



Effectiveness Of Taichi Exercises On Quality Of Life And Stress Management Among Junior College Teachers: An Experimental Study .

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Abstract: This study has been undertaken to check the effectiveness of Taichi exercises on quality of life and stress management among junior college by using perceived stress scale and SF-36 questionnaire.

Stress among teachers can have a range of causes, including heavy workloads, lack of support, conflicting demands, high stakes accountability, and challenging students or working conditions. This can lead to physical and mental health problems which can be reduced by Tai chi exercises . Experimental study was performed from Oct 22 to April 23. A convenient sampling technique was applied to select 58 participants.

The Perceived stress scale and SF-36 questionnaire was used to assess stress among junior college teachers. The 36-Item Short Form Health Survey questionnaire (SF-36) is a very popular instrument for evaluating Health-Related Quality of Life.

58 participants were included in the study. Paired T test was done. The result obtained for Tai chi exercises on quality of life and stress management among junior college teachers by perceived stress scale suggests significance as P value obtained was (<0.00001) and T value was (0.05) and by SF-36 suggests significance as P value obtained was (<0.00001) and T value was (25.09).

This study shows that the effectiveness of Taichi exercises is extremely significant on quality of life and stress management among junior college by using perceived stress scale and SF-36 questionnaire.

Keywords – Stress Management, TAI-CHI Exercises, perceived stress scale, Health related quality of life (HRQOL), SF-36.

I. INTRODUCTION

Stress is defined as “an excess of demand made upon the adaptive capabilities of the mind and body” and is seen in the form of physical demand, a mental demand, or both. Teaching in school is a highly stressful occupation ^[1]There were around 42.31% of male teachers and 57.69% of female teachers among the surveyed population with the male to female ratio being 1:1.36.^[1] Health-related quality of life (HRQOL) serves as a comprehensive measure of patient well-being, and it reflects patient perceptions of personal health and life satisfaction over a period of time.^[15] Individuals suffering from mental health conditions are particularly likely to report poor HRQOL.^[15] Health-related quality of life (HRQOL) serves as a comprehensive measure of patient well-being, and it reflects patient perceptions of personal health and life satisfaction over a period of time.^[15] Teachers are being stressed by the workload, the behavior of the pupils lacks promotion prospects, unsatisfactory working conditions, poor relationships with colleagues, pupils, and administrators, and a host of other problems.^[5] The cases of stress suffered by teachers in the schools are often triggered by this situation. The 36-Item Short Form Health Survey questionnaire (SF-36) is a very popular instrument for evaluating Health-Related Quality of Life.^[20]

Tai chi (TC), as it is more commonly known outside of Asia, is an ancient Chinese mind-body exercise that is practiced worldwide by millions of people daily with the belief that it has potent healing effects upon the

practitioner and is a fundamental path for longevity [6] Ryan (1974) described Tai Chi as an exercise, a dance, a method of achieving mental peace and relaxation, and a philosophy of life. [16] Tai Chi also may be thought of as a moving form of yoga and meditation. Compared to some popular exercises, such as walking, jogging, running, or weightlifting, Tai Chi is unique in that it combines the body and mind, and is a low impact exercise. [16] It is purported that TC calms the mind and benefits health. [6] Tai Chi and Qigong have been shown to promote relaxation and decrease sympathetic output. Relaxation interventions are known to reduce clinical somatic symptoms and to benefit anxiety, depression, blood pressure, and recovery from immune mediated diseases. [15] Tai chi is a kind of fitness activity guided by the mind. It combines exercise with static state and is naturally relaxing and calming. At the same time, it is accompanied by breathing exercises. [4]

II. NEED OF STUDY

Stress on the job results in lower productivity and performance, unnecessary employee sick leave, and higher medical cost. The stress does not only affect a company or an organization but also an individual personally [5] How much it affects the organization and the individual heavily depends on to what extent the individual reacts and responds to stress [5]

Stress could negatively influence the quality of life of teachers as well as their teaching performances. [5]

Tai chi helps in bringing about calm and peace of mind. [6] cognitively there are indicators that Tai chi exercises help in improving mood. So, in order to find out better treatment tool to cope with stress among teachers, there is a need to find out the effectiveness of tai chi exercises on HRQOL and stress management among junior college teachers. [6]

The ability of Tai Chi and Qigong to improve HRQOL is an important consideration for treating patients with mental disorders. [15]

III. AIM

Effectiveness of Tai chi exercises on Quality of life and stress management among junior college teachers.

IV. OBJECTIVE

To find out the effectiveness of tai chi exercises on stress management among junior college teachers by using a perceived stress scale over the period of 12 weeks.

To find out the effectiveness of Tai chi exercises on Health-related quality of life among junior college teachers by using SF 36 Scale over the period of 12 weeks.

V. HYPOTHESIS

Null hypothesis (h_0): There will not be a significant effect of TAI CHI exercises perceived stress scale among junior college teachers over the period of 12 weeks.

Experimental hypothesis (h_1): There will be a significant effect of TAICHI exercises perceived stress scale among junior college teachers over the period of 12 weeks.

Null hypothesis (h_0): There will not be a significant effect of TAI CHI exercises SF-36 among junior college teachers over the period of 12 weeks.

Experimental hypothesis (h_1): There will be a significant effect of TAICHI exercises SF-36 among junior college teachers over the period of 12 weeks.

VI. REVIEW OF LITERATURE

Huang J, Wang D, Wang J. (2021)

In their study “clinical evidence of tai chi exercise prescriptions: a systematic review” found that tai chi

exercise prescription is a feasible and effective method for preventing diseases and promoting health. In this systematic review, we summarized tai chi exercise prescriptions for different disease systems and people and recommended the more commonly used tai chi style, cycle, frequency, and time of exercise. Further clinical research on tai chi should be combined with the principles of exercise prescription to conduct large-sample epidemiological studies and long-term prospective follow-up studies to provide more substantive clinical evidence for tai chi exercise prescriptions.

Wen J, Su M (2021)

In their study “a randomized trial of tai chi on preventing hypertension and hyperlipidemia in middle-aged and elderly patients” found that in a small population of middle-aged and elderly subjects, Wu style tai chi could be useful in the management of vital cardiovascular risk factors, such as hypertension and hyperlipidemia. Longer-term studies involving larger clinical samples are necessary to assess the universality of our findings and to deepen our understanding of this promising treatment.

Huang ZG, Feng YH, Li YH, Lv CS. (2017)

In their study “systematic review and meta-analysis: tai chi for preventing falls in older adults” found that tai chi is effective for preventing falls in older adults. The preventive effect is likely to increase with exercise frequency and yang style tai chi seems to be more effective than sun style tai chi.

Cendekia Jurnal Pendidikan Dan Pembelajaran (2015)

In their study “stress management for teachers: reflection on school’s daily activities” found that the effect of stress is varied among the teachers. It is much more dependent on how they view and react toward the stress. Stress is often viewed negatively. It affects people physically and mentally. Consequently, it will lead to low motivation and spirit in the office. For the company or organization it will affect the level of productivity and quality. However, some people also view stress positively. They face stress as a challenge instead of threat. As it is viewed as a challenge, it could even generate more energy in the body to meet the demand placed upon them.

Shuai Zheng (2013)

In their study “the effect of 12 weeks of tai chi practice on anxiety in healthy but stressed people compared to exercise and wait-list comparison groups: a randomized controlled trial” found that TC reduces stress levels in healthy individuals and provides a safer, cost-effective, and less physically vigorous alternative to exercise.

Abbott, Ryan & Lavretsky, Helen. (2013)

In their study “Tai Chi and Qigong for the Treatment and Prevention of Mental Disorders” found that Tai Chi and Qigong are evidence-based approaches to improve health-related quality of life, and they may be effective for a range of physical health conditions. Evidence from randomized controlled trials suggests that

Tai Chi and Qigong may be effective in reducing depressive symptoms, stress, anxiety, and mood disturbances.

Wang, Yong Tai & Taylor, Leslie & Pearl, Marcia & Chang, Li-Shan.(2004)

In their study “Effects of Tai Chi Exercise on Physical and Mental Health of College Students. “Found that Tai Chi exercise had positive effects on the self-assessed physical and mental health of college students. Scores on the mental health dimension appeared to be particularly sensitive to change. Colleges/universities might consider offering Tai Chi as a component of their ongoing physical activity programs available to students.

Sandlund, Erica & Norlander, Torsten. (2000)

In their study “The Effects of Tai Chi Chuan Relaxation and Exercise on Stress Responses and Well-Being an Overview of Research” found that Studies reviewed in this article characterize Tai Chi as a form of moderate exercise. Although Tai Chi may not be suitable for achieving aerobic fitness, it may enhance flexibility and overall psychological well-being. Cognitively, there are indications that Tai Chi exercise may lead to improvements in mood.

VII. METHODOLOGY

- Study Design: Pre-post Experimental study
- Sampling method :Convenient sampling
- Study setting : In and around pune
- Sample Size: 58
- Study Duration: 6 months
- Intervention: 2 times in a week for 12 weeks
- Treatment Time: 60 minutes

VIII. MATERIALS

- Consent form
- Record sheet
- Questionnaire

IX. INCLUSION CRITERIA

- Age between 31 and 50 years of age.^[1]
- ROM for bilateral upper limb, lower limb, and trunk should be normal.
- MMT 3 and above^[9]
- Score on PSS should be more than or equal to 13.
- BMI : normal range i.e.,18 to 24.9kg/m²^[10,11,12]

X. EXCLUSION CRITERIA

- History of orthopedic or neurological disorders related to upper and lower extremities and spine ^[13]
- History of any fractures or recent injuries to upper and lower extremities and spine ^[13]
- Sacroiliac dysfunction and limb length discrepancies.^[13]
- Days of active Menstrual Period (for female participants)^[14]

- Pregnant females^[6]
- Known cases of endocrinal,cardiovascular,respiratory and psychotic illness^[4]
- Undergoing any other treatment protocol.^[6]

XI. PROCEDURE

- The study has begun with the presentation of synopsis and Ethical clearance from the ethical committee of PES Modern College of Physiotherapy.
- Participants were selected accordingly to inclusion and exclusion criteria and were explained about the study.(n=58).
- Consent form were taken from the participants.(n=58).
- Pre-treatment assessment was done by using perceived stress scale and QOL Scale.
- Tai Chi exercise was given for 12 weeks.
- Post treatment was done by using perceived stress scale and QOL Scale
- Data were Collected and statistical analysis was done.

XII.EXERCISE PROTOCOL

24 Forms simplified tai Chi routine(Movement name direction)

Form 1 Commencing Form-South

Form 2 Part the wild horse's mane-East

Form 3 The white crane spreads its wings-East

Form 4 Brush knee and twist step on both sides-East

Form 5 Hand strums the lute-East.

Form 6 Step back and whirl arms on both sides-East

Form 7 Grasp the bird's tail-left side-East.

Form 8 Grasp the bird's tail-right side-West

Form 9 Single whip-East.

Form 10 Wave hands like clouds-left side South

Form 11 Single whip-East

Form 12 High pat on the horse-East

Form 13 Kick with right heel (east by south 30 degrees)-East

Form 14 Strike opponent's ears with both fists-East

Form 15 Turn and kick with left heel (west by north 30 degrees)-West

Form 16 Push down and stand on one leg-left side-West.

Form 17 Push down and stand on one leg-right side-West

Form 18 Work at shuttles on both sides 45 Degrees.

Form 19 Needle at sea bottom-West

Form 20 Flash the arm-West

Form 21 Turn, deflect downward, parry and punch-East

Form 22 Apparent close up-East.

Form 23Cross hands-South

Form 24 Closing form-South



Figure1. Commencing form



figure2. Part the wild horse' mane

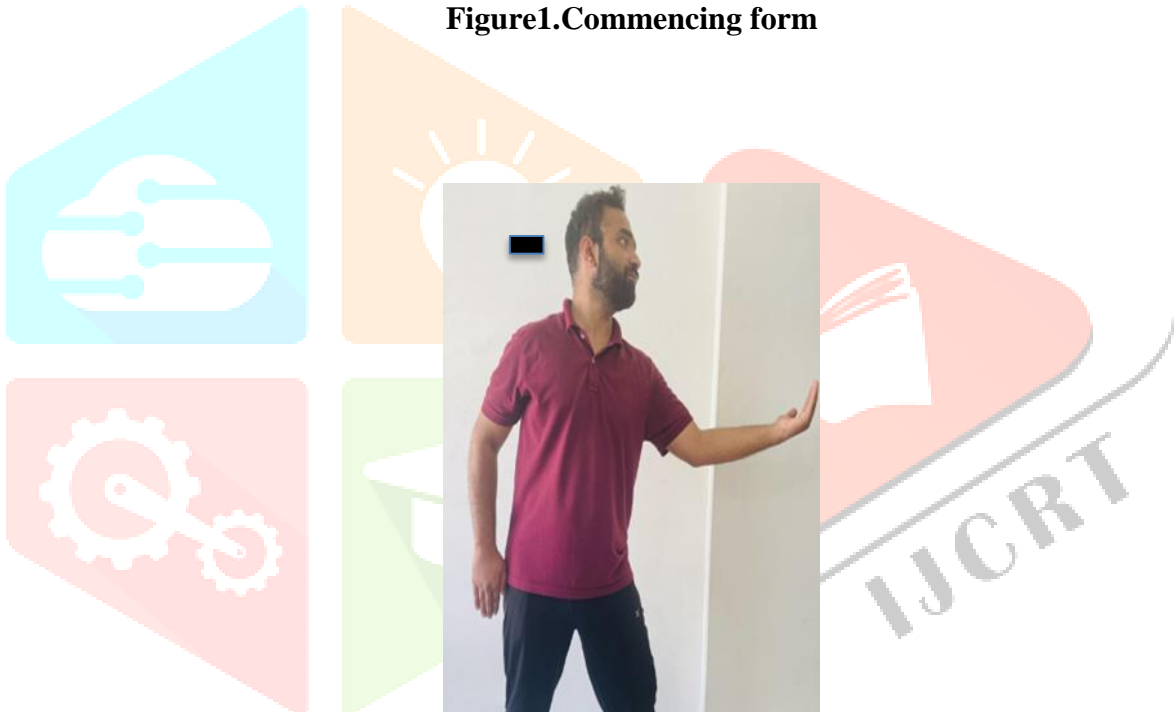




Figure3.The white crane spreads its wings.

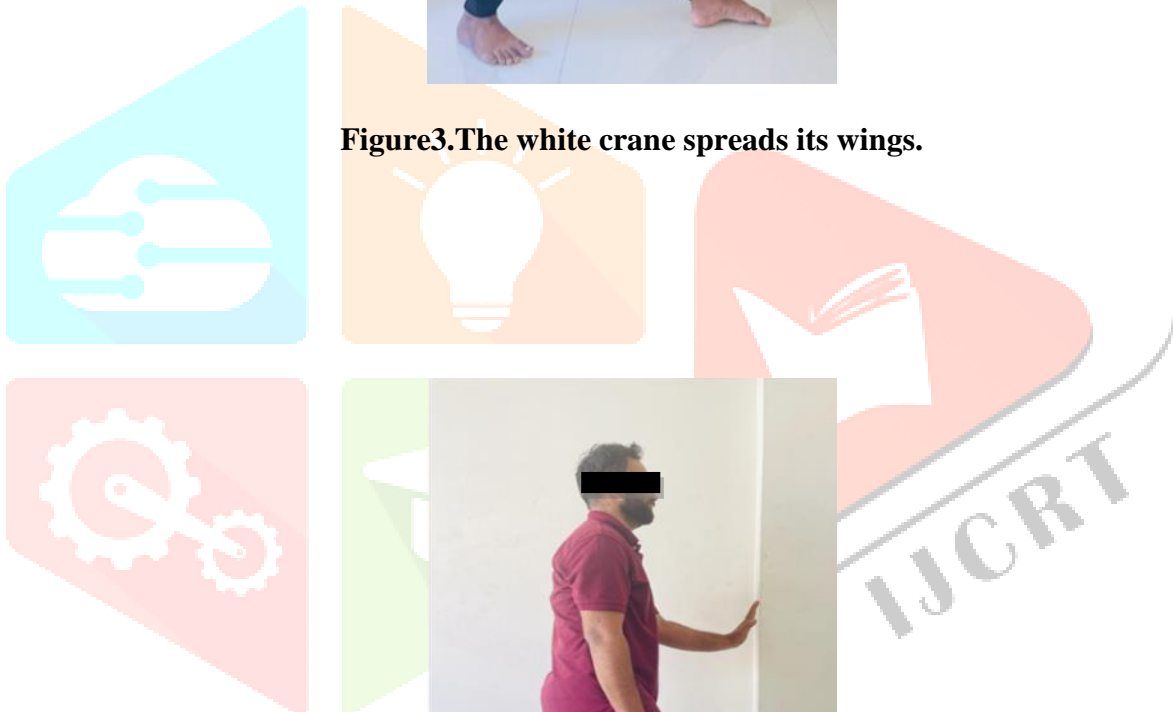


Figure4.Brush knee and twist step on both sides



Figure 5. Hand strums the lute



Figure 6 Step and whirl arms on both sides



Figure 7 Grasp the bird's tail-left side



Figure 8 Grasp the bird's tail -right side



Figure 9 Single whip



Figure 10 Wave hands like clouds



Figure 11 Single whip



Figure 12 High pat on the horse



Figure 13 Kick with right heel



Figure 14 Strike opponent's ears with both fists



Figure 15 Turn and kick with left heel



Figure 16 push down and stand on one leg-left side



Figure 17 push down and stand on one leg-right side



Figure 18 work at shuttles on both side 45 degrees



Figure 19 Needle at sea bottom



Figure 20 Flash the arm



Figure 21 Turn, deflect downward ,parry and punch



Figure 22 Apparent close up



Figure 23 Cross hands



Figure 24 Closing form

EXERCISE PROTOCOL

Week 1 and 2

- 10mins of breathing techniques
- Generalized stretching exercises
- The single Tai-Chi forms of the Tai Chi 24 forms (50mins)

Week 3 and 4

- 10mins of breathing techniques
- Generalized stretching exercises
- Combined single Tai-Chi forms of the Tai Chi 24 forms (50mins)

Week 5 and 12

- 10mins of breathing techniques
- Generalized stretching exercises
- Tai Chi 24 forms (50mins)
- Relaxation techniques

Participants will receive treatment for twice a week on Monday and Wednesday, and make-up sessions will be provided on Thursday and Friday for those who will miss a regularly scheduled practice session^[16]

BREATHING EXERCISES

When you inhale, expand your lower abdominal area—allow it to bulge out a little—and let your abdominal and pelvic floor muscles relax. You should feel a slight pushing out of the right hand. As you exhale, gently contract the pelvic floor muscles and the lower abdomen. Feel the contraction of the muscle with your right hand, keeping the area above your belly button as still as possible. Contract the pelvic floor muscles very gently, so gently that it's almost like you're just thinking about contracting them. Another good way is to imagine that you're bringing pelvic floor just half an inch closer to your belly button. A stronger contraction would move the left hand too much and that would mean involving different groups of muscles therefore not be as effective.^[17] As you inhale and relax the pelvic and lower abdominal muscles, try not to relax them completely but retain approximately 10–20 percent of the contraction. This will allow you to maintain an upright posture and have the right group of muscles ready for the next phase.^[17]

STRETCHING EXERCISES

Each stretch 3-5 times. Six parts of the body—neck, shoulders, spine, hips, knees, and ankles – with two exercises for each body part, starting with the neck, and ending at the ankles and keep your feet shoulder width apart.^[7]

- Head Back
- Head Down
- Turning Head
- Shoulder roll
- Gathering Qi
- Spine turns.
- Stretch spine forward stretch.
- Side stretch
- Kick
- Step forward
- Tapping ankle
- Tap foot with toes.
- Rotation

RELAXATION EXERCISES

- Jacobson’s relaxation techniques for 5-10 mins.

XIII. RESULT

A total of 58 participants of age group 31-50 years volunteered to participate in the study and have completed the 12 weeks of program.

Table No. 1 - Demographic Data

Age wise distribution of subjects in the study

Age	No. of Participants
31-35yr	5
36-40yr	10
41-45yr	18
46-50yr	24

Graph No. 1 - Demographic Data

Age wise distribution of subjects in the study

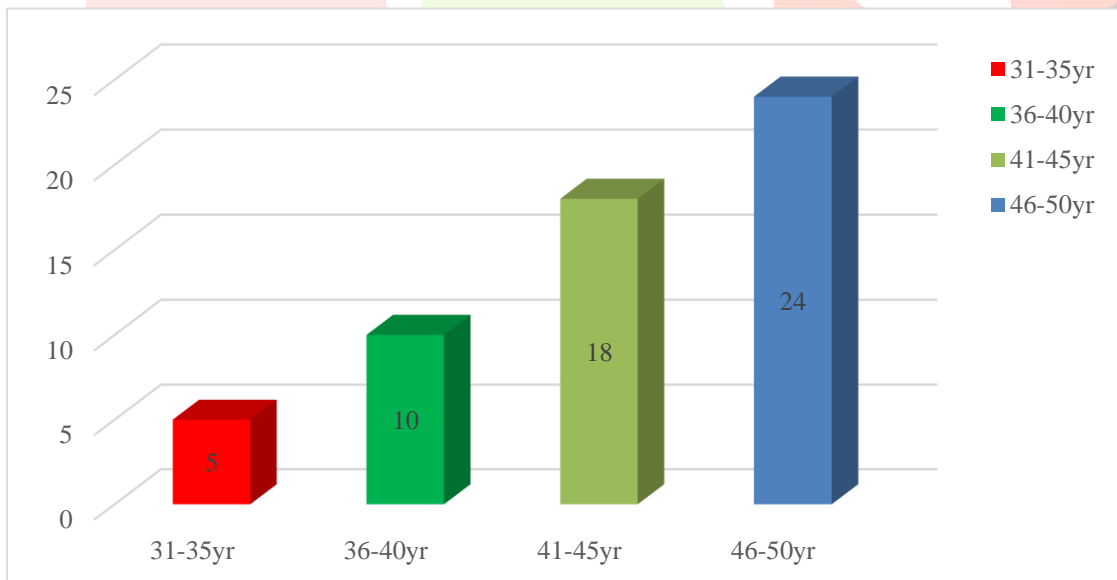


Table No. 2 – Pre and Post treatment scores on Perceived Stress Scale.

Comparing Pre and Post treatment scores on outcome measures Perceived Stress Scale

PARAMETER	PRETEST		POSTTEST		T VALUE	P VALUE	RESULT
PS Scale	MEAN	SD	MEAN	SD	11.618	<0.0001	EXTREMELY SIGNIFICANT
	22.086	4.202	13.431	0.812			

Graph No. 2 – Pre and Post treatment scores on Perceived Stress Scale.

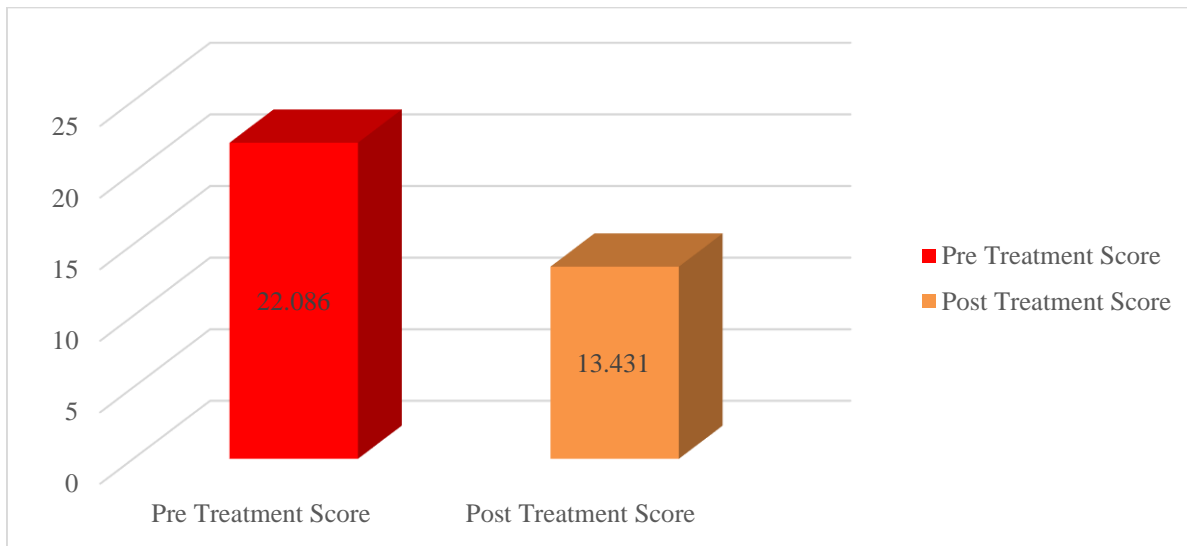


Table No. 3 - Comparing Pre and Post treatment scores of physical functioning on outcome measures sf36.

PARAMETER	PRETEST		POSTTEST		T VALUE	P VALUE	RESULT
sf36	MEAN	SD	MEAN	SD	25.09	<0.0001	EXTREMELY SIGNIFICANT
	29.57%	±16.12	85.95%	±7.86			

Graph No. 3 - Comparing Pre and Post treatment scores of physical functioning on outcome measures sf36.

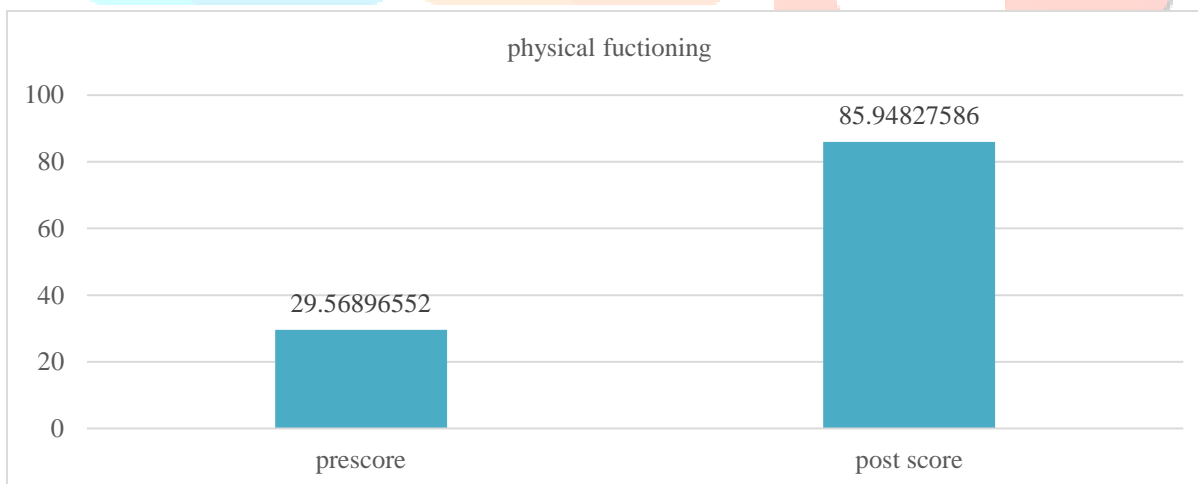


Table No.4 - Comparing Pre and Post treatment scores of physical health on outcome measures sf36.

PARAMETER	PRETEST		POSTTEST		T VALUE	P VALUE	RESULT
sf36	MEAN	SD	MEAN	SD	10.4112	<0.0001	EXTREMELY SIGNIFICANT
	30.60%	±30.72	80.60%	±19.89			

Graph No.4 - Comparing Pre and Post treatment scores of physical health on outcome measures sf36

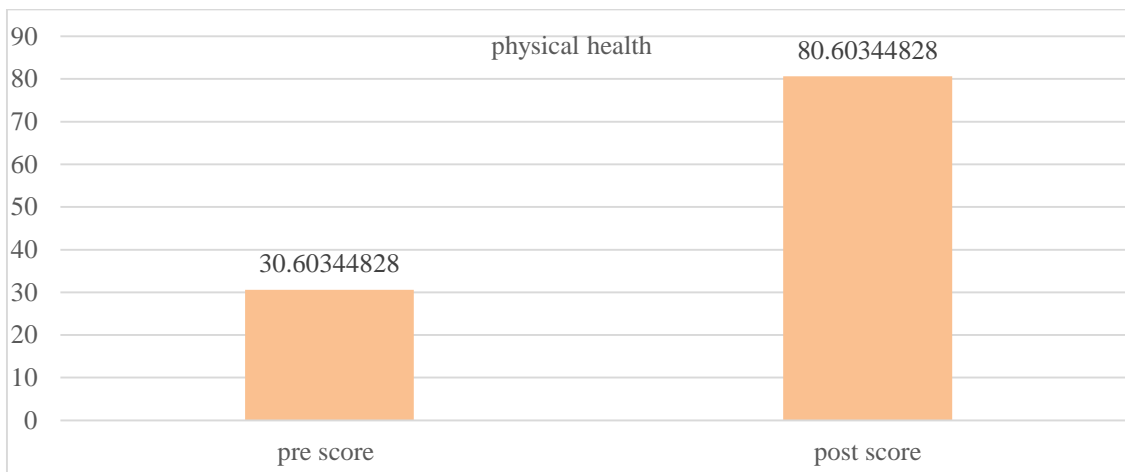


Table No.5 - Comparing Pre and Post treatment scores of emotional problems on outcome measures sf36

PARAMETER	PRETEST		POSTTEST		T VALUE	P VALUE	RESULT
	MEAN	SD	MEAN	SD			
sf36	36.83%	±33.74	84.80%	±21.88	8.76	<0.0001	EXTREMELY SIGNIFICANT

Graph No.5 - Comparing Pre and Post treatment scores of emotional problems on outcome measures sf36

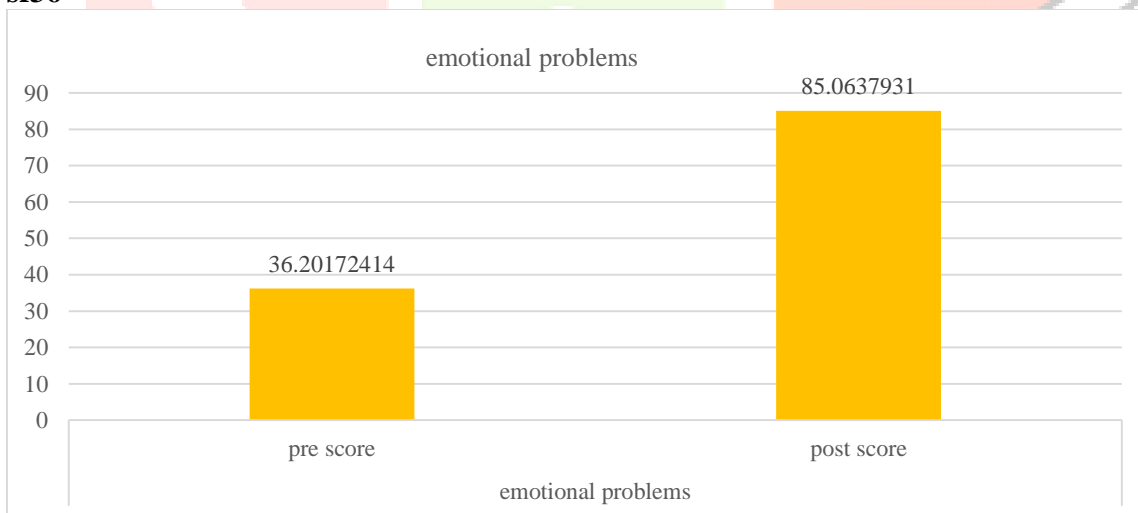


Table No. 6 - Comparing Pre and Post treatment scores of energy/fatigues on outcome measures sf36

PARAMETER	PRETEST		POSTTEST		T VALUE	P VALUE	RESULT
	MEAN	SD	MEAN	SD			
sf36	12.54%	±6.82	89.12%	±6.35	70.57	<0.0001	EXTREMELY SIGNIFICANT

Graph No. 6 - Comparing Pre and Post treatment scores of energy/fatigues on outcome measures sf36

Graph No. 6 -

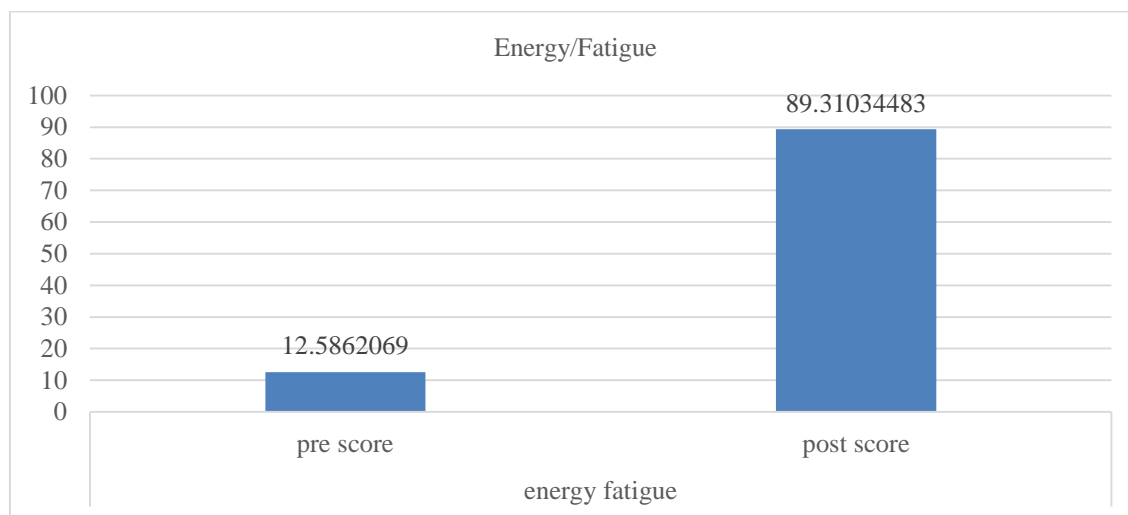
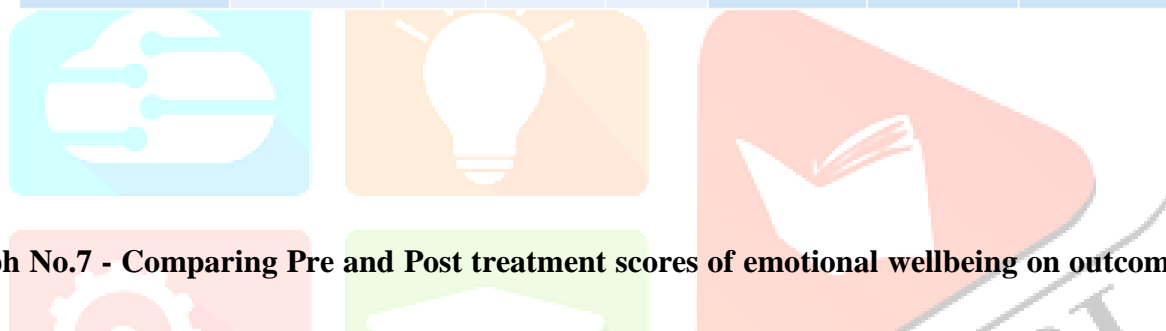


Table No.7 - Comparing Pre and Post treatment scores of emotional wellbeing on outcome measures sf36.

PARAMETER	PRETEST		POSTTEST		T VALUE	P VALUE	RESULT
sf36	MEAN	SD	MEAN	SD	52.61	<0.0001	EXTREMELY SIGNIFICANT
	18.88%	±6.62	88.56%	±8.26			



Graph No.7 - Comparing Pre and Post treatment scores of emotional wellbeing on outcome measures sf36.

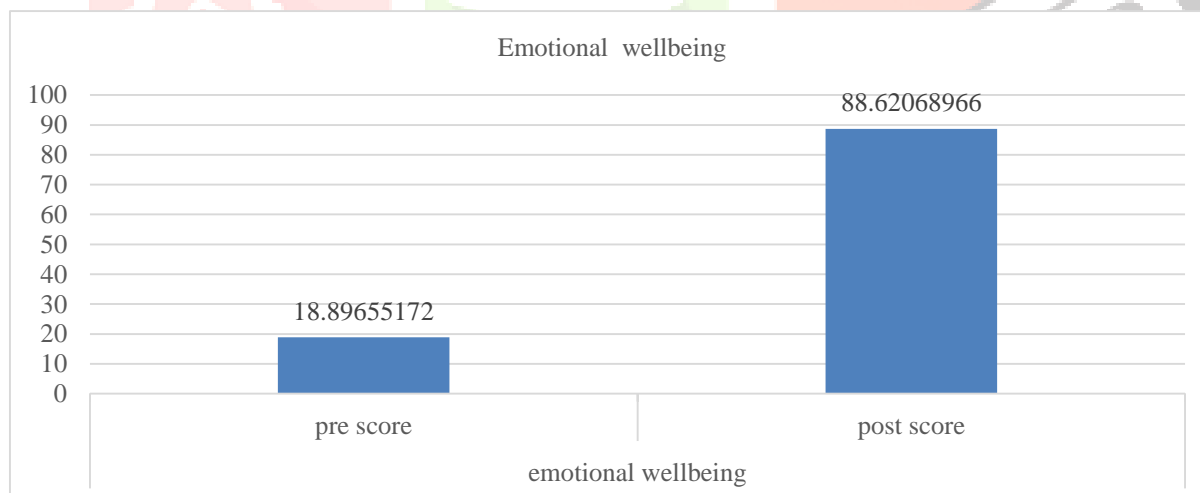


Table No.8 - Comparing Pre and Post treatment scores of social functioning on outcome measures sf36.

PARAMETER	PRETEST		POSTTEST		T VALUE	P VALUE	RESULT
sf36	MEAN	SD	MEAN	SD	13.4368	<0.0001	EXTREMELY SIGNIFICANT
	32.89%	±26.26	82.45%	±15.28			

Graph no.8 - Comparing Pre and Post treatment scores of social functioning on outcome measures sf36.

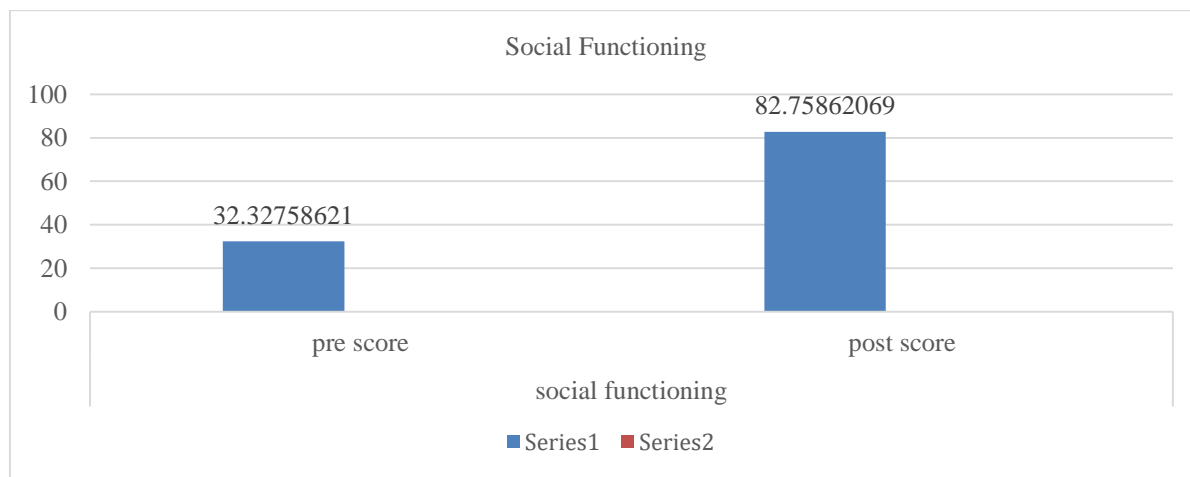
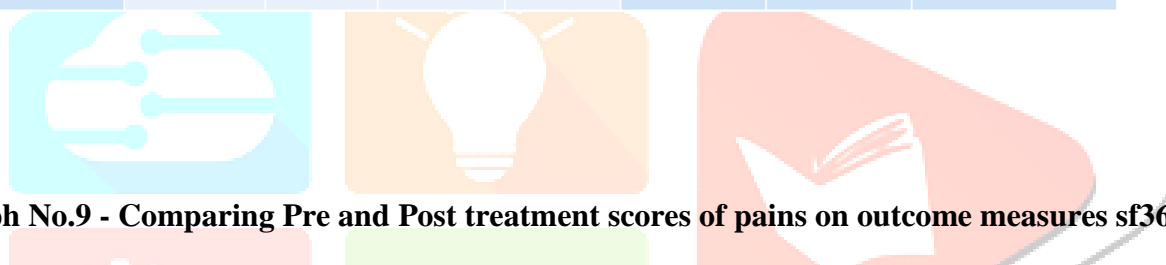


Table No.9 - Comparing Pre and Post treatment scores of pains on outcome measures sf36

PARAMETER	PRETEST		POSTTEST		T VALUE	P VALUE	RESULT
sf36	MEAN	SD	MEAN	SD	15.0148	<0.0001	EXTREMELY SIGNIFICANT
	28.33 %	±17.96	70.57 %	±14.49			



Graph No.9 - Comparing Pre and Post treatment scores of pains on outcome measures sf36

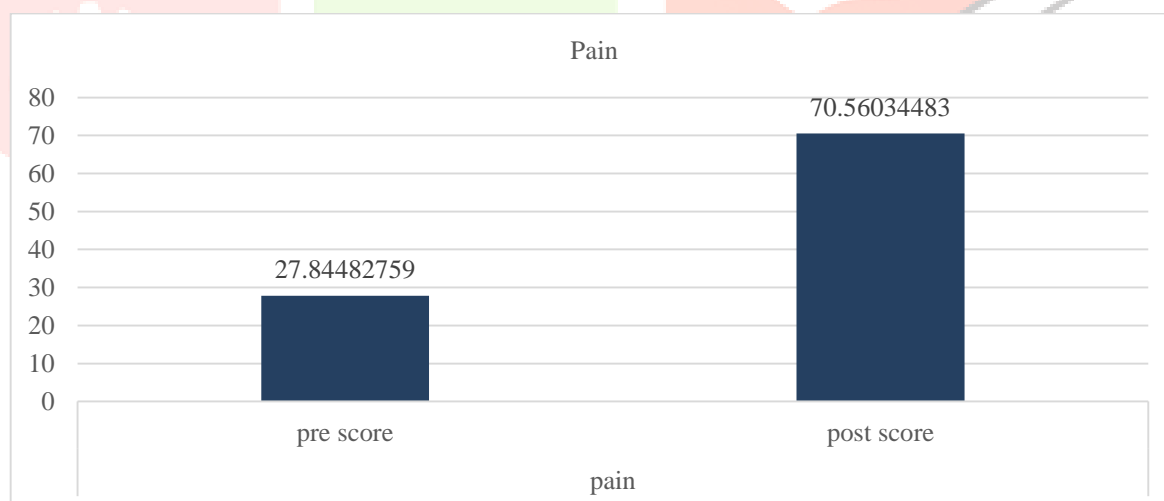
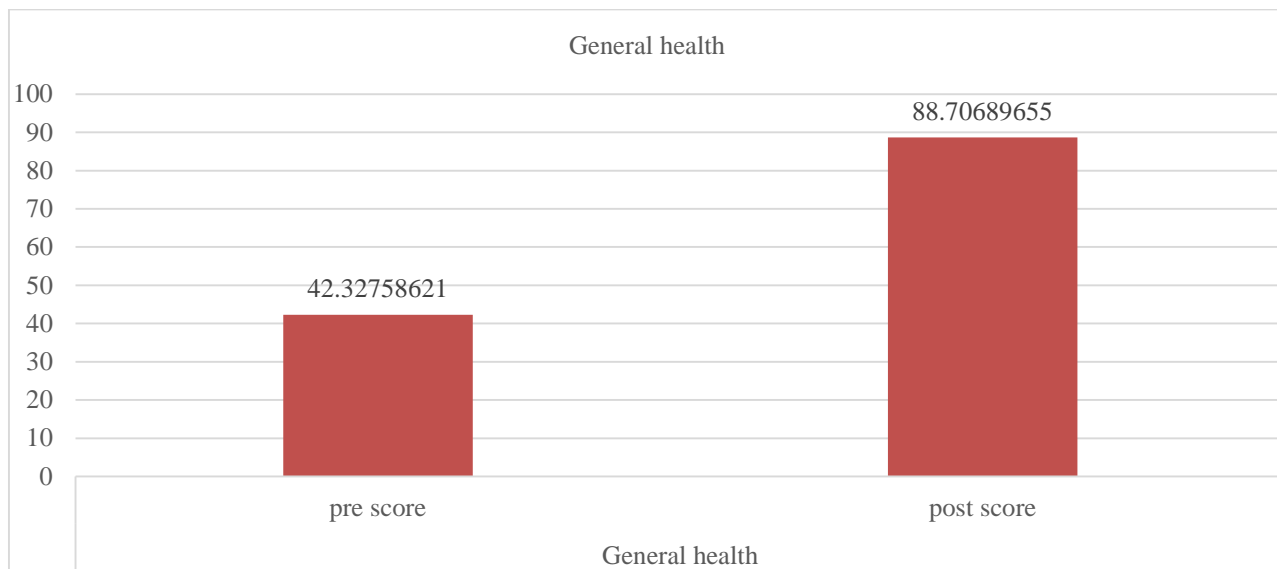


Table No.10 - Comparing Pre and Post treatment scores of general health on outcome measures sf36.

PARAMETER	PRETEST		POSTTEST		T VALUE	P VALUE	RESULT
sf36	MEAN	SD	MEAN	SD	14.2987	<0.0001	EXTREMELY SIGNIFICANT
	42.32 %	±22.08	88.70%	±8.61			

Graph No.10

- Comparing Pre and Post treatment scores of general health on outcome measures sf36.



XIV. DICUSSION

Stress among teachers can have a range of causes, including heavy workloads, lack of support, conflicting demands, high stakes accountability, and challenging students or working conditions. This can lead to physical and mental health problems which can be reduced by Tai chi exercises. The study was undertaken with the intention to compare effectiveness of tai chi exercises on perceived stress scale among junior college teachers. Tai Chi has been shown to increase HRV, which is an indicator of the balance between the sympathetic and parasympathetic nervous systems. A higher HRV is associated with better stress regulation and greater resilience to stress.^[27]

One movement that some people find challenging was "Single Whip". This movement involves shifting your weight from one leg to the other while turning your body and extending your arm, which requires balance, coordination, and strength. Additionally, this movement involves a lot of twisting of the waist and spine, which was challenging for some people. The effects of TCC on emotional health is likely due to the prefrontal cortex hypothesis, the "immune system of the mind" indicating the role of the prefrontal cortex as a flexible hub in regulating an individual's emotional health. TCC practice may also initiate brain feedback tools including meditation, deep breathing, and exercise to improve mental health.^[28] Systematic and regular exercise could improve mental function by increasing blood circulation to the brain, which enhances the availability of glucose and improve the distribution and transportation of oxygen.^[5] The slow, controlled movements of Tai Chi can help to promote relaxation, reduce muscle tension, and increase flexibility. In addition, Tai Chi can also provide a sense of mental clarity and emotional balance, which can be especially beneficial for teachers who may experience high levels of stress and burnout in their jobs. In this study Tai chi exercise proved to be effective for reducing stress after doing it for a period of 12 weeks.

A study by Long Zhang, Charles Layne, Thomas Lowder, Jian Liu, "A Review Focused on the Psychological Effectiveness of Tai Chi on Different Populations" found that the TC provides positive psychological benefits to its practitioners including children, teenagers, young adults, older adults, and those with a variety of chronic health conditions.^[21]

A study by Guichen Li, Hua Yuan, Wei Zhang Found that Tai Chi appears to be safe and has positive effects on health related quality of life in patients with chronic conditions, especially for patients with disorders in Cardio-cerebrovascular and respiratory systems, and musculoskeletal system.^[22]

A study by Fang Wang, Eun-Kyoung Othelia Lee, Taixiang Wu, Herbert Benson, Gregory Fricchione, Weidong Wang, Albert S Yeung found that tai chi interventions have beneficial effects for various populations on a range of psychological well-being measures, including depression, anxiety, general stress management, and exercise self-efficacy.^[23]

A study by Jing Sun 1, Nicholas Buys, Rohan Jayasinghe found that Regular and more than six months Tai Chi exercises had a beneficial effect to HRQoL, reducing psychological distress, promoting resilience, and reducing the BMI and blood pressure level in heart-failure patients.^[24] Tai Chi seems to be beneficial in the management of anxiety, depression, and quality of life, and safe to practice in people with CVD and/or cardiovascular risk factors.^[25] Regular Tai Chi exercise may have positive benefits in terms of improved physical health and mental state among community elderly population and may be useful and feasible body-mind exercise to community elderly population for its positive effects and advantages.^[26]

XV. CONCLUSION

In this study, pretreatment assessment and post treatment assessment showed significant results on Perceived stress scale. The Tai chi exercises proved to be effective for reducing stress after doing it for a period of 12 weeks. Hence, we are accepting alternate hypothesis which states that There was a significant effect of TAI CHI exercises on SF 36 and the perceived stress scale among junior college teachers over the period of 12 weeks.

XVI. LIMITATIONS AND FUTURE SCOPE

It can be further studied on larger population.

Pregnant women can be included in the study.

Tai Chi may also be integrated into workplace wellness programs and stress management workshops.

Tai chi can also be practiced in medical conditions, such as cardiovascular disease, arthritis, and depression.

Tai Chi can be effective in managing chronic pain, including low back pain, neck pain, and fibromyalgia.

Tai Chi can also help to improve mobility, balance, and coordination in people with Parkinson's disease.

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