Research Article

Effectiveness of Calisthenic Exercises on the Stress Level of B.Sc. Nursing 1st Year Students

Mr. Vishal Chougule[1*], Dr. Sunil Kumar Awate[2]

[1*]Final Year M.Sc. Nursing Student, Dept. of Mental Health Nursing, D. Y. Patil College of Nursing, Kolhapur – 416003.D. Y. Patil Education Society, (Deemed to Be University), Kolhapur, Maharashtra, India.

[2]M. Sc (N) Ph.D. Professor. Dept. of Mental Health Nursing, D. Y. Patil College of Nursing, Kolhapur – 416003. D. Y. Patil Education Society, (Deemed to Be University), Kolhapur, Maharashtra, India.

Email: [1]vishalchougule1414@gmail.com

ABSTRACT

Background of the Study: Stress is normal psychological and physical reaction to the demands of life. Thinking stress as a spectrum distress has been identified as a 20th century disease and viewed as a complex and dynamic transaction between individuals and environment. Stress or anxiety is not only workplace problem but different stressors affect the students. Especially nursing students experience high level of stress throughout their education.

Exercise has been shown to improve your mood and decrease feeling of anxiety and stress. Calisthenics are aerobic and dynamic exercises. Which are rhythmic and smooth and enjoyable which improves mood status of an individual.

So, the researcher felt that this study needs to be conducted to evaluate the effectiveness of Calisthenic exercise on stress level among of B.Sc. Nursing 1st year students in selected college of Nursing at Kolhapur.

Objectives:

1. To assess the stress level of B.Sc. Nursing 1st year students.
2. To evaluate the effectiveness of calisthenic exercises on the stress level of B.Sc. Nursing 1st year students.
3. To find out association between pre-assessment stress level score of B.Sc. Nursing 1st year students and selected socio-demographic variables.

Research method: The research approach adopted for the study was quantitative evaluative and research design was quasi-experimental, one group pre-test, post-test design. By using Probability, Simple random sampling technique 60 B. Sc. Nursing 1st year students were selected for the study. Modified Students Stress Rating Scale was used to assess the stress level of B. Sc. Nursing 1st year students. The reliability of the tool was tested by using Cronbach's alpha. The reliability computed was **r = 0.7.** Data were analysed by using mean, median, mode, range, standard deviation, paired 't' test & chi square test.

Analysis and Interpretation: In the pretest, majority of 27(45%) participants had moderate stress, 21(35%) participants had high stress level and 12(20%) participants had low stress level where none of them had severe. In the post-test, majority of 44(73.3%) participants had low stress level and 16(26.6%) participants had moderate stress level.

The calculated paired 't' value is (14.73) significance at level p (0.0003) < 0.05. **Hence, H_1 is accepted.** This indicates that Calisthenic exercise is effective in reducing the stress. Therefore, the findings revealed that Calisthenic exercises are effective in reducing stress level of B.Sc. Nursing 1st year students at selected college of Nursing.

In present study in B.Sc. Nursing 1st year students, none of the sociodemographic variables are associated with stress level scores, **Hence, H_2 is rejected and H_{02} is accepted.** There is no significant association between preintervention stress level scores with the selected socio demographic variables among B.Sc. Nursing 1st year students studying in selected college of Nursing at 0.05 level of significance.

Summary and conclusion: In the pretest, majority of 27(45%) participants had moderate stress, 21(35%) participants had high stress level and 12(20%) participants had low stress level where none of them had severe. In the post-test, majority of 44(73.3%) participants had low stress level and 16(26.6%) participants had moderate stress level. findings revealed that Calisthenic exercises are effective in reducing stress.

Keywords: Evaluate, Effectiveness, Stress, Calisthenic Exercises, Nursing Students.

Section 1: Distribution of Frequency and Percentage of Subjects According To Sociodemographic Variables.

Table 1: Frequency and Percentage of Subjects According To Sociodemographic Variables. n=60

S.no.	Socio-demographic variables	f(%)
1	**Age in years** a) 18 b) 19 **c)** 20	37(61.6) 15(25) 8(13.3)
2	**Gender** a) Male b) Female	26(43.3) 34(56.6)
3	**Religion** a) Hindu b) Muslim c) Christian	42(70) 5(8.3) 13(21.6)
4	**Marital status** a) Married b) Unmarried	57(95) 3(5)
5	**Residential area** a) Urban b) Rural **c)** Semi-urban	17(28.3) 28(46.6) 15(25)
6	**Type of family** a) Joint **b)** Nuclear	41(68.3) 19(31.6)
7	**Working parent** a) Yes **b)** No	55(91.4) 5(9.6)
8	**Previous knowledge about calisthenic exercises** a) Yes **b)** No	8(14) 52(86%)

Table 1. Indicates That,

Most of subjects, 37 (61.6%), are 18 years old, with the addition of 15 (25%), who are 19 years old, and only 8 (13.3%), are 20 years old. Majority of the subjects 34(56.6%) were the female, and 26(44.4%) subjects were the male. Majority of subjects 42(70%) were Hindu and minimum subjects 5(8.3%) were Muslim and 13 (21.6%) belong to Christian caste. Majority of subjects 57(95%) were single and only 3 of subjects were married. Majority of subjects 28 (46.6%) were from rural area and minimum subjects 17 (%) were from semi-urban area and 15 (25%) were from urban area.

The majority of the subjects, 40 (66.6%), are from nuclear families, while 20 (33.3%) come from joint families. Majority of subjects 55 (91.4%) were having working parents and 5(9.6%) subject's parents were not working. Majority of subjects 52 (86%) were having no pervious knowledge and 8(14%) of subjects knew about calisthenic exercise.

Section 2: Distribution of Frequency and Percentage of Stress Level Scores of Students

This table, the investigator examined and classified pre- and post-intervention stress levels among students.

Table 2: The frequency and percentage distribution of students' stress levels pre and post intervention. n=60

Stress level	f(%)	f(%)
	Pre-test	**Post-test**
Severe (191-240)	-	-

High (141-190)	**21(35)**	**-**
Moderate (91-140)	27(45)	16(26.6)
Low (51-90)	12(20)	**44 (73.3)**

Table 2. Indicates that, Prior to the intervention, 27 individuals (45%) had moderate stress, 21 (35%) had severe stress, and 12 (20%) had low stress. In post-intervention majority of the subjects 44 (73.30%) had low level of stress, 16 (26.6%) had moderate levels of stress, whereas none had high or severe stress.

Section 4: Effectiveness of Calisthenic Exercises on Stress Level of Students
H_1 – There is a substantial difference in the mean stress level score pre and post intervention.

Table 4: Mean, standard deviation and paired' values as well as p value of stress level among students.
n = 60

Mean ±Standard Deviation	't' values	'p' value
47.4 ± 17.15	14.73	0.0003

df$_{(59)}$ *significance at $p<0.05$ level.

Table 4: Indicates that**,** Reveals that the calculated paired't' value (t = 14.73)
Hence H_1 is accepted
This indicates that Calisthenic exercises is effective in reducing of the stress level, which is statistically significant at P <0.05 level of significance.
Therefore, the finding revealed that Calisthenic exercises is effective in reducing the stress level among B.Sc. Nursing 1st year students in D. Y. Patil college of Nursing, Kolhapur.

Section 5: Association between Stress Level Score and Selected Sociodemographic Variables.
H_2 – There is significant association between pre intervention stress level score with the selected socio-demographic variable among students.
Table 5: Association between pre-intervention stress levels among subjects with their selected socio-demographic variables.
age, gender, religion, marital status, residential location, working parent, family type, and prior knowledge are not significantly associated with each other.
Hence H_2 is rejected and H_{02} is accepted.
H_{02}- There is no significant association between pre interventions stress level score and selected socio-demographic variable among students.

DISCUSSION
Finding Related To Stress Level Among Subjects.
According to the results of this investigations, the general prevalence with low stress amongst nursing students was 12 (20%), moderate stress was 27 (45%), and high stress was 21 (35%). This implies that the overall stress level of nursing students is primarily moderate, which is consistent with the research results of a study conducted in Chennai to assess the stress among first year B.Sc. Nursing students. The study's findings stated that among B.Sc. Nursing first-year students, 28 (56%) had moderate stress, 14 (28%) had severe stress, and 7 (14%) had mild stress.
In contrast, Fatma Mohmed Ahmed did an investigation into the level of stress experienced by senior citizens; the study found that 15 (37.5%) students had light stress, 14 (35%) had moderate stress, and 11 (27.5%) had severe stress.[46] Stress has a variety of affects, including sleep, memory, focus, and appetite. This implies that nursing students are stressed mostly during clinical rotations, but that extra life stresses such as illness, family conflict, financial or housing problems can raise this level, which can be considered based on the data.

Findings Related To Effectiveness Of Calisthenic Exercises In Reducing The Stress Level.
The current study sought to determine the effect of callisthenics exercises on stress among B. Sc Nursing first-year students. The current study's findings imply that incorporating callisthenics exercises into students' everyday routines leads to improved outcomes in terms of stress reduction. In present study with relation to callisthenic exercises, the participants' mean post-stress level score was less than the average pre-stress level score among B.Sc.

nursing first-year students. p value was 0.003 which was less than 0.05 and computed "t" value exceeded the table value. i.e. (t_{cal}=14.73) (t_{tab}=1.66). This shows that there is significant difference between mean pre-test stress level score and mean post-test stress level score. These finding indicate that the Calisthenic exercise training is an effective strategy for reducing stress among B.Sc. Nursing 1st Year students. This is supported by; To obtain whether callisthenic exercises affect nursing students' stress levels, a similar study was conducted in Chennai. The calculated value (t_{Cal} = 8.94) is statistically significant at the p<0.001 level of significance, according to the analysis. The result signifies that,there are remarkable changes in stress level of the student nurses after doing calisthenics exercises. The significant improvement in post-test score can be attributed to utilize this knowledge into day-to-day life activities of students. In daily practice calisthenic exercises can used in student's academic curriculum as co-curricular activity to improve students grasping and to improve their cognitive abilities in colleges as it useful in reducing stress.

The study training lasted four weeks. Results from a longer-term study would be superior to those with a smaller sample size. The subject's everyday exertion was not tracked that might have affected the research. To increase the reliability of the study, a larger sample size and a longer follow-up period are recommended. Everyday stress can be measured for more precise results. Anxiety and suicidal ideation might be investigated further.

Findings Related To Association Between Calisthenic Exercises And Selected Socio-Demographic Variables.
Throughout this investigation, none of demographic characteristics have a significant relationship Compared to their preliminary test stress score. The probability ratio was assessed using the chi-square test. Therefore, there is no significant association between pre-intervention stress levels and selected socio-demographic characteristics. Where the estimated values of Chi-square were lower than the tabulated values, and the 'p' value was more than the 0.05 level of significance. A similar study is being undertaken in Chennai evaluate the efficiency of callisthenic exercises in stress reduction among first-year B.Sc. Nursing students. There is no significant relationship between the intervention and selected socio-demographic characteristics. The estimated values of Chi-square were greater than the tabular values at the 0.05 significance level.[24] Some of the drawbacks of this study include a restricted sample and recruitment of only nursing subjects. Future studies can be done with larger sample size and different population. Similar Training exercises can be compared with other training exercises such plyometric training, SAQ training or various therapies with different intensities of training and various other parameters can be measured like concentration, anxiety, depression as well.

The study's findings indicate that there is a difference between pre-test and post-test stress levels, implying that Callisthenic exercise has a beneficial effect on stress management. This is because the practice of Callisthenic exercises focusses on breathing. When the body and mind are relaxed, callisthenic actions such as standing, performing right movements, clearing thoughts, and deep breathing improve a person's physical and mental functions significantly. All of these physical activities contribute to overall well-being and the reduction of mental and physical stress. This example demonstrates that practicing Callisthenic exercises can help alleviate depression symptoms.

One of the study's key benefits was that callisthenic exercises are simple to implement, inexpensive, risk-free, and appropriate for all gender groups. We propose additional research with randomised groups, with follow-up assessments at 3 months, 6 months, and 1 year after the treatment program, to explore the long-term effects of callisthenic exercises on students. Callisthenic exercises may also be paired with physiotherapy, which includes strengthening programs such as aerobic and balance exercises, yoga, Pilates, Tai Chi, and Qi Gong exercises.

Implications
Implication of research.
The study's conclusions have a number of ramifications in other fields, which are covered in the section that follows,
- Nursing Education
- Nursing Practice
- Nursing administration

- Nursing research

- **Nursing Education**

The research investigation's conclusions showed that Calisthenic exercises help in reducing the stress level. Hence can be included as co-curricular activity.

The nurse educator can educate the regarding Calisthenic exercises to manage student's stress.

Conferences, workshops, and seminars can help students acquire stress management skills.

- **Nursing Practice**

Calisthenic exercise can be a used as preventive services to deal with stress in handling many patients.

In colleges and hospital small workshops can be arranged to develop the skills of Calisthenic exercise training to deal with day-to-day stressors.

Self-instructional materials about stress reduction can be given to nurses and students

Nurses must be able to teach about stress reduction techniques.

- **Nursing Administration**

Nurse administrator should take efforts to organize a training programme to other health professionals regarding Calisthenic exercise.

Nursing administrator should take initiative to create polices or plan in providing Calisthenic exercise training to the nurses.

Administration in both private and government sectors should have stress-management traits.

- **Nursing Research**

The present study conducted by the investigator can be a source of review of literature for others who are intending to conduct studies on Calisthenic exercise training among nursing students.

All nursing students who practice Calisthenic exercise training they will enhance the standard of living and will be efficient in reducing stress level.

This work will provide significant reference material for future researchers.

Research can be carried out to ascertain the efficiency of callisthenic exercises in reducing stress in the general people and different sectors.

Limitations

The study lacked control group that did not receive any specific techniques to allow testing for reduction of the stress in the samples without use of Calisthenic exercise training.

No broad generalizations could be made due to small size of samples and limited area, as it was limited only for nursing students.

The acquired score was used to determine the stress level.

Recommendations

The study's conclusions led to the following suggestions being made:

For the purpose of drawing broad conclusions, a comparable study conducted over an extended period of time in a big environment with more samples would be more relevant.

To more accurately assess the efficacy of callisthenic exercise training, a quasi-experimental study including two groups—one as the experimental group and the other as the control group—can be carried out.

A comparative study can be conducted to evaluate the effectiveness of Calisthenic exercise training with different stress relieving strategies.

A comparable investigation can be carried out to evaluate the impact of additional complementary therapies on stress.

To determine the long-term impact of callisthenic workouts on stress, a longitudinal study can be conducted.

Hospital staff nurses might be the subject of a comparable study.

REFERENCE
1. Abirami, P. A study to assess the effectiveness of calisthenic exercises in reducing stress among nursing students in a selected college of nursing at Chennai. College of Nursing, Madras Medical College; 2019. Available from http://repository tnmgrmu.ac.in/id/eprint/11656

2. Suryawanshi P. A Study to Evaluate the Effectiveness of Mindfulness movement to overcome the Stress among First Year Nursing students in selected Nursing College, Maharashtra. International Journal of Advances in Nursing Management. 2023; 11(1):69-2. Available from: doi: 10.52711/2454-2652.2023.00015

3. Amol Bhagwat Kanade, Shravan Raut. A study to assess the Mental stress among Nursing Student who failed in university examination and coping strategies utilized by them in selected colleges of Pune city. Int. J. of Advances in Nur. Management. 2020; 8(3):197-203. Available from: doi: 10.5958/2454-2652.2020.00047.5

4. Patil S & Subravgoudar P & Awate S. Effectiveness of 'SO HUM' meditation in reducing the level of stress among the 1st year B.Sc.(N) students in selected college of nursing at Kolhapur. International journal of scientific research. Dec 2022; 11(12): pg.no. 29-30. Available at :10.36106/ijsr/0507018.

5. George B. Julia. Nursing Theories-The basic for professional nursing practice.6th edition. Norwalk; Appleton and Lange. Page no.88-99.

6. Hamid R, Ali SKS, Maliki ABHM, Daud MAKM, Nadzmi A. The Effectiveness of Five Minutes Calisthenic Exercise on Depression, Anxiety and Stress Levels Among Teenagers .2023. Available from: https://www.wizdom.ai/publication/

7. Panchal, G., & Anand, M Effects of Calisthenics Training on Mood and Sleep Quality amongst Students Attending Online Mode of Education. *Journal of Ecophysiology and Occupational Health*, (2022). 22(4), 169–175. Available from: https://doi.org/10.18311/jeoh/2022/31945

8. Suganya, B. Effectiveness of Calisthenics Exercise on Improving the Level of Self Esteem among Elderly People Residing in Selected Old Age Homes at Tirunelveli District. [Sri K Ramachandran Naidu College of Nursing, Thirunelveli]; 2019. Available from: http://repository-tnmgrmu.ac.in/id/eprint/18972

9. Chandra, K. A study to assess the effectiveness of Calisthenics Therapy on shoulder pain and immobility among mastectomy patients admitted in postoperative wards [Thesis (Masters)]. Subramani R, editor. [College of Nursing, Madras Medical College, Chennai.]; 2019. Available from: http://repository-tnmgrmu.ac.in/id/eprint/18877

10. Kanimozhi P, A study to assess the effectiveness of laughter therapy on stress among school teachers in selected schools at Chennai [Thesis (Masters)]. [College of Nursing, Madras Medical College, Chennai.]; 2018. Available from: http://repository-tnmgrmu.ac.in/id/eprint/11659

11. K.N. Kristianingsih MRD. The effectiveness of exercise on the go program to nursing students' physical fitness and quality of life in Bali [Thesis (Masters)]. Rafaela Camacho Bejarano, editor. [ELSEVIER publication, Enfermería Clínica]; 2019. 30; p. 90-4. Available from: https://doi.org/10.1016/j.enfcli.2019.09.029

12. R. Geetha. Effectiveness of Laughter Yoga Exercises on Stress Reduction Due to Online Classes among 1st Year B.Sc. Nursing Students in Mother Teresa College of Nursing, Pudukkottai. www.ijshr.com. International Journal of Science and Healthcare Research; 2021. Available from: https://doi.org/10.52403/ijshr.20210430

13. Sathiyakani S, Dr. K. R. Effectiveness of calisthenics on psychological parameters among alcohol Dependents. International Journal of Current Research. Mar 2019;11(4):3376-83. Available from: https://doi.org/10.24941/ijcr.35073.04.2019

14. P K, Bhardwaj M. Descriptive Study on Academic Stress among Nursing Students of Selected Nursing Colleges at. Mandi. Nursing & Healthcare International Journal. Aug 2020;4(4):01-6. Available from doi: 10.23880/nhij-16000227

15. R Kadganche, A Moharkar.Protocol on Upper and Lower Limb Strength in Medical College Students after 6 Weeks. Acta Scientific Orthopaedics. Jan 2024;7(2):55-7. Available from: https://actascientific.com /ASOR-07-0902.php

16. Solanki PS, Solanki AB. Effectiveness of Calisthenics Training on Lower Body Strength and Endurance among College Students. International Journal of Scientific Development and Research. Jul 2022;7(7):479-82. Available from:

www.ijsdr.org/IJSDR2207066

17. GRECO G. Effects of Combined Exercise Training on Work related Burnout Symptoms and Psychological Stress in the Helping Professionals. Journal of Human Sport and Exercise. Apr 2021;16(2):424–34. Available from: https://doi.org/10.14198/jhse.2021.162.16

18. Kadganche R, Golhar S. Effectiveness of Calisthenics Exercise Sukono RH, Syed Kamaruzaman Syed Ali1. The Effectiveness of Five Minutes Callisthenic Exercise on Depression, Anxiety and Stress Levels among Form Four Students. International Journal of Human Movement and Sports Sciences. Feb 2023;11(2):440–9. Available from: doi: 10.13189/saj.2023.110222

19. B Savita. Effectiveness of calisthenic excercises on self-esteem among old age people. International Journal of Creative Research Thoughts (IJCRT). Mar 2021;9(3):5045–9. Available from: https://www.ijcrt.org/papers/IJCRT2103583

20. Sathiyakani S, Dr.Renuka K. Calisthenics on stress among alcohol dependents. International Journal of Advance Research. Apr 2019;7(4):326–29. Available from: http://dx.doi.org/10.21474/IJAR01/8820

21. Majrashi A, Khalil A, Nagshabandi EA, Majrashi A. Stressors and Coping Strategies among Nursing Students during the COVID-19 Pandemic: Scoping Review. Nurs Rep. 2021 Jun 3;11(2):444-459. Available from: doi: 10.3390/nursrep11020042. PMID: 34968220; PMCID: PMC8608052.

22. Anand, M. P G. Effects of Calisthenics Training on Mood and Sleep Quality amongst Students Attending Online Mode of Education. Journal of Ecophysiology and Occupational Health, 22(4), 169-175.; 2023. Available from: https://doi.org/10.18311/jeoh/2022/31945

23. World Health Organization, World Health Organization, UNAIDS. World health report 2001: Mental health: New understanding, new hope. World Health Organization; 2001 (Herbert, Meixner, Wiebking & Gilg, 2020).

24. Lavoie-Tremblay, M., Sanzone, L., Aubé, T., & Paquet, M. (2022). Sources of stress and coping strategies among undergraduate nursing students across all years. Canadian Journal of Nursing Research, 54(3), 261-271. Available from: https://doi.org/10.1177/08445621211028076

25. Frank J.C., Bharti S. Level of Academic Stress Among B.Sc. Nursing Ist Year Students, Jammu. Int. J. of Advances in Nur. Management. 2022 Jan ; 10(1):57-60. Available at; DOI: 10.52711/2454-2652.2022.00015

26. Homes M, Mahmoud Z, Faten M. Effect of Guided Imagery in Reduction of Stress among Elderly People in Geriatric. American Journal of Nursing Research, 2018 Sept, Vol. 6(6), 380-387 Available online at http://pubs.sciepub.com/ajnr/6/6/5