Natural Treatments for Lung Disease

A progressive disease affecting your lungs and the ability to breathe.
Causes of Respiratory Distress and Arrest

**Chronic Obstructive Pulmonary Disease (COPD)** is a long-term lung disease encompassing both chronic bronchitis and emphysema.

- A person has trouble breathing because of damage to the lungs.
- The airways become partially blocked and the air sacs in the lungs lose their ability to fill with air, making it difficult to breathe in and out.
- The most common cause of COPD is cigarette smoking.
- Breathing in other types of lung irritants, pollutants, dust or chemicals over a long period of time also can cause COPD.
Major Causes of Disease
1. Tobacco Addiction
2. High Glycemic Sugar
3. Bad Fatty Acids + Fats
4. Synthetic Chemicals
5. Stress- Trauma
6. Toxicity

SUPER-CARDIO Diet Tips

STARTS With
What NOT To EAT
1. AVOID Synthetic Foods
2. AVOID Hi Glycemic Foods
3. AVOID Processed Foods
4. AVOID White Sugars
5. AVOID Foods Boiled in Oil
6. AVOID Nitrite/Nitrate meat
Prof Nelson - Desiré  
Towards a new Safe and Effective truly Modern Medicine

Dr. János (Hans) Selye
This is a new common sense method of modern medicine, that is Health motivated not just symptom control. We respect the complexity and the whole body, and respect the Natural process of health

HEALTH IS EASE OF FLOW
Stressors block Flow, Stress is more than Just personal stress. Stress Reduction is the key to Medicine.

When the stressor or stressors weaken the defenses of the body, the weakest link of the body (from nature or nurture) is most prone to distress and thus disease.

LACK OF AWARENESS OR LACK OF EDUCATION
STRESS
HEREDITY
MENTAL FACTORS
(Greed, anger, delusion arrogance ETC)
ALLERGY
BAD POSTURE

TOXICITY
TRAUMA INJURY
PATHOGENS (microorganisms, bacteria, fungus, virus, prions, worms, etc.)
PERVERSE ENERGY (heat, cold, wind, dryness, radiation, magnetic, etc.)
DEFFICIENCY OR EXCESS OF NUTRIENTS

Nelson Method of Medicine
1. Reduce the Causes of Disease, Change Behavior, get patients to Care, get the nail out of the tire
2. Repair the organs weakened by the Causes. Restore Health. Fix the Tire
3. Unblock the Blockages to energy, nutrition, Oxygen, waste, Parana, acupuncture, nervous FLOW
4. Treat the symptoms with natural means before resorting to Synthetic. Use foods, exercise, herbs, homeopathics any and all natural means before resorting to Synthetics
5. Balance the metabolic typing or Constitutional Imbalances. Treat the patient as an Individual Whole

Selye Pathway of Disease
health then enter stressor (toxin etc)-enters
1. ALARM Stage
   - symptoms are the alarm, not the enemy, symptoms at first are related to the Stressor, later the dysfunction
   - if stressor continues then
2. ADAPTATION Stage
   - symptoms go away as we adapt, the disease = disease penetrates deeper. You can have no symptoms and be very very sick.
   - Being symptom free is not an indicator of Health
   - if stressor continues then
3. EXHAUSTION Stage
   - the stressors burden the weakest organs
   - if stressor continues then
      2. FUNCTIONAL
         - the stressors effect the weakest organ function
      3. ORGANIC
         - the weak organs start to swell or shrink
   - if stressor continues then
4. DEATH
   - cellular, organ, organ system, organism death

Since the body’s weakest link is prone to disease from the stressors, any disease will improve with reduction of the stressors. If there is good nutrition and no excess or deficiency of nutrients, the body’s repair system improves. With stress reduction the Para-Sympathetic system becomes free to boost digestion and immunity as well as cellular repair. Some stressors can have more specific target diseases, such as cigarettes target the lungs primarily. But with the lack of systemic oxygen, any other weak link in the body from genetics or from life will be involved, thus stress reduction is a universal therapy for all diseases. Reductionism of diseases via inaccurate and expensive current medical diagnostic means, are archaic inaccurate, overly complex, non-productive, expensive, unsafe, risky and most often ineffective. Add to this the risk of side effects from SiNthetic drugs and we see the poor history of medicine. Nelson and Selye have plotted out a safe, inexpensive and effective new more modern medicine.
Table 1. Drugs and Other Factors Increasing Susceptibility to Interstitial Lung Disease

**Age:** Considerably more likely to affect adults, although infants and children may be affected; IIPs increase with advancing age

**Antibiotics:** e.g., nitrofurantoin, sulfasalazine

**Anti-inflammatory agents:** e.g., infliximab, etanercept

**Chemotherapy agents:** e.g., bleomycin, busulfan, carmustine, cyclophosphamide, methotrexate

**Cardiovascular drugs:** e.g., amiodarone

**Illicit drugs**

**Occupational and environmental toxins:** e.g., asbestos fibers, silica dust, coal dust, cotton dust, grain dust, bird and animal droppings, and other toxins found in mining, farming, and construction

**Oxygen:** i.e., continuous inhalation of very high levels of therapeutic oxygen for more than 48 hours

**Paraquat**

**Radiation:** e.g., of the lung or breast—based on the extent of lung exposed, quantity of radiation, whether adjunct chemotherapy was used, and the presence of underlying lung disease

**Smoking:** A history of smoking or active smoking may exacerbate some forms of interstitial lung disease or cause it to be more severe

*IIP: idiopathic interstitial pneumonias
Source: References 1, 2, 4, 5, 9-13.

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**ILD of known cause or association**

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Systemic disease</th>
<th>Genetic</th>
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<tbody>
<tr>
<td>Occupation</td>
<td>CTD</td>
<td></td>
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<tr>
<td>Environment</td>
<td>IBD</td>
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<tr>
<td>Avocation</td>
<td>Sarcoidosis</td>
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<tr>
<td>Medication</td>
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<tr>
<td>Drug</td>
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<tr>
<td>Radiation</td>
<td></td>
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<tr>
<td>Smoking</td>
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</table>

**ILD of unknown cause**

<table>
<thead>
<tr>
<th>IIP</th>
<th>Specific pathology</th>
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<tbody>
<tr>
<td>IPF</td>
<td>LAM</td>
</tr>
<tr>
<td>NSIP</td>
<td>PAP</td>
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<tr>
<td>COP</td>
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<tr>
<td>LIP</td>
<td></td>
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<tr>
<td>Pulmonary Syndrome</td>
<td>Chest Film Findings</td>
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<tr>
<td>----------------------------</td>
<td>------------------------------------------------------------------------------------</td>
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<tr>
<td>Alveolar hemorrhage</td>
<td>Diffuse bilateral alveolar infiltrates</td>
</tr>
<tr>
<td>Alveolar hypoventilation</td>
<td>Normal or atelectatic changes</td>
</tr>
<tr>
<td>Bronchiolitis obliterans</td>
<td>Normal or hyperinflated lung fields, localized acinar or nodular infiltrates</td>
</tr>
<tr>
<td>Bronchospasm</td>
<td>Normal or hyperinflated lung fields</td>
</tr>
<tr>
<td>Hypersensitivity lung disease</td>
<td>Acinar or mixed acinar-interstitial pattern of infiltrates, frequent pleural effusions</td>
</tr>
<tr>
<td>Noncardiogenic pulmonary edema</td>
<td>Diffuse acinar infiltrates, pleural effusions may be present</td>
</tr>
<tr>
<td>Pneumonitis/ fibrosis</td>
<td>Bilateral reticular or reticulonodular infiltrates; pleural effusions may be present</td>
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<tr>
<td>Pulmonary hypertension</td>
<td>Normal or prominent pulmonary arteries with right ventricular enlargement</td>
</tr>
<tr>
<td>Pulmonary infiltrates and eosinophilia</td>
<td>Patchy alveolar infiltrates that rapidly migrate (acute disease) or diffuse interstitial infiltrates (chronic disease)</td>
</tr>
<tr>
<td>Pulmonary-renal syndrome</td>
<td>Diffuse acinar or reticular infiltrates</td>
</tr>
<tr>
<td>SLE</td>
<td>Pleural effusion; rarely interstitial and alveolar infiltrates, atelectatic changes</td>
</tr>
</tbody>
</table>

\(D_{1/2}CO\): carbon monoxide-diffusing capacity; \(LV\): lung volume; \(SLE\): systemic lupus erythematosus.

Source: References 1, 2, 4, 5, 7, 8, 24.
**Drugs that Cause Lung Disease**

<table>
<thead>
<tr>
<th>Chemotherapeutic Agents</th>
<th>Nonchemotherapeutic Agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Azathioprine</td>
<td>• Amiodarone&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>• BCNU</td>
<td>• Anti-TNF-α-targeted therapy</td>
</tr>
<tr>
<td>• Bleomycin&lt;sup&gt;a&lt;/sup&gt;</td>
<td>• Cocaine</td>
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<tr>
<td>• Busulfan</td>
<td>• Gold</td>
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<tr>
<td>• Chlorambucil</td>
<td>• Heroin</td>
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<tr>
<td>• Cyclophosphamide</td>
<td>• Methysergide</td>
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<tr>
<td>• Fludarabine</td>
<td>• Nitrofurantoin</td>
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<tr>
<td>• Gemcitabine</td>
<td>• Penicillamine</td>
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<tr>
<td>• 6-Mercaptopurine</td>
<td>• Phenytoin</td>
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<tr>
<td>• Methotrexate</td>
<td>• Sirolimus</td>
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<tr>
<td>• Mitomycin C</td>
<td>• Statins</td>
</tr>
<tr>
<td>• Taxanes (paclitaxel/docetaxel)</td>
<td>• Sulfasalazine</td>
</tr>
<tr>
<td>• Tyrosine kinase inhibitors (imatinib)</td>
<td>• Tocainide</td>
</tr>
</tbody>
</table>


<sup>a</sup>Most commonly implicated.

**SINthetic drugs can cause Lung disease.**
Causes of COPD Exacerbations

Pathogen factors

Antimicrobial resistance
Ability to persist in respiratory tract
   Invasion of bronchial tissue
   Biofilm formation

Host factors

Exposure to common respiratory pathogens
   Institutionalization
   Exposure to children in day care
Defects in host immunity
   Nonspecific
      Salivary lysozyme
      Immunodeficient states
      Human immunodeficiency virus (HIV) infection
   Specific
      Lymphocyte proliferation
      Antibody production
Comorbid conditions
   Cardiac disease
   Diabetes mellitus
Airway inflammation
   Increased airway inflammation at baseline
   Exaggerated inflammatory response to infection
   Chronic sinusitis
   Airway hyperreactivity
   Noncompliance with medication
   Recurrent aspiration

Treatment factors

Inadequate antimicrobial therapy
Inadequate anti-inflammatory therapy

Source: Curr Med Res Opin © 2004 Librapharm Limited
Over 30% of all Deaths involve Smoking
Top Ten Leading Causes of Death in the U.S.

- Heart Disease: 726,974
- Cancer: 539,577
- Stroke: 159,791
- Chronic Obstructive Pulmonary Disease: 109,029
- Accidents: 95,644
- Pneumonia/Influenza: 86,449
- Diabetes: 62,636
- Suicide: 30,535
- Nephritis, Nephrotic Syndrome, and Nephrosis: 25,331
- Chronic Liver Disease and Cirrhosis: 25,175

http://www.downloads.imune.net/medicalbooks/Lung%20Fungus%20+%20MycoBacteria.pdf
What Are the Signs and Symptoms of Idiopathic Pulmonary Fibrosis?

The signs and symptoms of idiopathic pulmonary fibrosis (IPF) develop over time. They may not even begin to appear until the disease has done serious damage to your lungs. Once they occur, they're likely to get worse over time.

The most common signs and symptoms are:

- Shortness of breath. This usually is the main symptom of IPF. At first, you may be short of breath only during exercise. Over time, you'll likely feel breathless even at rest.
- A dry, hacking cough that doesn't get better. Over time, you may have repeated bouts of coughing that you can't control.

Other signs and symptoms that you may develop over time include:

- Rapid, shallow breathing
- Gradual, unintended weight loss
- Fatigue (tiredness) or malaise (a general feeling of being unwell)
- Aching muscles and joints
- Clubbing, which is the widening and rounding of the tips of the fingers or toes

**Clubbing**

![Illustration of clubbing of the fingertips associated with idiopathic pulmonary fibrosis.]

IPF may lead to other medical problems, including a collapsed lung, lung infections, blood clots in the lungs, and lung cancer.

As the disease worsens, you may develop other potentially life-threatening conditions, including respiratory failure, pulmonary hypertension, and heart failure.
Idiopathic pulmonary fibrosis (IPF) causes the same kind of scarring and symptoms as some other lung diseases. This makes it hard to diagnose.

Seeking medical help as soon as you have symptoms is important. If possible, seek care from a pulmonologist. This is a doctor who specializes in diagnosing and treating lung problems.

Your doctor will diagnose IPF based on your medical history, a physical exam, and test results. Tests can help rule out other causes of your symptoms and show how badly your lungs are damaged.

Medical History

Your doctor may ask about:

- Your age
- Your history of smoking
- Things in the air at your job or elsewhere that could irritate your lungs
- Your hobbies
- Your history of legal and illegal drug use
- Other medical conditions that you have
- Your family's medical history
- How long you've had symptoms
Clinical features

- **Symptoms**
  - Chronic cough with expectoration
  - Shortness of breath
  - Wheezing
  - Chest tightness
  - h/o smoking

- **Signs**
  - Tachypnea
  - Active accessory muscles
  - Barrel-shaped chest
  - Prolonged expiration
  - Rhonchi

**Diagnostic Tests**

No single test can diagnose IPF. Your doctor may recommend several of the following tests.

**Chest X Ray**

A chest x ray is a painless test that creates a picture of the structures in your chest, such as your heart and lungs. This test can show shadows that suggest scar tissue. However, many people who have IPF have normal chest x rays at the time they're diagnosed.

<table>
<thead>
<tr>
<th>CHART 1</th>
<th>Granulomatous pulmonary diseases with infectious and non-infectious causes</th>
<th>Granulomatous pulmonary disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious</td>
<td>Tuberculosis</td>
<td>Non-infectious</td>
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<tr>
<td></td>
<td>Histoplasmosis</td>
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<td></td>
<td>Paracoccidioidomycosis</td>
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<td></td>
<td>Mycetoma</td>
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<td>Ascaridiasis</td>
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<td></td>
<td>Echinococcosis</td>
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<td></td>
<td>Dirofilariosis</td>
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14
**High-Resolution Computed Tomography**

A high-resolution computed tomography scan, or HRCT scan, is an x-ray that provides sharper and more detailed pictures than a standard chest x-ray.

HRCT can show scar tissue and how much lung damage you have. This test can help your doctor spot IPF at an early stage or rule it out. HRCT also can help your doctor decide how likely you are to respond to treatment.

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**Complications**

- COPD is a long-term illness
- COPD worsens quickly with smoking
- COPD can cause arrhythmias
- COPD can cause pneumonia
- COPD can cause osteoporosis

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**Restrictive Lung Diseases**

- **Pleura**
  - Pleural effusion
  - Pneumothorax
  - Pleural fibrosis
  - Pleural tumours
  - Pleural thickening

- **Chest Wall**
  - Trauma
  - Kyphoscoliosis
  - Ankylosing Spondylitis
  - Neuromuscular Disease (Myasthenia/Guillain Barre)
  - Morbid obesity
  - Scleroderma

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**Parenchymal**

- **Interstitial Pulmonary Fibrosis (IPF):**
  - Idiopathic
  - Occupational
  - Collagenic
  - Granulomatous
  - Irradiation
  - Resection
  - Drug induced (Bleomycin, Methotrexate, Cyclophosphamide)

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**Abdomen**

- Severe Distension
**Lung Function Tests**

Your doctor may suggest a breathing test called spirometry (spi-ROM-eh-tree) to find out how much lung damage you have. This test measures how much air you can blow out of your lungs after taking a deep breath. Spirometry also measures how fast you can breathe the air out.

If you have a lot of lung scarring, you won't be able to breathe out a normal amount of air.

**Pulse Oximetry**

For this test, your doctor attaches a small sensor to your finger or ear. The sensor uses light to estimate how much oxygen is in your blood.

**Arterial Blood Gas Test**

For this test, your doctor takes a blood sample from an artery, usually in your wrist. The sample is sent to a laboratory, where its oxygen and carbon dioxide levels are measured.

This test is more accurate than pulse oximetry. The blood sample also can be tested to see whether an infection is causing your symptoms.

**Skin Test for Tuberculosis**

For this test, your doctor injects a substance under the top layer of skin on one of your arms. This substance reacts to tuberculosis (TB). If you have a positive reaction, a small hard lump will develop at the injection site 48 to 72 hours after the test. This test is done to rule out TB.

**Exercise Testing**

Exercise testing shows how well your lungs move oxygen and carbon dioxide in and out of your bloodstream when you're active. During this test, you walk or pedal on an exercise machine for a few minutes.

An EKG (electrocardiogram) checks your heart rate, a blood pressure cuff checks your blood pressure, and a pulse oximeter shows how much oxygen is in your blood.

Your doctor may place a catheter (a flexible tube) in an artery in one of your arms to draw blood samples. These samples will provide a more precise measure of the oxygen and carbon dioxide levels in your blood.

Your doctor also may ask you to breathe into a tube that measures oxygen and carbon dioxide levels in your blood.
Lung Biopsy

For a lung biopsy, your doctor will take samples of lung tissue from several places in your lungs. The samples are examined under a microscope. A lung biopsy is the best way for your doctor to diagnose IPF.

This procedure can help your doctor rule out other conditions, such as sarcoidosis (sar-koy-DO-sis), cancer, or infection. Lung biopsy also can show your doctor how far your disease has advanced.

Doctors use several procedures to get lung tissue samples.

**Video-assisted thoracoscopy (thor-ah-KOS-ko pee).** This is the most common procedure used to get lung tissue samples. Your doctor inserts a small tube with an attached light and camera into your chest through small cuts between your ribs. The tube is called an endoscope.

The endoscope provides a video image of the lungs and allows your doctor to collect tissue samples. This procedure must be done in a hospital. You'll be given medicine to make you sleep during the procedure.

**Bronchoscopy (bron-KOS-ko-pee).** For a bronchoscopy, your doctor passes a thin, flexible tube through your nose or mouth, down your throat, and into your airways. At the tube's tip are a light and mini-camera. They allow your doctor to see your windpipe and airways.

Your doctor then inserts a forceps through the tube to collect tissue samples. You'll be given medicine to help you relax during the procedure.

**Bronchoalveolar lavage (BRONG-ko-al-VE-o-lar lah-VAHZH).** During bronchoscopy, your doctor may inject a small amount of salt water (saline) through the tube into your lungs. This fluid washes the lungs and helps bring up cells from the area around the air sacs. These cells are examined under a microscope.

**Thoracotomy (thor-ah-KOT-o-me).** For this procedure, your doctor removes a few small pieces of lung tissue through a cut in the chest wall between your ribs. Thoracotomy is done in a hospital. You'll be given medicine to make you sleep during the procedure.

Doctors may prescribe medicines, oxygen therapy, pulmonary rehabilitation (PR), and lung transplant to treat idiopathic pulmonary fibrosis (IPF).

**Medicines**

Currently, no medicines are proven to slow the progression of IPF.

Prednisone, azathioprine (A-zah-THI-o-prene), and N-acetylcysteine (a-SEH-til-SIS-tee-in) have been used to treat IPF, either alone or in combination. However, experts have not found enough evidence to support their use.
**Prednisone**

Prednisone is an anti-inflammatory medicine. You usually take it by mouth every day. However, your doctor may give it to you through a needle or tube inserted into a vein in your arm for several days. After that, you usually take it by mouth.

Because prednisone can cause serious side effects, your doctor may prescribe it for 3 to 6 months or less at first. Then, if it works for you, your doctor may reduce the dose over time and keep you on it longer.

**Azathioprine**

Azathioprine suppresses your immune system. You usually take it by mouth every day. Because it can cause serious side effects, your doctor may prescribe it with prednisone for only 3 to 6 months.

If you don't have serious side effects and the medicines seem to help you, your doctor may keep you on them longer.

**N-acetylcysteine**

N-acetylcysteine is an antioxidant that may help prevent lung damage. You usually take it by mouth several times a day.

A common treatment for IPF is a combination of prednisone, azathioprine, and N-acetylcysteine. However, this treatment was recently found harmful in a study funded by the National Heart, Lung, and Blood Institute (NHLBI).

If you have IPF and take this combination of medicines, talk with your doctor. Do not stop taking the medicines on your own.

The NHLBI currently supports research to compare N-acetylcysteine treatment with placebo treatment (sugar pills) in patients who have IPF.

**New Medicines Being Studied**

Researchers, like those in the Idiopathic Pulmonary Fibrosis Network, are studying new treatments for IPF. With the support and guidance of the NHLBI, these researchers continue to look for new IPF treatments and therapies.

Some of these researchers are studying medicines that may reduce inflammation and prevent or reduce scarring caused by IPF.

If you're interested in joining a research study, talk with your doctor. For more information about ongoing research, go to the "Clinical Trials" section of this article.
Other Treatments

Other treatments that may help people who have IPF include the following:

- Flu and pneumonia vaccines may help prevent infections and keep you healthy.
- Cough medicines or oral codeine may relieve coughing.
- Vitamin D, calcium, and a bone-building medicine may help prevent bone loss if you're taking prednisone or another corticosteroid.
- Anti-reflux therapy may help control gastroesophageal reflux disease (GERD). Most people who have IPF also have GERD.

Oxygen Therapy

If the amount of oxygen in your blood gets low, you may need oxygen therapy. Oxygen therapy can help reduce shortness of breath and allow you to be more active.

Oxygen usually is given through nasal prongs or a mask. At first, you may need it only during exercise and sleep. As your disease worsens, you may need it all the time.

For more information, go to the Health Topics Oxygen Therapy article.

Pulmonary Rehabilitation

PR is now a standard treatment for people who have chronic (ongoing) lung disease. PR is a broad program that helps improve the well-being of people who have breathing problems.

The program usually involves treatment by a team of specialists in a special clinic. The goal is to teach you how to manage your condition and function at your best.

PR doesn't replace medical therapy. Instead, it's used with medical therapy and may include:

- Exercise training
- Nutritional counseling
- Education on your lung disease or condition and how to manage it
- Energy-conserving techniques
- Breathing strategies
- Psychological counseling and/or group support

For more information, go to the Health Topics Pulmonary Rehabilitation article.

Lung Transplant

Your doctor may recommend a lung transplant if your condition is quickly worsening or very severe. A lung transplant can improve your quality of life and help you live longer.

Some medical centers will consider patients older than 65 for lung transplants if they have no other serious medical problems.
The major complications of a lung transplant are rejection and infection. ("Rejection" refers to your body creating proteins that attack the new organ.) You will have to take medicines for the rest of your life to reduce the risk of rejection.

Because the supply of donor lungs is limited, talk with your doctor about a lung transplant as soon as possible.

No cure is available for idiopathic pulmonary fibrosis (IPF) yet. Your symptoms may get worse over time. As your symptoms worsen, you may not be able to do many of the things that you did before you had IPF.

However, lifestyle changes and ongoing care can help you manage the disease.

**Lifestyle Changes**

If you're still smoking, the most important thing you can do is quit. Talk with your doctor about programs and products that can help you quit. Also, try to avoid secondhand smoke. Ask family members and friends not to smoke in front of you or in your home, car, or workplace.

If you have trouble quitting smoking on your own, consider joining a support group. Many hospitals, workplaces, and community groups offer classes to help people quit smoking.

For more information about how to quit smoking, go to the Health Topics Smoking and Your Heart article and the National Heart, Lung, and Blood Institute's (NHLBI's) "Your Guide to a Healthy Heart." Although these resources focus on heart health, they include general tips on how to quit smoking.

Staying active can help with both your physical and mental health. Physical activity can help you maintain your strength and lung function and reduce stress. Try moderate exercise, such as walking or riding a stationary bike. Ask your doctor about using oxygen while exercising.

As your condition advances, use a wheelchair or motorized scooter, or stay busy with activities that aren't physical in nature.

You also should follow a healthy diet. A healthy diet includes a variety of fruits and vegetables. It also includes whole grains, fat-free or low-fat dairy products, and protein foods, such as lean meats, poultry without skin, seafood, processed soy products, nuts, seeds, beans, and peas.

A healthy diet is low in sodium (salt), added sugars, solid fats, and refined grains. Solid fats are saturated fat and trans fatty acids. Refined grains come from processing whole grains, which results in a loss of nutrients (such as dietary fiber).

Eating smaller, more frequent meals may relieve stomach fullness, which can make it hard to breathe. If you need help with your diet, ask your doctor to arrange for a dietitian to work with you.
For more information about following a healthy diet, go to the NHLBI's "Your Guide to Lowering Your Blood Pressure With DASH" and the U.S. Department of Agriculture's ChooseMyPlate.gov Web site. Both resources provide general information about healthy eating.

Getting plenty of rest can increase your energy and help you deal with the stress of living with a serious condition like IPF.

Try to maintain a positive attitude; relaxation techniques may help you do this. These techniques also may help you avoid excessive oxygen intake caused by tension or overworked muscles.

Avoid situations that can make your symptoms worse. For example, avoid traveling by air or living at or traveling to high altitudes where the air is thin and the amount of oxygen in the air is low.

**Ongoing Care**

If you have IPF, you will need ongoing medical care. If possible, seek treatment from a doctor who specializes in IPF. These specialists often are located at major medical centers.

Treatment may relieve your symptoms and even slow or stop the fibrosis (scarring). Follow your treatment plan as your doctor advises. For example:

- Take your medicines as your doctor prescribes
- Make any changes in diet or exercise that your doctor recommends
- Keep all of your appointments with your doctor
- Enroll in pulmonary rehabilitation

As your condition worsens, you may need oxygen therapy full time. Some people who have IPF carry portable oxygen when they go out.

**Emotional Issues and Support**

Living with IPF may cause fear, anxiety, depression, and stress. Talk about how you feel with your health care team. Talking to a professional counselor also can help. If you’re very depressed, your doctor may recommend medicines or other treatments that can improve your quality of life.

Joining a patient support group may help you adjust to living with IPF. You can see how other people who have the same symptoms have coped with them. Talk with your doctor about local support groups or check with an area medical center.

Support from family and friends also can help relieve stress and anxiety. Let your loved ones know how you feel and what they can do to help you.

The National Heart, Lung, and Blood Institute (NHLBI) is strongly committed to supporting research aimed at preventing and treating heart, lung, and blood diseases and conditions and sleep disorders.
NHLBI-supported research has led to many advances in medical knowledge and care. For example, this research has uncovered some of the causes of chronic lung diseases, as well as ways to prevent and treat these diseases.

Many more questions remain about lung diseases, including idiopathic pulmonary fibrosis (IPF). The NHLBI continues to support research aimed at learning more about these diseases. For example, NHLBI-supported research on IPF includes studies that explore:

- The natural history of familial IPF and its underlying causes
- How well N-acetylcysteine works alone and with other medicines to treat IPF
- The benefits of pulmonary rehabilitation for people who have IPF

Much of this research depends on the willingness of volunteers to take part in clinical trials. Clinical trials test new ways to prevent, diagnose, or treat various diseases and conditions.

For example, new treatments for a disease or condition (such as medicines, medical devices, surgeries, or procedures) are tested in volunteers who have the illness. Testing shows whether a treatment is safe and effective in humans before it is made available for widespread use.

By taking part in a clinical trial, you can gain access to new treatments before they’re widely available. You also will have the support of a team of health care providers, who will likely monitor your health closely. Even if you don’t directly benefit from the results of a clinical trial, the information gathered can help others and add to scientific knowledge.

If you volunteer for a clinical trial, the research will be explained to you in detail. You’ll learn about treatments and tests you may receive, and the benefits and risks they may pose. You’ll also be given a chance to ask questions about the research. This process is called informed consent.

If you agree to take part in the trial, you’ll be asked to sign an informed consent form. This form is not a contract. You have the right to withdraw from a study at any time, for any reason. Also, you have the right to learn about new risks or findings that emerge during the trial.

For more information about clinical trials related to IPF, talk with your doctor. You also can visit the following Web sites to learn more about clinical research and to search for clinical trials:
Emphysema

**Medical:**
Although emphysema is irreversible, if it’s found early enough, it can be slowed or stopped. The first way to prevent the progression is to get rid of the irritation causing the emphysema, for example cigarette smoke.

*Uses of medication for Emphysema:*

- Takes pressure off the alveoli
- Removes mucus and edema from the lungs
- Prevents the potential for lung infections

**Medications for Emphysema:**

- Nicotine patches or gum are commonly suggested and prescribed to aid the patient in quitting smoking.
- Corticosteroids either ingested or inhaled are used to manage inflammation.
- To clear the lungs, mucolytics and expectorants are used.
- Short-acting and long-acting bronchodilators are to broaden airway and allow for easier airflow.
- Antibiotics are used if necessary to rid the system of bacteria.

-Due to the greater susceptibility to infection, it is recommended to vaccinate against pneumocococcus and to get a yearly flu shot.
Oxygen therapy is recommended during sleep or following exercise for some patients with emphysema depending on how extreme the symptoms are. (Werner, 2013)

**Surgical Intervention:**

**Lung Volume Reduction Surgery**

This is a surgery in which there is the removal of the damaged portions of the lungs. The benefits of this procedure are to allow for more capacity in the thorax, which improves the function of the diaphragm, intercostal muscles, and increases circulation. This makes it easier for the patient to breathe and in turn improves quality of life (Werner, 2013).

Prior to surgery, patients must go through a 6-10 week rehabilitation program to improve exercise capacity and post-operation recovery. Post surgery, physical therapy is required while still in hospital and patient is discharged once the patient is mobile, drainage tubes removed, and eating a regular diet.

**Lung Transplant:** As a last resort, many patients choose to undergo a lung transplant. Emphysema is the leading reason for lung transplants (Werner, 2013). Following treatment, patients will go to the intensive care unit for several days with tubes still inserted.

**Massage:**

- **Indications:** A gentle and reflexive treatment is indicated for emphysema patients, especially those with extreme fatigue. Because of the overworked accessory muscles to breathing, specific work on muscles of the chest, shoulders, and neck can be indications for treatment as long as treatment is within the tolerance of the patient.
- **Contraindications:** A major risk with massaging and individual with emphysema is that they may have cardiovascular issues. With this comes the inability to lay flat and also a secondary respiratory infection. Ensure to use caution with hydrotherapy choices and positioning.
- **Effectiveness:** Massage of the muscles of expiration and inspiration are important because it can reduce the amount of energy it takes to breathe providing the client with an energized and less fatigued feeling.

(Werner, 2013)

**Alternative Treatments:**

**Pulmonary Rehabilitation:**

- This involves a rehabilitation program to decrease susceptibility to breathlessness and to improve the ability to exercise by teaching specific exercises and techniques.

**Supplemental Oxygen:**
- Emphysema patients, with low levels of oxygen in the blood, benefit from the use of oxygen while exercising. However, many patients use oxygen 24 hours a day.

*Nutrition Therapy:*

- It is important for patients with emphysema to eat properly to ensure to receive maximal energy from food and should seek out advice from a nutritionist. In the early stages, many with emphysema are required to lose weight, while in the late stages many are required to gain weight.
Chronic obstructive pulmonary disease (COPD) refers to a group of diseases with one common feature: airway obstruction. Two major diseases, chronic bronchitis and emphysema, are prominent members of this group. COPD ordinarily features constricted airways clogged with excess mucous (bronchitis) or damaged and deteriorating air sacs (alveoli), which limit the amount of oxygen the lungs are able to deliver to the bloodstream.

In the late 1990s, it was estimated that COPD was the sixth leading cause of death worldwide, and the prevalence of COPD is believed to be on the rise. Unfortunately, there is presently no cure for COPD, and some of the drugs used to treat COPD have significant side effects. For this reason, alternative and complementary treatments have grown in popularity in recent years.

Several herbs have been used for centuries to alleviate the symptoms of COPD, including the aromatic culinary herb, thyme (Thymus vulgaris), ivy (Hedera helix), and other herbs, long used in Asian traditional medicine, including ginseng (Panax ginseng), curcumin (Curcuma longa) and Salvia miltiorrhiza.
To Treat Chronic Obstructive Pulmonary Disease Naturally

1. Stop or Limit the Cause

2. Scented Candle to clean the air and give medicine to the lungs thru breathing

3. Lose Weight

4. Clean the Room Air

5. Avoid Bad foods and eat good Natural foods that help breathing

6. Use Herbs, Teas and Coffee to provide symptom relief, Poltices, inhalers

7. Strengthen the Lungs, the Immune System + The Adrenals

8. Yoga Bellows and light Exercise to tolerance
**Thyme (Thymus vulgaris)**

Ample evidence suggests that this time-honored culinary and medicinal herb—prized for its aromatic oils—is a generous source of potent antioxidant compounds. Whether this translates to real relief from the inflammation and airway constriction of COPD remains less clear. Limited evidence, however, suggests, that thyme oil may offer relief. German researchers recently showed that the unique mixture of essential oils in thyme improves the clearance of mucus from the airways in animals. It may also help airways relax, improving airflow into the lungs.

**Ivy (Hedera helix)**

Extracted from common English ivy, this herbal remedy appears to offer significant relief from the airway restriction and impaired lung function associated with COPD. Scientists are guarded about the results of limited clinical trials, however. While promising, it’s believed that rigorous research is somewhat lacking. Ivy can cause skin irritation in some susceptible people and ivy extract is not recommended for people with an allergy to the plant.

**Ginseng (Panax ginseng)**

At least one well-controlled clinical study concluded that treatment with this traditional Asian herb was superior to a placebo for the relief of symptoms of COPD. Subjects taking ginseng experienced significant improvements in breathing and the ability to perform exercise, compared to similar subjects who received an inactive treatment.

Another study examined the effects of a combination therapy, which included ginseng and other Asian traditional healing herbs, versus no treatment at all. In this Chinese study, subjects taking the ginseng-based herbal blend experienced significant improvements in all measures of lung function, compared to subjects who received no treatment.
Another recent study examined all existing evidence regarding ginseng for COPD. The authors concluded that compared to no treatment, or treatment with standard medications alone, ginseng offered some additional improvement in quality of life and lung function among patients with stable COPD. A large, ongoing well-controlled clinical trial should provide more definitive information soon regarding the potential benefits of ginseng for the treatment of COPD.

**Curcumin (Curcuma longa)**

Turmeric, a spice commonly used in curries, is the source of powerful medicinal compounds collectively called “curcumin.” If there is a single traditional medicinal herb that may work as a panacea (a mythical treatment that heals everything) curcumin is probably it. Researchers are actively investigating curcumin’s ability to prevent, reverse, or improve a wide range of ailments and conditions. So far, scientists have found that curcumin may have significant antiviral, anti-inflammatory, anticancer, and antioxidant effects. What’s more, it may offer relief from arthritis and protection against Alzheimer’s disease.

Long used in Asian traditional medicine, curcumin has also been shown to reduce airway inflammation. As a powerful antioxidant, curcumin may help fight the oxidative stress believed to underlie COPD, while blocking inflammation at the molecular level. While many scientists are intrigued by curcumin’s potential ability to prevent or fight cancer, it may also be of significant benefit in the treatment of COPD. Curcumin is believed to be safe and well tolerated, even at relatively high doses.

**Red Sage (Salvia miltiorrhiza)**

Red Sage is yet another herb from traditional Chinese medicine reputed to improve the symptoms of COPD. Evidence is relatively scant, however. A recent study in China concluded that an extract of this herb (also known as Chinese Sage) alleviated some of the inflammation in the airways of people with severe COPD, compared to patients who received standard treatment alone.
Another study provided evidence that Salvia miltiorrhiza is an effective antioxidant, protecting the lining of the blood vessels from injury when circulation is temporarily cut off and then resumed, as in the case of stroke. This suggests that the herb may offer some benefit in COPD patients by reducing the effects of chronic inflammation through its antioxidant effects.

- **N-Acetyl Cysteine (NAC)**

**Other Proposed Natural Treatments**
- Acupuncture, Antioxidant-rich Diet, Ayurvedic Herbal Medicine, L-Carnitine, Coenzyme Q10, Creatine, Echinacea (in Combination With Wild Indigo and White Pine), Essential Oil Monoterpenes, Fish Oil, High-fat, Low-carbohydrate Diet, Ivy Leaf, Plantain, Qigong

**Broccoli Compound May Combat COPD**

In chronic obstructive pulmonary disease (COPD), damage to immune cells limits the lungs’ ability to fight off bacterial infections. According to a new study, boosting the activity of a specific molecule in these cells can restore their defensive powers.
COPD is the third leading cause of death nationwide. It’s often brought on by cigarette smoking. COPD can cause shortness of breath, wheezing and coughing, among other symptoms. In patients with COPD, immune cells called macrophages lose their ability to engulf and remove bacteria, making the lungs more vulnerable to infection. Infection can lead to inflammation, which is a major cause of impaired lung function and death in these patients. Until now, no one knew how to reverse this damage to the macrophages.

A team of scientists at Johns Hopkins University, led by Drs. Shyam Biswal and Robert Wise, investigated why macrophages don’t work properly in COPD patients. Previous research suggested that a process called oxidative stress might be to blame. Oxidative stress occurs when the body can’t effectively neutralize damaging compounds called peroxides and free radicals.

A molecule called Nrf2 can cause cells to make more antioxidants, which neutralize these harmful compounds. Previous studies found reduced Nrf2 activity in severe COPD. The scientists suspected that increasing Nrf2 activity might restore the ability of macrophages to remove bacteria. To test their theory, the team used a chemical called sulforaphane, which is known to activate Nrf2. A precursor of sulforaphane is found in broccoli. The research was cosponsored by NIH’s National Heart, Lung and Blood Institute (NHLBI) and National Institute of Environmental Health Sciences (NIEHS). The results appeared in the April 13, 2011, issue of *Science Translational Medicine*.

The researchers first took macrophages from the lungs of patients with moderate COPD. When they treated these macrophages with sulforaphane, they saw higher Nrf2 levels in the cells. Sulforaphane treatment also boosted the ability of cultured macrophages to clear 2 of the major types of bacteria that infect COPD patients. Macrophage uptake of bacteria rose 300% after treatment, whether the cells came from smokers or non-smokers.

Experiments in mouse and human cells revealed that sulforaphane, through Nrf2, increases levels of a receptor called MARCO on macrophages. MARCO activity was necessary for macrophages to engulf bacteria after sulforaphane treatment. Mice exposed to smoke had lower levels of MARCO. Furthermore, smoke-exposed mice genetically engineered to lack Nrf2 had more lung inflammation and higher levels of bacteria.

The team next tested treatment approaches that might help COPD sufferers. They gave sulforaphane with a nebulizer to mice exposed to smoke and found that the mice’s lungs showed reduced inflammation and bacterial burden. The researchers also gave human COPD patients broccoli sprout extract enriched with sulforaphane for 2 weeks. The patients taking the extract had higher levels of MARCO and Nrf2-controlled antioxidants in their blood cells. A NHLBI-sponsored clinical trial is now being conducted to test if sulforaphane can provide relief to patients with COPD.

“This research may help explain the long-established link between diet and lung disease, and raises the potential for new approaches to treatment of this often-devastating disease,” says Wise.
"Adding myrosinase enzymes in the form of even a pinch of mustard powder to cooked cruciferous (cabbage-family) vegetables like kale, collards or Brussels sprouts can offer anti-cancer sulforaphane levels comparable to raw, removing the necessity to pre-chop or juice for maximum health benefits."


Consuming Ivy Leaf And Plantain show improvement in patients of COPD
Licorice Root For COPD

Echinacea For COPD

Turmeric For COPD

1. Omega – 3 Fatty Acids For COPD

Vitamin E For COPD

7. Olive Leaf For COPD

Watercress For Lung Cleansing

Eucalyptus Oil show effective benefits for people suffering from COPD
Black Cumin Seed Oil: The Most Powerful Oil In The World?

The Prophet Muhammad called Black Cumin Seed “the remedy for every illness except death”, it was used by Cleopatra as a beauty treatment and Hippocrates used it to cure metabolic and digestive disorders. Some of the conditions found to have been improved through the use of Black Cumin Seed Oil include: allergies, anxiety, cold and flu, diabetes, hair loss, headaches and migraines, high blood pressure, insomnia, depression + more.

Diaphragmatic Breathing
is experienced more easily when you are lying on your back with knees bent.
Home Remedies for Bronchitis

Intake of water is a good remedy for bronchitis.

Tea tree oil and anise are beneficial for curing bronchitis.

Chicory and pepper help cure bronchitis.

Turmeric mixed with warm milk is an effective remedy.

Cardamom relieves coughing caused by bronchitis.

Onion and garlic help reduce inflammation.

Eucalyptus oil, juniper oil, and camphor oil aid in relieving pain associated with coughing.

Ginger provides relief from sore throat and coughing.

Bay leaf inhibits inflammation associated with bronchitis.

Honey provides relief from cough and sore throat.

Eucalyptus, Peppermint, Wintergreen in a candle can increase the vaso-dilation of the lungs to carry the herbs deeper to kill fungus, treat cancer, and or remedy other lung diseases.
One Scented Candle in a room can kill clinging Bacteria and Fungus on the walls and in the air. Use this as a carrier for Herbs. If you use Tea Tree oil, Oregano and Pau D’Arco oil in the candle it can be carried into the lungs via the air to kill the Fungus and Mycobacterium.
Black cumin: The secret miracle heal-all remedy

What if we told you there was a seed so densely packed with healing compounds that cancer, bacteria, viruses, ulcers, diabetes, chronic inflammation, and many other common health conditions hardly stand a chance in its presence?

Black Foods for Disease

List of Superfoods that Benefit the Cure of Diabetes, Heart Disease, and Cancer

Black Superfoods are dark fruits, vegetables, and grains that are nutritional power foods. Their color comes from plant pigments that may help lower the risks of diabetes, heart disease, and cancer, so it's health smart to eat them.

Black foods have more antioxidants than light-colored foods because of their high pigment content.

Chromium makes foods Dark or Black
Exercise and Conditioning are the best ways to fight Asthma, you must calmly learn to Stuggle Slowly and Overcome the Asthma, Many World Class runners had Asthma as a Child and Learned to Run Through Asthma and Burn away the Lung Fungus
SOME SURPRISING HEALTH BENEFITS OF COFFEE

Heart Disease
The antioxidants in coffee have several beneficial effects for the heart, including the improvement of blood vessel function and the reduction of inflammation. A study has also shown that women who drank 3-5 cups a day have a 58% lower risk of death from heart disease.

Cancer
Women who drink 3-4 cups a day have half the risk of developing colon cancer. A recent animal study found that coffee consumption was significantly associated with a lower risk of colorectal cancer.

Diabetes
Drinking coffee can lower the risk of type 2 diabetes by up to 69%, due to the antioxidants and minerals in coffee, improving glucose metabolism and insulin sensitivity.

Liver Cirrhosis
Drinking as little as 2 cups of coffee a day can lower the risk of Liver Cirrhosis by 30%.

Galstones
It has been shown that women who drank 4 cups of coffee a day were 25% less likely to need surgery for gallstones. While drinking coffee has been linked to a lowered gallstone risk in men.

Stroke
A 2005 study has shown that women who drank 4 cups coffee a day had a 24% lower chance of having a stroke.

Gout
Men who drank up to 4-5 cups of coffee a day were 40% less likely to develop gout.

Alzheimer’s
A recent study has found that people who drink 3-5 cups of coffee a day were 65% less likely to develop Alzheimer’s. Coffee may also reduce production of proteins that deposit in the brain of those with Alzheimer’s.

Memory
Older people who regularly drank coffee reported a slower rate of cognitive decline.

Parkinson’s
A 2007 study found that those who drank at least 1 cup of coffee a day reduced their chance of developing Parkinson’s disease by almost 50%.

Sources:
http://www.postnaturalliving.com/
http://www.bourbonnaiscoffee.org/
ADRENAL MASSAGE: A light massage of the adrenals can stimulate adrenalin by bringing blood flow to the adrenals. Slight rotation counter clockwise helps to stimulate adrenalin 2 to 5 min. Do not use excess pressure twice a day if necessary 5 hours in between.
A study led by researchers at Boston University School of Medicine (BUSM) has shown that a compound used in some skin creams may halt the progression of emphysema and reverse some of the damage caused by the disease. When the compound Gly-His-Lys (GHK) was applied to lung cells from patients with emphysema, normal gene activity in altered cells was restored and damaged aspects of cellular function were repaired.

The study, which is published in *Genome Medicine*, also demonstrates the potential impact of using genomic technologies to identify new possible treatments for diseases using existing drugs and compounds.

Chronic obstructive pulmonary disease (COPD) is a chronic, progressive lung disease that comprises emphysema, small airway obstruction and/or chronic bronchitis leading to the loss of lung function. Tobacco smoke and other irritants cause oxidative stress and chronic inflammation, which over time destroys lung alveolar cells and results in emphysema. Without these cells, the lungs are not able to efficiently exchange oxygen for carbon dioxide, causing shortness of breath and low blood oxygen levels. According to the National Institutes of Health’s National Heart, Lung and Blood Institute (NHLBI), COPD is the third leading cause of death in the United States and results in approximately 120,000 deaths each year. While there are treatments and lifestyle changes that can help people cope with COPD, there currently is no cure and there are no effective therapies to reduce the rate of lung function decline that occurs as the disease progresses.
Aniseed

Emphysema increases sputum formation, which results in congestion in the chest and a nasty cough. Aniseed is beneficial in this condition as it possesses expectorant properties and helps in the natural curing of emphysema. **You can chew on some aniseeds throughout the day** to get these health benefits. Alternately, you can mix six to seven drops of aniseed oil with little honey and have this mixture twice every day.

Pineapple

Pineapple contains a substance called bromelain that helps reduce the production of mucus in your lungs and respiratory system. This is very beneficial for people suffering from emphysema. **Have plenty of fresh pineapple slices every day**, and enjoy its juice as well. Some people are allergic to bromelain as it causes gastritis in them. So, observe if it suits you before you start eating pineapples regularly.
**Lagundi**

Lagundi plant (*Vitex negundo*) is a large shrub found mostly in the Philippines. It is generally used to treat asthma, coughs, and other respiratory problems. Lagundi acts as an analgesic, helping relieve pain and discomfort. It is one of the most effective natural cures of emphysema. The leaves of this plant contain an **active compound called chrysophenol D** which has antihistamine property and acts as a muscle relaxant.

Boil half a cup of lagundi leaves in two cups of water for about ten minutes. Strain and drink this decoction thrice a day. It helps clear out your lungs and makes breathing easier. Lagundi also helps prevent allergic reactions to pollutants in the air and food.

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**Juice Detox**

While you are considering the natural cures for emphysema, a fruit detoxification routine will help eliminate harmful toxins from your system and help boost your immunity. Consider a fast of three to four days that includes vegetable and fruit juices alone as your daily diet. These juices will provide essential nutrients that your body needs and make your immune system stronger.

Now, this is very essential for emphysema sufferers who are more susceptible to infections. Their organ strength and ability to fight off infections is highly improved by this process. After this initial detox, continue doing this for a couple of days every week for at least two months.
“Given the high costs, both direct and indirect, associated with COPD, there is an urgent need to identify novel approaches to treat the disease,” said Avrum Spira, MD, MSc, Alexander Graham Bell professor of medicine and chief of the division of computational biomedicine at BUSM, who was one of the study’s senior leaders. Spira also is a physician in the pulmonary, critical care and allergy department at Boston Medical Center.

Researchers took cells from lungs donated by patients undergoing a double lung transplant because their lungs were irrevocably damaged by COPD and found 127 genes had changes in activity as disease severity increased within the lung. The genes that showed increased activity included several that are associated with inflammation, such as those involved in signalling to B-cells (the immune system cells that make antibodies).

In contrast, the genes involved in maintaining cellular structure and normal cellular function, along with the growth factors TGFβ and VEGF, were down-regulated and showed decreased activity. Genes that control the ability of the cells to stick together (cell adhesion), produce the protein matrix that normally surrounds the cells and promote the normal association between lung cells and blood vessels were among the genes in this category.
Using genomic technologies and computational methods, the researchers identified genetic activity defects that occur as emphysema progresses and matched these defects with compounds that could reverse the damage. “Our study results showed that the way genes were affected by the compound GHK, a drug identified in the 1970s, was the complete opposite of the pattern we had seen in the cells damaged by emphysema,” said Marc Lenburg, PhD, associate professor in computational biomedicine and bioinformatics at BUSM and one of the study’s senior authors.

“What got us especially excited was that previous studies had shown that GHK could accelerate wound repair when applied to the skin,” said Joshua Campbell, PhD, a post-doctoral fellow working with Spira and Lenburg who served as the study’s first author. “This made us think that GHK could have potential as a therapy for COPD.”

“When we tested GHK on cells from the damaged lungs of smokers with COPD, we saw an improvement in the structure of their actin cytoskeleton and in cell adhesion, especially to collagen,” said James Hogg, MD, from the University of British Columbia and one of the study’s senior authors. “GHK also restored the ability of cells to reorganize themselves to repair wounds and construct the contractile filaments essential for alveolar tissue repair.”

GHK is a natural peptide found in human plasma, but the amount present decreases with age. While more testing needs to be done on its effects in COPD, these early results are very promising. Therapeutic studies with GHK in animal models of COPD are now underway with the ultimate goal of moving this compound into clinical trials. As more gene activity signatures are discovered, this method of matching drug to disease may provide a rapid method for discovering potential uses for existing drugs and compounds.

“Beyond the identification of a potential new COPD drug, the research team developed a cost-effective approach to study COPD at the molecular level across the entire lung, and then screen potential drug candidates,” said James Kiley, PhD, director of the NHLBI’s Division of Lung
Diseases, who supported this work. “This work demonstrates the potential of using genomics data to drive clinical research.”

Research reported in this published article was supported by the NHLBI under award number R01 HL095388 and through the National Institutes of Health under award number UL1 TR000157 (Boston University Clinical and Translational Science Institute). Researchers from the University of British Columbia, the University Medical Center Groningen and the University of Pennsylvania also collaborated on this study.

ABOUT COPD + SALT

“The Salt Cave changed my life. Before my first visit I was on lots of antibiotics and steroids, basically confined to my house, and I hated to be around people as my breathing was so noisy. However, this has now changed thanks to Salt Therapy. The Salt Cave lets me live again and manage my illness in a way that means I can enjoy life again. When I walk out of The Salt Cave I feel high on life. I call it my heaven on earth.”
By 2030, Chronic Obstructive Pulmonary Disease (COPD) is predicted to be the fourth leading cause of death in the UK. It is thought there are over 3 million people living with the disease in the UK, of which only about 900,000 have been diagnosed. This is because many people who develop the symptoms dismiss it as a smoker’s cough and don’t seek help.

COPD is a general term which includes chronic bronchitis and emphysema, both of which can cause narrowing of the airways and commonly occur together.

KEY FACTS

- Bronchitis is inflammation of the bronchi (the airways of the lungs).
- Emphysema is damage to the smaller airways and airsacs (alveoli) of the lungs.
- Pulmonary means ‘affecting the lungs’.

SYMPTOMS OF COPD

- A cough is usually the first symptom to develop, coming and going before gradually becoming more persistent. People often think of their cough as a ‘smokers’ cough’ in the early stages of the disease. It is when the breathlessness begins that people often become concerned.
- Breathlessness and wheeziness may occur only when you exert yourself at first, for example, when climbing stairs. These symptoms tend to become gradually worse over the years if you continue to smoke, and chest infections are more common.

MAIN CAUSES

- **Smoking.** The primary risk factor for COPD is chronic tobacco smoking. In the United States, 80 to 90% of cases of COPD are due to smoking. Almost all life-long smokers will develop COPD, provided that smoking-related, extrapulmonary diseases (cardiovascular, diabetes, cancer) do not claim their lives first.
- **Occupational exposure.** Intense and prolonged exposure to workplace dust found in coal mining, gold mining and the cotton textile industry and chemicals such as cadmium, isocyanates and fumes from welding have been implicated in the development of airflow obstruction, even in non-smokers.
- **Air pollution.** Studies in many countries have found that people who live in large cities have a higher rate of COPD compared to people who live in rural areas.

HOW SALT CAN HELP

- Salt is antibacterial, it kills bacteria
- It reduces inflammation of the airways
- Salt is mucolytic, which means it helps to shift retained mucus

HOW THE SALT CAVE CAN HELP

During the Salt Therapy process the overwhelming majority of patients notice a decrease in cough frequency and intensity, and that it’s easier to cough up mucus, which becomes less sticky and changes in its nature.
COPD sufferers find that not only does Salt Therapy bring immediate relief in the shorter, but also delays the frequency of reoccurrence.

Salt Therapy is a clinically proven natural, safe and beneficial method of treatment for every age group. By visiting one of our Salt Rooms and breathing in the saline aerosol generated by our machine it can significantly help to:

- Reduce the need for inhalers, steroids and antibiotics
- Make your breathing easier after just a few sessions
- Improve lung function
- Reduce the number of hospital admissions
- Alleviate sneezing, coughing, and shortness of breath
- Clear mucus and sticky phlegm from the lungs
- Increase the resistance to respiratory tract diseases
- Strengthen your immune system
- Prolong remission times

HOW OFTEN SHOULD YOU COME

- Depending on age and stage of your condition, 20-30 sessions are recommended for long term results.
- The sessions should be frequent; about two or three a week is suggested.
- For irreversible conditions, two to three-month follow-up sessions are recommended to maintain the clear lungs.

In most patients, after a course of Salt Therapy, airways become normal and symptoms disappear. The treatment’s efficacy is estimated at 75-98%. Most clients do 1-2 Salt Therapy courses a year. In between they might come back for some top-up sessions, if they start to feel poorly, e.g. they are coming down with a cold. Why not contact us now to book your first introductory Salt Therapy session absolutely free with no obligations.

SUCCESS STORIES

Last winter I suffered five hospitalisations due to chest infections, the final one culminating in hospital-acquired pneumonia, for which I was on a ventilator for six days. I left the hospital after 19 days, severely weakened, with an oxygen concentrator machine. Being told by NHS respiratory nurses that “there is no cure, you should try to make the best of the time you have left” wasn’t exactly what I wanted to hear whilst trying to recover. I googled “alternative therapies for COPD” and up jumped The Salt Cave. I read about it, mulled it over, spoke to friends and thought what the heck, I can’t be any worse off.
After my first session at Earlsfield I felt my breathing was a bit clearer. So I came back the next week and tried again. I’m delighted to report that since the third or fourth session I am now not using the nebuliser at all and have stopped completely taking the carbosistien tablets.

I would recommend The Salt Cave highly to other COPD sufferers. I used to cough until I vomited, trying to clear phlegm for my windpipe and lungs. Now a gentle cough without even trying brings it up. The Salt Cave will literally change your life.

I’m walking around almost normally, so if you have COPD please, please contact them and travel, no matter how far. The difference in my life is immeasurable – I cannot thank them enough. Many dark days in my life are behind me thanks to this treatment!”

Alan S.

“I suffer from COPD and get recurrent chest infections which can be very debilitating. Since regular sets of sessions (6 x every other day) each month or so I have found such infections have all but stopped and my breathing has eased. The staff at The Salt Caves are great, too!”

Anthony O.

"I suffer emphysema, and my daughter treated me to a session at The Salt Caves. I went into a room covered in salt, walls were salt, floor was salt, I sat on a deck chair, the lights were dimmed, and I chilled listening to relaxing music for an hour. It was the most relaxing hour I have ever had. Once I came out, I didn’t feel much different, just relaxed, but as time went on and the days went by, I felt my breathing was a lot better. I would definitely recommend the salt caves for anyone suffering from breathing difficulties.”

Michele B
COPD and Exercise: Breathing and Exercise Programs for COPD

In this article

- How Exercises for COPD Can Help You
- 4 Types of Exercises for COPD
- COPD and Exercise Guidelines
- COPD and Exercise Precautions
- COPD and Exercise: When to Stop

How Exercises for COPD Can Help You

Exercise -- especially exercise that works your lungs and heart -- has many benefits for those with chronic obstructive pulmonary disease (COPD). Exercise can:

- Improve how well your body uses oxygen. That's important because people with COPD use more energy to breathe than other people do.
- Decrease your symptoms and improve your breathing
- Strengthen your heart, lower your blood pressure, and improve your circulation
- Improve your energy, making it possible to stay more active
- Improve your sleep and make you feel more relaxed
- Help you maintain a healthy weight
- Enhance your mental and emotional outlook
- Reduce your social isolation, if you exercise with others
- Strengthen your bones

10 Smart Exercises for People With COPD

4 Types of Exercises for COPD

These four types of exercise can help you if you have COPD. How much you focus on each type depends on the COPD exercise program your health care provider suggests for you.

Stretching exercises lengthen your muscles, increasing your flexibility.

Aerobic exercises use large muscle groups to move at a steady, rhythmic pace. This type of exercise works your heart and lungs, improving their endurance. This helps your body use oxygen more efficiently and, with time, can improve your breathing. Walking and using a stationary bike are two good aerobic exercises if you have COPD.
Strengthening exercises involve tightening muscles until they begin to tire. When you do this for the upper body, it can help increase the strength of your breathing muscles.

Breathing exercises for COPD help you strengthen breathing muscles, get more oxygen, and breathe with less effort. Here are two examples of breathing exercises you can begin practicing. Work up to 5 to 10 minutes, three to four times a day.

Pursed-lip breathing:

1. Relax your neck and shoulder muscles.
2. Breathe in for 2 seconds through your nose, keeping your mouth closed.
3. Breathe out for 4 seconds through pursed lips. If this is too long for you, simply breathe out twice as long as you breathe in.

   Use pursed-lip breathing while exercising. If you experience shortness of breath, first try slowing your rate of breathing and focus on breathing out through pursed lips.

Diaphragmatic breathing:

1. Lie on your back with knees bent. You can put a pillow under your knees for support.
2. Place one hand on your belly below your rib cage. Place the other hand on your chest.
3. Inhale deeply through your nose for a count of three. Your belly and lower ribs should rise, but your chest should remain still.
4. Tighten your stomach muscles and exhale for a count of six through slightly puckered lips.

COPD and Exercise Guidelines

- Set realistic goals.
- Gradually increase the number of minutes and days you exercise. A good goal is to exercise 20 to 40 minutes, 2 to 4 times a week.
- Start out slow. Warm up for a few minutes.
- Choose activities you enjoy, and vary them to help you stay motivated.
- Find an exercise partner.
- Keep a record of your exercise to help you stay on track.
- As you end your exercise, cool down by moving more slowly.
COPD and Exercise Precautions

It's good to take precautions when exercising with COPD, but remember that shortness of breath doesn't always mean you should stop altogether. Ask your doctor about when you should stop exercising and rest.

Here are other exercise precautions:

- Always consult a doctor or other health care provider before starting a COPD exercise program. If you have a change in any medications, talk to your doctor before continuing your exercise routine.
- Balance exercise with rest. If you feel tired, start at a lower level. If you feel very tired, rest, and try again the next day.
- Wait at least an hour and a half after eating before beginning to exercise.
- When you drink fluids while exercising, remember any fluid restrictions you have.
- Avoid hot or cold showers after exercising.
- If you've been away from exercise for several days, start up slowly, and gradually return to your regular routine.

Exercises to avoid when you have COPD:

- Heavy lifting or pushing
- Chores such as shoveling, mowing, or raking
- Pushups, sit-ups, or isometric exercises, which involve pushing against immovable objects
- Outdoor exercises when the weather is very cold, hot, or humid
- Walking up steep hills

Ask your doctor whether exercises like weightlifting, jogging, and swimming are OK for you to do.

COPD and Exercise: When to Stop

If you experience any of these signs or symptoms, stop your COPD exercise program right away. Sit down, and keep your feet raised while resting. If you don't feel better right away, call 911. Even if you do feel better, make sure you tell your doctor right away about any of these symptoms.

- Nausea, Dizziness, Weakness
- Rapid or irregular heartbeat, Severe shortness of breath
- Pain, Pressure or pain in your chest, arm, neck, jaw, or shoulder
Breathing Techniques for COPD

Before starting these techniques, ask your Health Care Provider if they are right for you. Having COPD makes it harder to breathe. And when it’s hard to breathe, it’s normal to get anxious, making you feel even more short of breath.

There are two breathing techniques that can help you get the air you need without working so hard to breathe: Pursed-lips Breathing and Diaphragmatic (also called Belly or Abdominal) Breathing.

Better Breathing Tip: It’s normal to hold your shoulders tense and high. Before starting any breathing technique, take a minute to drop your shoulders down, close your eyes, and relax.

Pursed-Lips Breathing

- Slows your breathing down
- Keeps airways open longer so your lungs can get rid of more stale, trapped air
- Reduces the work of breathing
- Increases the amount of time you can exercise or perform an activity
- Improves the exchange of oxygen and carbon dioxide

To do purse-lips breathing:
1. Breathe in through your nose (as if you are smelling something) for about 2 seconds.

2. Pucker your lips like you’re getting ready to blow out candles on a birthday cake.

3. Breathe out very slowly through pursed-lips, two to three times as long as you breathed in.

4. Repeat.

**Diaphragmatic (Abdominal/Belly) Breathing**

The diaphragm is the main muscle of breathing. It’s supposed to do most of the work. When you have COPD, the diaphragm doesn’t work as well and muscles in the neck, shoulders and back are used. These muscles don’t do much to move your air. Training your diaphragm to take over more “work of breathing” can help.

*Diaphragmatic breathing is not as easy to do as pursed-lips breathing. It is recommended that you get instruction from a respiratory health care professional or physical therapist experienced in teaching it.*

This technique is best used when you’re feeling rested and relaxed, and while sitting back or lying down.

1. Relax your shoulders.

2. Place one hand on your chest and the other on your belly.

3. Inhale through your nose for about two seconds.

4. As you breathe in, your belly should move outward. Your belly should move more than your chest.

5. As you breathe out slowly through pursed-lips, gently press on your belly. This will push up on your diaphragm to help get your air out.

6. Repeat.
Better Breathing Tip: Stop, Reset, Continue

When you are feeling short of breath during exercise or regular activities, use these 3 steps:

1. Stop your activity.
2. Reset by sitting down, relax your shoulders, and do pursed-lips breathing until you catch your breath.
3. Continue activity, doing pursed-lips breathing as you go. Go at a slower pace if you need to.

While you’re here, look over these topics to learn tips on how to live better with your COPD.

- NEWLY DIAGNOSED
- UNDERSTAND YOUR LUNGS
- OXYGEN THERAPY
- MEDICATIONS
- PULMONARY REHABILITATION
- EXERCISE
- STAYING HEALTHY AND AVOIDING EXACERBATIONS
- AIR QUALITY IN YOUR HOME
- COPING WITH COPD
- QUITTING SMOKING

Yoga For COPD ...
Is That A Thing?
Why yes. Yes it is. It has been studied and proven to improve breathing, lung function, ability to relax, inflammation status, and quality of life.

I really regret going to yoga today ...
... said no one ever!

Yoga Inspiration

IMUNE
International Medical University for Natural Education
Evidence Based Natural Energetic Medicine Education
Bhastrika Bellows Breath
Yoga Pranayama

Background of Bhastrika Yoga Pranayama (Bellows Breath):

This important Yoga Breathing Exercise, Bhastrika Pranayama, is the ultimate pranayama for energy and power. It is one with a long list of benefits, which includes raising metabolic function at the cellular level to increase the burning of fat and promoting healthy, natural weight loss. Other than assisting in healthy weight loss and fat burning, there a myriad of valuable reasons to include this breathing exercise into your daily Yoga practice and a full list of these benefits is provided below.

Bhastrika Pranayama is also called Bellows Breath as it mimics the working of a bellows used to flame a fire. It pumps air and life-force (prana) vigorously and dynamically throughout the entire system. When practicing this champion of pranayamas be ready for a workout!

Benefits of Bhastrika Yoga Pranayama (Bellows Breath):

Primary:

- Boosts your metabolic rate so your body burns fat faster promoting natural weight loss.
- Purifies your gross and subtle body by eliminating toxins and waste.
- Generates heat in your body and opens up your energy pathways.
- Builds lung capacity and helps clear and strengthen the respiratory system.

Secondary:

- Expands and fortifies your nervous system.
- When done forcefully, the pulsating of the diaphragm massages the internal organs, thus improving your digestive system.

Cautions for Practicing Bhastrika Yoga Pranayama (Bellows Breath):

- If you feel dizzy or nauseous you should slow down the pace of bhastrika pranayama or stop entirely and return to normal breathing. If you suffer from vertigo, you should use caution in practicing this breathing exercise.
- If you are menstruating you should not practice this breathing exercise.
You should be careful practicing Bhastrika Pranayama if you have high blood pressure, heart disease or suffer from stroke or epilepsy. Also, if you have acid or heat related gastric issues such as ulcers you should use caution.

**Guided Beginner’s Breath of Bhastrika Yoga Pranayama (Bellows Breath):**

- To practice this breathing exercise sit up in a comfortable position. You may also practice it lying down or standing up, but, sitting is best.
- Elongate your spine upwards, lengthen your neck and subtly bring your chin back and in like a soldier at attention. This will align the spine with the back of your head.
- Close your eyes.
- Place your hands on your knees.
- Relax your stomach muscles.
- Now begin to breathe as forcefully as comfortable through the nose with equal emphasis on the inhalation and exhalation. The diaphragm should expand and contract in conjunction with your breathing. All the breaths should be deep and powerful and you should try to establish a steady rhythm. The pace should be about 1 second for inhalation and about the same for exhalation.
- Do a round of 10 repetitions and then inhale completely, hold your breath in for 1-5 seconds and then exhale completely. This completes 1 round. Take a short break.
- Work your way up to doing 5 rounds.

**Guided Intermediate Bhastrika Yoga Pranayama (Bellows Breath):**

- Once you feel comfortable with the Beginner’s version of Bellows Breath perform the breathing exercise at a faster pace now, about 1 breath per second. Also, breathe more forcefully if possible.
- Increase the number of repetitions slowly till you reach about 50 repetitions per round.
- At the end of every round, don’t forget to inhale completely and hold your breath. Build up this period of breath retention as well to about 15 seconds.
- You should still take a short break between rounds.

**Guided Advanced Bhastrika Yoga Pranayama (Bellows Breath):**

- Build up the pace and power with which you do this breathing exercise to almost 2 breaths per second.
- Increase the period of breath retention at the end of every round to 30 seconds. Still continue to take a break between rounds though.

**Secret of Bhasrika Yoga Pranayama (Bellows Breath):**

The final goal of Yoga is to awaken Kundalini Shakti (latent human potential energy) and Bhasrika Pranayama is one of the most effective breathing exercises for stimulating and raising this energy in you. Think of Kundalini as smoldering embers deep within you and think of Bhasrika as waves of prana stoking and igniting these embers. Be ready to handle the inferno!

**Breathing Exercise (Pranayama) - Bhasrika (Bellows)**

Bhasrika (Bellows) is the most powerful of all Breathing Exercises for raising Kundalini Bhasrika. Bhasrika or Bellows consists of pumping followed by the retention of breath like Kopalabhati.

**Warning in Performing the Bhasrika (Bellows)**

You should exercise caution against the temptation of pushing too far in your initial practice of Bellows. If you have the tendency to push the limit, lie down when doing this exercise since there is a risk for you to lose consciousness and fall on the floor. Forced breathing makes you relaxed and revitalized. Excess in practice may induce dizziness, drowsiness and lose of consciousness. No harm can come from hyperventilation as long as you are in bed. If you happen to lose consciousness, your breathing pattern will tend to rectify itself and return to normal. Excessive ventilation results to lightheadedness, giddiness or a feeling that you are floating in the air.

**Bhasrika (Bellows)**

Bhasrika is primarily consists of forced rapid deep breathing which serves as a basis for many varieties of exercises, all of which may be described by the same name. Although air is forced both in and out, the emphasis is placed upon the expulsion or explosion of air. A series of such explosions, each following the other in quick succession without either Full or Empty Pause, is called “A Round”. Beginners should limit a round to about five explosions, though the number may be increased to ten, or even more if needed to obtain the desired effect. The desired effects range from increased ventilation, increased Blood Circulation, clearing of the Nasal Passages and increased thinking capacity to eliminating all Mental Disturbances. Please be warned against generating such powerful explosions since it can cause injuries to lung tissues. Extending a series for so long can also cause dizziness. Comfort and not reckless excess should guide your motives and manner of doing the Bhasrika or Bellows.

Although you can breathe through your mouth or both mouth and nose, regular breathing is limited to either both or one nostril. The breath-stroke in the rapid succession of breaths may or may not be very deep, but it is customary to finish or follow a round by the deepest possible inhalation and exhalation. A series of normal breaths should occur before undertaking a second round. A deepest possible inhalation and exhalation may, and perhaps should, introduce each round. Some nasal hissing can be expected but avoid unpleasant sound and fluttering of the nasal skin surfaces. You may perform the Bhasrika exercise while standing but it is advisable to do it in a Seated Position in order to allow maximum Relaxation of the abdominal muscles and easy diaphragmatic breathing. Variations include using a full pause after each round, partial glottis closures and Alternation of Nostrils.
Asthma

Medical:

- Medications are usually prescribed to manage chronic asthma and reduce risk of acute attacks. Prevention includes the avoidance of triggers such as allergens and medications to reduce the inflammatory response (Rattray, 2000).
- Important for patients to recognize warning signs of an attack in order to be treated quickly as well as limit exposure to stimuli’s that triggers the attacks.
- Long-term intervention→ to get immediate relief and long term control
- Short-term intervention→ administering beta agonist inhalers to act as bronchodilators

Medications:

- Bronchodilators (inhalers) -to reduce resistance in airway
- Inhaled or oral corticosteroids- long term anti -inflammatories
- Antihistamines- allergy control
Long-term steroid use side effects- skin atrophy, episodes of bruising and hyperkyphosis associated with osteoporosis

(Massage:

- Indications: For those suffering from asthma, and live with anxiety of not being able to breathe deeply, massage is a great indication and can ease breathing
- Contraindications: Have an environment free of allergens such as heavy scents, essential oils, and non-hypoallergenic lubricants that may irritate or aggravate symptoms. Also be aware of client’s who are on medications that would need modifications for massage
- Effectiveness: May be soothing for client who may have high anxiety when it comes to taking a deep breathe and can also make big changes in easing their breathing
**Alternative Treatments:**

**Acupuncture**

- Insertion of thin needles into skin in specific points on body to try to relieve asthma is suggested in some studies
- *See experienced licensed acupuncturist or medical doctor if trying this treatment*

**Breathing Exercises**

- Techniques such as Buteyko breathing or yoga breathing are used to reduce hyperventilation and regulate breathing, some studies show these techniques may help reduce symptoms

**Herbal Remedies**

- Usually involves blends of herbs, taking herbs in combinations might be more effective that only one.
- Always discuss and take caution when using herbs or dietary supplements with your doctor.

**Some Concerns:**

- Quality of Dose- some are not standardized and may vary in quality
- Side Effects- range from mild to severe dependant on dosage and herb taken. Herbs may contain ephedra or similar substances which may increase blood pressure
- Drug Interactions- certain herbs may interact with other medications negatively

Talk to your doctor before trying any of these alternative treatments to see what the best approach is for you.

(Mayo Clinic, 2014)

**Stress and Asthma: What’s the Connection?**

"Stress can affect the cardiovascular, gastrointestinal, musculoskeletal, immune, and central nervous systems," says Paul Rosch, MD, president of the American Stress Institute. "In fact, it's difficult to think of any disorder in which stress has not been shown to have an aggravating role.

Asthma is no exception.
Stress can create strong physiologic reactions that lead to airway constriction and changes in the immune system, which can worsen asthma symptoms.

"The mechanism between asthma and anxiety is many-fold," says Kelkar, a physician at Allergy and Asthma Care in Maple Grove, Minn. "Uncontrolled emotions can work the nerves and cause constriction of muscles, like the smooth muscles of the airways in the lungs. They tighten up and constrict, which can worsen wheezing, coughing, and chest tightness in people with asthma."

Although stress and anxiety start in your mind, asthma is a physical disease of the lungs.

"It is important to note that asthma is not a psychosomatic disease," Kelkar tells WebMD. "It's not in your head. Stress can trigger symptoms if you already have the disease, but if you don't have it, stress does not all of a sudden cause a person to develop the disease of asthma."

**The Brain's Impact on Asthma and Stress**

The brain-body link between asthma and anxiety is starting to be better understood. Led by researchers from the University of Wisconsin, a group of scientists found that certain areas of the brain cause worsening asthma symptoms when a person is under stress.

Researchers exposed a group of people with mild asthma to triggers that caused both inflammation and muscle constriction. When symptoms flared, the participants were asked to read words that were either emotionally charged, such as "lonesome"; neutral, such as "curtains"; or asthma-related, such as "wheezing."

They found that the words linked with asthma increased inflammation and activity in parts of the brain that control emotions.

The results, published in the Proceedings of the National Academy of Science, show a possible link between emotions and asthma. Although it's only preliminary research, it does start to connect the dots. Until researchers find a clear link between anxiety and asthma, keep symptoms in check by managing stress and treating asthma with appropriate medication.

Persistent asthma means you have symptoms more than once a week, but not constantly. Treating persistent asthma requires long-term maintenance therapy, such as an inhaled corticosteroid, plus rescue therapy when something triggers symptoms. And when your symptoms are out of control, an anti-inflammatory, such as the oral steroid prednisone, might be necessary. The problem is that prednisone can cause mood swings as a side effect, adding fuel to the anxiety fire.

"The good news is that prednisone is only a short-term treatment," explains Kelkar. "When a course of oral steroids ends, a person should go back to a long-term maintenance therapy like inhaled steroids, which do not have an impact on mood and anxiety."

Sometimes a long-term asthma medication doesn't work well, and wheezing and chest tightness occurs all too often. Then, a vicious circle can begin, where anxiety worsens asthma, and asthma worsens anxiety, says Kelkar.

The solution is to talk to a health-care provider about your symptoms, triggers, and
stress. Also discuss other treatment options that can help get your asthma under control again.

**Managing Asthma and Anxiety**

"There are numerous stress-reduction techniques, ranging from [meditation](#), [yoga](#), and [Pilates](#) to [jogging](#), listening to music, and hobbies," says Rosch. "You have to find out what works best for you."

Here are stress-reduction tips from the Cleveland Clinic. They can help you make anxiety one less asthma trigger for you to worry about:

- Keep your mind free of stressful thoughts. Use the power of positive thinking to keep your mind going in the right direction. When you feel anxious about something, try to stay positive. How you think and what you think both play a role in managing stress levels.

- Identify your stressors. What stresses you out? Is it money, your mother-in-law, a hectic lifestyle? Once you know what your stress triggers are, work on resolving them. If you can't do it on your own, get help from a professional. This might be a financial counselor, psychologist, or family therapist. Link your health-care providers together, as well. Let your allergist know that stress is a trigger, so she or he can keep your anxiety in mind when treating your symptoms.

- Don't try to do it all. Manage your time wisely. Don't cram two days' worth of errands into one day. If you know you need to get everything done before a deadline, delegate so you can take some time for yourself. With more hands pitching in, you can avoid being overburdened.

- Say ohm. Practicing relaxation exercises can help lessen the negative effects of stress and asthma. Try deep breathing, progressive muscle relaxation, and clearing negative thoughts.

- Eat right and exercise. Exercise is a great way to let go of stress. Also, eat right and avoid junk food, coffee, and soda -- which can make you feel drained after the sugar-high and caffeine effects wear off. This can help your overall health, give you more energy to combat stress, and put you in a better position to manage asthma.

- Get by with a little help from your friends and family. When it comes to asthma and anxiety, no one should go it alone. Having support from your loved ones can help you tackle stressful situations. They can provide an emotional hand when things get tough as well as offer friendly reminders when it's time to take your medication.

- Get a good night's sleep. Sleep helps you recharge your batteries -- physically, emotionally, and even cognitively -- according to the National Sleep Foundation. Without a solid night's sleep, mood, behavior, and performance can be affected, and so can asthma.
Drug discovery from medicinal plants

Marcy J. Balunas, A. Douglas Kinghorn

Abstract

Current research in drug discovery from medicinal plants involves a multifaceted approach combining botanical, phytochemical, biological, and molecular techniques. Medicinal plant drug discovery continues to provide new and important leads against various pharmacological targets including cancer, HIV/AIDS, Alzheimer's, malaria, and pain. Several natural product drugs of plant origin have either recently been introduced to the United States market, including arteether, galantamine, nitisinone, and tiotropium, or are currently involved in late-phase clinical trials. As part of our National Cooperative Drug Discovery Group (NCDDG) research project, numerous compounds from tropical rainforest plant species with potential anticancer activity have been identified. Our group has also isolated several compounds, mainly from edible plant species or plants used as dietary supplements, that may act as chemopreventive agents. Although drug discovery from medicinal plants continues to provide an important source of new drug leads, numerous challenges are encountered including the procurement of plant materials, the selection and implementation of appropriate high-throughput screening bioassays, and the scale-up of active compounds.

Keywords

Pharmacognosy; Medicinal plants; Natural products; National Cooperative Drug Discovery Group (NCDDG); Anticancer agents; Cancer chemoprevention; Challenges
Drug discovery from natural sources

- Young-Won Chin.
- Marcy J. Balunas.
- Hee Byung Chai.
- A. Douglas Kinghorn

Abstract

Organic compounds from terrestrial and marine organisms have extensive past and present use in the treatment of many diseases and serve as compounds of interest both in their natural form and as templates for synthetic modification. Over 20 new drugs launched on the market between 2000 and 2005, originating from terrestrial plants, terrestrial microorganisms, marine organisms, and terrestrial vertebrates and invertebrates, are described. These approved substances, representative of very wide chemical diversity, together with several other natural products or their analogs undergoing clinical trials, continue to demonstrate the importance of compounds from natural sources in modern drug discovery efforts.

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Herbal medicines for the treatment of COPD: a systematic review

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Abstract

The aim of the current study was to systematically assess the effectiveness of herbal medicines in treating chronic obstructive pulmonary disease (COPD).

Randomised clinical trials (RCTs) testing herbal medicines against any type of control intervention in patients with COPD and assessing clinically relevant outcomes were included. The selection of studies, data extraction and validation were performed independently by at least two reviewers. Methodological quality was evaluated using the Jadad score. Effect sizes and their 95% confidence intervals were calculated.
Fourteen eligible RCTs, testing 14 different herbal medicines, were located. Herbal medicines were compared against placebo or no treatment in six trials. Significant intergroup differences for one or more outcome were reported for several herbal medicines including *Panax ginseng* and *Salvia miltiorrhiza*. In seven RCTs, which compared herbal medicines with other herbal medicines, the results were mixed. A single trial compared a herbal medicine (*Hedera helix* leaf extract) with a conventional treatment (ambroxol tablet) and reported no significant difference between groups. Due to the heterogeneity of the data, statistical pooling was not performed. The median methodological quality score was 2 out of a possible maximum 5.

The effectiveness of herbal medicines for treating chronic obstructive pulmonary disease is not established beyond reasonable doubt. Currently, the evidence from randomised clinical trials is scarce and often methodologically weak. Considering the popularity of herbal medicine among chronic obstructive pulmonary disease patients, rigorously designed studies seem warranted.

**Curcumin Induces Glutathione Biosynthesis and Inhibits NF-κB Activation and Interleukin-8 Release in Alveolar Epithelial Cells: Mechanism of Free Radical Scavenging Activity**

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**Irfan Rahman, Ph.D.**
ABSTRACT

Oxidants and tumor necrosis factor-α (TNF-α) activate transcription factors such as nuclear factor-κB (NF-κB), which is involved in the transcription of proinflammatory mediators, including interleukin-8 (IL-8). Curcumin (diferuloylmethane) is a naturally occurring flavonoid present in the spice turmeric, which has a long traditional use as a chemotherapeutic agent for many diseases. We hypothesize that curcumin may possess both antioxidant and antiinflammatory properties by increasing the glutathione levels and inhibiting oxidant- and cytokine-induced NF-κB activation and IL-8 release from cultured alveolar epithelial cells (A549). Treatment of A549 cells with hydrogen peroxide (H₂O₂; 100 µM) and TNF-α (10 ng/ml) significantly increased NF-κB and activator protein-1 (AP-1) activation, as well as IL-8 release. Curcumin inhibited both H₂O₂- and TNF-α-mediated activation of NF-κB and AP-1, and IL-8 release. Furthermore, an increased level of GSH and glutamylcysteine ligase catalytic subunit mRNA expression was observed in curcumin-treated cells as compared with untreated cells. Curcumin interacted directly with superoxide anion (O₂⁻) and hydroxyl radical (·OH) as shown by electron paramagnetic resonance, quenching the interaction of the radicals with the spin trap, Tempone-H. This suggests that curcumin has multiple properties: as an oxygen radical scavenger, antioxidant through modulation of glutathione levels, and antiinflammatory agent through inhibition of IL-8 release in lung cells. Antioxid. Redox Signal. 7, 32–41.
Natural Products As Sources of New Drugs over the 30 Years from 1981 to 2010

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Dedication

Dedicated to Dr. Gordon M. Cragg, formerly Chief, Natural Products Branch, National Cancer Institute, Frederick, Maryland, for his pioneering work on the development of natural product anticancer agents and, on a more personal note, for his advice, support, and friendship to me (D.J.N.) over the last twenty-plus years. May his advice and help continue for a long time into the future.
Abstract

This review is an updated and expanded version of the three prior reviews that were published in this journal in 1997, 2003, and 2007. In the case of all approved therapeutic agents, the time frame has been extended to cover the 30 years from January 1, 1981, to December 31, 2010, for all diseases worldwide, and from 1950 (earliest so far identified) to December 2010 for all approved antitumor drugs worldwide. We have continued to utilize our secondary subdivision of a “natural product mimic” or “NM” to join the original primary divisions and have added a new designation, “natural product botanical” or “NB”, to cover those botanical “defined mixtures” that have now been recognized as drug entities by the FDA and similar organizations. From the data presented, the utility of natural products as sources of novel structures, but not necessarily the final drug entity, is still alive and well. Thus, in the area of cancer, over the time frame from around the 1940s to date, of the 175 small molecules, 131, or 74.8%, are other than “S” (synthetic), with 85, or 48.6%, actually being either natural products or directly derived therefrom. In other areas, the influence of natural product structures is quite marked, with, as expected from prior information, the anti-infective area being dependent on natural products and their structures.

Although combinatorial chemistry techniques have succeeded as methods of optimizing structures and have been used very successfully in the optimization of many recently approved agents, we are able to identify only one de novo combinatorial compound approved as a drug in this 30-year time frame. We wish to draw the attention of readers to the rapidly evolving recognition that a significant number of natural product drugs/leads are actually produced by microbes and/or microbial interactions with the “host from whence it was isolated”, and therefore we consider that this area of natural product research should be expanded significantly.
By studying mice exposed to tobacco smoke for a period of months, researchers have new insight into how emphysema and chronic obstructive pulmonary disease develops. They also report a promising new way to reverse the lung damage underlying these conditions.

"It has not been very clear what causes the disease and there has been no therapy to stop or reverse lung destruction in emphysema," said Norbert Weissman of the University of Giessen Lung Center in Germany. "There have really been no new concepts about therapy in the last 20 years."

It's not for lack of interest, he said. In fact, COPD, including chronic bronchitis and emphysema, is expected to become the third-greatest cause of death worldwide by the year 2020.
In addition to airway inflammation and decreased of respiratory function, COPD is often accompanied by pulmonary hypertension, which is essentially high blood pressure in the lungs. Whether this condition was a cause or a consequence of COPD was not known.

Now, with powerful mouse models of COPD, Weissman and colleagues provide evidence that changes to the pulmonary blood vessels and the development of high blood pressure precede the development of emphysema. They further trace those effects to an inducible form of an enzyme known as nitric oxide synthase (iNOS), which catalyzes the formation of nitric oxide.

Nitric oxide (NO) and the nitric oxide system are important for opening up blood vessels and maintaining vascular tone, Weissman said. When nitric oxide levels grow too high, however, the molecule can undergo a chemical reaction forming aggressive peroxynitrite.

"Simply put, peroxynitrite can modify protein functions, leading to the destruction of lung tissue," Weissman said.

It appears this is exactly what happens in the development of emphysema. Mice lacking the iNOS enzyme were protected from both emphysema and pulmonary hypertension. Importantly, existing pharmacological agents can block iNOS activity, and mice treated with one of these drugs were protected from COPD-like changes to their lung vasculature. Treatment with the inhibitor also successfully reversed the course of the disease in the mice.

"For reversal of emphysema, you need active restructuring of the lung," Weissman said, noting that there is more work to do to explore the pathways involved.

The iNOS inhibitor used in these studies has already been used in clinical trials with apparently no major side effects, Weissman says. He and his team plan to pursue use of the drug as an inhaled therapy, with the hope that it may reach therapeutic concentrations only where it is needed.

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**Journal Reference:**

Increased tumour necrosis factor-α plasma levels during moderate-intensity exercise in COPD patients

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Abstract

Post-training downregulation of muscle tumour necrosis factor (TNF)-α messenger ribonucleic acid (mRNA) expression and decrease in cellular TNF-α levels have been reported in the elderly. It is hypothesised that chronic obstructive pulmonary disease (COPD) patients may not show these adaptations due to their reduced ability to increase muscle antioxidant capacity with training.

Eleven COPD patients (forced expiratory volume in one second 40±4.4% of the predicted value) and six age-matched controls were studied. Pre- and post-training levels of TNF-α, soluble TNF receptors (sTNFRs: sTNFR55 and sTNFR75) and interleukin (IL)-6 in plasma at rest and during exercise and vastus lateralis TNF-α mRNA were examined.

Moderate-intensity constant-work-rate exercise (11 min at 40% of pretraining peak work-rate) increased pretraining plasma TNF-α levels in COPD patients (from 17±3.2 to 23±2.7 pg·mL⁻¹; p<0.005) but not in controls (from 19±4.6 to 19±3.2 pg·mL⁻¹). No changes were observed in sTNFRs or IL-6 levels. After 8 weeks’ endurance training, moderate-intensity exercise increased plasma TNF-α levels similarly to pretraining (from 16±3 to 21±4 pg·mL⁻¹; p<0.01). Pretraining muscle TNF-α mRNA expression was significantly higher in COPD patients than in controls (29.3±13.9 versus 5.0±1.5 TNF-α/18S ribonucleic acid, respectively), but no changes were observed after exercise or training.

It is concluded that moderate-intensity exercise abnormally increases plasma tumour necrosis factor-α levels in chronic obstructive pulmonary disease patients without exercise-induced upregulation of the tumour necrosis factor-α gene in skeletal muscle.
Effect of CPAP on respiratory effort and dyspnea during exercise in severe COPD

B. J. Petrof, E. Calderini, S. B. Gottfried

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Abstract

Recent work has demonstrated the ability of continuous positive airway pressure (CPAP) to relieve dyspnea during exercise in patients with severe chronic obstructive pulmonary disease (COPD). The present study examined the effects of CPAP (7.5-10 cmH2O) on the pattern of respiratory muscle activation and its relationship to dyspnea during constant work load submaximal bicycle exercise [20 +/- 4.8 (SE) W] in eight COPD patients (forced expiratory volume in 1 s = 25 +/- 3% predicted). Tidal volume, respiratory rate, minute ventilation, and end-expiratory lung volume increased with exercise as expected. There was no change in breathing pattern, end-expiratory lung volume, or pulmonary compliance and resistance with the addition of CPAP. CPAP reduced inspiratory muscle effort, as indicated by the pressure-time integral of transdiaphragmatic (integral of Pdi.dt) and esophageal pressure (integral of Pes.dt, P less than 0.01 and P less than 0.05, respectively). In contrast, the pressure-time integral of gastric pressure (integral of Pga.dt), used as an index of abdominal muscle recruitment during expiration, increased (P less than 0.01). Dyspnea improved with CPAP in five of the eight patients. The amelioration of dyspnea was directly related to reductions in integral of Pes.dt (P less than 0.001) but inversely related to increases in integral of Pga.dt (P less than 0.01). In conclusion, CPAP reduces inspiratory muscle effort during exercise in COPD patients. However, the expected improvement in dyspnea is not seen in all patients and may be explained by more marked increases in expiratory muscle effort in some individuals.

The major limitation to exercise performance in COPD is dynamic hyperinflation

Denis E. O'Donnell, Katherine A. Webb

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The inability to engage in sustained physical activity is a common feature of chronic obstructive pulmonary disease (COPD) and contributes importantly to the perception of poor health status. Given the vast pathophysiological heterogeneity of this disease, the concomitant effects of aging on physical performance, and the existence in many serious comorbidities, the mechanisms of exercise intolerance are necessarily complex and multifactorial. Recognized contributory factors to exercise limitation include critical dynamic physiological impairment of the ventilatory, cardiovascular, metabolic, and locomotor muscle systems in highly variable combinations. In practice, intolerable exertional symptoms limit exercise performance even
before physiological maxima are reached: in more advanced COPD, perceived respiratory difficulty (dyspnea) is usually the proximate limiting symptom \((10, 12)\). Expiratory flow-limitation (EFL) and lung hyperinflation that are only partially reversible to bronchodilator therapy are pathophysiological hallmarks of COPD. Static lung hyperinflation refers to the resetting of the respiratory system's relaxation volume to a higher level as a result of the increased static lung compliance of emphysema. When EFL is present during resting spontaneous breathing, end-expiratory lung volume (EELV) is also dynamically determined and varies with the mechanical time constant for emptying (the product of resistance and compliance) of the respiratory system, the inspired tidal volume, and the expiratory time available.

Breathing at higher lung volumes increases airway conductance at rest in flow-limited patients with COPD. Moreover, the insidious development of thoracic hyperinflation over decades is associated with several adaptations that remarkably preserve the force-generating capacity of the diaphragm \((27)\). The existence of significant lung hyperinflation at rest means that the patients' ability to increase ventilation when the situation demands it (e.g., exercise) is seriously curtailed. During exercise, the combination of increased ventilatory requirements (mainly secondary to increased ventilation/perfusion mismatching) and abnormal dynamic ventilatory mechanics stresses the already diminished cardiopulmonary reserves of patients with COPD. Reduced peak oxygen uptake has been found to correlate well with the low resting inspiratory capacity (IC; reflecting increased EELV) in patients with demonstrable resting EFL, confirming that mechanical factors contribute importantly to exercise limitation \((5, 17, 25)\). The temporary and variable increase in EELV above the “static” value that occurs when ventilation is acutely increased is termed dynamic pulmonary hyperinflation (DH; Fig. 2). DH occurs during exercise in flow-limited patients despite active recruitment of expiratory muscles \((12, 15)\). Pneumotachygraphic IC measurements are reliable \((16, 31)\) and changes accurately reflect changes in EELV during exercise as total lung capacity (TLC) remains unaltered \((28, 31)\). Significant DH (by ∼0.5 l) has recently been documented in symptomatic patients with early COPD (GOLD stage I) and was associated with reduced peak oxygen uptake \((19)\). In recent studies in 430 patients with moderate to severe COPD (FEV1.0 40% predicted), IC at peak exercise was reduced by an average of 20% of the already reduced resting value \((10, 14)\). Fifteen percent of COPD patients did not significantly decrease IC during incremental or constant work rate cycle exercise. These included: 1) patients with milder COPD (the minority) who increased or maintained IC during exercise and 2) patients with severe resting lung hyperinflation who could not decrease IC any further.

In a recent mechanical study, DH early in exercise (by attenuating EFL) permitted acute increases in submaximal ventilation (to ∼30 l/min) and concomitant inspiratory effort (to ∼40% maximum) without provoking significant breathing discomfort (Borg ratings ∼2 “slight”; Ref. 15). However, as end-inspiratory lung volume expanded to reach a minimal inspiratory reserve volume (IRV) of ∼0.4 liters below TLC, the inspiratory muscles become functionally weakened and burdened with significant increases in elastic and inspiratory threshold loading (i.e., auto-PEEP effect). When the minimal IRV was reached, dyspnea subsequently escalated to intolerable levels at a point where their inspiratory and expiratory muscles used ∼50 and 10% of their maximal possible force generating capacity, respectively.

DH results in restrictive mechanical constraints (see Fig. 2), which in the extreme can lead to alveolar hypoventilation during exercise \((13)\). The smaller the resting IC (and IRV), the lower the ventilation (and work rate) at which a VT plateau is discernible. The consequent tachypnea will result in an increased velocity of shortening of the inspiratory muscles (with further functional weakness; Ref. 24) as well as sharp decreases in dynamic lung compliance. DH, particularly if it is accompanied by excessive expiratory muscle activity, also has the potential to adversely affect cardiocirculatory function, and thus ventilatory/locomotor muscle interactions, during exercise in COPD \((1, 23)\). When impairment of cardiac output (and oxygen transport) is coupled with severely compromised ventilatory muscle function, the development of inspiratory muscle fatigue is possible. However, objective diaphragmatic fatigue has not been consistently demonstrated at the limits of tolerance in COPD \((9, 21)\).

In health, the ratio of tidal inspiratory effort (esophageal pressure relative to the maximum) to VT displacement—the effort-displacement ratio—remains essentially unaltered throughout much of symptom-limited cycle exercise, indicating the optimal position of operating volume on the pressure-volume relationship
of the respiratory system (12) (see Fig. 2). By contrast, this ratio increases approximately twofold during exercise in COPD, reflecting “high-end mechanics” and consequent neuromechanical uncoupling of the respiratory system as a result of DH (12, 15). In essence, a situation arises during activity in the patient with COPD where, despite expending the most vigorous inspiratory efforts, very little air enters the lungs with each breath.

Several studies have shown that dyspnea intensity is strongly correlated with indexes of mechanical restriction (reduced dynamic IC and IRV, increased VT/IC ratio) and with increased effort-displacement ratios that rise precipitously when VT expands to reach the minimal IRV (12, 15). We postulate that in COPD, a mismatch between central neural drive (sensed via increased central corollary discharge; Ref. 3) and the abnormal “restricted” mechanical response (conveyed by afferent inputs from abundant respiratory mechanosensors) is fundamental to the origin of dyspnea or its major qualitative dimensions (11).

The contention that lung hyperinflation contributes importantly to dyspnea and exercise intolerance in COPD has been bolstered by a number of intervention studies (2, 6–8, 10, 14–16, 18, 20, 22). All classes of bronchodilators act by relaxing airway smooth muscle tone, thereby decreasing the mechanical time constants for emptying in heterogeneously distributed alveolar units. Sustained increases in the resting IC (reflecting lung deflation) in the order of 0.3 liters or ~10–15% predicted (or 15–17% of baseline value) appear to be clinically meaningful (2, 10, 15, 16, 20). Greater IC recruitment (e.g., 0.5 liters) is possible with combined long-acting bronchodilators (31).

In moderate-to severe COPD patients, improvement in the resting and dynamic IC has been shown to correlate well with: 1) improved peak symptom-limited oxygen uptake and constant work endurance time (4, 14–16, 20), 2) increased peak VT (14, 15, 20), and 3) reduced dyspnea intensity (4, 14, 15, 20). In all of these studies, increased resting IC was linked to a deeper slower breathing pattern during exercise. Moreover, bronchodilator therapy was associated with reduced resistive and elastic/threshold loading of the inspiratory muscles, which resulted in a reduced oxygen cost of breathing compared with placebo (15). Lung volume deflation was also linked to increased ventilatory muscle strength and reduced fractional effort requirements for a given VT displacement (15).

Decreased dyspnea intensity ratings correlate with improved effort-displacement ratios and increased VT during exercise (8, 15). Pharmacological lung volume reduction is associated with minor improvements in cardiac performance during exercise (26, 29). In carefully selected patients, lung volume reduction surgery (LVRS) and bullectomy has similarly been shown to improve operating lung volumes, effort-displacement ratios, exertional dyspnea, and exercise performance (8, 18). Surprisingly, LVRS was not associated with positive short- or long-term effects on cardiac hemodynamics, at least at rest (4). Finally, interventions such as hyperoxia (alone or in combination; Refs. 6, 20) and exercise training (22) have been shown to reduce the rate of DH during exercise (mainly by reducing breathing frequency), thereby contributing to improved dyspnea and exercise endurance.

In conclusion, although activity limitation in COPD is multifactorial, there is now compelling evidence that acute derangements in dynamic ventilatory mechanics contribute importantly. Therapies aimed at partially reversing pulmonary hyperinflation represent the first step in improving dyspnea and exercise capacity, thus facilitating rehabilitation in symptomatic patients with COPD.
Fig. 2.

Dyspnea intensity, operating lung volumes, breathing pattern, and the effort displacement ratio are shown during incremental exercise in patients with COPD and in age-matched healthy individuals (Normal). Dyspnea intensity is greater and breathing pattern is relatively rapid and shallow in COPD compared with health. In COPD, tidal volume (VT) takes up a larger proportion of the reduced inspiratory capacity (IC) at any given ventilation—mechanical constraints on tidal volume expansion are additionally compounded because of dynamic hyperinflation during exercise. In COPD compared with health, tidal inspiratory pressure swings expressed as a fraction of their maximal force-generating capacity ($P_{es}/P_{max}$) are greater and the VT response expressed as a fraction of the predicted vital capacity (VC) is reduced, i.e., the effort-displacement ratio is increased. TLC, total lung capacity; $F$, breathing frequency. Values are shown as means of data from Ref. 12.

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Exercise training in COPD patients: the basic questions

1. R Gosselink,
2. T Troosters and
3. M Decramer

Abstract

Pulmonary rehabilitation programmes aim at improving exercise capacity, activities of daily living, quality of life and perhaps survival in patients with chronic obstructive pulmonary disease (COPD). Recently, well-designed studies investigated and confirmed the efficacy of comprehensive pulmonary rehabilitation programmes, including exercise training, breathing exercises, optimal medical treatment, psychosocial support and health education. In the present...
overview, the contribution of exercise training in clinical practice to the demonstrated effects of pulmonary rehabilitation is discussed by means of six basic questions. These include: 1) the significance of exercise training; 2) the optimal intensity for exercise training; 3) prescribing training modalities; 4) the effects of exercise training combined with medication, nutrition or oxygen; 5) how training effects should be maintained; and 6) where the rehabilitation programme should be performed: in-patient, out-patient or homecare? First, exercise training has been proven to be an essential component of pulmonary rehabilitation. Training intensity is of key importance. High-intensity training (>70% maximal workload) is feasible even in patients with more advanced COPD. In addition, the effects on peripheral muscle function and ventilatory adaptations are superior to low-intensity training. There is, however, no consensus on the optimal training modalities. Both walking and cycling improved exercise performance. Since peripheral muscle function has been recognized as an important contributor to exercise performance, specific peripheral muscle training recently gained interest. Improved submaximal exercise performance and increased quality of life were found after muscle training. The optimal training regimen (strength or endurance) and the muscle groups to be trained, remain to be determined. Training of respiratory muscles is recommended in patients with ventilatory limitation during exercise. The additional effects of anabolic-androgenic drugs, oxygen and nutrition are not well-established in COPD patients and need further research. In order to maintain training effects, close attention of the rehabilitation team is required. The continuous training frequency necessary to maintain training effects remains to be defined. At this point in time, out-patient-based programmes show the best results and guarantee the best supervision and a multidisciplinary approach. Future research should focus on the role of homecare programmes to maintain improvements.

### Table 2 – Contraindications to stress testing

<table>
<thead>
<tr>
<th>Absolute</th>
</tr>
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<tbody>
<tr>
<td>Severe symptomatic aortic stenosis</td>
</tr>
<tr>
<td>Acute MI within past 48 h</td>
</tr>
<tr>
<td>Acute pulmonary embolus</td>
</tr>
<tr>
<td>Unstable angina</td>
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<tr>
<td>Uncontrolled congestive heart failure</td>
</tr>
<tr>
<td>Uncontrolled arrhythmias with symptoms or hemodynamic compromise</td>
</tr>
<tr>
<td>Acute stroke</td>
</tr>
<tr>
<td>Aortic dissection</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Relative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe hypertension (systolic BP &gt; 200 mm Hg or diastolic BP &gt; 110 mm Hg)</td>
</tr>
<tr>
<td>Inability to exercise adequately</td>
</tr>
<tr>
<td>Hypertrophic cardiomyopathy</td>
</tr>
<tr>
<td>Electrolyte abnormalities</td>
</tr>
<tr>
<td>High-grade atrioventricular block</td>
</tr>
<tr>
<td>Left main coronary stenosis &gt; 50%</td>
</tr>
<tr>
<td>Acute comorbid conditions (e.g., bronchitis, psychosis)</td>
</tr>
</tbody>
</table>

MI, myocardial infarction; BP, blood pressure.
### OTHER CONTRAINDICATIONS

<table>
<thead>
<tr>
<th>Contraindications</th>
<th>Signs and symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncontrolled or poorly controlled asthma</td>
<td>Severe shortness of breath, chest tightness or pain, and coughing or wheezing</td>
</tr>
<tr>
<td></td>
<td>Worsening symptoms</td>
</tr>
<tr>
<td>Unstable/Uncontrolled COPD</td>
<td>Patients are required to be stable before training and oxygen saturation levels</td>
</tr>
<tr>
<td></td>
<td>should be above 88-90%</td>
</tr>
<tr>
<td>Unstable cancer or blood disorders</td>
<td>When treatment or disease cause leucocytes below 0.5 x10^9/L, haemoglobin below</td>
</tr>
<tr>
<td></td>
<td>50g/L or platelets below 20 x 10^9/L.</td>
</tr>
<tr>
<td>Uncontrolled Diabetes</td>
<td>If blood glucose is &gt;13 mmol or &lt;5.5 mmol/l then it should be corrected first.</td>
</tr>
<tr>
<td></td>
<td>Patients with diabetic peripheral or autonomic neuropathy or foot ulcers should</td>
</tr>
<tr>
<td></td>
<td>avoid weight bearing exercise. Any diabetic with acute illness or infection.</td>
</tr>
<tr>
<td>Osteoporosis/High fracture risk</td>
<td>avoid activities with a high risk of falling or fracture (for example: caution in</td>
</tr>
<tr>
<td></td>
<td>abdominal crunches)</td>
</tr>
<tr>
<td>Acute Pulmonary embolus or pulmonary infarction</td>
<td>Excessive or unexplained breathlessness on exertion</td>
</tr>
<tr>
<td>Unexplained symptoms that could cause</td>
<td>For example: dizziness, any acute severe illness</td>
</tr>
<tr>
<td>risk of injury or exacerbation</td>
<td></td>
</tr>
</tbody>
</table>

### CONTRAINDICATIONS:

- Increased ICP
- Unstable head or neck injury
- Active hemorrhage with hemodynamic instability or hemoptysis
- Recent spinal injury
- Empyema
- Bronchoplueral fistula
- Flail chest
- Uncontrolled hypertension
- Anticoagulation
- Rib or vertebral fractures or osteoporosis
- Acute asthma or tuberculosis
- Patients who have recently experienced a **heart** attack.
- Patients with skin grafts or spinal fusions will have undue stress placed on areas of repair.
Clinical and Radiological Features of Pulmonary Disease Caused by Rapidly Growing Mycobacteria in Cancer Patients

K. Jacobson, R. Garcia, H. Libshitz, E. Whimbey, K. Rolston, D. Abi-Said, J. Raad

Abstract The role of rapidly growing mycobacteria in the pathogenesis of pulmonary disease is being increasingly recognized; however, the clinical significance of these mycobacteria in patients with underlying malignancy has not been well studied. Over a 6-year period, 37 cancer patients with rapidly growing mycobacteria isolated from respiratory specimens were identified at our center. Mycobacterium chelonae group was isolated in 24 cases and Mycobacterium fortuitum in 13 cases. Of the 24 cases with cultures yielding Mycobacterium chelonae group, eight met the study criteria for infection and were determined to be clinically significant, whereas only one of the Mycobacterium fortuitum isolates was determined to represent infection. An average of two antimicrobial agents were used for treatment, most commonly clarithromycin, ciprofloxacin, and trimethoprim/sulfamethoxazole. Although the isolation of rapidly growing mycobacteria represents colonization in most cases, these bacteria, especially the Mycobacterium chelonae group, may cause pulmonary disease in cancer patients. The clinical and radiological findings are usually non-specific in this population, and patients with respiratory cultures yielding rapidly growing mycobacteria should be assessed carefully to distinguish infection from colonization. Effective therapy can be provided with oral regimens that include at least two antibiotics to which the organism is susceptible.

Introduction

Rapidly growing mycobacteria (RGM) (Runyon Group IV) are emerging pathogens in that, in recent years, their role in human disease has been increasingly accepted and the clinical situations in which they are likely to occur have been more frequently recognized. This group of mycobacteria consists of ubiquitous environmental organisms that exist in water, soil, and dust [1, 2]. Two members of this group, Mycobacterium chelonae group and Mycobacterium fortuitum, have been identified as causing disease in both healthy and immunocompromised patients. They can cause a variety of infections, including skin and soft tissue abscesses, post-surgical wound infections, osteomyelitis, corneal ulceration, meningitis, peritonitis, prosthetic valve endocarditis, hepatitis, pulmonary infections, lymphadenitis, bacteremia, and venous catheter-related infections, as well as disseminated disease in immunocompetent and immunocompromised patients [3-22].

The role of RGM in pulmonary disease has been unclear. Mycobacterium fortuitum and Mycobacterium chelonae group, both of which have been cultured from the saliva and sputum of healthy persons, may colonize the respiratory tract. The clinical presentation of infections by RGM in cancer populations has not been well defined. In a small study, antineoplastic chemotherapy and pre-existing pulmonary disease in patients with malignancies were associated with pulmonary infection rather than simply colonization with RGM [23].

RGM are usually resistant to standard anti-tuberculous agents and have varying susceptibility to other antibio-
Introduction:

Over View:

This Large scale research was designed to produce a extensive study of people with a wide variety of diseases to see who gets or feels better while using the SCIO for stress reduction and patient monitoring. The SCIO is a evoked
potential Universal Electro-Physiological Medical apparatus that gauges how a individual reacts to miscellaneous homeopathic substances. The device is registered in Europe, America, Canada, S Africa, Australia, S. America, Mexico and elsewhere. The traditional software is fully registered. Some additional functions where determined by the manufacturer to be worthy of evaluation. Thus a study was necessary to determine safety and efficacy. (As a result of these studies these additional functions are now registered within the EC)

An European ethics committee was officially registered and governmental permission attained to do the insignificant risk study. Qualified registered and or licensed Biofeedback therapists where enlisted to perform the study. Therapists were enrolled from all over the world including N. America, Europe, Africa, Australia, Asia, and S. America. They were trained in the aspects of the study and how to attain informed consent and transmit the results to the ethics committee or IRB (Institutional Review Board).

2,569 therapists enlisted in the study. There were 98,760 patients. 69% had more than one visit. 43% had over two visits. There were over 275,000 patient visits recorded. The therapists were trained and supervised by medical staff. They were to perform the SCIO therapy and analysis. They were to report any medical suspected or confirmed diagnosis. Therapists personnel are not to diagnose outside of the realm of their scope of practice. Then the therapist is to inquire on any reported changes during the meeting and on follow-ups any measured variations. It must be pointed out that the Therapists were free to do any additional therapies they wish such as homeopathy, nutrition, exercise, etc. Therapists were told to not recommend synthetic drugs. Thus the evaluation was not reduced to just the device but to the total effect of seeing a SCIO therapist.

Part 1. The emphasis was on substantiating safety followed by efficacy of the SCIO.

Part 2. Proving the efficacy of the SCIO on diseases (emphasis on degenerative disease)

Part 3. Proving the efficacy of the SCIO on the avant garde therapies of Complementary Med

Part 4. QQC standardization
Methods and Materials:

**SCIO Device:**

The SCIO is an evoked potential Universal Electro-Physiological Medical device that measures how a person reacts to items. It is designed to measure reactions for allergy, homeopathy, nutrition, sarcoodes, nosodes, vitamins, minerals, enzymes and many more items. Biofeedback is used for pre-diagnostic work and or therapy.

The QXCI software will allow the unconscious of the patient to guide to repair electrical and vibrational aberrations in your body. For complete functional details and pictures, see appendix.

**Subspace Software:**

The QXCI software is designed for electro-physiological connection to the patient to allow reactivity testing and rectification of subtle abnormalities of the body electric. If a patient is not available a subspace or distance healing link has been designed for subspace therapeutics. Many reports of the success of the subspace have been reported and thus the effectiveness and the safety of the subspace link is part of this test. Many companies have tried to copy the subspace of Prof. Nelson and their counterfeit attempts have ended in failure.

**SOC Index:**

The SCIO interview opens with a behavioral medicine interview. This is called the SOC Index. Named after the work of Samuel Hahneman the father of homeopathy, he said that the body heals itself with it's innate knowledge. But the patient can suppress or obstruct the healing process with some behavior. Hahneman said that the worst way to interfere with the healing natural process was allopathy or synthetic drugs. Theses upset the natural healing process by unnatural intervention and regulation disturbance. Other ways to Suppress or Obstruct the Cure are smoking, mercury amalgams, stress, lack of water, exercise and many others. This behavioral survey then gives an index of SOC.

The scores relate to the risk of Suppression and Obstruction to the natural Cure. The higher the scores the more the Suppression and or Obstruction. The scores of 100 or lower are ideal. A copy of the SOC index questions appear in the appendix.

**Study Technicians:**
The study technicians were educated and supervised by medical officers. The study technicians were to execute the SCIO therapy and analysis. All were trained to the standards of the International Medical University of Natural Education. Therapists from all over the world including N. America, Europe, Africa, Australia, Asia, S. America and elsewhere were enlisted to perform the study according to the Helsinki study ethics regulations.

They were to chronicle any medical suspected or confirmed diagnosis. Therapists personnel are not to diagnose outside of the realm of their scope of practice. Then the study technician is to inquire on any disclosed observations during the test and on follow-ups report any measured changes.

To test the device as subspace against the placebo effect, two of the 2,500+ therapists were given placebo SCIO devices that were totally outwardly the same but were not functional. These two blind therapists were then assigned 35 patients each (only 63 showed). This was to assess the double blind factor of the placebo effect as compared to the device. Thus the studied groups were

A. placebo group, B. subspace group, and C. attached harness group.

Cross placebo group manipulation was used to further evaluate the effect.

**Important Questions**: these are the key questions of the study

1. *Define Diseases or Patient Concerns*

2. *Percentage of Improvement in Symptoms*

3. *Percentage of Improvement in Feeling Better*

4. *Percentage of Improvement Measured*

5. *Percentage of Improvement in Stress Reduction*

6. *Percentage of Improvement in SOC Behavior*

7. *What Measured+How (relevant measures to the patient’s health situation)*

8. *If Patient worsened please describe in detail involving SOC*_

After the patient visit is was complete the data was e-mailed to the Ethics Committee or IRB for storage and then analysis. This maneuver minimized the risk of data loss or tampering. Case studies were reported separately in the disease analysis.
MEDICAL DETAILS

Paroxysmal dyspnea accompanied by the adventitious sounds caused by a spasm of the bronchial tubes or due to swelling of their mucous membrane.

The symptoms of person with asthma differ greatly in frequency and degree. Some have an occasional episode that is mild and brief; otherwise they are symptom-free. Others have mild coughing and wheezing much of the time, punctuated by sever exacerbations of symptoms following exposure to know allergens, viral infections, exercise, or nonspecific irritants. Psychosocial stress may precipitate an attack or may be additive with noxious exposures.

Children, in particular, may notice an itching sensation over the anterior neck or upper chest as an early sign of an impending attack, and dry cough, particularly at nigh and with exercise, may be the sole presenting symptoms, especially in children. However, an asthma attack usually begins acutely with paroxysms of wheezing, coughing, and shortness of breath, or insidiously with slowly increasing symptoms and sign of respiratory distress. In either case, the patient usually first notices the onset of dyspnea, tachypnea, cough, and tightness or pressure in the chest, and may even notice audible wheezes. The episode may subside quickly or persist for hours to days. Pulmonary function abnormalities, may persist for weks after an acute attack, even in asymptomatic patients. The cough during an acute attack sounds "tight" and is generally nonproductive of mucus. Except in young children, who rarely expectorate, tenacious mucoid sputum is producted as the attack subsides.

- Mild wheezing, audible wheezing progressing to severe dyspnea
- Chest tightness
- Cough productive of thick mucus
- Tachypnea
- Nasal flaring
- Diaphoresis
- Flushed skin
- Intercostal and supraclavicular retraction
- Accessory chest muscle use
- Possible signs and symptoms of eczema or allergic rhinitis

Results:
Before we review the direct disease improvement profiles, we need to review the overall results. The first most basic of question in the results is the basic feedback of the generic patient conditions.

1. Percentage of Improvement in Symptoms
2. Percentage of Improvement in Feeling Better
3. Percentage of Improvement Measured
4. Percentage of Improvement in Stress Reduction
5. Percentage of Improvement in SOC Behavior

The SOC index gives us great insight to this study. Each disease has a different cut off where the ability of the SCIO to help was compromised. As a general index scores of 200 + where much less successful.

**ASTHMA**

This groups significant SOC cut off was 100.

The Large scale study had over 98,000 patients and 275,000 patient visits we have direct evidence of the safety and efficacy. A placebo group was used for the large scale test to help validate the results.

This disease group total number of patients was **631**

**Subspace Treatment 122 patients, 509 SCIO Harness Patients**

**OVERALL ASSESSMENT**

A. **Subspace Treatment 323 patient visits**

   There were 0 cases of patients who reported a negative Improvement.

   None of these cases reported any major difficulty.

   There were

   0 cases reporting no improvement of Symptoms, 0.001 % of Subgroup

   0 cases reporting no improvement in feeling better, 0.001% of Subgroup

   0 cases reporting no improvement in stress reduction . 0.001% of Subgroup

   33%--- **Percentage of Improvement in Symptoms**
32%--- Percentage of Improvement in Feeling Better
21%---Percentage of Improvement Measured
45%-- Percentage of Improvement in Stress Reduction
10%----Percentage of Improvement in SOC Behavior

B. SCIO Harness Treatment 1308 patient visits

There were 1 cases of patients who reported a negative Improvement.

None of these cases reported any major difficulty.

There were

2 cases reporting no improvement of Symptoms, 0.001% of Subgroup
5 cases reporting no improvement in feeling better, 0.001% of Subgroup
1 cases reporting no improvement in stress reduction 0.001% of Subgroup

43%--- Percentage of Improvement in Symptoms
33%--- Percentage of Improvement in Feeling Better
54%----Percentage of Improvement Measured
32%-- Percentage of Improvement in Stress Reduction
11%----Percentage of Improvement in SOC Behavior

CASE STUDY REPORT CONDENSATION:

“I had a client with a swollen lymph node near her ear - it was causing her a lot of discomfort. After only one session for stress relief, she reported the swelling had gone down and the area around the lymph node was no longer painful.

A client was suffering from burning and stinging pain and itching deep in the tissues in her shoulder and arms. This pain was worse during the night and she was getting very little sleep. After six to eight EPFX sessions for stress, the pain and itching were significantly reduced and she could sleep through the night.

After three or four EPFX sessions for stress relief, a client diagnosed with emphysema was able to discontinue her oxygen. She still relied on her steroid inhaler for occasional asthma attacks, but refused to make dietary or lifestyle changes that might have helped to alleviate the asthma.
A client had been suffering with neck and back pain from a car accident which occurred over 20 years ago. She felt an immediate relief from pain after only one session stress relief.

A client called me one night from California seeking relief from severe flu-like symptoms. I used sub-space for her session. The next morning she reported feeling much better and was able to rest soon after her distance session for stress began.

A client called from Texas - her husband had fallen and was in the hospital with a serious concussion, bleeding on the brain, and broken bones in his shoulder. After several distance sessions to relieve stress, the bleeding stabilized and his doctors and physical therapists were amazed at the rate that his injuries were healing.

A friend asked for help for her mother recovering from a mastectomy. I started a distance session for stress about the time she was placed in the recovery room at the hospital. She reported very little pain and healed very quickly - not only physically but emotionally as well.

New Mexico, U.S.A.”

“Thursday, 17 January 2008

Patient: (name withheld for privacy reasons)

Address: Casablanca, Morocco

Date of Birth: 28/08/1997

Gender: Female

First Consultation: 27/02/2003

Presenting Complaint: Respiratory dysfunction, Asthma related symptoms. Adenoidectomy performed at 18 months. Overweight.
Presently being treated with **Seretide** 500 (serre-tied) is a medicine which is used in asthma and chronic obstructive pulmonary disease.

QXCI was used for testing and therapy application: Programs used were NLP, Biofeedback, EEG, ECG to treat for stress related to anxiety fear and worry. Prescribed Psor 200 S/D and Thuja 200 1 X Week for 4 Weeks.

**Second Consultation: 27/03/2003**

There was a marked improvement immediately following the first consultation with some acute attacks controlled with homeopathic remedies and Seretide 250 (note reduction of dose).

Tested and treated with QXCI, Used therapy suggestions from QXCI. Prescribed Tub. 1M , 1X Week for 4 Weeks and Bell 30, as required for acute Asthma symptoms.

Recommended Homeopathic Remedy Kit for the home.

**Third Consultation: 29/04/2003**

Patient continues to improve, less frequency of Asthma attacks, using Homeopathic remedies and Seretide 125 (note reduction of dose) to control.

Tested and treated with QXCI. Prescribed Calc. 30, 1 X every other day for 2 Weeks. Natural Vit/Min supplement.

**10/05/2003: Telephone consultation for acute attack Asthma/Cough**
Prescribed Ant.-t 30, as required for acute

**Fourth Consultation: 27/05/2003**

Patient makes very good progress, after reduction of Seretide patient is now free of allopathics.

Test and treat with QXCI. Prescribed Calc. 100, 1 X for 5 days, Ant.-t 30 to hold for acute attack.

**Fifth Consultation: 23/09/2003**

Patient improved in all respects, weight is now normal for age and height. No allopathic drugs being used.

Preventive Treatment Plan: Using QXCI, Desensitization program for allergies and immune system improvement.

Casablanca, Morroco”

“CLIENT #1

36YR OLD FEMALE. Client reported that she could not smell and fingers and mouth would turn blue due to lack of oxygen. She also reported that she had been in an auto
accident and had surgery on her face. She said she was constantly in and out of hospital for oxygen. One session for 1 hour and client told me she could smell everything in the office. Four months later she reported that she had not yet been back to the hospital for oxygen.”

City Unknown

“The reason I bought the machine was as follows. I am a registered nurse and was diagnosed at St Paul’s Hospital as having asthma. I was put on steroid and ventolin puffers, a combination of two to use 4 times a day. This made me feel worse. I heard about the Scio through another nurse so decided to try it. It said I had eaten raw sushi 3 weeks prior and a bacteria had lodged in my right upper lung field. This is exactly where I was experiencing the tightness. After the session I have had no more chest tightness or asthma attacks and have not used any inhalers for 2 years since I was diagnosed.

I had a lady come to see me who said she was on antidepressants, I gave her one treatment and she has told so many people who have come to see me. She does not take any medications and is free of depression.

City Unknown”

“10 year old male. He has suffered from Asthma for all of his life. He was a frequent emergency room attendance. Steroids were given each visit along with other drugs. He was treated 3 times with the QX and for the last 4 years he has not gone back to the E room. He was treated monthly for the first 5 months and then a few other treatments since.

City Unknown”

“One of the few non family members we worked with initially was a friend with multiple health issues. In her forties, she has already had a stroke. She also deals with fibromyalgia and asthma. She is seeing wonderful changes. After two sessions she said she could carry a load of laundry up a flight of stairs without stopping to breathe. It’s
been years since she could do that. She was amazed that she even had better balance and could put on her socks without sitting down. She ran out of her muscle relaxant and found she didn't need it. She is not having the cramping in her muscles that were so painful. I love the way she put it.

"I feel like the way I remember NORMAL being, its been a very long time."

Now that we are seeing results we are starting to work with more people outside of the family. My husband's secretary has done two sessions with us. She felt immediate results. She was becoming depressed from her weight gain and the troublesome cravings she would have. She felt very down on herself and didn't know how to improve it. She, like the others we have worked with, had a lifting of her depression. She said she felt brighter. She knew she had found the way to help herself. She follows the recommendations of the SCIO and is amazed at the results. She has been addicted to a type of soda produced by Weight Watchers. She buys it by the case and has been trying hard to cut back on her 3-4 a day habit. She was down to one a day when I saw her the first time but it was a struggle. After one session she was able to go the whole weekend without having any and, when she did have one later in the week, found she no longer enjoyed it and couldn't finish it. She was very impressed.

City Unknown"

“EPFX for ASTHMA, Back Problems

In early September I received my first assessment and treatment. Without any prior disclosure, the QX SCIO identified several areas that I knew to be problematic and then treated those problems. I received considerable improvement in many areas, but I was amazed how my asthma improved. I have suffered many years with condition and the improvement was amazing.

In late January, I hurt my back at the gym. With two treatments, I improved from a pain level of 9 to a 4 with the first treatment. It went from a 4 to a 1 with the second treatment. I am a believer and am most interested in purchasing one for each of my daughters, one who has suffered from Type I diabetes since age 10 (She is now 25), and the other who was born with a profound speech disorder. I recommend it to anyone who has tried traditional medical treatments without positive results.

Springfield, U.S.A."
“Age 60, female, **asthma and allergies and headaches**. After initial session Dec 20/07 she was breathing deeper, getting more sleep, dizzy/nausea and weepy following session, and yoghurt not settling either. She was waking up in mornings without headaches, but they came back during the day. After second session on Dec 24/07 she noticed she was able to take bigger breaths, but still got some headaches. She also noticed floaters the following day and disappeared within the following week. She still wasn’t getting her usual AM headaches.

City Unknown”

“Age 57, male, **ulcerative colitis, arthritis, asthma**. Initial session Nov 5/07. After two weekly sessions, on Dec 3/07 he reported that colon pain was not as sharp. After two more sessions, on Dec 21/07 he reported that he had no pain for 3 days after last session, then pain and swelling back but with no fever. After the session on Dec 21/07, he reported on Jan 2/08 that he had pain for 3 days after his last session, but felt much better for a longer time. He was starting to look better. On Feb 1/08 he reported that he was feeling better still. Wondered if sending frequency of platinum helped, or the brain scan program #22, or using reactivity of IgA with DNA program. Improvements seen more after doing these programs.

City Unknown”

“Age 11, male, **asthma**. Improvement seen with asthma after 2 sessions.

**USUAL or CUSTOMARY TREATMENT PLAN for COPD:**

**Herbs: Western**

**Grindelia (Grindelia camporum):** For asthma with spasm, in infusion

(also combined with lobelia).

**Sundew (Drosera):** Also good for this condition. Infusion three times daily.

When excess sputum is present use or add:

**Comfrey root: decoction and**
Ginger (Zingiber), or the excellent Coltsfoot (Tussilago fargara):

infusion, capsules, or tincture.

Icelandic moss (Icelandica): For children, in decoction.

Ephedra: For those with allergies, in decoction.

Valerian, hops (Humulus lupulus): For nervous people.

Lime blossom (Tilia europea): For asthma accompanied by heart disorders, this and other heart tonics are important.

Chinese

Minor Bupleurum Formula: The formula of choice.

Ma_Huang Combination (Ma_Huang_Tang): for childhood asthma and bronchial asthma.

Uma_Huang 5g Licorice root 1.5 g

Cinnamon twigs 4g Apricot seeds 5g

Heart/Lung; Bone Liquescence; Immune Stim; Mucous Dissolver;

Adrenal Liquescence; E_Z Calcium; Asthma:

Due to Psora or Sycotic and Tubercular miasms, give the constitutional remedy. Attacks occurring early morning, NUX VOMICA and NATRU SULPHURICUM, alternating a dose of first one and then the other every 3 hours. Attacks at midnight or between 1 and 2 a.m., ARSENICUM ALBUM. Awakes in the night, suffocating with the asthma,

SAMBUCUS NIGRA, (high potency). With cough and catarrh, with a lot of mucus, ANTIMONIUM TARTARICUM and CARBO VEGETABILIS. With cough and catarrh, and little mucus, NATRUM SULPHURICUM and HEPAR SULPHURIS. In the throat, SPONGIA TOSTA (high potency). In the chest, PHOSPHORUS. Spasmodic, IPECACUANHA, NATRUM SULPHURICUM. IN
In the under _40 age group, probably 90 percent of asthma is triggered by an allergy. Tree, weed, and grass pollens, animal dander, dust mites, and mold are the biggest allergic triggers for asthma. After age 40, it’s about 50 percent, this percent is triggered by some form of lung disorder such as emphysema. Avoid smokers, fires, food additives, and salt.
1. Asthma is an inflammatory disease where inflammation of the bronchial tree restricts air flow out of the lungs. In most cases air will be sequestered in the lung, making it harder to get rid of air, than it is to bring air in. Most asthma is air retained in the lungs.

2. The primary cause of this inflammation in the bronchial tree is that of inflammation and swelling of tissues provoked by allergies.

3. Infections in the lungs can also cause swelling in the tissues. Susceptibility to both the inflammation and infection from allergies are contributed by nutritional problems such as calcium deficiency, pantothenic acid deficiency, fatty acid deficiency, B_6, magnesium, niacin deficiencies, and other nutritional disturbances.

4. *ASTHMA helps the tissues to diminish their inflammation. Combine *LUNG LIQUESCENCE to helps supply needed nutrients, minerals, and sarcodal support to help healthy lung tissue to develop (ref. Asthma Study).

5. Behavioral programs such as exercise, meditation and relaxation techniques are also suggested to help reduce asthma.

ASTHMA FORMULA works by reducing bronchial tree inflammation.

ADRENAL LIQUESCENCE supplies adrenalin to relax bronchial spasms.

SCIO TREATMENT SUGGESTED

Color - set patient's favorite if desired, or choose color by chakra that is deficient

   Cosmic: set 1 for physical body, 2 for astral, 3 for etheric, 4 for mental, 5 for cosmic, 6 for other

Magnetic Method - 1+10 is universal, 7 for detox, 8 for regrowth of new tissue, 3 for injury, 2 for metabolic correction, 5 for inflammation, 6 for infection, 9 for psych stress, 2 for energy stimulation

   Frequency - 1k, 555hz , 333hz, 1111hz, 500--1500hz

   Auto Frequency for 30 min once a month in early stages once a week in later stage.
Discussion:

The results show significant improvement in symptoms and feeling better. The Collective results show a dramatic benefit to the SCIO therapist visit.

--- BIBLIOGRAPHY ---

BOOKS


ARTICLES AND STUDIES

Pulmonary Interstitial Glycogenosis

Background

Pulmonary Interstitial Glycogenosis (PIG) is a children’s interstitial lung disease (chILD) and was first described in 2002. This disorder is relatively rare and only few cases have been reported in the medical literature. However, given its relatively recent description and the fact that it is only diagnosed through lung biopsy, PIG may be under-recognized and under-reported. PIG has only been reported in infants, usually diagnosed within the first few months of life.

What causes PIG?

The cells of the body use glucose, a sugar, for energy. Most cells of the body use glucose from the blood, but it can be stored in a larger molecule called glycogen. Glycogen is found in large amounts in skeletal muscle and the liver and is used to supply energy to the body when needed. It is not typically found in large amounts in other cells of the body.

Pulmonary Interstitial Glycogenosis (PIG) is caused by an abnormal accumulation of glycogen in specific cells of the lung. These cells are located in the interstitium, the space between the air sacs in the lungs. The excess glycogen leads a thickening of this space, making it difficult for oxygen to get from the air sacs into the bloodstream.

The cause of PIG remains unclear. The accumulation of glycogen has also been seen in other lung conditions to different degrees, especially those associated with poor lung growth. Based on these observations and the lack of inflammation in the lungs, it is thought that PIG is a result of abnormal development of the lungs in the fetus and young infant. However, a report of PIG in a pair of identical twins also point to the likely genetic predisposition for this disorder. Further studies are needed to accurately define this lung disorder.

Symptoms

Infants with PIG present with rapid and laborious breathing and the need for oxygen supplementation in the first few weeks of life. These symptoms are similar to those of many other respiratory disorders of infancy, such as respiratory distress syndrome and surfactant protein deficiencies. However, a common pattern in the presentation of these infants is an initial stable period, followed by an unexplained deterioration in their respiratory status several days or weeks after birth.

Diagnosis

As in other forms of chILD, several tests can help with the diagnosis.

- Lab work to rule out other causes of these symptoms, such as cystic fibrosis or immunodeficiency, is often performed.
- A high-resolution computed tomography (CT) scan of the lungs may show findings consistent with an interstitial lung disease. However, the imaging appearance of PIG is highly variable and non-specific for PIG. With the few case reports of PIG, it is currently difficult to make the diagnosis solely based on radiographic imaging.
- A bronchoscopy with bronchoalveolar lavage (BAL) may be performed which can look for infection, inflammation and signs of aspiration into the lungs. Currently, a definitive diagnosis of PIG can only be made through lung biopsy. The biopsy tissue typically shows little inflammation. The hallmark of PIG is the accumulation of glycogen in the lung interstitial cells.

Treatment

As for any chILD, optimizing nutrition for adequate growth and the prevention of respiratory infections are important in the overall health. In addition, oxygen supplementation may be required.
Most of the reported infants with PIG have received and responded favorably to therapy with intravenous or oral corticosteroids. However, given the potential side effects of corticosteroids and that the evidence of this treatment is based on few patients, careful consideration before initiating treatment is warranted for each patient.

**Prognosis**

The cases of PIG described in the medical literature have been associated with a favorable prognosis. Clinical improvement is noted in most cases and only one death has been reported in a premature infant with PIG. Again, these statistics are based on few patients. Caution must be exerted before drawing conclusions about the prognosis of PIG, especially if PIG is present along with lung growth abnormalities, in which case the prognosis may be poorer.

**Future Directions**

There is still much to learn about Pulmonary Interstitial Glycogenosis (PIG). Along with the chILD Foundation and the Children’s Interstitial Lung Disease Research Network (CHILDRN), there is an ongoing multi-center collaboration on a Rare Pediatric Lung Disease Patient Registry. This database will enable doctors and researchers to collect more information and better understand rare pediatric lung disorders such as PIG.

**Study of the effect of yoga training on diffusion capacity in chronic obstructive pulmonary disease patients: A controlled trial**

**INTRODUCTION**

According to the global burden of disease study, COPD will be the fifth leading cause of disability and the third leading cause of death in the world in the first half of the twenty-first century. For developing countries, COPD is expected to be the fourth leading cause of disability for males and the third for females in 2020.[1]

Chronic obstructive pulmonary disease (COPD) has been defined by the global initiative for obstructive lung disease (GOLD) as a disease state characterized by airflow limitation that is not fully reversible.[2]
Dyspnoea, the hallmark symptom of COPD, is the reason for which most patients seek medical attention and is a major cause of disability and anxiety associated with the disease. Chronic cough, often the first symptom of COPD, to develop.[3]

The diffusing capacity of lung for carbon monoxide (DLCO) is a measure of the ability of gas to transfer from the alveoli across the alveolar epithelium and the capillary endothelium to the RBCs. Gas exchange is impaired by parenchyma destruction, which disrupts the local matching of ventilation and perfusion.[4] The imbalance of ventilation perfusion may lead to alteration of transfer factor. It is usually due to a change in either or both the volume of blood in the alveolar capillaries and the diffusion capacity of alveolar capillary membrane. In chronic lung disease, diffusion capacity is impaired when there is a reduction in the effective surface area for gas exchange in lung, in disease of lung parenchyma in which there is loss of lung tissue or part of the lung, not ventilated.[5]

A comprehensive yoga program can have a salutary effect on general health and respiratory health and thereby help increase a person's ability to perform activities of daily living. COPD is known to increase the level of stress, emotional vulnerability, physical inactivity and muscle wasting. This yogic regimen may change the milieu at the bronchioles and the alveoli particularly at the alveolo-capillary membrane to facilitate diffusion and transport. Hence transfer factor of the lung for carbon monoxide (TLCO) has been included in this proposed study.

We have not come across any study regarding the effect of yogic exercises on transfer factor of lung for carbon monoxide; it was therefore decided to scientifically study the effects of yogic exercises in a group of COPD patients by measuring pulmonary function tests along with diffusion capacity.

**MATERIALS AND METHODS**

The study was conducted in University College of Medical Sciences (UCMS), Delhi on 60 diagnosed patients of mild (n=30) and moderate (n=30) COPD patients in the age group of 30-60 years, of either sex, having disease duration of more than one year. The patients were recruited from the medicine outpatient department (OPD) of Guru Teg Bahadur (GTB) hospital, Delhi. The diagnosis was based on three most common symptoms, namely, cough, sputum production and exertional dyspnoea.

Inclusion criteria for COPD patients of mild and moderate severity, according to GOLD guidelines: Mild ratio of forced expiratory volume in first second to forced vital capacity (FEV₁/FVC)<70% and FEV₁>80% predicted, moderate- FEV₁/FVC<70% and FEV₁=50-80% predicted. All patients remained on their prescribed medical treatment during the study. They
were on regular conventional treatment with daily inhaled bronchodilator \( \beta_2 \) agonist; salbutamol 100-200 \( \mu \)g at the interval of 6 h and inhaled anticholinergic; ipratropium bromide 40-80 \( \mu \)g at the interval of 6-8 h.

Subjects with a history of an exacerbation or respiratory tract infections, tuberculosis, current smokers, pregnant or lactating women, diabetes or any other disorder were excluded. The medication for COPD was kept the same throughout the study period for both control and the yoga group. The study was explained to the patients and their signed informed consent was taken. Ethical clearance was also obtained from UCMS ethical committee.

Selected patients were randomized into two groups:

- **Group 1: Conventional drug therapy**
- **Group 2: Yoga with conventional drug therapy**

**Group 1 control group** (n=30): This group was further subdivided according to severity:

- **Group 1a Mild COPD**: This group was taking conventional treatment with inhaled bronchodilator \( \beta_2 \) agonist, salbutamol 100-200 \( \mu \)g at an interval of 6 h.

- **Group 1b Moderate COPD**: This group was taking conventional treatment with inhaled bronchodilator \( \beta_2 \) agonist, salbutamol 100-200 \( \mu \)g at an interval of 6 h and inhaled anticholinergic, ipratropium bromide 40-80 \( \mu \)g at an interval of 6 h.

**Group 2 Yoga group** (n=30): These patients were taught pranayama and asanas and were asked to continue the same medication as group 3. This group was further subdivided according to severity.

- **Group 2a Mild COPD**
- **Group 2b Moderate COPD**

The training in yoga: The yoga practice given to COPD patients (for 2 months) included pranayama and asanas. Before putting the patients on yoga regimen, they were clinically examined to rule out any physical ailments. Patients were asked to perform yoga exercises for 40-50 min everyday for 2 months under the supervision and guidance of a yoga instructor. Yoga includes pranayama (30-35 min), asanas (10 min), meditation (10 min) and lifestyle changes.

Pranayama (breathing exercises): \([6]\)

1. **Bhastrika**: 5 min
2. **Anulom Vilom**: 15 min
3. **Kapalbhati**: 10 min
4. **Bhramari**: 5 times
Asanas (postures):

1. Surya Namaskar
2. Tadasana
3. Sukhasana
4. Paschimotanasana
5. Shavasana: 10-20 min

Both the control group and yoga group were matched for age, sex and duration of asthma and COPD. All subjects underwent complete physical examination and clinical assessment. Routine laboratory tests (complete hemogram) were done at the time of commencement of the study. Patients were tested, instructed and followed up in cardiopulmonary laboratory of the Physiology department. Yoga group were explained about yoga and their lifestyle modifications. They were advised about the diet, in which more fruits and vegetables were included. They were instructed to avoid alcohol and smoking and to keep regular working and sleeping hours. Proper yoga training was given by yoga experts. Subsequently they performed yoga in the yoga clinic for 21 days for an average of 45 min daily. Thereafter, they were asked to practice yoga for 45 min daily at home. The subjects were followed in the cardiopulmonary laboratory, after each week, for an evaluation and compliance to see whether they were doing the yogic exercises properly. Subjects maintained daily records of their breathing exercises, asthma symptom severity during the day and night, plus activity limitations due to asthma. They were asked to note down if there was any change in the dose of their medications.

The control groups were also asked to maintain records of all events related to disease and medication use. Both the groups were regularly attended by their treating physicians during study evaluation visits. Both the groups filled the daily diary and brought it at each visit. During the follow up period, telephonic support was provided for motivating participants to improve their compliance. All the subjects were evaluated three times, first at the time of recruitment, then after one month and two months. Simultaneously they underwent either conventional treatment or conventional treatment with yogic intervention. The recorded parameters were compared, statistically analyzed and then concluded. All of the patients received the same yoga training.

**Parameters**

Standing height and weight of the patients were measured and body mass index (BMI) was calculated. Diffusion capacity was assessed prior to yoga training, at the end of 1 month and after 2 months of yoga therapy. It was carried out on each stable subject using computerized medisoft instrument (HYP’AIR compact-manufacturer- PK MORGON). The patients were acclimatized to the laboratory for 10 min. The level of the mouth piece was adjusted so that the patient was
comfortable. Adequate demonstration was given till the subject had comprehended the instructions. Diffusion capacity was carried out in the morning between 9:30 am and 11 am.

To make the measurement of transfer factor, the subject was seated upright in front of the apparatus; this is set so that the subject breathes air through the mouth piece. A nose clip was worn. After a few normal breaths, the subject breathed out to residual volume. Then immediately, the subject rapidly inhaled the test gas to total lung capacity, held the breath for approximately 9-11 s and finally breathed out at a moderately fast rate. After exhalation, a sample of alveolar gas was collected for analysis.

By the method of Jones and Meade, the effective duration of breath holding is taken to include two- thirds of time of inspiration and the time of expiration up to half way through the period of sample collection.[7,8]

A total of 3 tests were performed and the best of the three fulfilling the criteria of reproducibility and vitality were considered for analysis.

The control group was told to continue the medicines, with no dietary restrictions or daily activities. They were also assessed for diffusion capacity at the time of recruitment, at the end of 1 month and after 2 months.

Data were collected, tabulated and analyzed using repeated measures of analysis of variance (ANOVA), followed by Tukey test with $P<0.05$ as statistically significant. Results are expressed as mean±standard deviation (SD).

Go to: RESULTS

The mean±SD for age in group 1a was 39.33±8.415 years and for group 2a was 46±9.449 years. The mean±SD for age in group 1b was 50.87±8.634 years and for group 2b was 52.47±8.911 years. The baseline parameters were comparable between the yoga and the control group of mild COPD patients and moderate patients ($P>0.01$ for all). Anthropometric variables (body surface area (BSA), body mass index (BMI) were found to be significantly different between group 2a and group 2b [Tables [Tables1 and and2]2] ($P<0.05$).

![Table 1](image_url)

Table 1
Anthropometric variables in group 2a

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Control group</th>
<th>Yoga group</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLCO (mm Hg)</td>
<td>17.04 ± 0.67</td>
<td>18.12 ± 0.57</td>
<td><strong>NS</strong></td>
</tr>
<tr>
<td>1 month</td>
<td>17.08 ± 0.52</td>
<td>19.72 ± 0.40</td>
<td><strong>NS</strong></td>
</tr>
<tr>
<td>2 month</td>
<td>17.08 ± 0.52</td>
<td>19.72 ± 0.40</td>
<td><strong>NS</strong></td>
</tr>
<tr>
<td>Significance</td>
<td><strong>NS</strong></td>
<td><strong>NS</strong></td>
<td><strong>NS</strong></td>
</tr>
</tbody>
</table>

Table 2

Anthropometric variables in group 2b

Transfer factor of lung for carbon monoxide (TLCO) in group 2a and group 2b showed a statistically significant increasing trend over time from baseline to 1 month and baseline to 2 months ($P<0.001$) [Tables 3 and 4]. TLCO was higher in group 2a than in group 1a, but the differences were statistically not significant ($P=0.443$) [Table 3]. Also, TLCO was higher in group 2b than in group 1b, but the differences were statistically not significant ($P=0.409$) [Table 4].

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Time period</th>
<th>Control group</th>
<th>Yoga group</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLCO (mm Hg)</td>
<td>Baseline</td>
<td>17.04 ± 0.67</td>
<td>18.12 ± 0.57</td>
<td><strong>NS</strong></td>
</tr>
<tr>
<td></td>
<td>1 month</td>
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<tr>
<td>Significance</td>
<td><strong>NS</strong></td>
<td><strong>NS</strong></td>
<td><strong>NS</strong></td>
<td><strong>NS</strong></td>
</tr>
</tbody>
</table>

Table 3

Transfer factor of lung for carbon monoxide in group 1a and 2a

Table 4
DISCUSSION

In the present study, there was significant decrease in weight and body mass index after yoga. The values of TLCO showed a statistically significant improvement after two months of yoga training in mild as well as moderate COPD. Behera D studied the effect of yoga on COPD patients and showed that lung function parameters (forced vital capacity (FVC), forced expiratory volume in first second (FEV₁), and peak expiratory flow rate (PEFR)) improved after the practice of yoga.[9] COPD patients undergoing conventional drug treatment had no change in TLCO in COPD patients. In the earlier stage of COPD, a person's lung function may be impaired 20% to 30%. The progress of disease causes further impairment, which in turn increases inactivity. Inactivity itself may contribute to the deterioration of the lungs and the total musculature.[10] Yoga when practiced by patients with COPD results in improvement in their quality of life and lung function on a short-term basis.[11] Through proper breathing exercises more oxygen is available for the exchange at tissue level, in turn muscles throughout the body do their job efficiently. Breathing exercises and stretching postures are used to increase respiratory stamina, relaxation of the chest muscles, expansion of lungs, raising energy levels and calming the body.[12]

Yoga improves the blood circulation; there is better perfusion of tissues also, which increases the strength of respiratory muscles. More oxygen binds with hemoglobin. So oxygen delivery increases. The further advantage of yogic breathing lies in the fact that it is more of a vertical breathing. By this vertical breathing, all the alveoli of both the lungs open up evenly. Due to the even expansion of all the alveoli, a vast expanse of alveolar membrane is available for exchange of gases. This surface is about 50 m² in extent, which is 20 times the entire body surface. The larger the surface available for the process of diffusion, the better is the process. The purpose of yoga breathing exercises is to supply the body with oxygen and cleanse it of carbon dioxide and other toxins. Generally, a small portion of lung capacity is been utilized. This inadequate supply of oxygen results in improper waste disposal from the body. The body functions are slowed down and the cells/tissues fail to regenerate themselves due to lack of sufficient energy.[6]

With pranayama practice, there can be an increased intake of oxygen as much as five times. This means five times of carbon dioxide is gotten rid from the body. There can be great improvement in the health by doing pranayama.

The controlled breathing in yoga can ease anxiety, achieve relaxation, and provide more oxygen to the blood stream. The exercises help open blocked airways caused by bronchitis or emphysema, which are linked to COPD, and improve the function of air circulation. Simple yoga moves can even aid those with advanced COPD.

Vedanathan has observed that one of the most important aspects of yoga for asthma and COPD patients is that “they develop an increased capacity to relax and control their breathing. They
learn that they don’t have to let their breathing control and that they can take charge of their breathing.” As with any technique, they emphasize that yoga requires regular practice in order to be effective.[13]

Pranayama, asana and meditation, through external signals (five sense organs) and internal signals (proprioreceptors, visceroreceptors and chemoceptors) modulate the brain’s cortico-limbic-hypothalamic systems and provide beneficial effects due to better functional coupling of ‘autonomic, endocrine and somatic’ responses. This could be correlated with homeostatic responses set up to negate the undesirable effects of stress.

**CONCLUSION**

We conclude that yoga, especially the pranayamic breathing exercises when used adjunctively with standard pharmacological treatment, can significantly improve TLCO in yoga with mild-to-moderate grades of COPD.

**Footnotes**

**Source of Support:** Nil

**Conflict of Interest:** None declared

**REFERENCES**


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OmeGA-3 SupPLEMENTATION and Cardiovascular Disease, Acupuncture and Chronic Obstructive Pulmonary Disease (COPD), Myofascial Physical Therapy and Interstitial Cystitis, and Yoga and Chronic Pain

Richard Glickman-Simon, MD, and Alan Ehrlich, MD

EVIDENCE-BASED INTEGRATIVE MEDICINE UPDATES

OMEGA-3 FATTY ACID SUPPLEMENTATION DOES NOT REDUCE MORTALITY OR RISK FOR CARdiovascular EVENTS IN HIGH-RISK PATIENTS WITH DYSGLYCEMIC

Level 1 (likely reliable) evidence

Epidemiologic studies have demonstrated a reduced risk of cardiovascular events in persons consuming diets rich in fish or taking fish oil supplements.1,2 Inspired by these results, researchers have conducted numerous clinical trials investigating the cardiovascular benefits of omega-3 polyunsaturated fatty acids (eicosapentaenoic and docosahexaenoic acid).

A few systematic reviews have suggested favorable effects in patients with known cardiovascular disease (CVD).3,4,5 but the preponderance of clinical evidence appears to be shifting against a beneficial role for omega-3 supplementation in these patients.6-9 Many of these negative trials included patients at high risk but without CVD. Until now, no trials had specifically targeted patients with type 2 diabetes or impaired glucose tolerance.

To investigate the possibility that dysglycemic patients with CVD or other CVD risk factors may benefit from long-term omega-3 administration, researchers randomized 12,611 such patients (older than 50 years of age) to receive 1 g of Omecor (containing 890 mg of ethyl esters of omega-3 fatty acids, a relatively low dose compared with other trials) or placebo (1 g of olive oil) once daily.10 (Omecor is sold under the brand name Lovaza in the United States.) At a median of 6.2 years, there were no significant differences in cardiovascular-related mortality, all-cause mortality, fetal and nonfetal myocardial infarction, fetal and nonfetal stroke, heart failure-related hospitalization for any cardiovascular cause, revascularization procedures, or angina between the two groups. Predictably, omega-3 supplementation was associated with reduced triglyceride levels (P < .001), but it had no significant effect on other lipid levels.

In this large, well-executed study, researchers were unable to show an association between daily omega-3 supplementation and death or any cardiovascular outcomes in dysglycemic patients with (or at high risk for) CVD. Although this was the first study to focus exclusively on this patient population, the findings are consistent with the small to neutral CVD-related effects of omega-3 seen in recent meta-analyses, which included subgroups of similarly dysglycemic patients.5,6 It is important to note that although participants receiving omega-3 significantly reduced their triglyceride levels compared with placebo, other lipoproteins remain unchanged. The clinical benefits of isolated reductions in triglyceride levels are debatable, particularly in type 2 diabetics, whose high triglyceride levels often are accompanied by reduced high-density lipoprotein cholesterol levels and, markedly atherogenic low-density lipoprotein cholesterol particles.11 It is, therefore, not surprising that a reduction in triglyceride levels alone would not translate into favorable cardiovascular outcomes. If omega-3 fatty acids have an influence on CVD risk, it is unlikely related to their triglyceride-lowering effect.

ACUPUNCTURE MAY IMPROVE DYSPNEA ON EXERTION IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

Level 2 (mid level) evidence

Dyspnea is the most frequent symptom of COPD and the one associated with the greatest morbidity. Acupuncture has previously been found effective in treating dyspnea associated with cancer.12 It has shown benefit in reducing dyspnea and
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Bacteria in COPD; their potential role and treatment

Paul T King1,2*, Martin MacDonald1,2 and Philip G Bardin1,3

Abstract
The role of bacterial infection in chronic obstructive pulmonary disease (COPD) and how it should be treated has been an ongoing source of controversy. For many years bacterial infection has not been thought to have an important effect in the pathology of this condition. Recent advances in diagnostic techniques, particularly the use of 16S sequencing, has demonstrated that there are a large range of bacteria present in the lower respiratory tract, both in terms of exacerbations and chronic colonization. A proportion of the bacteria present in the lower respiratory tract have also been shown to produce inflammation and hence are likely to be relevant for the pathogenesis of COPD. The accurate diagnosis of bacterial infection in individual patients remains a major challenge. The trials that have assessed the effect of antibiotics in COPD have generally been of low quality and have not been placebo controlled. Recent studies of macrolides for long-term treatment in COPD have found significantly reduced rates of exacerbations. Major challenges remain in accurately defining the potential role of bacteria in the inflammatory process and how best to optimize the use of antibiotics without the overuse of this limited resource. Alternative strategies to treat infection in COPD remain very limited.

Review
The role of bacterial infection in COPD and how it should be treated has been an ongoing source of controversy. The British hypothesis proposed that recurrent bronchial infections were the reason that some smokers developed airflow obstruction while others did not [1,2]. The subsequent study of Fletcher and Peto demonstrated that chronic bronchitis and respiratory infections did not relate to lung function decline [3]. As a consequence for many years it was believed that the chronic bronchitis syndrome had no relevance to lung function decline in COPD. However, more recent studies have described a relationship between lung function decline and respiratory infections. Chronic bronchitis [4], respiratory infections [5,6] and sputum bacterial counts [7] have been shown to be related to decline in lung function in COPD. The role of chronic bronchitis remains controversial though.

A relatively recently realized feature of COPD is intense bronchial inflammation; that persists despite the cessation of smoking and is most prominent in advanced disease [8,9]. The factors that drive the inflammatory process after smoking cessation have not been clearly defined [10]. Bacterial infection is one potential candidate and bacteria can induce inflammation both in the context of exacerbations and in the stable baseline state. Antibiotics have been used as standard management for the treatment of exacerbations of COPD, but their value in this context remains uncertain [11]. Recent trials of the long-term use of macrolides have shown promising results [12].

This review will discuss the role of bacteria in the pathogenesis of COPD. Methods of diagnosing respiratory infection will be reviewed and the potential effect of antibiotics and other therapies in treatment.

Microbiology of the respiratory tract
Bacteria have established niches in the human body where they exist in symbiosis with their host. The term microbiome is used to refer to complex communities of microorganisms, termed the microbiota, that inhabit the body surfaces in symbiosis with the host [13]. The most clearly defined microbiome occurs in the gastrointestinal

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Alternative strategies for exercise critical power estimation in patients with COPD

Abstract Exercise critical power (CP) has been shown to represent the highest sustainable work rate (WR) in patients with chronic obstructive pulmonary disease (COPD). Parameter estimation, however, depends on 4 high-intensity tests performed, on different days, to the limit of tolerance (T_tol). In order to establish a milder protocol that would be more suitable for disabled patients, we contrasted CP derived from 4, 3 and 2 tests (CP₄, CP₃, and CP₂) in 8 males with moderate COPD. In addition, CP was calculated from 2 single-day tests performed on an inverse sequence (CP₂₁₈ and CP₂₁₉₈); CP values within 5 W from CP were assumed as “clinically-acceptable” estimates. We found that [CP₄−CP₂₃] and [CP₄−CP₂₉₈] differences were within 5 W in 8 and 6 patients, respectively (95% confidence interval of the differences = −1.3 to 3.5 W and −11.5 to 6.5 W). There was a systematic decline on T_tol when an exercise bout was performed after a previous test on the same day (P < 0.05). Consequently, substantial differences were found between CPs and any of the CP estimates obtained from single-day tests. In conclusion, clinically-acceptable estimates of CP can be obtained by using 3 or, in most circumstances, 2 constant WR tests in patients with moderate COPD—provided that they are not performed on the same day.

Keywords COPD • Critical power • Oxygen consumption • Exercise capacity

Introduction

Intolerance to physical exertion, commonly associated with disabling breathlessness, is a hallmark of advanced chronic obstructive pulmonary disease (COPD) (Celli and MacNee 2004). Several protocols have been used to evaluate the ability of patients to sustain dynamic exercise—as summarized by Luesker et al. (2002). Most of these tests, however, are unable to properly identify an exercise intensity which could be maintained without progressive discomfort and incapacitating dyspnea. This work rate (WR) would be expected to provide an index of the “ideal” initial intensity for endurance training and also to evaluate the effects of therapeutic and rehabilitative strategies in these patients (Neder et al. 2000a; Puente-Maestu et al. 2003; Casas et al. 2005).

In this context, we have described that the asymptote of the hyperbolic power-duration relationship (critical power or CP) does provide a reliable indicator of the highest sustainable WR in patients with COPD (Neder et al. 2000a). This parameter was closely related to the highest ventilatory stress and dyspnea intensity which could be maintained below a limiting threshold. Unfortunately, estimation of CP seems to depend on a series (at least 4) of high-intensity (60–120% peak WR), short-duration bouts to the limit of tolerance, ideally performed on different days (CPₓ) (Hill 1993; Morion and Hodgson 1996; Neder et al. 2000b; Puente-Maestu et al. 2003; Fukui et al. 2003). These shortcomings have substantially hampered the practical application of the CP concept in clinical settings.

This study was performed to evaluate whether a simplified protocol would provide clinically-acceptable estimates of CP (i.e., within 5 W from CP) in patients with COPD. We hypothesized that reliable CP values could be obtained by using fewer exercise tests (less than 4) and/or less days of testing.
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