CYSTIC FIBROSIS
AND
PHYSIOTHERAPY

• Physiotherapy: Modified Postural Drainage with Percussion and Vibration
  • Activity and Exercise
**PHYSIOTHERAPY**

**Modified Postural Drainage Positions with Percussion and Vibration**

Physiotherapy techniques are taught to parents of children with Cystic Fibrosis. These techniques include Modified Postural Drainage with Percussion and Vibration.

People with Cystic Fibrosis have thicker mucus in their lungs. Physiotherapy helps loosen and remove the mucus from the lungs. This keeps the lungs healthier.

- Physiotherapy is done 2-3 times a day
- Do the physiotherapy session before meals or 45-60 minutes after eating
- Place a blanket or towel over the area to be percussed
- Percuss for 3-5 minutes in each position
- Follow with 3-4 vibrations as your child breathes out
- Encourage your child to cough after each position

**Modified Postural Drainage**
- Your child is placed in different postural drainage positions to help mucus move from the small airways to the large airways of the lung
- Each position focuses on a different area of the lung

**Percussion**
- Percussion helps loosen the mucus in the lungs
- Percuss with a cupped hand
- Majority of the movement should be from your wrist, relax your shoulder
- Percuss firmly and rhythmically, faster is not better

**Vibration**
- Vibration helps move the mucus from the smaller airways to the larger airways of the lung
- Vibrate with a flat hand
- Majority of the movement should come from tensing your arm
- Vibrate as your child breathes out

**Coughing**
- Coughing helps clear the mucus from the lung
- Encourage your child to cough after completing each postural drainage position with percussion and vibration

**Medication**
- If ordered by your child’s CF specialist, give ventolin before the physio session using a nebulizer or puffer
Physiotherapy
Percussion and Vibration with Modified Postural Drainage Positions

**Lower Lobes**

**Front Lower Lobes**
(Anterior Segments)
Position child flat on back.
Percuss and vibrate on both sides of chest just below the nipple line but above the tummy.

**Back Lower Lobes**
(Posterior Segments)
Position child flat on stomach.
Percuss and vibrate on both sides of the chest just below the shoulder blades.

**Right Side Lower Lobe**
(Lateral Segment)
Position child flat, lying on left side.
Percuss and vibrate over right lower ribs.

**Left Side Lower Lobe**
(Lateral Segment)
Position child flat, lying on right side.
Percuss and vibrate over left lower lobe.
Upper Lobes

Back Right Upper Lobe (Posterior Segment)
Position child flat ¾ turn onto their stomach. Percuss and vibrate over the right shoulder blade.

Back Left Upper Lobe (Posterior Segment)
Position child sitting on lap on right side with head up at an inclination of 30° and ¾ turn on to their stomach. Percuss and vibrate over the left shoulder blade.

Front Upper Lobes (Anterior Segment)
Position child flat on back. Percuss and vibrate above nipple line.

Top Upper Lobes (Apical Segment)
Position child on lap in sitting, leaning backwards at 45°. Percuss and vibrate over collar bones.
Middle Lobes

Right Middle Lobe
Position child lying on left side ¾ turn to back. May use a towel or pillow to lean back against. Percuss and vibrate close to right armpit over nipple line.

Left Middle Lobe (Lingula)
Position child lying on right side ¾ turn to back. May use a towel or pillow to lean back against. Percuss and vibrate close to right armpit over nipple line.
Every day we use our lungs. They give our bodies oxygen and get rid of carbon dioxide. This keeps us alive, healthy and well.

Everyone’s lungs make mucus. Mucus is mostly made up of water. Mucus acts as a barrier and collects all the pollutants and germs that we breathe in through the air. When we cough or “clear our throats” we get rid of or clear the mucus from our lungs.

People with Cystic Fibrosis have mucus that is thicker. This is because people with Cystic Fibrosis have a defective chloride (Cl\(^-\)) channel in their epithelial cells. Therefore, water cannot move into the mucus. When mucus is thick it cannot easily be cleared from the lungs so they become clogged up with mucus. This makes it harder to breathe.

One of the most serious side effects of CF is lung damage. Physiotherapy helps loosen the mucus so it can be coughed up. This helps keep the lungs healthier.
THE RESPIRATORY SYSTEM
What is it made up of?

Air enters your body through your nose or your mouth and travels to your lungs through the large airways. The large airways divide into smaller and smaller airways until they end in air sacs called alveoli. Alveoli are the site of gas exchange where your body takes in oxygen and gets rid of carbon dioxide.

Each lung can be divided into three sections called lobes; the upper, middle and lower lobe. You can think of each lobe as a balloon. The 3 lobes (balloons) sit one on top of each other and inflate and deflate as you breathe in and out.

The upper lobe can be further divided into a top (apical), front (anterior) and back (posterior) segment. The lower lobe can be divided into a front (anterior), back (posterior) and side (lateral) segment. Physiotherapy treatment (modified postural drainage with percussion and vibration) targets all areas on the lung for mucus clearance.

Diagram of the Different Segments of the Lungs

[Diagram showing the segments of the lungs]
Respiratory System

- Upper Airways
- Trachea (windpipe)
- Right Lung
- Left Branches
- Left Lung
- Diaphragm
- Gas Exchange
- Bronchiole
- Alveoli
- Upper Lobe
- Middle Lobe
- Lower Lobe
- Lobes of the Lungs

To be used as a teaching tool at BC Children's Hospital
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Activity and Exercise

Being active each day is healthy for children and youth. It helps lungs be stronger. When you exercise you need to breathe deeper.

What are some ideas to encourage my child to be more active?

- Go to areas that encourage children to explore, run, jump, climb and skip.
- Help a group of neighborhood children play soccer, or ride bikes. Have your child join a team.
- Find something the whole family can do so being active is part of your family's routine. Make it fun. When a child is exposed to an activity early on, they will likely learn to enjoy exercise.
- You can also start blowing games with your child to help their lungs. Blowing games can include bubbles, pinwheels or blow toys.