



# Improvement of lung physiotherapy for neuromuscular disease

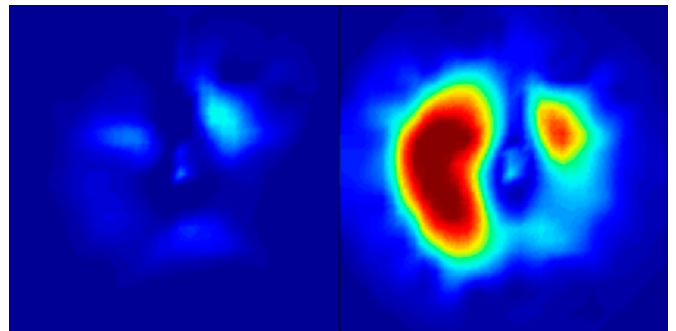
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Originaltitel: Comparison of two modes of a lung physiotherapy device in children with neuromuscular disease

Main applicant: PD Dr. med. Thomas Riedel  
Department of Paediatrics, University Children's Hospital, Inselspital Bern

## Synopsis

Children with neuromuscular disease need regular physiotherapy to prevent severe lung infections. With the present study, we investigate the effect of a new, possibly superior mode of a commonly used physiotherapy device on short-term lung function.



Electrical impedance tomography image showing the distribution of air content in the lung during expiration (left) and inspiration (right). Blue indicates low air content, dark red indicates high air content. With this technique we are able to track changes over time and calculate different lung function measures.

### Context

Children with neuromuscular disease often suffer from insufficient cough due to their muscle weakness. This may lead to recurrent severe lung infections and consecutively reduced quality of life and also life expectancy. Regular chest physiotherapy with devices that mechanically assist the children's cough, can reduce this risk. Via a facemask or a mouthpiece, air is actively pushed into the lungs and quickly sucked out, mimicking a spontaneous cough. Recently we could demonstrate that the commonly used manoeuvre with this device does not cause any short-term improvement of lung volumes or lung function.

### Objectives and methods

In the present study, we aim to investigate, whether a slightly modified manoeuvre with the same device will result in a short-term improvement of lung function. With a measuring technique called "electrical impedance tomography", we have the possibility to non-invasively measure lung volumes and lung function during the physiotherapy sessions and to compare the different manoeuvres with each other.

### Significance

Evidence of a positive effect of the new manoeuvre may lead to a substantial adjustment in clinical practice. It has the potential of further improving infection prevention and lung development and thereby quality of life and life expectancy of children with neuromuscular diseases.

### Start and duration

We aim to start patient recruitment in July 2022 with measurements lasting until April 2023. We expect the data analyses to be completed and the publication to be finalised by June 2023.

	Betrag	
Total research budget	CHF	50'804
Grants promised / received by third parties	CHF	0
Grants pending from third parties	CHF	0
Grants being sought from the Swiss Lung Association	CHF	50'804
Amount to be acquired by researchers	CHF	304
Contribution from Research Fund of the Lung Association	CHF	15'500
<b>Donations required from third parties</b>	<b>CHF</b>	<b>35'000</b>

