

**Official Title of the study:** Effect of breathing exercise on some physiological parameters, sleep quality and vitality in elderly.

**NCT number:** not yet have

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## **Study population and sample**

The population of the study consists of 294 individuals living in the 75th Year Nursing Home Elderly Care and Rehabilitation Center affiliated to Ankara Provincial Directorate of Family and Social Policies. In the sample calculation of the study, taking into account the results of similar studies in the literature with the GPower 3.1.9.4 program, it was calculated that it would be sufficient to take a total of 52 individuals, with a margin of error of 0.05, 80% test power, 26 elderly individuals per group. Considering that such studies may be lost in the process, 20% of the minimum sample number (11 individuals) was added to the study in order not to decrease the statistical power of the research. A total of 32 elderly individuals in the intervention group and 31 elderly individuals in the control group were planned.

Stratified randomization method will be used in the research. Elderly individuals who meet the inclusion criteria will be separated into layers by considering the age (65-74 years -75 years and older) and gender (women-men) after the pre-test data are obtained, and then by simple randomization method using SPSS program in computer environment. will be assigned to the intervention and control groups.

## **Data collection tools**

Research data will be obtained by using the data collection tools mentioned below.

- Introductory Information Form
- Pittsburg Sleep Quality Index (PSQI)
- Subjective Vitality Scale (SVS)
- Physiological Parameters Evaluation Form

### *Introductory information form*

The form was created by the researcher by examining the related literature. In this form, there are 9 closed-ended questions that question the socio-demographic characteristics, health conditions and habits of the elderly.

### *Pittsburg sleep quality index (PSQI)*

Pittsburg Sleep Quality Index (PSQI) was developed by Buysse et al. In 1989 and its adaptation to Turkish, validity and reliability study was done by Ararın et al. The scale that determines the quality of sleep consists of 18 self-report questions and evaluates the quality of sleep in the last 4 weeks. PSQI has 7 components such as subjective sleep quality, sleep latency, sleep duration, habitual sleep effectiveness, sleep disturbance, use of sleep medication, daytime dysfunction and each component is evaluated between 0 and 3 points. The total score ranges from 0-21. The total score higher than 5 indicates that the sleep quality is bad. The sensitivity of the scale was 89.6%, and its selectivity was 86.5%. Cronbach internal consistency coefficient of the scale is 0.80 in the Turkish validity and reliability study and later studies.

#### *Subjective vitality scale (SVS)*

Subjective Vitality Scale (SVS) The scale was developed by Ryan and Frederick in 1997, and its validity and reliability study was performed by Uysal et al. (2014). It is a 7-point Likert (1 absolutely disagree-7 strongly agree) measurement tool based on self-report, consisting of 7 items. By collecting the points of all items in the scale, the total subjective fitness score of the individual can be obtained. The second item of the scale is reversed. The scale in the scale ranges from 7 to 49. High scores obtained from the scale indicate that the individual's subjective fitness level is high. Cronbach internal consistency coefficient of the scale is 0.87. The test-retest correlation coefficient was found to be 0.79. In the explanatory factor analysis applied for the construct validity of the scale, it was determined that the items were collected in one factor and the single factor model explained 62% of the total variance. Confirmation factor analysis result fit index values  $\chi^2 = 19.95$ ,  $sd = 8$ ; RMSEA = 0.08, AGFI = 0.93, GFI = 0.97, NFI = 0.98.

#### *Physiological parameters evaluation form*

As physiological parameters;

- It is a form prepared by the researcher to evaluate lung functions. In this form; forced vital capacity (FVC), air volume removed in the 1st.second of forced expiration (FEV1), FEV1 / FVC ratio and percentages
- In the form created to evaluate cardiological functions; heart rate, blood pressure, heart rate, oxygen saturation are forms to evaluate and record.

Cardiac functions will be evaluated using a manual sphygmomanometer and a pulse oximeter, while pulmonary functions will be assessed by a physiotherapist using a spirometer.

### **Dependent variables**

Respiratory function test results, systolic / diastolic pressure, heart rate and oxygen saturation, the score obtained in the Pittsburg Sleep Quality Index, and the Subjective Vitality Scale are dependent variables of the study.

### **Independent variable**

The breathing exercise program is the independent variable of the study.

### **Evaluation of the data**

The data will be evaluated using SPSS (Statistical Package for Social Sciences) 16.0 package program. For descriptive statistics, frequency, percentage values, average and standard deviation will be used. Chi-square test will be used for categorical comparisons. In the statistical evaluation of quantitative variables, the compatibility of the data with the normal distribution will be examined with the Kolmogorov Smirnov test. If the data are suitable for normal distribution, whether the Pittsburg Sleep Quality Index score, Subjective Fitness Scale score, pulmonary function test results, systolic / diastolic pressure, heart rate and oxygen saturation values change between the intervention and control groups before and after respiratory exercise, the significance of the difference between the two partners is important. Intra-group change will be evaluated by t-test in dependent groups and two-way analysis of variance in repeated measurements of groups. The level of significance will be taken as  $p < 0.05$ . The effect size will be determined by Cohen's d value. In general, if the d value is less than 0.2, it is defined as a weak effect, medium if 0.5, and strong if it is greater than 0.8. In the evaluation of bidirectional variance analysis, partial eta square ( $\eta^2$ ) will be used as the effect value. Generally, if the value of  $\eta^2$  is less than 0.01, the effect size is weak, it is defined as medium if it is 0.060, and strong if it is greater than 0.140.

In order to prevent bias in the evaluation of the data, the data recorded in the database will be analyzed by a statistical expert independent of the researcher. The data will be sent to the statistical specialist by coding as "Group 1" and "Group 2", without specifying the name of the intervention and control groups.