ISI – Individual Simulator Inhaler: “Frolov’s Respiratory Training Device”.

Dinamika LLC
Novosibirsk, Russia
Complete set

The device consists of:

- external cup (1),
- internal container (2),
- container for essential oils (3),
- cover (4)
- breathing tube (5),
- mouthpiece (6).
Application

Frolov’s device is used for treatment, rehabilitation and preventive measures in different conditions,

1. For breathing gymnastics;

2. For inhalations with herb decoctions;

3. For inhalations with essential oils;

4. For performing breathing trainings in combination with essential oils inhalations – aromarespiratory training.
Indications, contraindications

- **Indications.** For treatment of chronic bronchitis, bronchial asthma, vegetative-vascular dystonia (hypo- and hypertension types), hypertension, stenocardia.
- Also used in a part of rehabilitation program in bronchitis and pneumonia, psychosomatic conditions, after heart attack, apoplectic attack, surgeries.
- **Contraindications.**
  - Acute somatic and infectious diseases.
  - Chronic diseases at exacerbation or decompensation stages.
  - Respiratory failure higher than II stage.
  - Cardiovascular failure of II A stage.
  - Bronchial hemorrhage.
  - Implanted pacemaker.
  - Other general contraindications for physical therapy.
Principle of operation

- water (up to 30 ml) is poured into the device and then respiratory training is performed with resistance to breathing both during inhalation and exhalation;

- patients should perform diaphragmatic breathing with extended exhalation;

- during the exercise hypoxic and hypercapnic conditions are created;

- when air passes through water microvibration is created that leads to micro massage of bronchus;

- the device allows combining mechanical treatment and normobarical hypoxic training.
Main rules of respiratory gymnastics

- 1 stage – adaptation, inhalation through nose, exhalation through mouth into the water.
- 2 stage – main course, inhalation and exhalation through mouth, через воду в аппарате.

- **Main course** – daily exercises with Frolov’s device, preferably at night before going to bed, max training time – 30 minutes.
- Preventive – 2-3 times a week, 20-30 minutes, preferably at night before going to bed.
- Breathing type - diaphragmatic, rhythmical breathing, calm inhalation 2-3 seconds and slow extended exhalation.
- In the process of trainings exhalation time gradually increases up to 20-40 seconds and more.
- Compatibility – Frolov’s method is compatible with any medications and physical therapies.
- For treatment of bronchopulmonary diseases it is preferable to combine Frolov’s method with inhalations or aromatherapy.
Respiratory gymnastics
Specific effects

- Improvement of bronchial patency, alveolaris ventilation, venous circulation and lymph drainage;
- Massage of pulmonary tissue and abdominal cavity organs;
- Increase of functional reserves of respiratory system and cardiorespiratory system in general;
- Increase of persistence to hypoxo and hypercapnia;
- Increase of strength and tolerance of breathing muscles.
Respiratory gymnastics
Training factors

- Resistance to breathing during inhalation;
- Resistance to breathing during exhalation;
- Additional respiratory space;
- Hypoxic factor, physiological hypoxy (increase of exhalation time + additional respiratory space);
- Hypercapnic factor (rebreathing + additional respiratory space);
- Less breathing frequency;
- Diaphragmatic breathing (diaphragmatic relaxation breathing pattern).

Combination of these factors in the training process – **combined respiratory training.**
Dynamics of breathing functions’ indicators in patients with bronchial asthma (adults)

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Main group (12 people)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Originally</td>
<td>After the training course</td>
<td></td>
</tr>
<tr>
<td>VC</td>
<td>87,3 ± 3,3%</td>
<td>100,0 ± 4,6%*</td>
<td>s – dynamics statistically significant</td>
</tr>
<tr>
<td>RA</td>
<td>151,4 ± 6,8%</td>
<td>117,2 ± 7,1%*</td>
<td>s</td>
</tr>
<tr>
<td>TLC</td>
<td>107,7 ± 8,1%</td>
<td>105,2 ± 7,6%*</td>
<td>ns- dynamics statistically insignificant</td>
</tr>
<tr>
<td>FIV 1</td>
<td>66,8 ± 4,2%</td>
<td>87,8 ± 3,3%*</td>
<td>s</td>
</tr>
<tr>
<td>MVF 75</td>
<td>50,6 ± 4,6%</td>
<td>74,6 ± 2,6%*</td>
<td>s</td>
</tr>
<tr>
<td>MVF 50</td>
<td>41,1 ± 3,9%</td>
<td>65,3 ± 2,9%*</td>
<td>s</td>
</tr>
<tr>
<td>MFV 25</td>
<td>39,2 ± 4,3%</td>
<td>63,6 ± 3,3%*</td>
<td>s</td>
</tr>
<tr>
<td>Tfsc</td>
<td>64,1 ± 3,6%</td>
<td>77,1 ± 3,1%*</td>
<td>s</td>
</tr>
</tbody>
</table>

VC – vital capacity; RA – residual air; TLC – total vital capacity; FEV 1 – forced expiratory volume per 1 second; MEF 75 – maximum expiratory flow 75 % FVC (forced vital capacity); MEF 50 – maximum expiratory flow 50 % FVC; MFV 25 – maximum expiratory flow 50 % FVC; Tfsc – CO transfer factor in stable condition.
Dynamics of indicants of the system "peroxide lipoid oxidation – anti-oxidation shield" by bronchial asthmatic patients as related to a treatment program

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Main group (12 people)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Originally</td>
</tr>
<tr>
<td></td>
<td>0,129 ± 0,006</td>
</tr>
<tr>
<td>MDA er</td>
<td>s – dynamics statistically significant</td>
</tr>
<tr>
<td>MDA pl</td>
<td>0,067 ± 0,008</td>
</tr>
<tr>
<td>AOA</td>
<td>43,0 ± 2,9</td>
</tr>
<tr>
<td>FAS</td>
<td>242,6 ± 13,6</td>
</tr>
</tbody>
</table>

MDA er - malondialdehyde in erythrocytes
MDA pl - malondialdehyde in plasma
AOA - antioxidant activity
FAS - functional anti-oxidation supply of the body
Dynamics of peak expiratory flow in children with bronchial asthma after breathing exercises with Frolov’s device (l/min)
**Indicators of external breathing functions in children with bronchial asthma before and after training course with Frolov’s device (n-18)**

<table>
<thead>
<tr>
<th>Study period</th>
<th>Before training</th>
<th>After training</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>VC (l)</td>
<td>2.3 + 0.3</td>
<td>2.4 + 0.3</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>FEV – 1 (l/sec)</td>
<td>1.98 + 0.2</td>
<td>2.54 + 0.1</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>PEF (l/min)</td>
<td>280 + 34</td>
<td>370 + 25</td>
<td>&lt; 0.05</td>
</tr>
</tbody>
</table>

VC (l) – vital capacity;

FEV 1 – forced expiratory volume per 1 second;

PEF (l/min) – peak expiratory flow
Dynamics of external breathing function indicators in children with bronchitis after training with Frolov’s device

<table>
<thead>
<tr>
<th>Indicators of external breathing function, %</th>
<th>Initial value</th>
<th>After the training</th>
</tr>
</thead>
<tbody>
<tr>
<td>FVC</td>
<td>92,3 ± 3,3</td>
<td>104,5 ± 3,2 ** (p &lt; 0,05)</td>
</tr>
<tr>
<td>FEV 1</td>
<td>92,4 ± 4,9</td>
<td>100,1 ± 3,7</td>
</tr>
<tr>
<td>MEF 25</td>
<td>91,1 ± 5,5</td>
<td>88,4 ± 2,7</td>
</tr>
<tr>
<td>MEF 50</td>
<td>71,9 ± 2,6</td>
<td>81,1 ± 2,12** (p &lt; 0,05)</td>
</tr>
<tr>
<td>MEF 75</td>
<td>73,4 ± 1,4</td>
<td>82,2 ± 1,3** (p &lt; 0,05)</td>
</tr>
</tbody>
</table>
Dynamics of serum immunoglobulin indicators in children with bronchial asthma after trainings with Frolov’s device

<table>
<thead>
<tr>
<th>Observation period</th>
<th>Serum immunoglobulin *p &lt; 0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ig G(g/l)</td>
</tr>
<tr>
<td>before trainings</td>
<td>13.1±0.33</td>
</tr>
<tr>
<td>after trainings</td>
<td>9.6±0.24</td>
</tr>
</tbody>
</table>
Dynamics of serum immunoglobulin indicators in children with bronchitis after trainings with Frolov’s device

<table>
<thead>
<tr>
<th>Observation period</th>
<th>Ig G (g/l)</th>
<th>Ig M (g/l)</th>
<th>Ig A (g/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>before trainings</td>
<td>14,05±0,5</td>
<td>1,68±0,15</td>
<td>1,24±0,04</td>
</tr>
<tr>
<td>after trainings</td>
<td>10,06±0,2*</td>
<td>1,17±0,03*</td>
<td>1,34±0,22</td>
</tr>
</tbody>
</table>
Dynamics of systolic blood pressure in children with vegetative-vascular dystonia of hypertension type

[Graph showing dynamics of blood pressure over 10 sessions]

- **Main group**
- **Control group**

**MmHg**

110 115 120 125 130 135 140

**No. of session**

1 2 3 4 5 6 7 8 9 10
APPLICATION EFFICIENCY

Respiratory related conditions in children

Results of Frolov’s technique application:

Restoration of bronchus drainage function in 68.7% of patients with bronchial asthma after 5-6 session (in case of bronchitis – on 2\textsuperscript{nd} -3\textsuperscript{rd} day).

Indicators (FVC, FEV1 and MEF25, MEF50 and MEF75) were increased by 30-45%.

Elimination of autonomic dysfunction in more than 67.5% cases.

Breathing exercises cause favorable effect on psycho-emotional state of children with respiratory organs diseases. Improvements were seen already on 6\textsuperscript{th} session.
APPLICATION EFFICIENCY

Vegetative-vascular dystonia in children

Irritability decrease, performance incoordination, improvement of sleep.

High blood pressure is reduced after 4th -5th session.

High blood pressure is reduced in 75% of children with vegetative-vascular dystonia of hypotonic type by the end of the course.

Normalization of vascular and bronchus tone, headache relief.

Reduce of “vegetative” complaints.

Blood pressure and heart rate stabilization on physiological level, elimination of vegetative dysfunction.
Example of Stepan Permyakov, Novosibirsk. Year of birth 2004

At the age of 1 year old Stepan was diagnosed with obstructive bronchitis, at the age of 3 – with asthma, moderately severe. He started his trainings with Frolov’s device at the age of 4. In a month his asthma attacks stopped completely, his parents never had to call ambulance again and Stepan wasn’t put in a hospital since then. In 4 months he stopped taking medications. At the age of 6 Stepan started judo classes and swimming. Currently the boy is healthy and goes to school.
Daniel Williams, Denver, USA, 12 years old

- **10.09.2010.** Daniel, who had been diagnosed with asthma condition since he was one year old. After breathing with Frolov’s device for 20 days his lung function is improved by 16% and he was not been prescribed with steroids for the first time in his life. The doctor put the Frolov’s device in his medical chart.
- **21.02.2011.** The doctor was amazed: because **FEV1** was already normal for his age and **FEV1/FVC** was 79% but normal for his age 80%-85%. Daniel’s lungs sound clear. Not even single use of any steroids or/and bronchodilators since august 2010. His DRA now is 37-40 sec., he is breathing before bed for 35 minutes and in the morning 5-7 min with amount of water 35 ml. He is enjoying exercises now, doing body building, and wrestling.
- **29.04.2011.** Daniel went on intense wrestling training and after two months of training (his first ever season) he participated in three big competitions between schools of the district where he took **first place** in his weight category, then he went on regional competitions and took 6th place and then he went on state competition.

Now he is breathing without his parents reminding him about it because he realized that it is helping him to get this strength.
Nina Kozmenko, Vancouver, Canada, 79 yo

Nina was born on January 15, 1932. In 1986 had a thyroid surgery. Has been suffering from asthma for more than 30 years.

She used to take medications regularly: L-thyroxin 50 mg, spiriva, advair, salbutamol).

10.09.2009 – Nina started using the Frolov’s device in light regime (inhalation through nose, exhalation through the mouth into the device).

2.01.2010 – started exercising in normal regime – inhale and exhale through the water in the device.

29.04.2010 Nina’s exercise regime: first 5 minutes - water 25 ml, inhale through nose, exhale for 25 sec through the device. Next 20 minutes inhale and exhale through the device. Nina started feeling better and stopped taking salbutamol and advair.

13.04.2011 – Nina wrote: «I keep exercising with the Frolov’s device regularly and I am not going to stop. I know it helps me a lot while most patients I saw at a waiting room of my pulmonologist are already using oxygen bottles... I train at night and sometimes in the morning and I try to walk at least 3 km a day».
Dr. Sergey Kaplan, Kiev, Ukraine, 56 years old

- Sergey has served at a military force in Afghanistan for almost 3 years. He had mine-blast trauma and head injury. Due to his work he also had to go to Chernobyl atomic power station a lot (a place where in 1986 the reactor blew up).

- As a result his health started to worsen – blood pressure went up (to 220/110 mmgh), he developed varicosity and others.

- Sergey is also a chiropractic and he is convinced that regular breathing exercises with the Frolov’s device helped him restore his health and become a successful chiropractor.

- His training regime now is the following: first 5 minutes DRA (duration of respiratory act) is 30 sec, inhalation through nose. Next 35 minutes – DRA is 60 sec, inhalation and exhalation are both done through the device.
Results of 6-month breathing training with the Frolov’s device

1. One of the participants (age 65) – after having blood test, discovered he no longer needs taking medications that decrease cholesterol level (it dropped from 250 to 115).
2. A woman of 72 years old had her blood pressure normalized. Also her varicosity was fully regenerated.
3. A woman of 37 years old had her thyroid function restored.
4. Regeneration of vocal cords.
5. Hemorrhoids was gone.
6. Snoring was stopped.
7. Digestive system functions restored.
8. Smokers stated they no longer feel the need to smoke.
9. Asthma symptoms are greatly diminished especially in children.
Anton Arnt, 83 years old

- Diagnoses:
  - Diabetes of I type, moderate level since 1986;
  - Hypertension of IIB stage, for more than 30 years;
  - Coronary heart disease, chronic heart failure of IIA level;
  - Ciliary arrhythmia since 2002;
  - 28.02.2010 - acute myocardial infarction;
  - Moves around with a pair of crutches.

Results of the training with the Frolov’s device:

24.03.2010 – started his training with the device. 3 training sessions a day 10-15 minutes each in a light regime.

04.05.2010 – Overall state is good, no pains, arrhythmia doesn’t disturb much. Exercises help decrease blood pressure. Heart rate is also normal. Even though test shows high sugar level, the patient feels good.

24.06. 2010 – Blood pressure is from 115/70 to 140/90, heart rate is 80. Sugar level decreased a little.

05.03.2011 – Anton now trains in the following regime: water 25 ml, first 5 minutes inhalation through nose, exhalation for 20 sec into the device. Next 15 minutes inhalation and exhalation through water in the device (inhale 3-4 sec, pause for 2-3 sec, exhale up to 15 sec). He trains twice (in the morning and evening). After breathing exercises blood pressure quickly becomes normal – 135/70. Sugar content in the blood is between 7 and 8,4. His leg hurts less.
Evaluation of the Impact of breathing training with the Frolov’s device with the use of Gas Discharge Visualization Technique

1. Captura 1 – before the training, after 3 hour choir rehearsal.

2. Captura 2 – after 20 minute of first training with the device – the overall area of luminescence increased (from 11287 to 21646), symmetry has also increased (from 64% to 88%).
Results of the chakras program. All chakras have “charged” and balanced.
Breathing exercises with Frolov’s device during pregnancy

- Improvement of respiratory-cardiac synchronization,
- Optimization of sympathetic-parasympathetic balance with prevalence of parasympathetic element,
- Blood pressure lowering,
- Heart rate reduction,
- Significant improvement of newborn clinical state.
Asya Vlasova, 30 years old, Tolyatti, Russia

Asya had chronic bronchitis, pleuritis, developed breathing problems, during physical exercises experienced heart pains, fast heartbeat and dizziness. Breathing trainings with the Frolov's device helped get rid of these problems and now Asya is doing yoga and can easily do the hardest asanas.
10.09.2009 – Elena has been training with the Frolov’s device for about 6 weeks and her DRA is about 50-58 seconds. She has been training in the morning and before bed for 35-40 minutes.

06.07.2011 – Elena left to Miami for Intermediate Freediving course. She can now hold her breath for 3 minutes 10 seconds thanks to the training with the Frolov’s device.
RESPIRATORY TRAINING FOR SPORTSMEN

Study done in Russian State University of Physical Education

32 sportmen have been training with the Frolov’s device for 20 minutes every day during 2 weeks.

In two weeks there was a study of their external respiration function (ERF). There was growth of all parameters especially vital capacity – by 20%, forced exhalation volume 1 – by 25%, momentum volume flow 25 – by 15%, momentum volume flow 50 – by 20%, momentum volume flow 75 – by 20%.

It was recognized that, due to reflexogenic system of the respiratory trainings with the device, the automatism, which prevents the exertions exceeding the physiological standards, appears.

This training method also allows a person to be in a state of increased endurance.

“In order to achieve great results in sport it is necessary to use all capabilities that Nature gave the human body. In my training program I use the system of metabolism stimulation with the help of Frolov’s device. Breathing exercises with the Frolov’s device helped me greatly increase the effectiveness of correct nutrition and trainings and excel my previous achievements!”

- Sergey Dmitriev
Breathing exercises with the Frolov’s device are now included in the athletes training in one of the sport clubs in Sweden.
Frolov’s breathing exercises in alpinists training

Miroslav Kaban, 47 years old, Czech Republic

Miroslav is one of the best alpinists in the world. He climbed Everest without any special oxygen equipment in just 6 days after arriving to the base camp. Miroslav has been doing breathing exercises with the Frolov’s device for 12 months.
Breathing exercises course is included in the program of training special police forces

Dr. Sergey Zinatulin gives practical training to the employees of special police forces in the conditions of field camp in Novosibirsk.
Literature

9. www.intellectbreathing.com