European Journal of Molecular & Clinical Medicine
ISSN 2515-8260 Volume 7, Issue 11, 2020

Effect Of Strelnikova Exercise On Respiratory Parameters Among Children With LRTI In Selected Hospital Bhubaneswar.

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Abstract :Background: Children of all ages may be diagnosed with acute infections of the lower respiratory tract. It renders to occur mostly in younger children. Childhood respiratory problems include asthma, bronchitis and pneumonia. It is believed that breathing exercises strengthen the lung capacity and maintain a normal breathing pattern. Objectives: The objectives of the study were to assess the respiratory parameter of children with LRTI before & after strelnikova breathing exercises and secondly to determine the effect of strelnikova breathing exercises. Material & Method: Quasi-experimental research design was used for strelnikova breathing exercises on respiratory parameters of children with LRTI admitted in the pediatric ward at IMS & Sum Hospital, Bhubaneswar. The non-probability purposive sampling method was being used to choose 60sample. The Procedure was showed to the experimental group for 10 - 15 minutes for five days and was given twice in a day. There was no intervention for the control group. The study was conducted for one month .patients of both gender of age group 5-12 year selected and critically ill with ventilator patients was excluded. Result & conclusion: Data were analyzed by using descriptive and inferential statistics. The findings for post-test was obtained in experimental & control group were respiratory rate ($t_{58=}$9.50, p<0.0001), breath sounds ($t=_{58}$2.21, p<0.03), &oxygen saturations ($t_{58=}$5.99, p<0.0001) respectively which was statistically significant in respiratory parameters. The pretest and posttest findings were for respiratory rate ($t_{29=}$1.21, p>0.23),breath sounds (t_{29}=0.36 ,p>0.71),& oxygen saturation (t_{29}=3.06,p<0.004) which was statistically not significant .

Keywords: Strelnikova exercise, children, respiratory parameters, LRTI

INTRODUCTION

Children of all ages may be diagnosed with acute infections of the lower respiratory tract. It renders to occur mostly in younger children.[1] Childhood respiratory infections are included asthma, bronchitis, and pneumonia. It is believed that breathing exercises strengthen the lung capacity and maintain normal breathing pattern.[2] Pneumonia and bronchiolitis are the most common types of LRTI in children. Pneumonia accounts for most of the deaths in children < 5 years of age. The present study was undertaken to understand the various types of LRTI in children less than 12 years of age.[3]Children with LRTI may anxious and feel uncomfortable with increased chances of allergic reaction, not able to do normal activities. They required frequent hospitalization and this interference may disturb family life and cause school absenteeism. [4] Self-management programs were intended to develop the concept of "partnership" between physicians, health teams, child and family, and to teach children the skills necessary to manage lower respiratory tract infections such as asthma and another airway disease at home.

Strelnikova breathing exercise is a kind of exercise which will reduce the respiratory symptoms and improve the gas exchange of the lungs.[5]

OBJECTIVE

1. Assessing the level of respiratory parameter before strelnikova breathing exercise among children.
2. Assessing the level of respiratory parameter after strelnikova breathing exercise among children.
3. To evaluate the effect of strelnikova breathing exercises in both the experimental and control group.

MATERIAL AND METHOD

A quasi-experimental research design was used with pretest post control design. The study was conducted in IMS & SUM Hospital in Bhubaneswar, Odisha. 60 samples were selected for this study where 30 samples belonged to the experimental group and30sample belonged to the control group. The study was conducted for one month for data collection and intervention. This study included patients of both gender of age group 5-12 years and who understood Odia, Hindi, and English and critically ill ventilated patients were excluded in this study. The written consent was taken from all the parents of participants in the hospital. Two self-structure tools were developed: Demographic data was collected through a structured questionnaire with eight items. Secondly, Self –structured observational checklist for assessing respiratory parameters such as respiration rate, breath sound & oxygen saturation respectively. Both the tools were Validated and modified by the experts before data collection. Interrater reliability was applied and it was calculated to be 0.85 which was acceptable. The study was done in three phases. In the first phase, the researcher has assessed the respiratory parameters which include respiration rate, abnormal breath sounds, and oxygen saturation by using, observation, auscultation & pulse oximeter respectively. Second phase, Strelnikova breathing exercise was showed to children and their family members and helped them to do the exercises for 30 minutes in the morning, afternoon, and evening for 5 consecutive days in the experimental group. The child was under observation of the investigator in every session in the presence of family members. The existing daily hospital routine was carried for the control group. Post-test was done after 5th day of intervention to assess respiratory parameters measured by observation auscultation & oximeter for both groups.

Procedure:

The first three exercises are warm-up.

1. Turns of the head to the right and left. For each turn – a quick breath through the nose.
2. Tilts the head to the right and left. A sharp breath at the end of each movement.
3. Tilts the head back and forth. For each slope – a sharp breath.
4. The reduction of hands in front of the chest towards each other. The right hand alternately from above to below.
5. Springy forward bends with small amplitude, as when working with a pump. Quick breath at the end of the slopes.
6. Tilts back with leading hands in front of the chest.
7. Spring squat in the lunges with the information lowered: to the sides of the arms. Inhale at the extreme point of the squat.
8. Tilts back and forth. Breathe in every move.

All these exercises are divided into five -day courses twice a day.

Result

The demographic data were expressed in terms of graphs.

Frequency and percentage distribution of socio-demographic variables through graphical presentation.

N=n1+n2=30+30

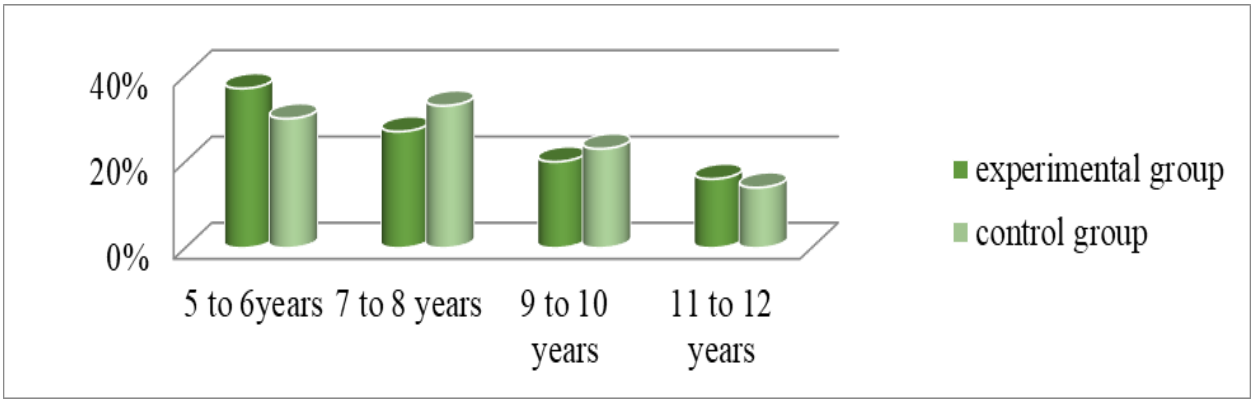

Figure 1. Column diagram showing distribution of sample according to their age.

The above diagram showed that 37% sample were in 5-6years of age, 27% were in 7-8 year, 20% belonged to 9-10 years and 16% sample belonged to 11-12years in experimental group .33%sample were belonged to 7-8 years of age, 30% samples belonged to 5-6 years, 23% belonged to 9-10 years and 14%sample belonged to 11-12 years of age in the control group.

N=n1+n2=30+30

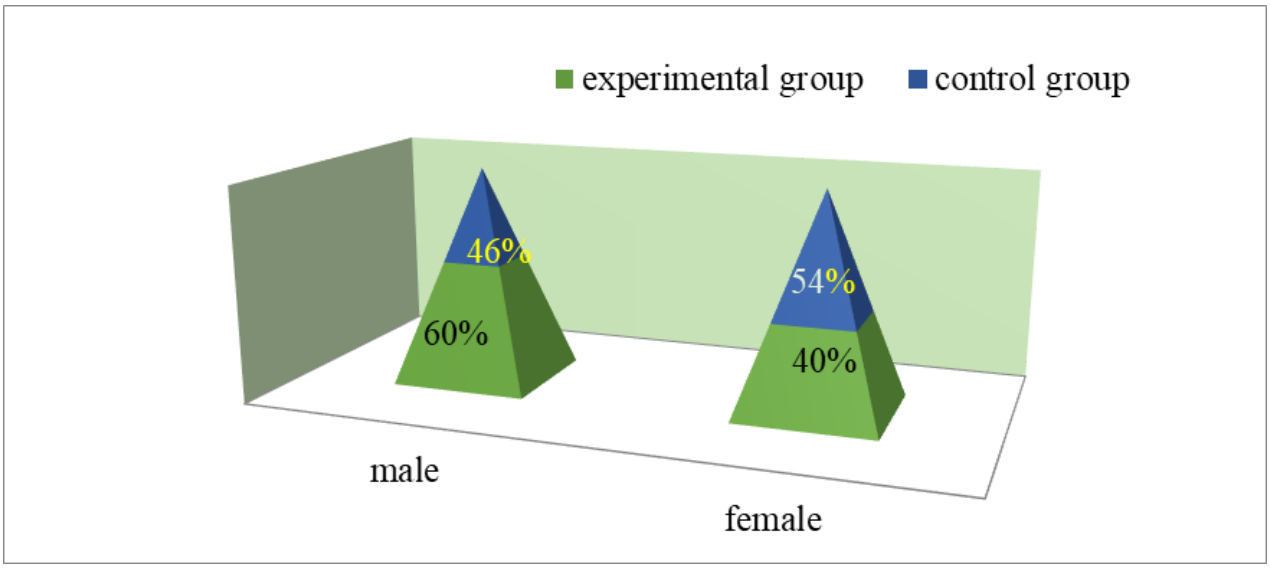

Figure 2: Conical diagram showing distribution of the sample according to their gender.

The above diagram showed that 60%sample were male & 40% sample were female in experimental group .54 % samples were female 46% sample were male in control group

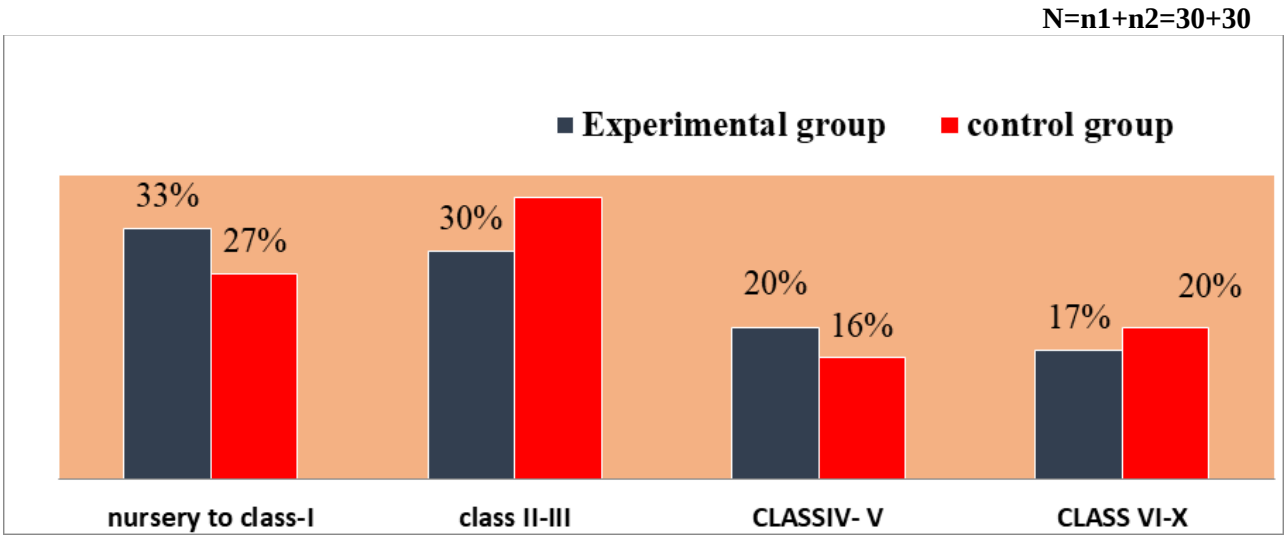

Fig.3: Column diagram showing distribution of sample according to their educational status.

The above diagram showed that 33%sample belonged to the nursery to class-I,30% belonged to class-III, 20% sample belonged to class IV-V, and 17% belonged to class VI-X in experimental group. 37% sample belonged to class-III, 27% belonged to nursery-class, 20%belonged to class VI-X, and 16% belonged to class IV-V.

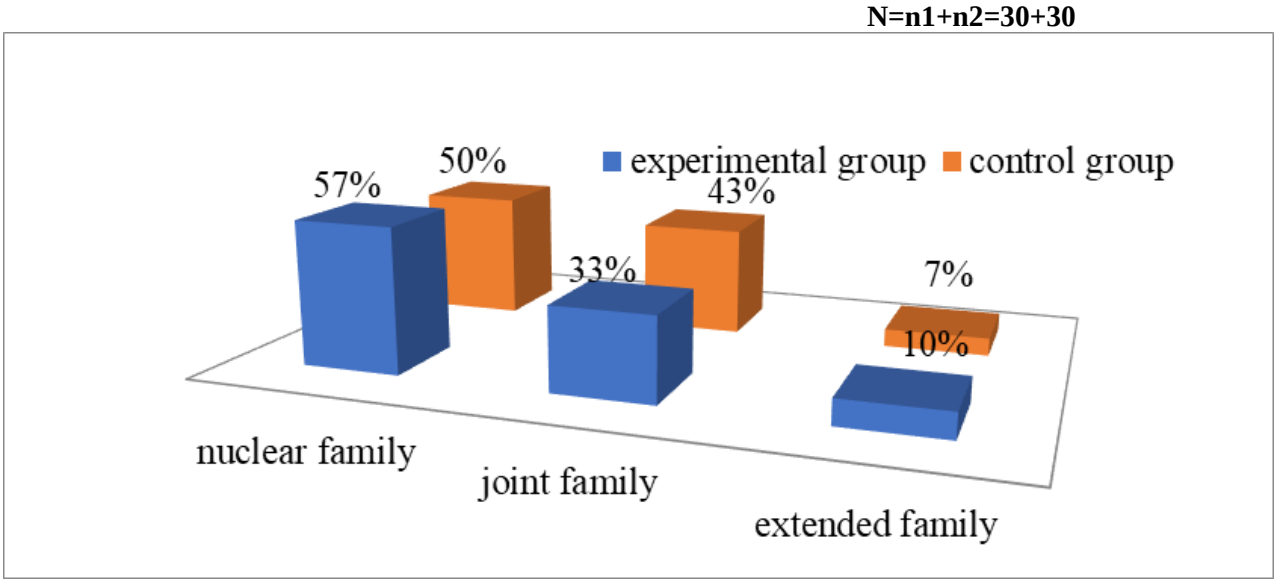

Fig4: Bar diagram showing the distribution of the sample according to their types of family.

The above diagram showed that 57% sample belonged to the nuclear family, 33% belonged to a joint family and 10% belonged to extended family in the experimental group .50% belonged to the nuclear family, 43% belonged to joint family and 7% belonged to extended family in the control group.

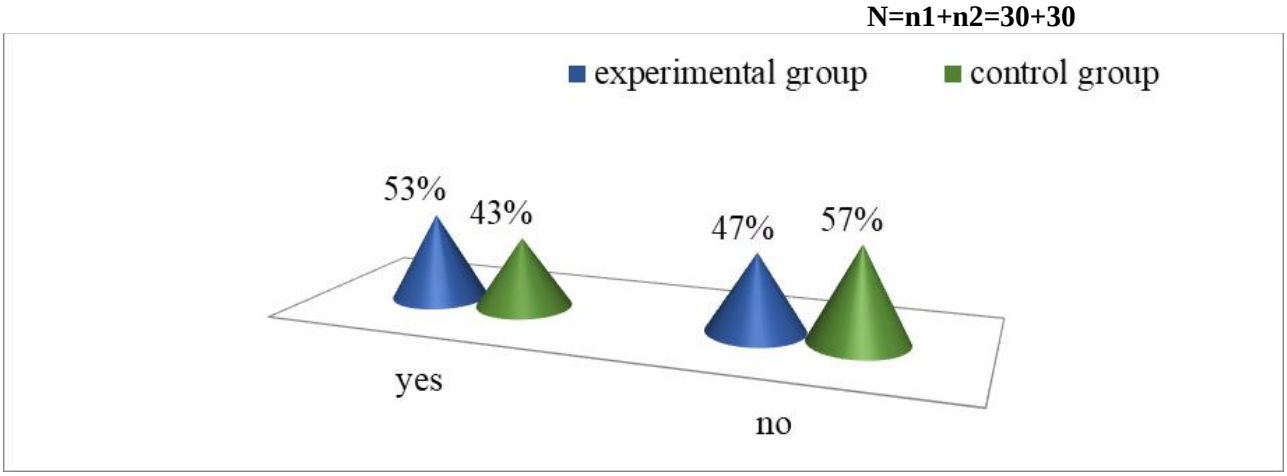

Figure 5. Conical diagram showing the distribution of children according to their history of family.

The above diagram showed that 53% sample were stated yes and 47% stated No to the asthmatic history in the family in the experimental group. 57 % of children were stated No and 43% of children were stated Yes to the history of the respiratory infection in family in the control group.

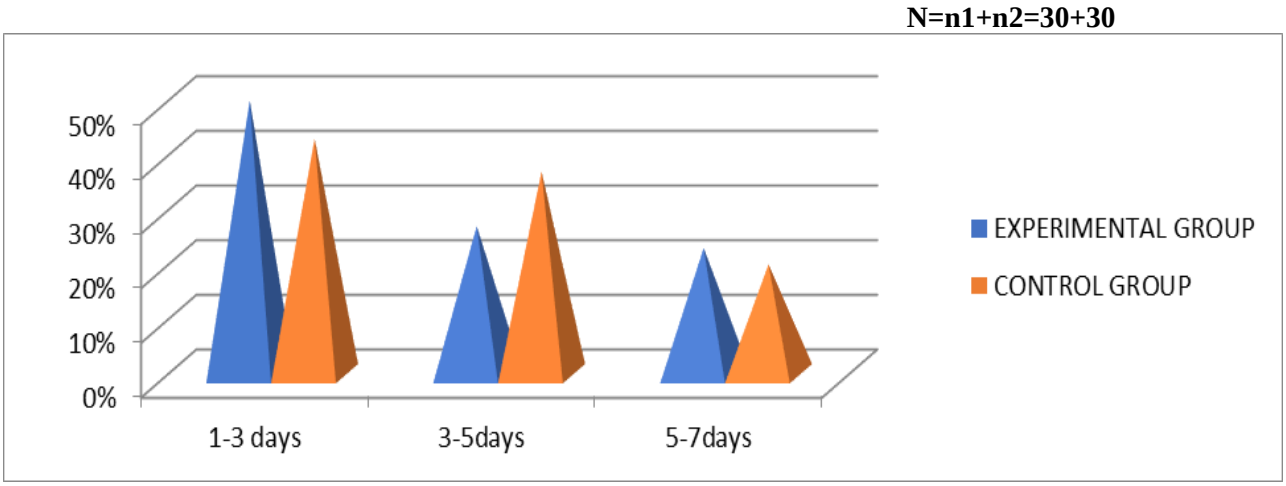

Fig.6: The conical diagram showing the distribution of the sample according to their duration of hospital stay (in Days).

The above diagram showed that 50% sample had 1-3 days of hospital stay 27% had 3-5 days of hospital stay, 23% of samples had 5-7 days of hospital stay in the experimental group. 43% sample had 1-3 days of hospital stay, 37% sample had 3-5 days of hospital stay and 20% sample had 5-7 days of hospital stay in the control group.

N=n1+n2=30+30

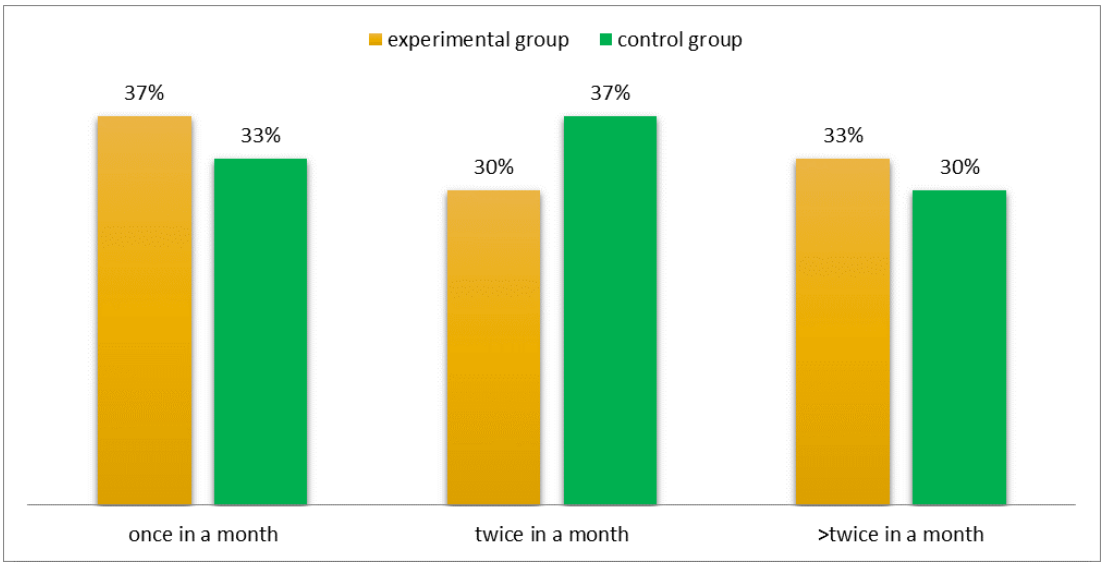

Figure 7. Bar diagram showing of children according to their frequency infection in the experimental and control group.

The above diagram showed that 37% sample had lower respiratory infections once in a month,33% had infections more than twice in a month and 30% sample had twice in a month of lower respiratory infections in the experimental group. 37% sample had lower respiratory infections twice in a month and 33% sample had infections once in a month and 30% of samples had more than twice in a month in the control group.

Excel Sheet (Microsoft Corporation) was used to enter the data. The results had been expressed in mean with & a standard deviation.

Table1: The obtained pretest score by using unpaired t test in both experimental and control groups**.**

n1+ n2=30+30

Respiratory parameters	Mean ± SD	SE	t value	P value
Respiration rate	8.13±5.32	0.97	8.36	0.0001***
Breath sound	0.06±0.49	0.090	0.7	0.46
Oxygen saturation	1.53 ±2.73	0.49	3.07	0.003**

P <0.05 **very significant *** extremely significant

The above table depicted that the pre-intervention scores were 8.13±5.32, 0.06±0.49 & 1.53 ±2 respectively. The unpaired t value for respiratory rate was (t58=8.36, p<0.0001), breath sounds were (t_{58}=0.7, p ≥0.46) & oxygen saturations were (t_{58}=3.07, p<0.003) which was statistically significant in respiratory rate, oxygen saturation and breath sound. Thus it was indicated that there was a significant difference in the pretest score of both experimental and control groups except breath sound.

Table 2: The obtained post-test score on respiratory parameters among children by using unpaired t-test in both experimental and control groups

n1+ n2=30+30

Respiratory parameters	Mean ± SD	SE	T value	P-value
Respiration rate	9.2±5.30	0.96	9.50	0.0001***
Breath sound	0.02±0.49	0.90	2.21	0.03**
Oxygen saturation	2.33±2.13	0.38	5.99	0.0001***

P <0.05 **very significant *** extremely significant

This table depicted that the post-test score of respiratory parameter in both experimental & control group among children were 9.2±5.30, 0.02±0.49 & 2.33±2.13respectively. The unpaired t value for respiratory rate were (t_{58}=9.50, p<0.0001), breath sounds were (t=$_{58}$2.21, p<0.03), &oxygen saturations were (t_{58}=5.99, p<0.0001) respectively. Hence it was concluded there was a significant difference of post-test score of both experimental and control group in comparison of respiratory rate, breath sound, and oxygen saturation

Table 3. The obtained score of pretest and post-test by using paired t-test in the experimental group.

n=30

Respiratory parameters	**Mean ±SD**	**SE**	**t value**	**P value**
Respiration rate	0.46±3.32	0.60	0.76	0.44
Breath sound	0.26±0.50	0.09	2.91	0.006 **
Oxygen saturation	5.4±3.24	0.59	9.11	0.0001***

P <0.05 **very significant *** extremely significant

This table depicted that the pre & post-test scores were 0.46±3.32, 0.26±0.50&5.4±3.24 respectively. The paired t-test value for respiratory rate were (t_{29}=076,p>0.44), breath sounds were (t_{29}=2.91,p<0.006), & oxygen saturations were (t_{29}=9.11,p< 0.0001) respectively which was statistically significant .Hence it was concluded there was a significant difference found in both groups.

Table 4 The obtained pretest and post-test scores on respiratory parameters among children by using paired t-test in the control group.

n=30

Respiratory parameters	Mean ±SD	**SE**	T value	P-value
Respiration rate	0.6±2.69	0.49	1.21	0.23
Breath sound	0.03±0.50	0.09	0.36	0.71
Oxygen saturation	1.53±2.74	0.50	3.06	0.004**

P <0.05 **very significant

This table depicted that the pretest and post-test score of respiratory parameters in control group among children were 0.6±2.69, 0. .03±0.50& 1.53±2.74, respectively. The paired t value for respiratory rate

were($t_{29=}1.21, p>0.23$),breath sounds were ($t_{29}=0.36$,$p>0.71$),& oxygen saturation ($t_{29}=3.06, p<0.004$) which was not statistically significant .

DISCUSSION

The present study finding reported that respiratory rate were ($t_{58=}9.50$, $p<0.0001$), breath sounds were ($t=_{58}2.21$, $p<0.03$), &oxygen saturations were ($t_{58=}5.99$, $p<0.0001$) respectively which was statistically significant. The present study was supported by Schetimin in the year of 2005. He did the comparison of pre and post assessment spirometry which showed that there was a reduction of cough and nasal breathing.[6] The present research study was also supported by a similar study by Peter. N**.,** (2009) that was taken 135 children aged (1-14.5 years) received deep breathing exercises. The assessment of SaO2 (>91%) is mild/moderate, (<91%) is severe at P<0.01. In post-test SaO2 is inversely related to initial SaO2. SaO2 increased more in a severe group than the mild to moderate group (2.3% Vs 0.6%) at P<0.01. Peak flow rate also has a significant increase in value after intervention.[7] This research was confined to a small group, undergoing the procedure which limited the generalization of the present research study findings.[8-10]

CONCLUSION

The study determined that the effect of" strelnikova breathing exercise" on respiratory parameters among children with LRTI has a good impact on respiration patterns. Based on findings it was evident that strelnikova exercise significantly reduced the level of respiratory signs and enhance respiratory parameters.

Conflict of Interests: None
Ethical Permission: Approved
Funding: Nil

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