Zhìnéng qìgōng´s effect on stress and pain levels in retreat participants. Santiago Acutzilapan, Mexico State, Mexico.

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Summary

Stress has become one of the most frequent syndromes in people worldwide. When stress is chronic, it can generate anxiety, depression, and pain, causing changes throughout the body. The objective of this project was to study the effect of intensive zhìnéng qìgōng practice on stress and pain levels in retreat participants. Seventeen people (15 women and 2 men) in the age range of 20 to 74 years practiced zhìnéng qìgōng 7 hours a day for 4 days in a row. Participants reduced levels of perceived stress and pain.

Keywords - Reduction, stress, pain, meditation, zhìnéngqìgōng.

I. Introduction

1. Stress

According to the World Health Organization (OMS, 2023), stress can be defined as "a state of worry or mental tension generated by a difficult situation." It also mentions that, because it is a natural response to threats and some other stimuli, all people present it to some degree, and it is positive when it helps us carry out daily activities.

In this regard, Mora et al. (2020) report that stress is the response that constitutes a defense mechanism and is important for adapting to changes in the environment, both biological and social. Therefore, when faced with a stressor, a set of reactions is activated that involve behavioral, physiological, metabolic, and neuroendocrine responses, which allow us to adapt to new

circumstances. They also mention that, in 1935, Hans Selye called this set of responses as the general adaptation syndrome, describing it in three phases, which are: 1. Alarm. Activated when detecting a stressor, which causes a series of physiological and psychological reactions to prepare the body for maximum energy expenditure; 2. Adaptation. The body reacts to the stressor to activate the fight or running away system; and 3. Exhaustion. Due to the intensity or duration of the stressor, the system depletes its resources.

Stress has many causes, among which we could name personal difficulties, for example, having conflicts with loved ones, loneliness, lack of income, worry about the future; work problems, such as conflicts with colleagues, high levels of demand or job insecurity; or the existence of significant threats in the community, such as violence, disease, and lack of economic opportunities (OMS, 2020).

And when stress becomes excessive it has physical and psychological consequences such as difficulty for relaxing and concentrating, feeling anxious, irritable, difficulty for sleeping, gastric discomfort, alterations in appetite (overeat or fasting), aggravating health problems, increasing tobacco and alcoholic beverages consumption, and other addictive substances (legal and illegal), dizziness, be tired all the time, overweight, feeling overwhelmed, depression, sleep disturbances, sexual dysfunction, deterioration in family, work or social relationships, violence towards others or towards oneself, muscle tension, headache or pain in any other part of the body (OMS, 2023; ISSSTE, 2020).

According to Freire-Garabal (2011), stress has become one of the most frequent syndromes in the world of work and threatens the health of one in five workers in the world (García-Moran and Gil-Lacruz, 2016). In addition to this, when stress is chronic it can increase pain, it can also generate anxiety and depression, which activates the limbic system that induces pain intolerance. Mora and collaborators (2020) mention that pain causes a change in the entire organism.

2. Pain

According to the latest edition of the Dictionary of the Spanish Language of the Royal Spanish Academy, the term pain (Latin etymology dolor-oris) is defined as: "that annoying and afflictive sensation of a part of the body due to internal or external causes" and also as "a feeling, pain or anguish that is suffered in the soul" (Illodo et al., 2017).

For its part, the International Association for the Study of Pain (IASP) defined pain as "an unpleasant sensory and emotional experience, associated with a real or potential tissue injury" (Puebla, 2005).

It is worth mentioning that the IASP has advised the OMS with world experts in chronic pain to carry out a new classification by priority (first, the etiology; second, the pathophysiological mechanism, and third, the anatomical area), likewise, it defines pain separately; primary chronic pain is characterized by functional alteration or emotional stress that cannot be explained by another cause and is presented as a disease in itself; and secondary chronic pain, which is an entity where pain is a symptom of an underlying clinical condition (Margarit, 2019).

Likewise, the IASP defines chronic pain as "pain that persists after the normal healing period has passed" (Cid et al., 2014).

Regarding the way in which pain is produced, Illodo and collaborators (2017, p. 13) mention that it occurs when a number of stimuli reach different cortical areas of the Central Nervous System (CNS) through a normally inactive afferent system, generating a reflex response, an unpleasant sensation and an emotional response that have several components, which are:

The sensory-discriminative component, which refers to strictly sensory qualities of pain (location, quality, intensity, and temporal-spatial characteristics);

The cognitive-evaluative component that analyzes and interprets pain based on what is being felt, and what may happen; and

The affective-emotional component that implies that the painful sensation is accompanied by anxiety, depression, fear, anguish, etc. This component encompasses responses related to previous painful experiences, the individual's personality, and socio-cultural factors.

Pain is a prevalent pathology in the general population and acquires special relevance among the working population due to its socioeconomic implications since it interferes with daily living activities (Vicente-Herrero, 2018).

3. Qì gōng (chikon)

The origins of qìgōng date back thousands of years when the great Chinese masters created methods (specific exercises) with the aim of readjusting the vital processes of the human being (De Ming, 2018). The term **qì** (chi) is the deepest and most fundamental concept of qìgōng. Qì can be defined as the basic substance of the universe, the building block of everything that exists. The word **gōng** (kon)

means work/effort. In this way, qìgōng is a work with the basic substance of the universe (Pang, 1998/1999; Jin, no year).

But, why work with qì? According to qìgōng theories, all diseases are caused by the decrease in qì and/or by an abnormality in the circulation or movement of qì (blockage) in humans. The benefits of constant qìgōng practice are: a) increase in the amount of qì in the body, b) qì blockages release, c) diseases prevention and cure, d) prolonging life, e) intelligence development f) and calms the mind, among others (Ooi, 2010).

In the book “More abundant life, the science of zhìnéng qìgōng principles and practice” the author mentions Zhang Jingyue, an ancient sage of the Ming Dynasty who said: “Man's life depends completely on qì” (Páng 1998/1999, p. 55).

4. Zhìnéng qìgōng (tzi neng)

In 1981, the master and doctor Páng He Ming unveiled a new system of qìgōng called zhìnéng qìgōng, which means working with qì to awaken the wisdom and abilities of the human being (De Ming, 2018). For the creation of zhìnéng qìgōng, Dr. Páng Ming drew on both ancient wisdom and modern scientific knowledge to provide a new understanding of the universe and human beings (Pang, 1994/2013).

5. Scientific research with qìgōng

Various research projects have been carried out in different countries to demonstrate that qìgōng practice reduces depression, anxiety, stress, and pain by improving the mood of practitioners (Phattharasupharerk et al., 2019; Wang et al., 2014; Hwang et al., 2013; Chow et al., 2012; Griffith et al., 2008; Chow and Tsang, 2007).

In 2007, researchers Chow and Tsang measured the reduction of stress and anxiety in 65 healthy adults through qìgōng practice for 12 weeks. The results indicated that changes in the levels of stress and anxiety of the group that practiced qìgōng occurred from the first week. And the improvement in anxiety levels began in the fourth week.

In the project carried out by Griffith and collaborators (2008), the effectiveness of qìgōng practice in reducing stress in hospital staff was studied for 6 weeks. 50 participants practiced 2 days a week in the

hospital for one hour and at home they practiced for 30 minutes. The results showed a difference in the reduction of perceived stress in the experimental group compared to the control group. The authors concluded that short-term exposure to qìgōng was effective in reducing stress in hospital staff.

In 2012, in a new project, Chow and collaborators studied whether the practice of qìgōng would help reduce stress and anxiety, improving the well-being of the body and mind of the participants. Levels of stress, anxiety and depression were measured. Thirty-four healthy adults participated in an 8-week qìgōng program. Their results were compared with thirty-one participants belonging to the control group. In the twelfth week, the qìgōng group had positive changes in levels of stress, anxiety, and depression compared to the control group.

Hwang and collaborators (2013) implemented a stress and anxiety reduction program through the practice of qìgōng in 25 participants as an experimental group. After 4 weeks of intervention, the results were compared with the control group (25 participants). The data obtained showed that, compared to the control group, the group that practiced qìgōng showed decreases in perceived stress and state anxiety scores.

Wang and collaborators (2014) conducted a systematic review and meta-analysis of randomized controlled trials where they concluded that qìgōng practice reduces stress and anxiety in healthy adults.

In Bangkok (2019), Phattharasupharerk and collaborators conducted a study with 72 office workers with chronic nonspecific low back pain. The participants were randomly assigned into two groups: the group that learned qìgōng (experimental group) and the group that was on the waiting list (control group).

The experimental group learned and practiced qìgōng for one hour per week for six weeks at their workstation. The authors indicate that in the group that practiced qìgōng, pain intensity, functional deterioration of the back, range of motion, central muscle strength, heart rate, respiratory rate and mental state were significantly improved, concluding that, Qigōng practice is an option for the treatment of chronic nonspecific low back pain in office workers.

II. Methodology

An intensive zhìnéng qìgōng retreat was held for 4 days in “Rancho el rinconcito, Santiago Acutzilapan, State of Mexico, Mexico”, organized by a Mexican instructor and a Chinese instructor.

One week before the retreat, an informative talk was given to the students explaining the project, answering questions, and handing over the informed consent letter for signature.

The group of students who participated in the retreat was made up of 17 people, of which 15 were women and 2 men in an age range of 20 to 74 years (fig. 1).

Figure 1. Retreat group.

Before starting the retreat, the students answered the Perceived Stress questionnaire and the Brief Questionnaire for the evaluation of pain (fig. 2).

Figure 2. Students answering the stress and pain questionnaires before starting the retreat (baseline measurements).

Measurement tools

1. Perceived Stress Scale (PSS)

This scale is a self-report instrument that evaluates the level of perceived stress during the last month, it consists of 14 items with a response format of a five-point scale. It is important to note the score for each response: In items 1, 2, 3, 8, 11, 12 and 14 (0 = never, 1 = almost never, 2 = occasionally, 3 = often, 4 = very often). In items 4, 5, 6, 7, 9, 10 and 13 (4 = never, 3 = almost never, 2 = occasionally, 1 = often, 0 = very often). The total score of the 14 items is added. The direct score obtained (ranging from 0 to 56) indicates that a higher score corresponds to a higher level of perceived stress. It is said that a moderate stress level fluctuates between 20 and 25; beyond these scores, stress is considered high (Remor and Carrobles, 2001).

2. Brief questionnaire for pain assessment

Defining pain and doing so in such a way that it has unanimous acceptance is complex, since it is an individual and subjective experience, and is accompanied by the perception of a heterogeneous group of nuances and sensations that can increase it (Vicente-Herrero et al., 2018).
Therefore, an important instrument for pain assessment is the pain questionnaire, which collects basic and relevant information about the patient, including their history and current treatment. To do this, the patient is offered a drawing of the human body where they can mark or paint the places where they feel pain (Vicente-Herrero et al., 2018).

After the students answered the measuring instruments, zhìnéng qìgōng instructor Yuan Ming began the meditations, leading most of the sessions at the retreat. The sessions included both theory and practice. The zhìnéng qìgōng methods practiced during the retreat were: the method of gathering qì (fig. 3), the method of wall squats, the method of lifting and pouring qì over the head (fig. 4), and the method of the 3 centers merge (fig. 5).

Figure 3. Students practicing gathering qì.

Figure 4. Students practicing the method to lift and pour the qì over the head.

Figure 5. Students practicing the 3 centers merge method.

Additionally, various experiments were done with zhìnéng qìgōng. These experiments were: cutting and pasting a cucumber (fig. 6), bending a spoon (fig. 7), creating magnetism in pins (fig. 8), and changing the pH of water.

Activities such as sending qì to the food (fig. 9), connecting with nature (fig. 10) and dancing (fig. 11) were also carried out.

Figure 6. Students showing their experiment with cucumber.

Figure 7. Students showing their experiment with the spoon.

Figure 8. Students showing their magnetism experiment.

Figure 9. Students sending qì to the food.

Figure 10. Connecting with nature.

Figure 11. Students dancing.

Zhìnéng qìgōng instructor Citlalli Álvarez translated Master Yuan's sessions from English to Spanish and also led practices and experiments.

The theory, practice of the methods and experiments mentioned above were carried out intensively (7 hours a day) with rest periods, for 4 days.

At the end of the fourth day of the retreat, the students answered the Perceived Stress questionnaire and the Brief Pain Assessment Questionnaire again (fig.12).

Figure 12. Students answering the stress and pain questionnaires at the end of the retreat (final measures).

To analyze the data obtained, the student's t test for related samples was performed.

III. Analysis of results

1. Perceived stress

Of the 17 questionnaires answered, two were left out of the study because they left an option unanswered or placed two answers in the same question; therefore, to obtain results, the data of 15 participants were considered.

The average perceived stress was 22.33 in the pre-test, while in the post-test it was 10.53, that is, the participants considered that stress decreased after the days of zhìnéng qìgōng practice. To assess whether the differences obtained were statistically significant, the *Student t* test for related samples was applied, obtaining t = 4.40, and a value of p = 0.001, this implies that the differences in perceived stress before and after the zhìnéng qìgōng practices are statistically significant.

2. Brief questionnaire for pain assessment

a) Chronic pain

Of the 17 people who responded to the pain assessment questionnaire before the start of the retreat, 14 indicated that they had chronic pain in some part of their body, while 3 indicated that they did not have any chronic pain. The parts with the greatest number of mentions were the knees, the neck or cervical, shoulders, feet, ankles and back.

On a scale from 0 to 10 where 10 is the maximum pain, seven of the participants reported that their maximum pain in the last 24 hours was between 7 and 8 points, while four of them had pain between 3 and 4 points.

At the end of the retreat the same 14 people reported pain, although in fewer parts of the body, they also reported less intensity; When comparing the two measurements, it is observed that the maximum perceived pain, the minimum, the average, and the current pain present statistically significant differences, as seen in Table 1.

Table 1. Baseline and final measures of chronic pain.

Pain	Means		*t*	*df*	*Significance*
	Pre-test	Post-test			
Maximum	5.93	2.93	5.41	13	0.000
Minimum	2.64	0.64	3.37	13	0.005
Medium	4.29	1.79	4.45	13	0.001
Actual	4.07	1.38	3.37	12	0.006

Of the 14 people who reported chronic pain before starting the retreat, 5 indicated that they did not use treatment or medication, 3 used exercise or physical strengthening, 4 took some type of allopathic or homeopathic medication, 1 person used aromatherapy and one more zhìnéng qìgōng.

Furthermore, when participants were asked whether their perceived pain interfered with their general activity, mood, ability to walk, normal work, relationships with other people, sleep, and ability to have fun, greater interference was observed before the workshop than at the end; When obtaining the difference between the means, it was found that these were statistically significant in all cases (Table 2).

Table 2. Baseline and final measures of chronic pain interference.

Pain interference	Means		*t*	*df*	*Sign 2-tails*
	Pre-test	Post-test			
General activity	3.29	0.71	3.44	13	0.004
Mood	4.29	0.21	4.38	13	0.001
Walking ability	2.93	0.64	3.52	13	0.004
Normal work	3.21	0.71	3.61	13	0.003
Relationships with other people	2.86	0.08	2.92	12	0.013
Sleep	2.93	0.71	2.87	13	0.013
Ability to have fun	2.93	0.21	3.68	13	0.003

b) Acute pain

Regarding acute pain, 7 of the 17 participants reported some type of pain prior to the retreat; however, 2 of the 7 reported pain similar to chronic pain, so only 5 participants were considered acute. Of them, the acute pains they reported and that occurred in recent days were headaches, muscle and joint pain, whether due to exercise, fatigue, not sleeping well, or high blood pressure.

At the end of the retreat, only 5 participants reported acute pain, 2 of them due to practicing squats (muscle pain), hand pain, headache and cramps (table 3).

Table 3. Baseline and final measurements of acute pain.

	Maximum	Minimum	Average	Actual
Pre-test	3.80	1.60	2.60	3.60
Post-test	3.00	0.80	1.60	1.60

In relation to the interference of acute pain, it was determined not to obtain the difference between the pain, since it is a pain that in most of the participants was different from that reported before the retreat began (table 4).

Table 4. Baseline and final measures of acute pain interference.

	General activity	Mood	Ability to walk	Normal work	Relation ships	Sleep	Ability to have fun
Pre-test	1.20	1.60	0.40	0.60	1.20	2.00	1.00
Post-test	0.60	0.20	0.60	0.40	0.20	0.80	0.00

IV. Conclusions

In the 4-day intensive zhìnéng qìgōng practice retreat held in the State of Mexico, with 18 students and led by 2 instructors, it was possible to reduce the levels of stress and perceived pain in the participants.

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