentration, emotional control, and overall well-being.

Hypotheses

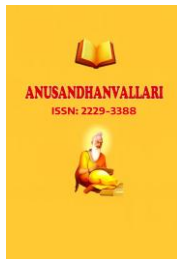
1. There will be a significant reduction in stress due to Zumba dance training among women NCC cadets.
2. There will be a significant reduction in anxiety due to Zumba dance training among women NCC cadets.

The hypotheses were laid down to test whether Zumba dance training could bring about measurable psychological improvement after the training period. The expected direction of change was a reduction in both stress and anxiety.

Methodology

Subjects

A cohort comprising forty female NCC cadets, within the age range of 18 to 22, served as the primary subjects for this investigation. These participants underwent random assignment to establish two distinct, balanced groups prior to the commencement of the intervention period. This methodological step ensured that the groups possessed comparable baseline characteristics. The first cohort, designated as the Experimental Group, functioned as the Zumba Training Group. This specific collective encompassed twenty individuals. The second



cohort, labeled the Control Group, similarly maintained a composition of twenty subjects. The Experimental Group engaged in a structured Zumba dance training regimen. Conversely, the Control Group refrained from participating in any specialized fitness activities throughout the duration of the study. This separation aimed to isolate the effects of the intervention. The research design leaned on these clear divisions to carry out the study. The study set up a rigorous framework to track progress. Both groups started from a level playing field. The Zumba Training Group carried out the dance sessions as planned. Meanwhile, the Control Group kept up with their usual routine, opting out of the extra training. This setup helped bring out the contrast between the two groups. It also allowed for a clearer view of how the training program played out. The reliance on this grouping strategy ensured that the findings would hold up under scrutiny.

Groups Used in the Study

Experimental Group (Zumba Training) - 20 subjects.

Control Group - 20 subjects.

Variables

The independent variable was the Zumba Dance Training Programme. This training programme was given only to the Experimental Group. The dependent variables were stress and anxiety. These variables were selected because psychological balance is an important part of effective NCC training and general well-being.

Independent Variable: Zumba Dance Training Programme.

Dependent Variables: Stress and Anxiety.

Tools Used

The Perceived Stress Scale (PSS) was used for stress measurement. The scale helped to assess the level of perceived stress among the women NCC cadets before and after the training period.

A Standardized Anxiety Inventory was used for anxiety measurement. The inventory helped to assess anxiety levels before and after the training programme. These tools made possible a systematic comparison between pre-test and post-test scores.

Training Programme

The experimental cohort engaged in a rigorous, structured Zumba-based aerobic regimen over a designated 12-week duration. This intervention schedule strictly mandated participation across 5 days each week. Every individual session spanned a full 60-minute interval, ensuring consistent physical exertion. The programme was meticulously designed to uphold high intensity throughout the entire observation period. Participants consistently showed up for their scheduled slots to carry out the routines. Adherence to this dense training calendar was key to the research framework. The 60-minute timeframe was carefully set aside to push the physical limits of the subjects involved. The intervention successfully carried on for the full 12-week timeframe without deviation. By keeping up with the 5-day-per-week cadence, the researchers ensured that the physiological impact of the dance-based activities could be fully tracked. Each session was meant to build upon the progress made in the previous ones. The researchers looked into the cumulative effects of these daily 60-minute sessions on the experimental group's performance metrics. This study sought to flesh out the relationship between sustained Zumba practice and health outcomes. Data collection took place as the participants worked through the 12-week cycle. All findings gathered during this time were meant to shed light on how such a demanding exercise programme holds up over an extended period. Researchers kept a close watch on how the group pulled through the intensity of the sessions day after day. By breaking down the 12-week block into manageable 5-day units, the study aimed to see how the participants kept going and how their bodies kept pace

with the requirements. The sessions included music-based rhythmic aerobic movements. The activities were arranged in a planned manner so that the participants could warm up, take part in the main Zumba movements, and cool down at the end of each session. The Control Group followed regular routine activities without any intervention. No special psychological or physical training programme was given to the Control Group during the study period. This arrangement helped to work out the specific effect of Zumba dance training on stress and anxiety.

Statistical Technique

The collected data underwent rigorous examination via the t-ratio test. This statistical tool helped determine whether the fluctuations observed between the pre-test and post-test scores held genuine statistical weight. The threshold for significance was set at 0.05. Furthermore, the analysis relied on a critical value of 2.093 to establish this 0.05 benchmark. The researchers brought the calculated t-values into comparison with this pre-defined critical threshold. Whenever the t-value soared past the critical value, the results pointed toward a significant decline in the psychological variable under investigation. These procedures were carried out to ensure the findings stood up to scrutiny. By sticking to this strict framework, the study aimed to rule out chance occurrences. Consequently, the data clearly teased out the underlying trends, showing where the psychological variable trailed off significantly. The application of these tests helped the research team wrap up the quantitative phase of the inquiry with a higher degree of certainty regarding the outcomes.

Results and Discussion

The results were worked out for stress and anxiety separately. The pre-test and post-test mean values were compared within the Experimental Group and the Control Group. The t-ratio values helped to point out the size of the change after the training period.

Table 1: Stress Levels

Group	Pre-Test Mean	Post-Test Mean	t-ratio
Experimental	28.60	20.45	6.12*
Control	28.40	27.90	0.88

The findings regarding stress levels within the Experimental Group indicate a notable reduction following the intervention. Initially, the pre-test mean score for stress stood at 28.60. Subsequent assessments revealed that the post-test mean dropped to 20.45. A statistical analysis yielded a t-ratio of 6.12*, which surpassed the critical threshold of 2.093 established at the 0.05 significance level. These data point to the fact that the Zumba dance training program effectively cut down stress among women NCC cadets. The implementation of the Zumba curriculum brought about a substantial shift in the participants' psychological state. This systematic exercise routine acted as a catalyst for stress reduction. By engaging in these sessions, the cadets were able to shake off the pressures associated with their training regimen. The significant gap between the pre-test and post-test scores serves to back up the claim that this form of physical activity is highly beneficial. The analysis of the t-ratio further highlights the reliability of these outcomes. Because the calculated figure went well beyond the critical value, the results appear robust. It is evident that the dance intervention did not just provide a temporary distraction but instead helped the participants to tone down their stress levels in a measurable way. Such empirical evidence underlines the potential of integrating rhythmic physical training into standard fitness protocols for cadets. Ultimately, the data make it clear that the Zumba intervention played a crucial role in improving the mental well-being of the cohort. The Control Group showed only a small change in stress. The pre-test mean was 28.40. The post-test mean was 27.90. The obtained t-ratio was 0.88. This value was lower

than the critical value. The result shows that regular routine activities did not bring about a significant reduction in stress.

Table 2: Anxiety Levels

Group	Pre-Test Mean	Post-Test Mean	t-ratio
Experimental	26.75	18.30	6.45*
Control	26.50	26.10	0.76

*Significant at 0.05 level

Regarding the anxiety assessment, the data indicates a substantial decline within the Experimental Group. Initial evaluations established the pre-test mean for anxiety at 26.75. Subsequent measurements revealed that this figure dropped to 18.30 following the intervention. Statistical analysis yielded a t-ratio of 6.45*. This calculated metric surpassed the critical threshold of 2.093 at the 0.05 significance level. Consequently, the findings demonstrate that the implementation of Zumba dance training effectively brought about a reduction in anxiety levels among the women NCC cadets. The collected evidence highlights how the exercise regimen successfully cleared up lingering tension. The data points show that the anxiety scores leveled off at a much lower position. This outcome serves to back up the hypothesis that structured physical activity assists in phasing out stress. Overall, the evidence points toward the conclusion that such training regimes can significantly thin out emotional distress within this specific demographic.

The Control Group showed only a slight change in anxiety. The pre-test mean was 26.50. The post-test mean was 26.10. The obtained t-ratio was 0.76. This value was lower than the critical value. The result shows that routine activities did not bring about a significant change in anxiety levels.

Interpretation of Results

The statistical analysis reveals that the Experimental Group achieved t-values of 6.12 for stress and 6.45 for anxiety. These figures exceed the critical threshold of 2.093 established at the 0.05 significance level. Such data confirm a statistically significant decline in stress and anxiety markers following the completion of the Zumba dance regimen. Consequently, these findings highlight the efficacy of a structured Zumba dance initiative in fostering positive psychological shifts among women NCC cadets. Conversely, the Control Group failed to exhibit any notable transformations. The calculated t-ratios for stress and anxiety settled at 0.88 and 0.76, respectively. Since these metrics fall short of the critical value, the variations observed within the Control Group lack statistical significance. The disparity between the two cohorts underscores the profound impact of the intervention.

Regarding the progression of the study, the Experimental Group successfully brought down its elevated pre-test scores, reaching significantly lower post-test levels across both psychological variables. Meanwhile, the status of the Control Group held steady, showing almost no deviation from initial readings. This distinct divergence in outcomes backs up the assertion that the Zumba dance training played a pivotal role in bringing about the reported improvements in psychological well-being. By carrying out this specific physical activity, participants managed to smooth out their stress and anxiety levels, proving that such programs can hold up well when integrated into a formal training structure for cadets.

Discussion

The reduction in stress and anxiety may be attributed to the rhythmic aerobic movements, music involvement, and enjoyable nature of Zumba dance. The continuous movement pattern may help participants work off tension. The music may help participants loosen up and take part with interest. The dance movements may

support emotional release. These factors may come together and bring down psychological distress. Zumba dance also has a social and motivational value. The activity is usually carried out in a group setting. Group participation may build up enthusiasm and reduce feelings of isolation. The cadets may feel encouraged to keep up with the activity because of music, rhythm, and peer involvement. Such positive participation may help reduce mental pressure. Rhythmic aerobic activity may also support endorphin release and mood regulation. The body may respond to repeated movement with a feeling of freshness and relaxation. Such responses may help in reducing stress. Anxiety may also come down when the mind becomes engaged in music and movement rather than worry and tension. The findings support the idea that dance-based aerobic exercise can serve as an effective psychological intervention for young adults. Zumba dance does not depend on complex equipment. The activity can be set up in educational institutions, training camps, and physical education programmes. For women NCC cadets, Zumba dance may serve as a useful method for improving mental health along with physical fitness. The present findings also show the value of enjoyable exercise. Programmes that are enjoyable are more likely to be followed through by young adults. When participants take up an activity with interest, regular attendance may improve. Regular participation may then bring about better psychological results. Therefore, Zumba dance can be treated as a practical and attractive training method for reducing stress and anxiety.

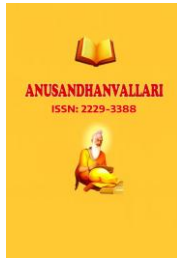
Conclusion

1. Zumba dance training significantly reduces stress among women NCC cadets.
2. Zumba dance training significantly reduces anxiety among women NCC cadets.
3. No significant changes were observed in the Control Group.
4. Zumba dance can be recommended as an effective psychological fitness programme.

The empirical evidence derived from this investigation indicates that the implementation of structured Zumba dance regimens effectively mitigates stress and anxiety levels within the demographic of female National Cadet Corps (NCC) members. This longitudinal intervention spanned a duration of 12 weeks. During this period, the prescribed activity schedule required adherence to five sessions per week, with each session lasting 60 minutes. Data analysis revealed that the participants assigned to the Experimental Group experienced a substantial enhancement regarding both identified psychological parameters. Conversely, the Control Group failed to exhibit any statistically significant modifications in these areas throughout the study. In light of these outcomes, it is recommended that physical education curricula and NCC training frameworks take on Zumba dance as a core component. The integration of such rhythmic physical activity serves to bolster overall psychological health. Adopting these dance-based protocols offers a viable pathway to round out existing training regimens, ultimately helping to build up the mental resilience of cadets. Future initiatives should aim to carry out these exercises consistently to help bring about positive long-term shifts in emotional stability.

References

- [1] American Psychological Association (APA). (2020). Stress and Health Guidelines.
- [2] Barrabeitg, G. L. (2024). Controversial Analysis of Cannabis Reclassification: Perspectives in A Narrative Review. *Journal of Ayurvedic Herbal and Integrative Medicine*, 4(2), 9–44. <https://doi.org/10.29121/jahim.v4.i2.2024.54>
- [3] Gajula, S. (2025). Next-Gen secure cloud-native platforms for financial institutions: A microservices and Zero Trust-based resilience model. *Journal of International Crisis and Risk Communication Research*, 8(S10), 280–287. <https://doi.org/10.63278/jicrcr.vi.3355>
- [4] Legrand, F. D. (2016). Effects of dance on psychological well-being. *Journal of Physical Activity & Health*.



-
- [5] Kavuri, S. (2025). AI-driven test automation frameworks: Enhancing efficiency and accuracy in software quality assurance. *International Journal of Applied Mathematics*, 38(10s), 699–710. <https://doi.org/10.12732/ijam.v38i10s.990>
- [6] Surwase, M. N., & Shinde, P. A. (2024). Recent Research on the Concept of The Hridaya In Rachana Sharira, and its Relation with Modern Anatomy. *Journal of Ayurvedic Herbal and Integrative Medicine*, 4(1), 28–33. <https://doi.org/10.29121/jahim.v4.i1.2024.44>
- [7] Nadesakanthan, S., Sanjeeva, A., Uluwaduge, . I., Peiris, P., Meedin, F., & Bandara, S. (2023). Oral Health Protection Through An Ayurveda Poly Herbal Formulation- An in Vitro Study. *Journal of Ayurvedic Herbal and Integrative Medicine*, 3(1), 1–10. <https://doi.org/10.29121/jahim.v3.i1.2023.26>
- [8] WHO (2022). Mental Health and Physical Activity Report.