



## Research Paper

## Emotional freedom techniques (EFT) to reduce exam anxiety in Turkish nursing students

Pınar Irmak Vural<sup>a,\*</sup>, Gülşah Körpe<sup>a</sup>, Demet Inangil<sup>b</sup><sup>a</sup> Istanbul Medipol University, Health Sciences Faculty, Department of Nursing, Goztepe Atatürk Street No.40 Kavacik Beykoz 34815 Istanbul Turkey<sup>b</sup> University of Health Sciences Hamidiye Faculty of Nursing, Tibbiye Street Uskudar 34668 Istanbul Turkey

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## ABSTRACT

**Introduction:** Nursing education involves among other things tracking the learning process. Many students experience anxiety prior to exams, and they try to cope with it. The purpose of this study was to determine the effects of Emotional Freedom Techniques (EFT) on the reduction of exam anxiety in nursing students in the Women's Health and Diseases Nursing course in Turkey.

**Methods:** In this outcomes study, 80 s-year nursing students participated in three EFT sessions, each consisting of six two-minute parts. The study took an average of 46 min. Pre- and post-treatment measurements included: the socio-demographics of participants, the Beck Anxiety Inventory (BAI), the State-Trait Anxiety Inventory (STAI Tx-1, Tx-2), and the Subjective Units of Distress (SUD) scale. The SUD scale was used before and after sessions. Prior to and following the three sessions, the BAI and the STAI Tx 1 and 2 were administered.

**Results:** EFT significantly reduced exam anxiety. Almost half of the students were using some method of coping with anxiety and the most common methods were listening to music and breathing exercises. However, the initial anxiety level was quite high. State and trait anxiety levels, as well as exam anxiety, decreased, statistically significant, after the EFT sessions. At the end of three sessions of EFT, more than half success was determined in the subjective exam anxiety level.

**Conclusions:** This study showed that three EFT sessions administered in a group setting, reduced and helped them better cope with exam anxiety as well as other anxiety indicators in nursing students.

## 1. Introduction

Exam anxiety is a type of situational anxiety reported to be a common problem among university students [1,2]. It is defined as “a set of phenomenological, physiological and behavioral responses that accompany concern about possible negative consequences of failure on an exam or similar evaluative situation” [3]. Individuals with test anxiety are more prone to reacting with excessive uneasiness (e.g., worrying, emotional and physiological arousal) during evaluative situations such as exams [4]. Anxious individuals suffer from these serious situations and exhibit marked restraining behaviors [5]. Exam anxiety often leads to undesirable physiological and mental symptoms and may negatively influence academic performance [2,6]. Nursing education involves theoretical and practical teaching and learning processes. In most students who attend programs in which progression in skills is constantly evaluated, exam anxiety appears to be a problem requiring

management [7].

Individual or group interventions directed towards psychological and behavioral changes have become popular since the 1980s, and many students have been offered such treatments to reduce anxiety and stress. Among the techniques used are diaphragmatic breathing, meditation sessions, elective lessons and private mentoring, counselling services, and Emotional Freedom Techniques (EFT). Their aim is to improve skills for coping with stress and anxiety [5,8–10,12]. In addition, medications (beta-blockers, benzodiazepines, triazolobenzodiazepines, etc.) can be used to help students cope with anxiety. However, they may jeopardize students' performance in exams due to their adverse effects on the central nervous system. Therefore, their use is not recommended [11].

Energy psychology approaches, which have become increasingly popular in the United States and Europe since the early 1980s, involve a combination of conventional psychotherapy methods with stimulation

**Abbreviations:** EFT, emotional freedom techniques; BAI, Beck Anxiety Inventory; STAI, State-Trait Anxiety Inventory; SUD, Subjective Units of Distress; PTSD, Posttraumatic Stress Disorder; EEG, Electroencephalography

\* Corresponding author.

E-mail addresses: [pinar.irmak@windowslive.com](mailto:pinar.irmak@windowslive.com) (P. Irmak Vural), [gulsahkorpe@outlook.com](mailto:gulsahkorpe@outlook.com) (G. Körpe), [demet.inangil@sbu.edu.tr](mailto:demet.inangil@sbu.edu.tr) (D. Inangil).

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of basic meridian and acupuncture points and energy centres utilized in traditional Chinese medicine to facilitate energy flows in the body. These therapies based on energy psychology are reported to result in an effective change in a very short time [12]. Energy psychology techniques are an alternative treatment for anxiety disorders. The most widely used form of energy psychology is the EFT [13,14]. The basic EFT protocol was published in 1995 by Craig & Fowle (1995) as a simplified form of thought field therapy [15]. In its basic recipe, all twelve points on twelve meridians, energy flow paths in the body, are used and implemented. The manualized, evidence-based expression of the method is defined as clinical EFT [16].

EFT can be safely applied to all age groups, including the elderly, pregnant women, and children. Some of the studies were randomized controlled studies, and positive results were obtained using clinical measurements [17]. EFT can be utilized in many cases, such as addiction, anger, sexuality, anxiety, beliefs, grief, confidence, death, forgiveness, and creativity. It can produce positive effects, and so far, no side effects have been reported [18]. In a meta-analysis, it was found that EFT studies in the clinical area are as effective as cognitive-behavioral therapies in the treatment of depression, posttraumatic stress disorder (PTSD), and anxiety [19–21]. In Patterson's study on nursing students, EFT was found to reduce stress and anxiety levels. Additionally, in their responses to open-ended questions, the students reported lower stress and anxiety levels [22]. Church et al. performed a study on high school students to determine the effect of EFT on the severity of depression and showed that the students who underwent EFT got lower depression scores [23]. In addition, Boath et al. reported that EFT reduced presentation anxiety and boosted academic success [8].

EFT affects individuals' ability to cope with stress or anxiety at the cognitive and energy levels. While individuals are made aware of a disturbing symptom or affliction, selected acupuncture points are tapped at the same time, and as a result, a cognitive transfer and energy release are created. When an emotional stimulus is recalled, the situation causing a problem or a trauma that cannot be healed activates the amygdala and creates a stimulus of threat. Stimulating the selected acupuncture points decreases the stimulus while it remains active in the patient's mind and afterwards sends signals that deactivate it. The hippocampus safely records the activation of a memory or a stimulus without the occurrence of a stress reaction, and the neural pathways initiating the relevant stress reaction change [24]. The benefits of stress reduction are also clearly achievable in more complex disorders involving anxiety as a component. For example, the interplay between pain and psychological distress is well documented. A study of EFT in fibromyalgia patients found that reductions in anxiety accompanied reductions in pain ( $p < 0.05$ ) [25].

Psychological changes may occur very quickly during energy psychology treatments, and they are manifested in the electromagnetic waves of the brain [26]. Some researchers measured changes in electromagnetic waves during energy psychology treatment by using electroencephalography (EEG). As a result, several studies have revealed the following findings supporting the mode of action in EFT: a decrease in brain waves frequencies on EEG in patients with posttraumatic stress disorder, increased theta frequencies, considerable relaxation of the trapezius muscle on electromyography, regulation in the amygdala and other fear processing centers of the brain, considerable decreases in cortisol levels, increased releases of  $\gamma$ -aminobutyric acid and beta-endorphins by regulation of stress reaction through hypothalamus-pituitary-adrenal axis, and positive effects of EFT on epigenetics and gene expression [27,28].

Moreover, as it was mentioned before, it has been shown in the literature that EFT can be utilized for exam anxiety and performance, fear, phobias, sleep problems, stress, depression, academic performance, sports anxiety, learning difficulty, and self-anxiety [8,12,23,24,29–32]. Overall, it can be suggested that university students should be offered courses in which they are taught techniques

that will help them overcome stressors. The aim of this study was to determine the effects of EFT on exam anxiety in Turkish nursing students.

## 2. Methods

### 2.1. Participants

The study was performed on 80 nursing students studying at a university in Istanbul. This study was conducted in the second year students because the inclusion criteria were not taken by the students yet to cope with stress and anxiety on exams, and since the first grade did not start the vocational practice courses yet. In addition, the EFT application with the students was conducted by a certified author on the subject of EFT, which gives Women's Health and Disease Nursing practice course.

The inclusion criteria were as follows: participating in the exam to be held after the EFT sessions (I), not having been diagnosed with any psychiatric disease (II), not having received any course on anxiety and stress coping strategies (III), and volunteering to participate in the study (IV). Once the inclusion criteria were determined, the number of participants eligible for the study was 80. Three students did not participate in the exam, and four students did not volunteer to participate in the study. So, there was a dropout rate of 8%.

### 2.2. Measures

#### 2.2.1. Socio-demographics of participants

This form was developed by the researchers to collect data about the socio-demographic features of the students. It comprised questions about students' gender, age, place of residence during university education, coping strategies, family income, diagnosed psychiatric diseases, use of medications, their relationships with parents, and the place of residence of parents.

#### 2.2.2. The state-trait anxiety inventory (STAI)

The State-Trait Anxiety Inventory (STAI Tx-1 and Tx-2) was used to evaluate the students' state (the temporary condition) and trait (more general and long-standing) anxiety levels [33]. Each test consists of 20 Likert-type questions. The scores from each form range between 20 and 80 without a cut-off point. Higher scores indicate more severe anxiety and stress. Öner and Le Compte investigated reliability (Cronbach's alpha value = 0.93) and validity (Cronbach's alpha value = 0.94) of the Turkish version of STAI [34]. In the present study, Cronbach's alpha value was found to be 0.81 for the STAI Tx-1 and 0.76 for the STAI Tx-2.

#### 2.2.3. The beck anxiety inventory (BAI)

This inventory was developed by Beck et al. in 1988 to measure anxiety symptoms [35]. Individuals were asked to mark to what extent anxiety symptoms listed in the inventory had affected them one week before. The inventory is a four-point Likert scale composed of 21 items (0 corresponds to never, and 3 corresponds to severe). The validity and reliability of the Turkish version were tested by Ulusoy et al. [36]. The lowest and highest scores to be obtained from the inventory are 0 and 63, respectively. Its Cronbach's alpha was found to be 0.89.

#### 2.2.4. The subjective units of distress scale (SUD)

The cognitive element of EFT involves self-rating of distress severity and pairing of an abbreviated exposure statement and a self-acceptance statement. The severity of distress is evaluated by subjects on an 11-point Likert scale. 0 corresponds to absolutely no distress, while 10 corresponds to the maximum possible distress [37]. This is considered as the subjective units of distress scale (SUD) and provides clinicians and patients with the measurement of the severity of symptoms experienced by the latter in addition to a repeated measure by which the

progress of treatment can be evaluated. In the present study, Cronbach's alpha and the correlation coefficient for the SUD scale were found to be 0.95 and 0.90, respectively.

### 2.3. Procedure

Permission was obtained from the Ethics Committee before starting the study. The students included in the study were given information about EFT in a classroom where they gathered to take an exam for the Women's Health and Diseases Nursing Course. Following verbal information about the study by the researchers, written informed consent was obtained from the students. The first author of this study is the lecturer giving this course. Firstly, students volunteered to participate in the study. Next, they individually completed the socio-demographics of participants, BAI, STAI Tx-1, and STAI Tx-2. None of the students was previously diagnosed with psychiatric disease. The EFT sessions were structured to reflect adherence to EFT's basic method as defined in the EFT Manual [16,38]. The EFT basic recipe was provided by the first author, who is certified in EFT. The other author is a psychiatric nurse who continues her doctoral education. The practitioner who would give instructions to the students about EFT firstly did a complete EFT session herself in front of the students. The steps of an EFT session are explained below. Before the students were asked to do the EFT session, they were required to complete the SUD scale. After that, all students in the group started the first EFT session along with the practitioner. After the first EFT session, they were asked to fill in the SUD scale again. This procedure was repeated three times. Each of the treatment sessions lasted approximately two minutes, resulting in a six-minute treatment for intervention. When the EFT sessions ended, the students completed the BAI, STAI Tx-1, and STAI Tx-2 again for the post-test results. The study took an average of 46 min: 5 min for the explanation of the study and for informed consent forms, 10 min for the pre-test application, 15 min for the description of EFT and EFT steps, 6 min for students' EFT sessions, and 10 min for the post-test application. During the EFT sessions, no adverse events were reported. After the procedure, the students took their exam.

#### 2.3.1. EFT tapping: the basic recipe

EFT sessions include several basic steps. While there are different tapping points in Thought Field Therapy, developed by Callahan and adopted by Craig for certain psychological conditions, there are 12 energy points tapped consecutively in EFT to treat all psychological problems (Fig. 1) in what is called the Basic Recipe [39].

The steps below are followed for the implementation of the Basic Recipe:

- 1 Scoring the SUD scale (The client rates the discomfort he/she feels by assigning scores between 0 and 10 on the scale.)
- 2 Set-up involves the following sentence "Despite my exam anxiety, I deeply and completely accept myself."
- 3 Tapping meridian points in a specific order (The points presented in Fig. 1 are tapped.)



Fig. 1. EFT tapping points<sup>40</sup>.

- 4 Nine Gamut procedure (While the gamut point is tapped, some eye movements, humming some tunes, and counting are performed.)
- 5 Tapping meridian points in order is performed again.
- 6 Scoring the discomfort level again to determine a change in the discomfort [39,40].

### 2.4. Data analysis

Obtained data were analyzed by using SPSS 22.0 (SPSS Inc., Chicago, IL, USA). Data analysis methods included descriptive and inferential statistics with non-parametric tests. Statistical significance was set at  $\alpha = 0.05$ . The Mann-Whitney *U* test was used to compare two groups.

### 3. Results

Of the students, 82.5% were female, 67.5% of the students were between 18–20 years, 88.8% of the students were living with their family, and 87.5% of the students were living in a city centre. The parents of 93.8% of the students were living together, and 62.52% of the students had a family income equal to their expenses. 38.8% of the students reported that they used a method for coping with exam anxiety. Of them, 16.3% reported that they preferred listening to music, 7.5% performing breathing exercises, 3.7% thinking about pleasant things, and 2.5% going for a walk. Other students reported that they preferred praying, using medication, going shopping, counting, sleeping, eating something, and crying to cope with exam anxiety (Table 1).

There was a significant difference between the SUD scale scores before the first EFT session and the SUD scale scores after the first EFT session ( $Z = -2.835$ ,  $p = 0.005$ ), the SUD scale scores after the second EFT session ( $Z = -3.118$ ,  $p = 0.002$ ), and the SUD scale scores after the third EFT session ( $Z = -4.085$ ,  $p = 0.000$ ). The SUD scale scores dropped after each EFT session, and a statistically significant difference was found (Table 2).

The differences in scores for the STAI Tx-1 ( $Z = -2.997$ ,  $p = 0.003$ ), and the STAI Tx-2 ( $Z = -3.862$ ,  $p = 0.000$ ) before and after EFT sessions were also significant. BAI mean score was not statistically significant although there was a decrease in post-test mean ( $Z = -0.145$ ,  $p = 0.885$ ). Overall, the anxiety levels of the students decreased after EFT sessions (Table 2).

### 4. Discussion

In the present study, EFT performed by students before an exam was shown to reduce exam anxiety. The mean SUD scale score of the students was  $4.81 \pm 2.19$  out of 10 before EFT, which means that they had moderate anxiety before EFT. Following three EFT sessions, the mean SUD scale score dropped to  $1.98 \pm 1.97$ , which suggests that EFT was quite effective in the reduction of anxiety. A significant reduction in anxiety scores was observed. In addition, the mean scores from the Beck Anxiety Inventory decreased, albeit not significantly, after the EFT sessions. These results may also be indicative of a clear visual presentation of the SUD scale score. Several similar studies have also shown similar results. In addition, Boath et al. reported that EFT reduced presentation anxiety and resulted in greater academic success [8,22,41].

During EFT, individuals were made aware of a disturbing symptom or discomfort. In addition, selected acupuncture points were tapped, and cognitive shift and energetic release were achieved [9]. Both the verbal and somatic components of EFT were required to produce a significant reduction in stress symptoms. The results of a study on college students show that performing the EFT protocol and tapping on the prescribed acupressure points were an effective means of reducing immediate stress [41]. In this research, we did not pay attention to the students' scores from the exam conducted after the EFT treatment since our primary aim was to check the effects of EFT on students' exam

**Table 1**  
Descriptive characteristics of students.

Descriptive Characteristics(n = 80)	N	%
Gender		
Male	14	17.5
Female	66	82.5
Age		
18–20	54	67.5
≥21	26	32.5
Place during his / her university education		
Parents	71	88.8
Student Dormitory	4	5.0
Relative	1	1.2
At home with friends	4	5.0
Annual income		
More than revenue	28	35.0
Equivalent to income revenue	50	62.5
Less than revenue	2	2.5
Family Status		
Living together	75	93.8
Parents Divorced	5	6.2
Lived in		
Province	70	87.5
District	10	12.5
Is there a way of coping with anxiety?		
Yes	31	38.8
No	49	61.2
Methods of coping (n = 31)		
Listening to music	13	16.3
Breathing exercise	6	7.5
Thinking of nice things	3	3.7
Walking	2	2.5
Praying	1	1.3
Medication	1	1.3
Shopping	1	1.3
Counting	1	1.3
Sleeping	1	1.3
Eating	1	1.3
Crying	1	1.3

Note. N: Number of participants.

**Table 2**  
Pre-post Test Analysis of EFT Implementation (n = 80).

Measure	Time	Mean ± SD	Test
SUD scale	Before	4.81 ± 2.19	Z = -2.835
(1 st EFT session)	After	4.05 ± 2.27	p = 0.005
SUD scale	Before	4.05 ± 2.18	Z = -3.118
(2nd EFT session)	After	3.13 ± 2.10	p = 0.002
SUD scale	Before	3.20 ± 2.13	Z = -4.085
(3rd EFT session)	After	1.98 ± 1.97	p = 0.000
Beck Anxiety Inventory	Pre-test	34.71 ± 11.65	Z = -0.145
	Post-test	32.95 ± 7.59	p = 0.885
STAI Form	Pre-test	43.56 ± 10.59	Z = -2.997
Tx-1	Post-test	42.85 ± 8.55	p = 0.003
STAI Form	Pre-test	45.83 ± 6.92	Z = -3.862
Tx-2	Post-test	41.12 ± 8.41	p = 0.000

Note. Z = Mann-Whitney U Test, p < 0.05, SD: Standard Deviation, EFT: Emotional Freedom Techniques, SUD: Subjective Units of Distress Scale, STAI Form Tx-1 and 2: The State-Trait Anxiety Inventory.

anxiety. After all, more factors than just exam anxiety affect academic success. Still, Church (2009) performed a quantitative, randomized-controlled, blind condition study on a sample (n = 26) of athletes to ascertain the effect of EFT on athletic performance, specifically vertical jump height and free throws. The purpose of the study was to examine

if EFT could affect the athletic performance by diminishing anxiety. In addition, Church used the SUD scale to measure participant distress before and after EFT intervention. Per cent change scores were calculated, and the results showed that the EFT group demonstrated a 20.8% improvement in free throws [42].

In this study, the student's state anxiety was shown to reduce. There were significant decreases in STAI I and II scores. Although there was a decrease in BAI mean scores, no statistically significant decrease was found (Table 2). BAI measures the "severity" of anxiety symptoms experienced by the individual. STAI I and II measure an individual's anxiety "level" at a particular time and conditions, while the anxiety scale determines the level of anxiety independent of the individual's circumstances. The study shows that, although the EFT interventions resulted in a significant decrease in anxiety level, they were not effective enough to lead to statistically significant decreases in the severity of anxiety. As a result of the coping mechanism, short-term and long-term outcomes were generated and manifested in the form of improvement of social functioning, morale, and somatic health. As short-term outcomes, we understand positive or negative feelings associated with specific encounters while long-term outcomes represent the cumulative effect of these encounter experiences [22]. This study was designed to improve students' short-term ability to cope with exam anxiety. The lack of long-term follow-up was one of the limits of this study. However, a decrease in trait anxiety levels was spotted (Table 2).

According to the results, teaching EFT to students will make it easier for them to cope with their anxiety. Using this technique, exam anxiety may be reduced, thus affecting the academic performance positively [24]. The review of the Turkish literature yielded only one study that conducted EFT sessions to reduce students' exam anxiety: the author of the study, Sezgin stated that EFT decreased the anxiety level of students and that the anxious and restless behaviors observed in students were relieved. Moreover, students were observed to be more cheerful [12]. The fact that only 38% of the participants in our study had previously attempted to cope with their exam anxiety may be the result of a lack of knowledge of coping strategies. Students participating in this study were second-year students. Therefore, it may be recommended that starting from the first semester, strategies for coping with anxiety should be included in the curricula of departments. In this way, students can learn to cope with exam anxiety and attain a new, increasingly important skill.

#### 4.1. Limitations of the study

The primary limitation to the generalization of the study was the lack of inclusion of a control group. Therefore, we could not compare the results of the EFT sessions. This study was further limited by the lack of follow-up over time. There was no test for any placebo effects, such as rapport, communication skills, or the like. There was also no comparison with other techniques (such as hypnosis). Moreover, there was no objective assessment of the students, with all scores coming from the students' own subjective ratings. Nevertheless, students' comments and authors' observations tended to confirm the validity of the reduced scores. Although there was an immediate effect on the SUD scale, the evidence for long-term effects was not addressed in this study. In a research review, Feinstein stated that in the studies of EFT that included a follow-up assessment, participants maintained their gains, with the duration of rehabilitation assessed between 3 months and 2 years [43]. Since the nursing profession is predominantly preferred by females, the number of males in the sample was significantly low. This represents a selection bias and limits the ability to generalize study results across genders. However, further research should consider the impact of EFT in reducing exam anxiety in male as well as female students. Additionally, only subjective scales were used, and there were not qualitative or physiological measures in this study. Questioning the effect of EFT application with structured qualitative questions could provide more specific and deeper data.

## 5. Conclusion

The aim of this study was to determine the effects of EFT on exam anxiety in nursing students. This study concludes that EFT can be an effective tool in reducing exam anxiety levels of nursing students. However, further research and more comprehensive studies are needed to verify whether these findings are indicative and long-lasting. State and trait anxiety levels were found to decrease in students following the EFT sessions. These results can be considered evidence for the effects of EFT. Other evidence for the effects of this treatment was that the SUD scale scores after one session of EFT were close to those after the next session of EFT. This easy and quick to implement technique seems to be effective in the reduction of anxiety and to help students to cope with anxiety and stress. While until now, many studies have shown that EFT can be used to treat various conditions, there were not many studies which used EFT with university students. Further research is needed, however, before the use of EFT can be recommended for all students in all subject areas at all levels, and long-term studies are recommended for long-term outcomes.

## Declaration of Competing Interest

All authors have no competing financial interests.

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