

# Effectiveness of Some Relaxation Exercises Use by Nurse in Assessment of Vital Signs

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## Abstract

**Objectives:** The objective of this study was to assess the short term effect of relaxation exercise on vital signs measured at baseline.

**Method:** A quasi-experimental design with pre and post-intervention with a group control method. Sixty subjects, divided to study and coronal group measurement of vital signs (Temperature, pulse, respiration and blood pressure) done by researchers, by using a calibrated sphygmomanometer, mercury thermometer, and done of four relaxation exercises include (deep breathing, leg relaxation exercise, arm relaxation exercise, and face muscles relaxation exercise).

**Results:** The findings of research appear there is a significant difference between the study and control sample in vital signs after applied relaxation techniques, and This table reveals the statistical significance and high significance between study and control study for the physical parameter (vital signs) after applied the relaxation technique.

**Conclusions:** The currents study concludes, some relaxation exercises such as (deep breathing, leg relaxation exercise, arm relaxation exercise, and face muscle relaxation exercise) after application for a study group, make a slight alteration in vital signs. And there is no significant association among the control group. The authors recommend the training of the office employees about some relaxation exercises.

**Keywords:** Effect, Nurse, Relaxation Exercise, Vital Signs, Measurement.

## Introduction

The application of relaxation exercise in reduce anxiety and pain relief mentioned in several works of literature and have well resulted in reducing pain, anxiety, and lowering vital signs<sup>1-3</sup>. Regarding surgical intervention, were the highest levels of anxiety and fear, the nurse can play a pivotal role in lowering a patient's vital signs related to anxiety from surgery<sup>4</sup>. Also, Nurses play a role in the adaptive response and rise patient experience to emotional problems before

the surgical procedures which affect blood pressure, pulse, and respiratory rate to be near baseline<sup>2</sup>. On the other hand, patients with maladaptive responses to pain and anxiety can play a negative role not only in need of sedative or opioids drugs but in the length of hospital stay<sup>2,5</sup>. According to literature, there are several unpleasant feelings and discomfort associated with the stressed and anxious patient include muscles tight up such as headache, backache, neck and shoulder pain, instability of breathing, panic, palpitation, tremor, numbness in the hand and the face, as a result, relaxation is the most effective way of how to control the physical and feeling. There are many hormones such as cortisol, glucagon, adrenaline, epinephrine, and norepinephrine are connected with stress as well as there are many

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physiological indicators including blood pressure, heart rate, respiratory rate, and body temperature<sup>6</sup> According to Kim et al. (2016) progressive muscle relaxation exercise creates a positive impression, to reduce the level of stress that evidenced by low blood pressure, slow breathing and decrease heart rate. The ability of people to be relaxed is required to learn, it is skilled more than natural ability. Moreover, relaxation exercise is safe, cost-effective, availability, and easy to nurse to teach the patients in multi health care setting<sup>4</sup>. The current study measures the effects of some relaxation exercise in making a slight alteration in vital signs for persons in the workplace, the use of the inexpensive method is available can make positive effects regarding physiological body changes and can increase productivity.

### Methodology

**Research Hypothesis:** the author hypothesized the most study subjects, have slight changes in vital signs after relaxation exercise practice.

**Design:** Descriptive design study was conducted using a questionnaire to collect data.

**Setting and Data Collection:** Twenty subjects in the college of nursing university of Al-Muthanna who met the inclusion criteria were vital signs measured and intervention of relaxation exercise and after that vital signs were measured.

**Ethical Approval:** This study was approved and permitted by the ethical committee in the college of the Nursing University of Al-Muthanna. The purpose of the study was explained to the participants. Informed consent was reviewed and permitted by the ethical committee in the college of the Nursing University of Al-Muthanna.

**Study sample:** the researchers applied this research on (60) employer office, Instructor, and worker are the population in this study. The target population that provided the sample data is a group of subjects who met the sampling criteria. All subjects with different educational levels were included in this study.

**Instrument:** study instrument includes

**This tool consisted of two parts:**

Part I: Subjects demographics characteristics include: age, gender, level of education, occupation.

Part II: Vital signs measurement before and after relaxation exercise intervention.

**Data Analysis:** The statistics done by the Statistical Package for the Social Sciences (SPSS) version 22 software was used to perform the statistical analysis. By use frequency, percentage, mean, slandered deviation, and dependent and independent t-test.

### Findings

The current findings of 60 clients who participate in this study, were their mean age of the study group 37.90, and the control group was 38.06 mean of age and the majority (30%) was 29-35 years old. Regarding gender distribution, the majority of the study sample was female in the study group (66.7%) and the control group(73%). The quarter 26.7% of the study group was a bachelor's degree and one-third (33.3%) of the control group also bachelor's degree. According to marital status, the most (86.6%) of the study group was married in the same manner the most (93.3%) of the control group also married. Finally, according to the residence, the majority of 66% of the study group was urban, and near two-third (73%) of the control group also residence in the urban area see table (1).

In comparison between study and control groups of vital signs measurement, the study group systolic blood pressure SBP was 114.63 mean of scores and the control group was record 118.63 mean of score SBP readings and have a significant association between study and control groups( $t=-2.379, p = 0.020$ ). The diastolic blood pressure DBP reading for the study group recorded 62.13 mean of the score, and 65.00 mean of scores for the control group, and The single most marked observation to emerge from the data comparison was the significant association between study and control group ( $t=-3.627, p = 0.001$ ). The findings also show the body temperature record 37.06 mean of the score for the study group, and body temperature record 36.13 mean of scores, and there is a significant association between the study and control group post applying relaxation exercise ( $t=-5.470, p= 0.000$ ). It is interesting to note the pulse rate for the study group was 72.90 mean of the score and the pulse rate for the control group was 70.40 mean of the score, and there is a significant association between study and control groups( $t=-2.232, p = 0.001$ ). Finally, the respiratory rate was 14.70 mean of the score for the study group, and

15.83 mean of scores for the control group, and there is a significant association between the study and control group( $t=-3.554, p=0.001$ ) after relaxation exercise applied to see table (2).

The comparison significance of vital signs means of score between pre-application and post-application period for the study group. Current findings show the SBP reading has a significant association between pre/post-test for the study group were ( $t=4.054, p=0.000$ ). Regarding DBP, the findings show a significant

association between before applied period and after an applied period of relaxation exercise were ( $t=2.948, p=0.000$ ). Also, body temperature had a significant association between both pre/post applied relaxation exercises were ( $t= 11.366, p=0.000$ ). According to pulse rate, there is a significance relationship pre/post applied relaxation exercise ( $t=15.031, p=0.000$ ). Regarding the respiratory rate, there is a significant association between pre/post applied relaxation exercise was ( $t=16.858, p=0.000$ ) see table (3).

**Table (1): Distribution of the (60) Diagnostic Clients According to the Demographical Characteristics and Divided to Study and Control.**

Basic Information	Groups	F total	% total	Study group N=30		Control group N=30	
				F	%	F	%
Age groups	≤28	12	20	6	20	6	20
	29-35	18	30	9	30	9	30
	36-42	6	10	3	10	3	10
	43-49	12	20	6	20	6	20
	>50	12	20	6	20	6	20
	Total	60	100	30	100	30	100
	Mean.sd=37.98 ±10.26				Mean.sd= 37.90± 10.39		Mean.sd= 38.06±10.30
Gender	Male	18	30	10	33.3	8	26.7
	Female	42	70	20	66.7	22	73
	Total	60	100	30	100	30	100
Education Level	Primary	8	13.3	4	13.3	4	13.3
	secondary	8	13.3	6	20	2	6.7
	Diploma	9	15	4	13.3	5	16.7
	Bachelor	18	30	8	26.7	10	33.3
	Post-graduation	17	28.3	8	26.7	9	30
	Total	60	100	30	100	30	100
Marital status	Married	54	90	26	86.6	28	93.3
	Single	4	13.3	2	13.3	2	6.7
	Widow	1	3.3	1	6.6	0	16.7
	Divorced	1	3.3	1	6.6	0	13.3
	Total	60	100	30	100	30	100
Resident	Rural	18	30	10	33.3	8	26.7
	Urban	42	70	20	66.7	22	73
	Total	60	100	30	100	30	100

F= frequency; %= percentage; n= total sample; >= more than; ≤ = less than or equal; sd; standard dev.

**Table (2): Comparison between Study and Control Groups' Vital Signs at Post-applied of Relaxation Technique.**

Physical Parameter	Study Group Mean ± Sd.	Control Group Mean ± Sd.	T-test	P. Value	Sig.
Systolic Blood Pressure	114.633 ±7.880	118.6333±4.766	-2.379	0.020	S.
Diastolic Blood Pressure	62.1333 ±1.851	65.000 ±3.912	-3.627	0.001	HS.
Temperature	37.066 +0.583	36.133 +0.730	-5.470	0.000	HS.
Pulse Rate	72.900 ± 4.389	70.400 ± 4.287	-2.232	0.030	S.
Respiration	14.700 ± 1.235	15.833 ± 1.234	-3.554	0.001	HS.

Sig.= Significance, S.=Significant, HS. = highly Significant Sd.= Standard deviation

**Table (3): Comparison between Vital Signs Mean in (Pre and Post) Test to Study Group to Measure the Effectiveness of Applied the Relaxation Technique.**

Physical Parameter	Pre-applied Mean ± Sd.	Post -applied Mean ± Sd.	T-test	P. Value	Sig.
Systolic Blood Pressure	118.6 ±4.825	114.633 ±7.880	4.054	0.000	HS.
Diastolic Blood Pressure	65.1667 +5.298	62.1333 +1.851	2.948	0.000	HS.
Temperature	37.033 +0.639	36.1333 +0.730	11.366	0.000	HS.
Pulse Rate	72.966 +4. 468	70.400 +4.287	15.031	0.000	HS.
Respiration	15.866 +1.166	14.700 +1.235	16.858	0.000	HS.

Sig.= Significance, S.=Significant, HS. = highly Significant Sd.= Standard deviation

## Discussion

The current findings of 60 participants showed, according to SBP, there is a significant association 0.02 between the study group were the mean of score 114.6, and the standard deviation was 7.88. these results agree with the study done on preeclampsia primiparous women, the authors implement two types of exercise on two groups of preeclampsia woman and the found a significant association between the systolic and diastolic blood pressure reading in pre-intervention and post-

intervention and there is no significant association in the control group [7]. These reflect the importance of relaxation exercise in reducing blood pressure (see table 2,3) This result of the study is similar with the article explained most people seeking medical attention for decreased blood pressure with muscle relaxation in various age group [8] and Maria et al, (2016) indicated that Simple yoga exercises (as relaxation exercises) may be useful as a supplementary hypertension therapy in addition to medical treatment (9). Regarding temperature reading, the findings show the significance association

0.000, of body temperature, reading between pre relaxation exercise intervention  $37.066 \pm 0.583$ , and post-intervention  $36.133 \pm 0.730$ , in comparison with pre-application of relaxation exercise for both study and control groups. These results come along with Ismansyah et al. they found the muscles relaxation have greatest effects on the body temperature in contrast with slow breathing intervention<sup>[10]</sup>. According to the pulse rate record, the results of the study show the significance association 0.030 between study group  $72.900 \pm 4.389$  and the control group  $70.400 \pm 4.287$ , and the authors notice a slight alteration in pulse rate nearly two beats. On the other hand, there is no significant association between the study and control group before the application of relaxation exercise. These results are supported by Sahin & Basak were they found that can intervene progressive relaxation exercise as nursing interventions to increase patients' satisfaction and positively affect vital signs in patients who undergo surgery with spinal anesthesia there is a significant association between study and control groups post- applied of progressive relaxation exercise. The importance of Sahin and Basak is evidence of the effects of relaxation exercise not only in reality but also in the virtual environment, so the current authors ensure the application of the relaxation exercise in a real environment. Finally, the respiratory rate also has light alteration after application of relaxation exercise where the p-value was 0.001 and the study group  $14.700 \pm 1.235$  and the control group was  $15.833 \pm 1.234$  and there is no significant association between study and control groups before relaxation exercise application<sup>[11]</sup>. These results come in the line with Hameed et al, and Chatterjee, & Mukherjee, they found the significant differences in the experimental group after they applied muscle relaxation exercise and music therapy<sup>[12&13]</sup>. The authors found the role of relaxation exercise to make a slight alteration in vital signs and especially in respiratory rate. Music as relaxation technique used to patients hospitalized in a hospice environment, they found this relaxation technique effect on vital parameters such as blood pressure, heart rate and oxygen saturation<sup>[14]</sup>. The result of this study similar the research done by Saritaş and Araç, (2016) explained the effectiveness of some relaxation therapy on vital signs (decrease in pulse values, systolic blood pressure value and diastolic blood pressure) and pointed the effectiveness of some relaxation therapy increase the oxygen saturation rate of patients in

surgical intensive care unit<sup>[15]</sup>.

## Conclusions

The current study concludes, some relaxation exercises such as (deep breathing, leg relaxation exercise, arm relaxation exercise, and face muscle relaxation exercise) after application for a study group, make a slight alteration in vital signs. And there is no significant association among the control group. The authors recommend the training of the office employees about some relaxation exercises:

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**Conflict of interest:** None to declare.

**Ethical Clearance:** All experimental protocols were approved under the Adult of Nursing Department and all experiments were carried out in accordance with approved guidelines.

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