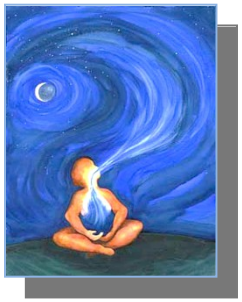
Erreurs en kinésithérapie?

Gregory Reychler

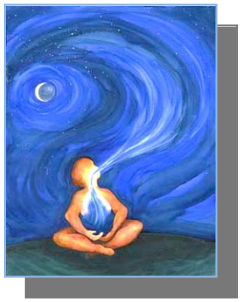
Services de Pneumologie et Médecine Physique

Cliniques universitaires Saint-Luc

Multitude d’erreurs possibles…



- Erreurs relevant de différences dans le geste thérapeutique (description et apprentissage)
- Erreurs par mimétisme
- Erreurs relevant d’habitudes dans les pratiques (idées reçues)
- Erreurs liées à des défauts de connaissances théoriques



Erreur?

« Erreurs relevant de différences dans le geste thérapeutique (description et apprentissage) »

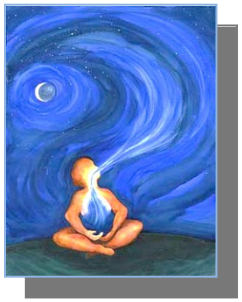
Chest physiotherapy in cystic fibrosis: a comparative study of autogenic drainage and the active cycle of breathing techniques with postural drainage.

Miller S, **Hall DO**, **Clayton CB**, **Nelson R**.

Physiotherapy Department, Royal Victoria Infirmary, Newcastle upon Tyne, UK.

BACKGROUND--Autogenic drainage has been suggested as an alternative method of chest physiotherapy in patients with cystic fibrosis. In this study autogenic drainage was compared with the active cycle of breathing techniques (ACBT) together with postural drainage. METHODS--Eighteen patients with cystic fibrosis took part in a randomised two-day crossover trial. There were two sessions of one method of physiotherapy on each day, either autogenic drainage or ACBT. The study days were one week apart. On each day the patients were monitored for six hours. Mucus movement was quantified by a radioaerosol technique. Airway clearance was studied qualitatively using xenon-133 scintigraphic studies at the start and end of each day. Expectorated sputum was collected during and for one hour after each session of physiotherapy. Pulmonary functions tests were performed before and after each session. Oxygen saturation (SaO2) and heart rate were measured before, during, and after each session. RESULTS--Autogenic drainage cleared mucus from the lungs faster than ACBT over the whole day. Both methods improved ventilation, as assessed by the xenon-133 ventilation studies. No overall differences were found in the pulmonary function test results, but more patients had an improved forced expiratory flow from 25% to 75% with autogenic drainage, while more showed an improved forced vital capacity with ACBT. No differences were found in sputum weight and heart rate, nor in mean SaO2 over the series, but four patients desaturated during ACBT. CONCLUSIONS--Autogenic drainage was found to be as good as ACBT at clearing mucus in patients with cystic fibrosis and is therefore an effective method of home physiotherapy. Patients with cystic fibrosis should be assessed as to which method suits them best.

Thorax. 1995 Feb;50(2):165-9.



A comparison of autogenic drainage and the active cycle of breathing techniques in patients with chronic obstructive pulmonary diseases.

Savci S, **Ince DI**, **Arikan H**.

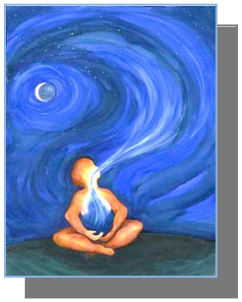
Hacettepe University, Physical Therapy and Rehabilitation School, Ankara, Turkey.

PURPOSE: The effects of a long-term treatment of autogenic drainage (AD) and the active cycle of breathing techniques (ACBT) were evaluated in patients with chronic obstructive pulmonary disease (COPD). METHODS: Thirty clinically stable male COPD patients were randomly assigned to AD or the ACBT treatment for a 20-day treatment period. Patients were assessed through pulmonary function tests, arterial blood gases, a 6-minute walking test, and a modified Borg Scale before, and immediately after the walking test. RESULTS: Autogenic drainage improved forced vital capacity, forced expiratory volume in 1 second, peak expiratory flow rate, forced expiratory volume from 25 to 75%, chronic hypercapnia, arterial oxygenation, exercise performance, and dyspnea perception during exercise. The ACBT increased forced vital capacity, peak expiratory flow rate, arterial oxygenation and exercise performance. Peak expiratory flow rate increased in AD more than in ACBT. In AD treatment, the increase in oxygen saturation was significantly higher than in ACBT treatment. Chronic hypercapnia improved significantly in AD treatment than in ACBT. No differences were found in other lung function parameters. CONCLUSIONS: Autogenic drainage is as effective as the ACBT in cleaning secretions and improving lung functions. These techniques can be used in stable COPD patients according to the patients' and the physiotherapists' preferences.

J Cardiopulm Rehabil. 2000 Jan-Feb;20(1):37-43.

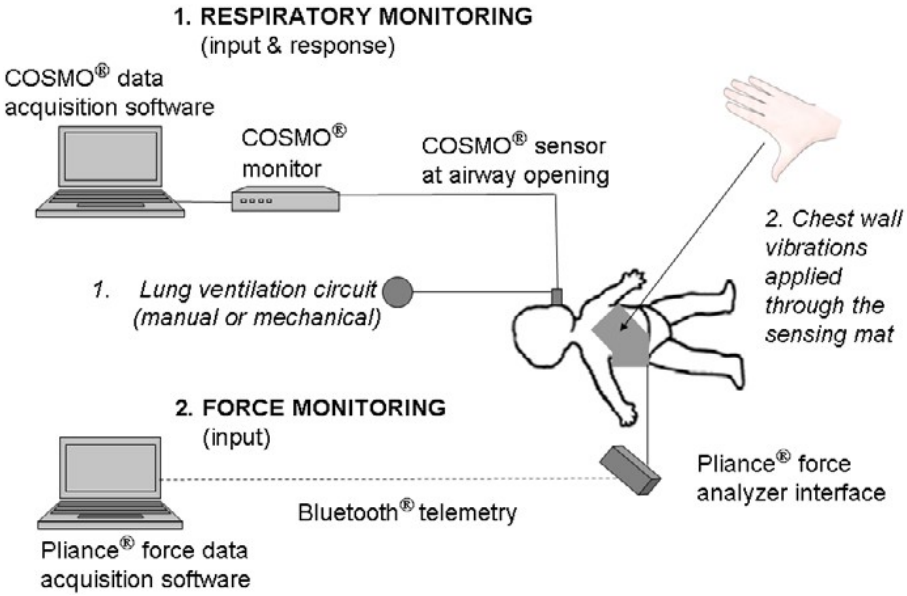
IOP PUBLISHING PHYSIOLOGICAL MEASUREMENT

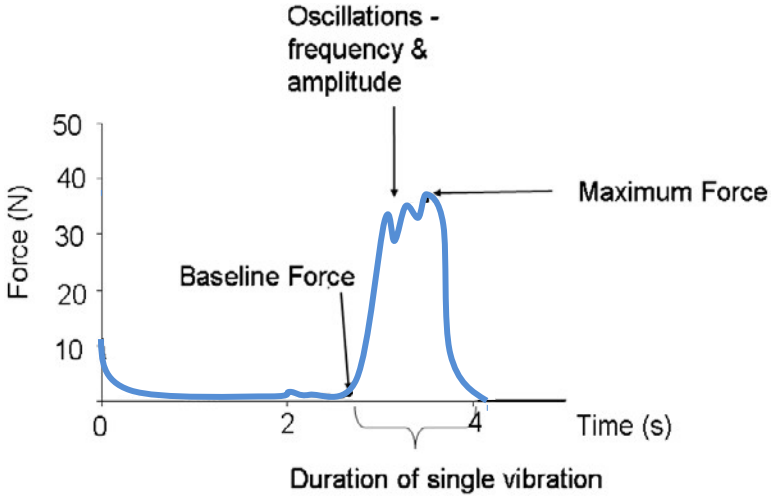
Physiol. Meas. 28 (2007) 1017–1028 doi:10.1088/0967-3334/28/9/004

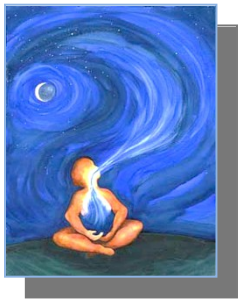


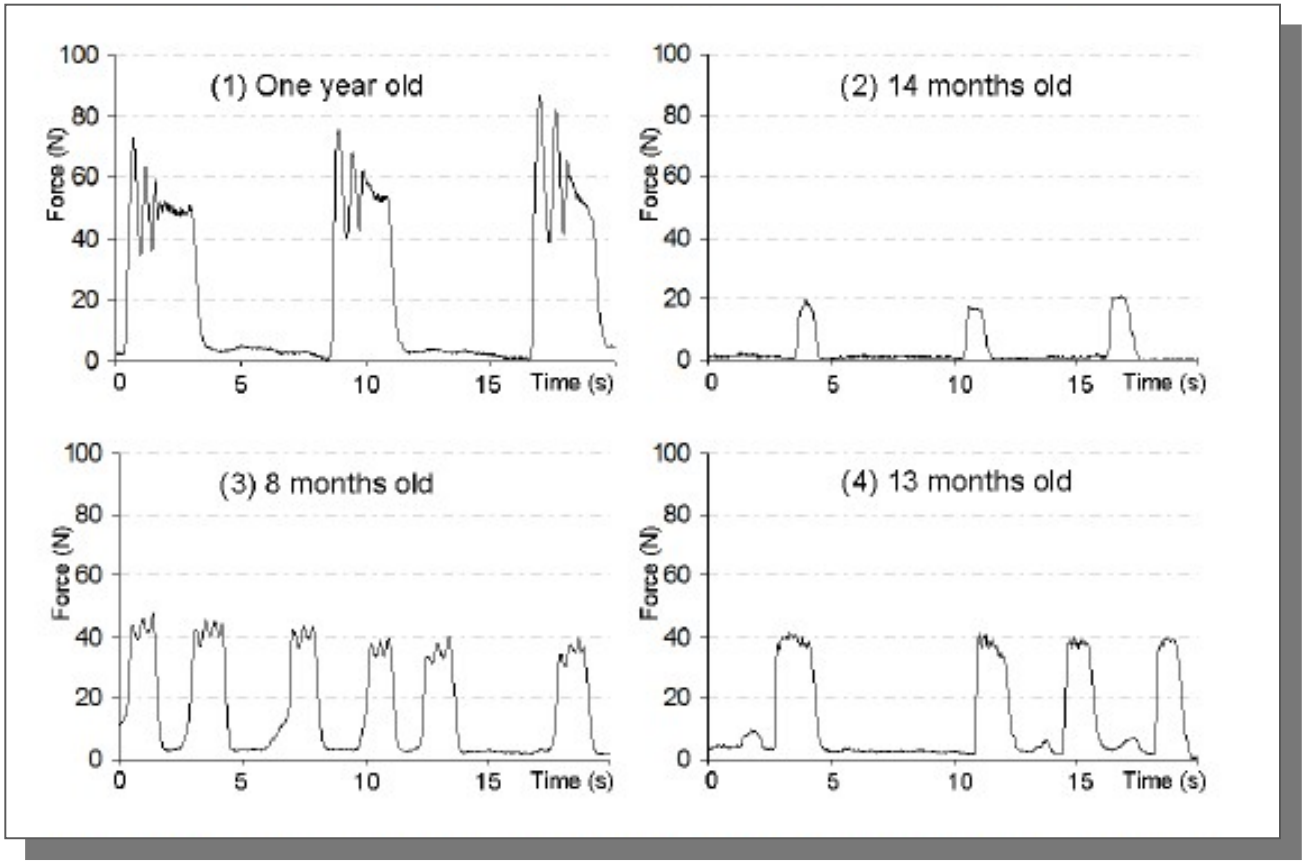
Simultaneous measurement of force and respiratory profiles during chest physiotherapy in ventilated children

R K Gregson[1,2,3], J Stocks[2], G W Petley[4], H Shannon[2,3], J O Warner[5,6], R Jagannathan[4] and E Main[2,3]

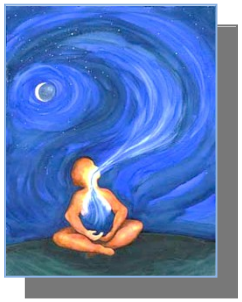


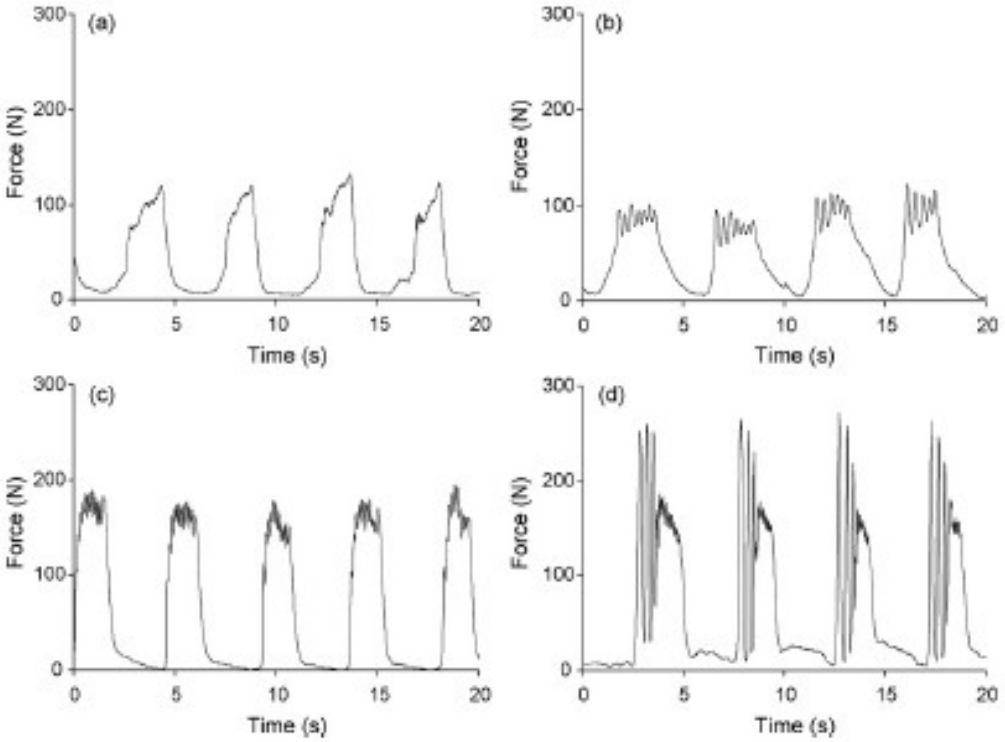






Variabilité de la force pour 4 enfants





Variabilité de la force pour 4 kinés

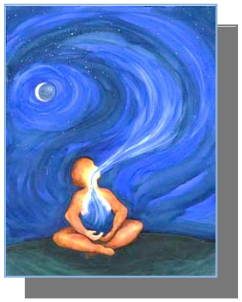
Table 1
Summary statistics of chest wall vibration profiles applied by eight physiotherapists to both subjects in Test 1

Physiotherapist	Subject A				Subject B			
	Fmax (N)	Duration (s)	Freq. (Hz)	Amp. (N)	Fmax (N)	Duration (s)	Freq. (Hz)	Amp. (N)
1	102 (7)	5.2 (0.9)	3.5 (0.1)	29 (1.9)	132 (13)	4.5 (0.9)	3.3 (0.1)	29 (3.8)
2	173 (9)	3.2 (0.5)	8.1 (0.3)	29 (4.3)	131 (2)	2.2 (0.1)	8.9 (0.3)	12 (1.0)
3	222 (8)	2.3 (0.1)	3.9 (0.3)	62 (11)	178 (4)	1.9 (0.1)	6.2 (3.0)	7 (6.2)
4	198 (21)	3.4 (0.1)	6.3 (1.0)	59 (16)	200 (7)	2.3 (0.1)	6.5 (0.6)	54 (7.0)
5	105 (4)	[illegible]	[illegible]	[illegible]	[illegible] (4)	2.1 (0.1)	6.0 (0.3)	13 (2.8)
6	178 (12)	3.4 (0.3)	7.5 (0.2)	29 (4.2)	173 (2)	2.2 (0.2)	8.4 (0.2)	26 (4.3)
7	129 (7)	2.6 (0.2)	8.1 (0.6)	14 (3.1)	135 (5)	2.2 (0.1)	8.5 (0.4)	18 (3.0)
8	71 (8)	2.7 (0.3)	8.9 (1.5)	2 (0.4)	83 (7)	2.7 (0.3)	11.4 (3.7)	3 (1.8)

Mean (standard deviation) calculated for each session of seven chest wall vibrations by Physiotherapists 1–8 in Test 1. Fmax, maximum force; Freq., frequency of oscillation; Amp., amplitude of oscillation.

Variabilité intra-sujet (CV=227%)

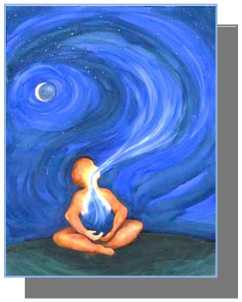
Shannon, Physiotherapy 2009;95:36-42

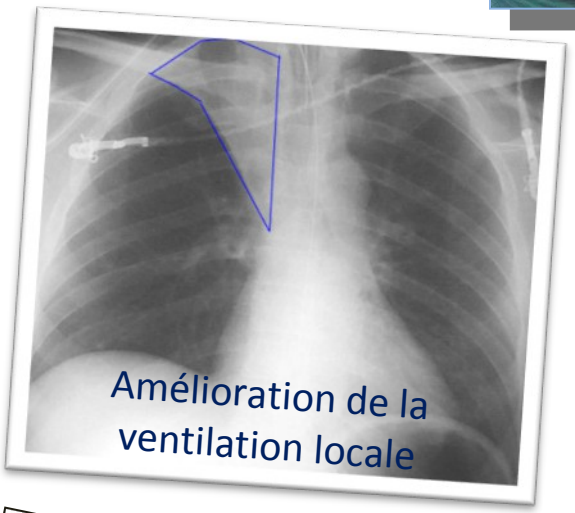


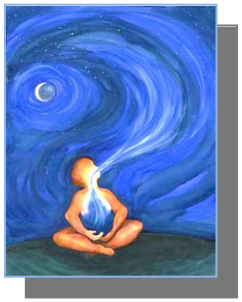
Erreur?

« Erreurs par mimétisme »

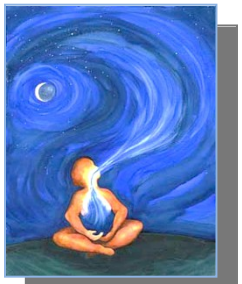
Principales indications de la kinésithérapie







Y a-t-il une kinésithérapie pour soigner une pathologie ?



Chest physiotherapy for pneumonia in adults (Review)

Yang M, Yan Y, Yin X, Wang BY, Wu T, Liu GJ, Dong BR

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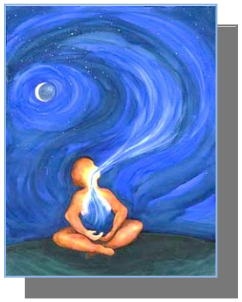
Signes cliniques des pneumonies	
Fatigue	84-93%
Toux	78-90%
Expectorations	61-72%
Dyspnée	60-75%
Fièvre	53-85%
Tachycardie	37-45%
Douleurs pleurétiques	30-60%
Céphalées	29-72%
Nausées	29-48%
Myalgies	25-67%
Vomissements	20-29%



Chest physiotherapy for acute bronchiolitis in paediatric patients between 0 and 24 months old (Review)

Roqué i Figuls M, Giné-Garriga M, Granados Rugeles C, Perrotta C

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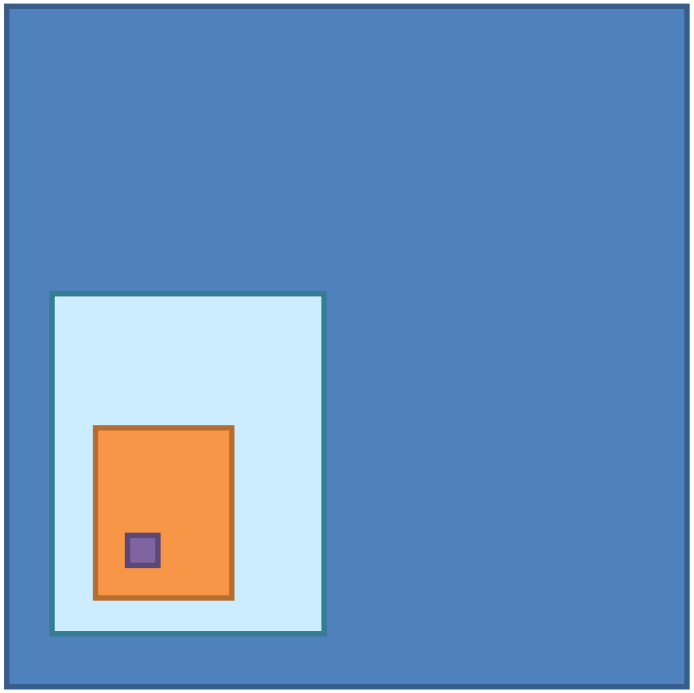
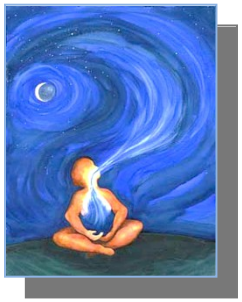


100% Bronchiolite

20% Atteinte pulmonaire

5% Hospitalisation

0.25% Réanimation



(vous avez la parole)

Le blog des lecteurs

Textes, photos, vidéos : livrez vos témoignages sur le blog et retrouvez une sélection de vos histoires dans France Dimanche

France Dimanche

L'épidémie de bronchiolite aiguë du nourrisson revient, comme chaque année à la même période.

Jeunes parents, vous êtes désarmés et inquiets lorsque subitement votre bébé se met à tousser, respire mal, dort et mange moins bien ?

Vous devez impérativement consulter rapidement votre médecin généraliste ou votre pédiatre.

La kinésithérapie respiratoire constitue le plus souvent le traitement de choix, dés les premiers signes de la maladie, et sera prescrite par votre médecin.

Dans ce cas, prenez contact dans les meilleurs délais avec votre kinésithérapeute.

Lui seul pourra aider votre enfant à passer ce cap difficile, éviter ainsi une éventuelle hospitalisation et répondre à vos inquiétudes.

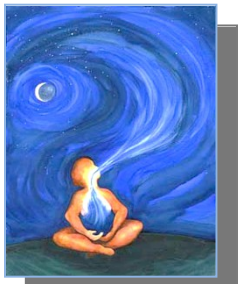
Vous éviterez une perte de temps fâcheuse et votre enfant pourra retrouver son entrain habituel en quelques jours.

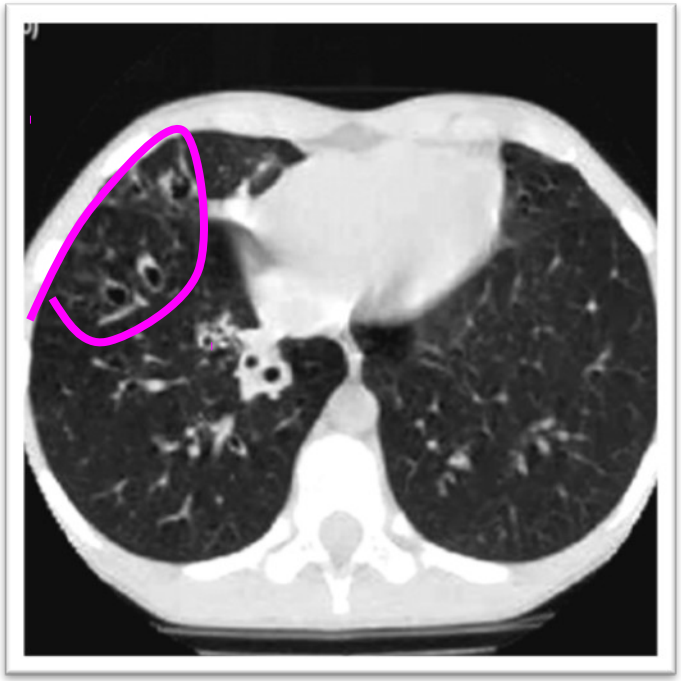
Le kinésithérapeute : un professionnel, compétent et formé, disponible pour vous accompagner dans ces moments difficiles.

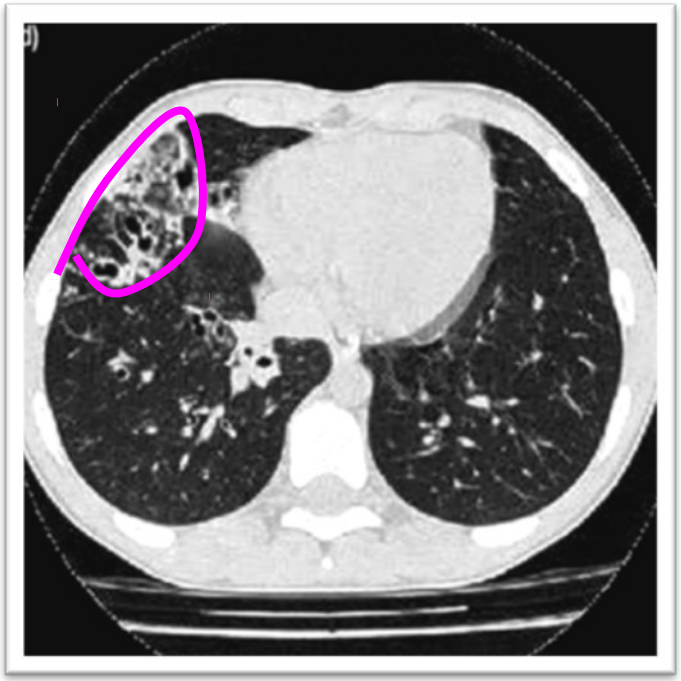
N'hésitez pas ! Pour la santé de votre enfant et sa sécurité, en cas de doute, demandez conseil à votre kinésithérapeute.

CMK, 85 Rue Duhesme 75018 PARIS www.college-mk.org secretariat@college-mk.org

Peut-on réellement envisager de soigner une pathologie?



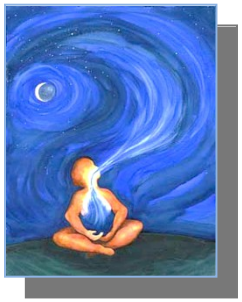


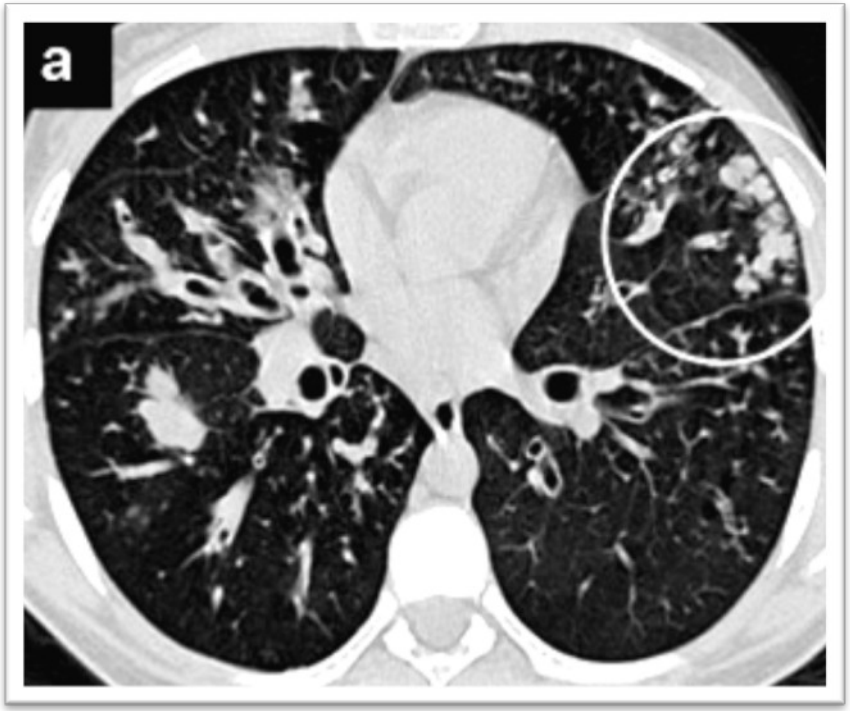


CF patient with improvement of lung function but deterioration of lung structure. The left panel shows HRCT scan at 10 yrs of age (FEV_1=86%, FVC=93, $FEF_{25–75\%}$=80). The light panel shows HRCT at 13 yrs of age (FEV_1=96, FVC=91, $FEF_{25–75\%}$=105).

de Jong, ERJ. 2004;23(1):93-97

Peut-on réellement envisager de soigner une pathologie?



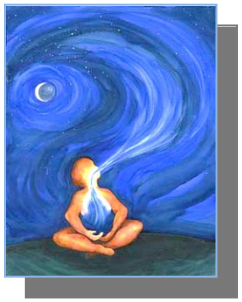


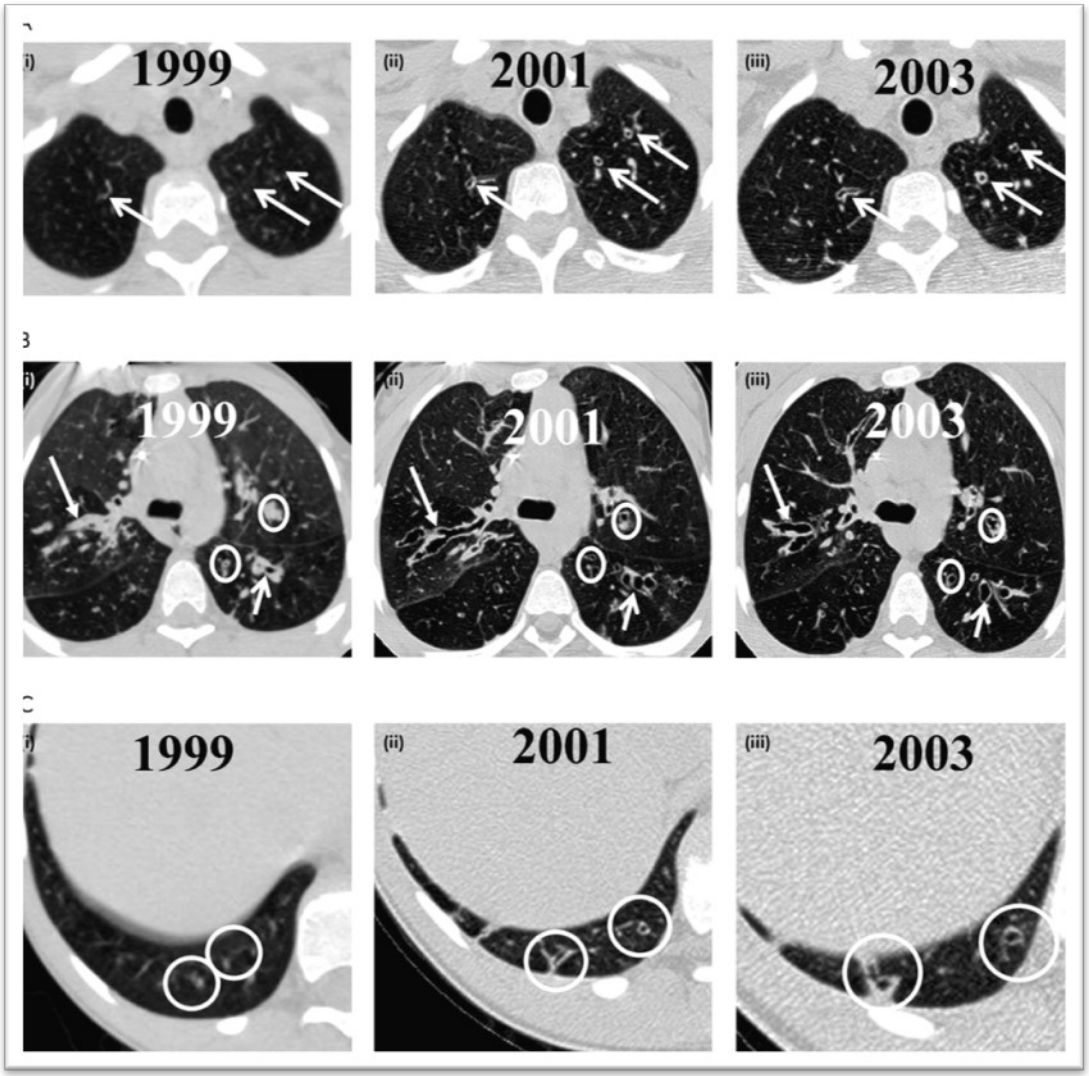
High-Resolution CT demonstrating lung abnormalities in a CF patient (16yo)

High-Resolution CT in a CF patient (15yo) (Personal data)

Robinson, Clin Chest Med. 2007;28:405-421

Peut-on réellement envisager de soigner une pathologie?





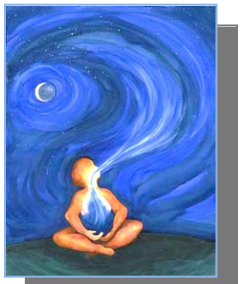
Même technique de désencombrement en 1999, 2001 et 2003?

Une seule technique pour ce patient?

de Jong, Thorax 2006;61:80-85

The Cochrane Collaboration

Working together to provide the best evidence for health care



Chest physiotherapy for pneumonia in children (Review)

Chaves GSS, Fregonezi GAF, Dias FAL, Ribeiro CTD, Guerra RO, Freitas DA, Parreira VF, Mendonca KMPP

Chest physiotherapy for acute bronchiolitis in paediatric patients between 0 and 24 months old (Review)

Perrotta C, Ortiz Z, Roqué i Figuls M

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Chest physiotherapy compared to no chest physiotherapy for cystic fibrosis (Review)

Warnock L, Gates A, van der Schans CP

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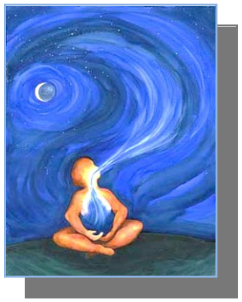
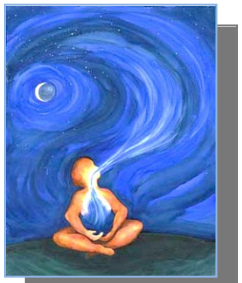
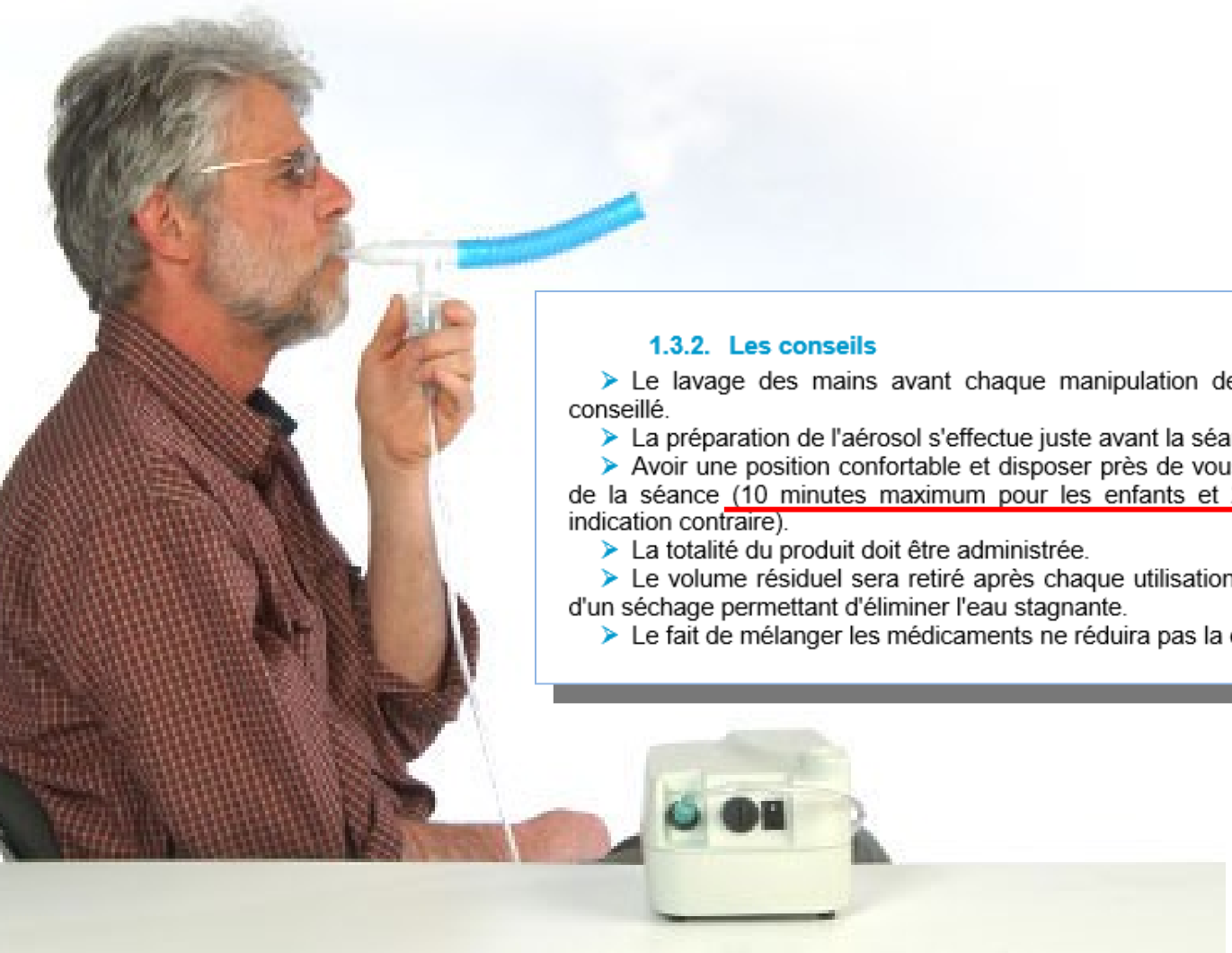


Erreur?

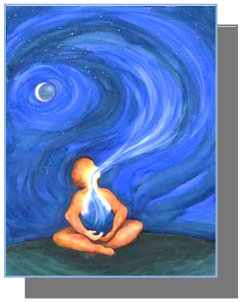
« Erreurs relevant d'habitudes dans les pratiques (idées reçues) »

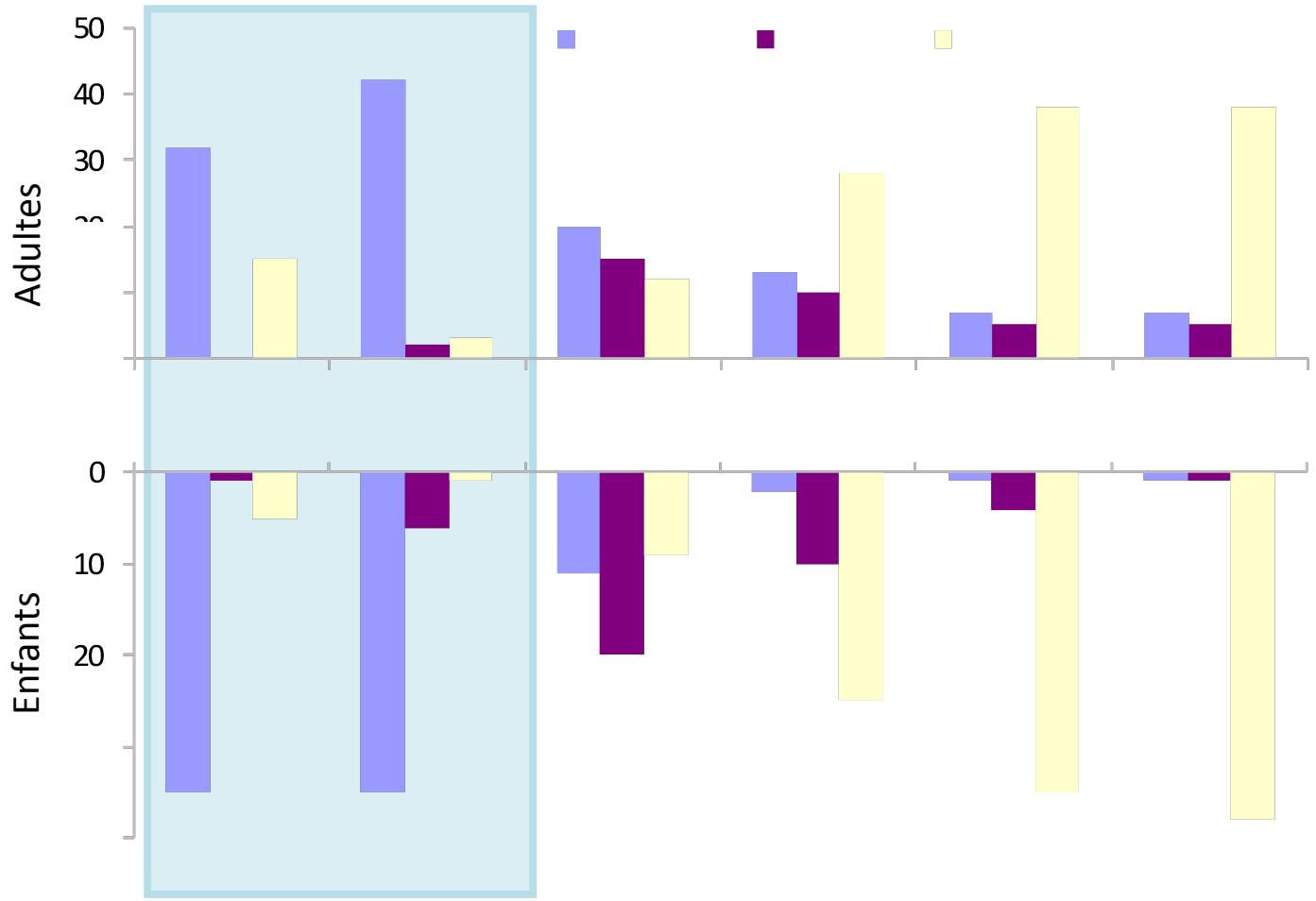




1.3.2. Les conseils

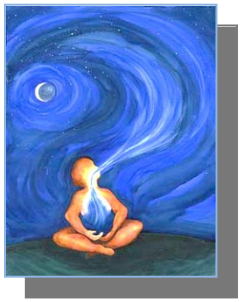
- Le lavage des mains avant chaque manipulation de l'appareil et des médicaments est conseillé.
- La préparation de l'aérosol s'effectue juste avant la séance.
- Avoir une position confortable et disposer près de vous une montre afin de vérifier la durée de la séance (10 minutes maximum pour les enfants et 20 minutes pour les adultes sauf si indication contraire).
- La totalité du produit doit être administrée.
- Le volume résiduel sera retiré après chaque utilisation de l'appareil, suivi d'un nettoyage et d'un séchage permettant d'éliminer l'eau stagnante.
- Le fait de mélanger les médicaments ne réduira pas la durée de la séance de nébulisation.



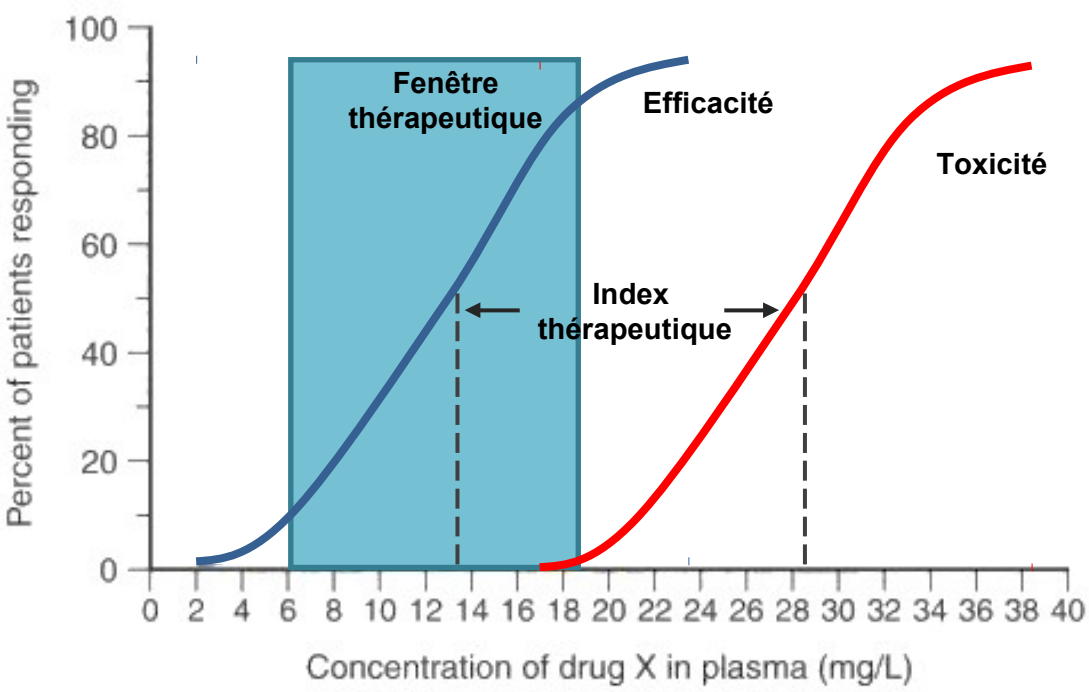


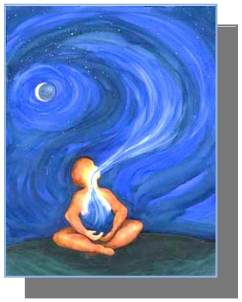
Acceptabilité de la durée des nébulisations par les patients

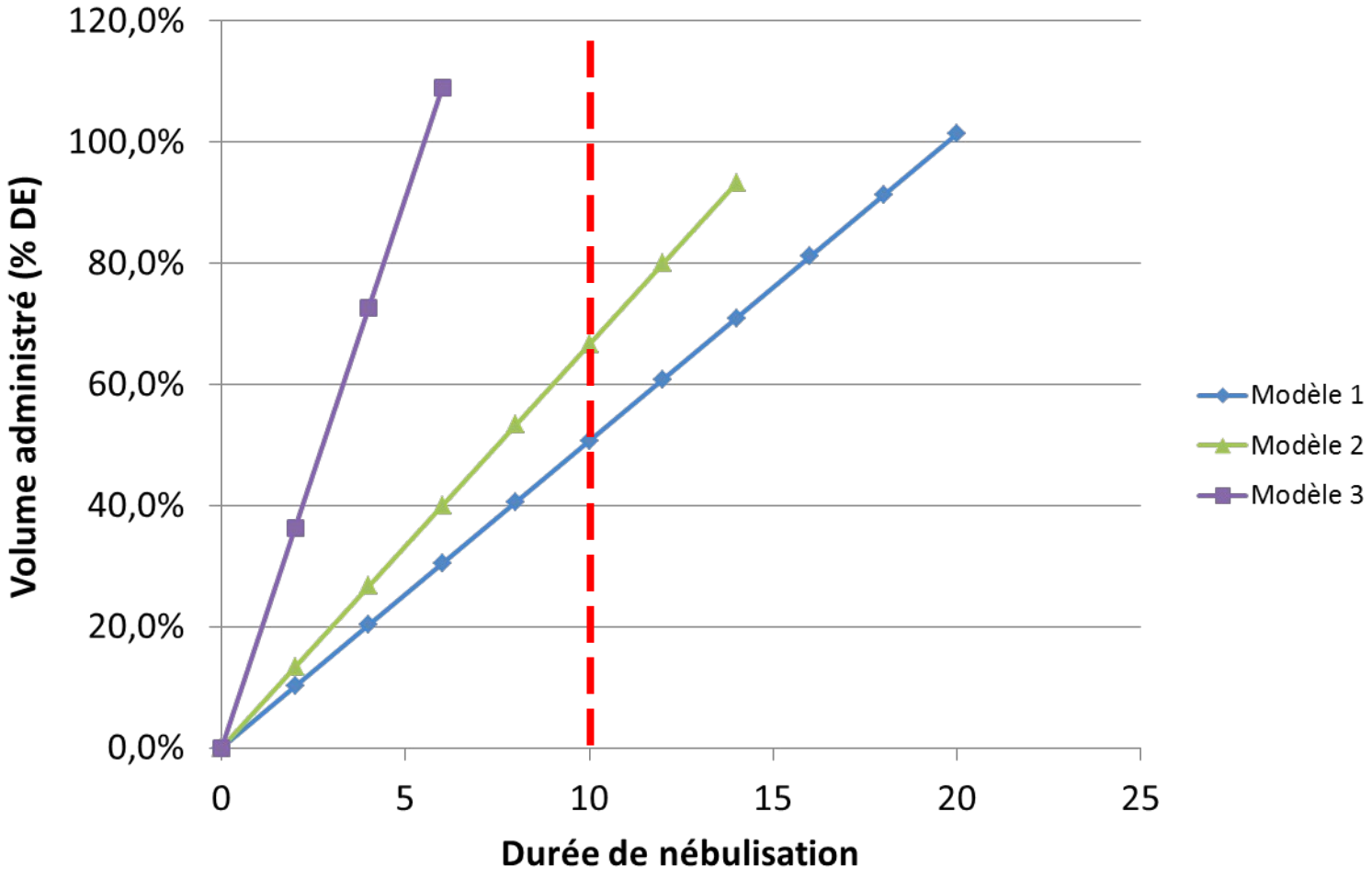
Kendrick, Thorax 1997;52(suppl 2):S92-S101



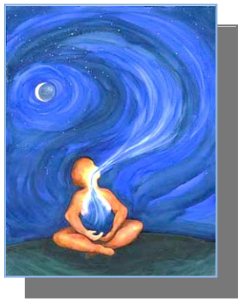
Principe de saturation du récepteur





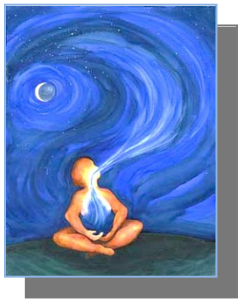


Basé sur Loffert, Chest 1994



Erreur?

« Erreurs liées à des défauts de connaissances théoriques »



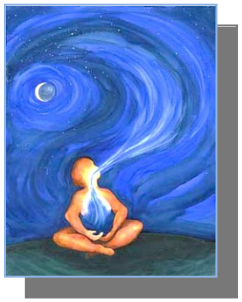
OXYGÈNE ET BPCO

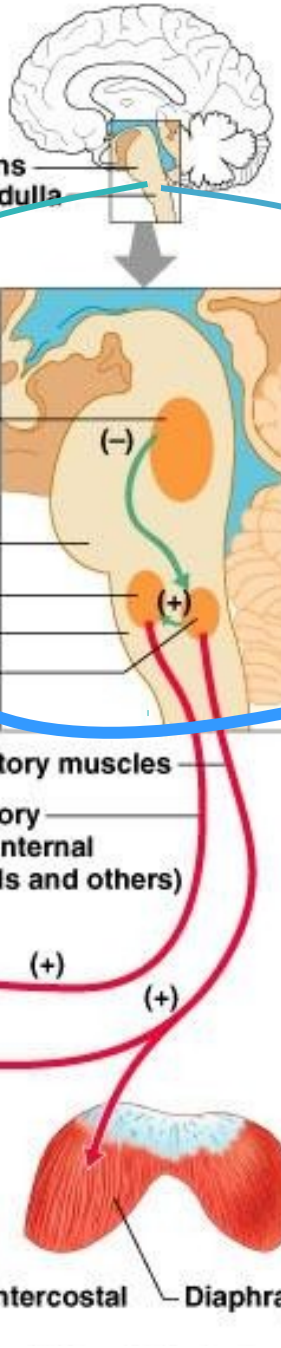
HYPOXÉMIE = CAUSE DE DÉCÈS

ADMINISTRER DE L'OXYGÈNE

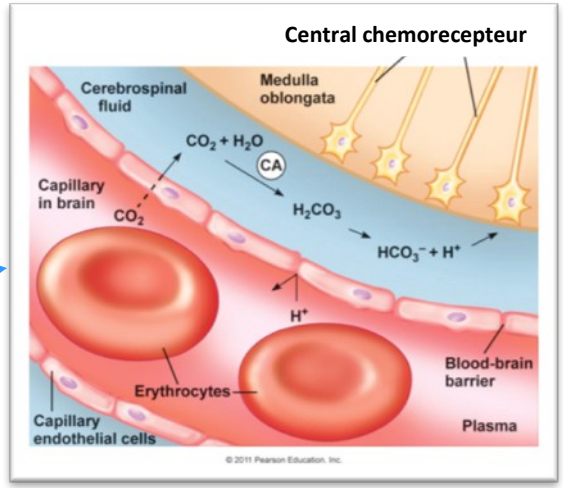
PCO2

PO2

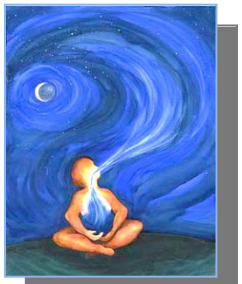


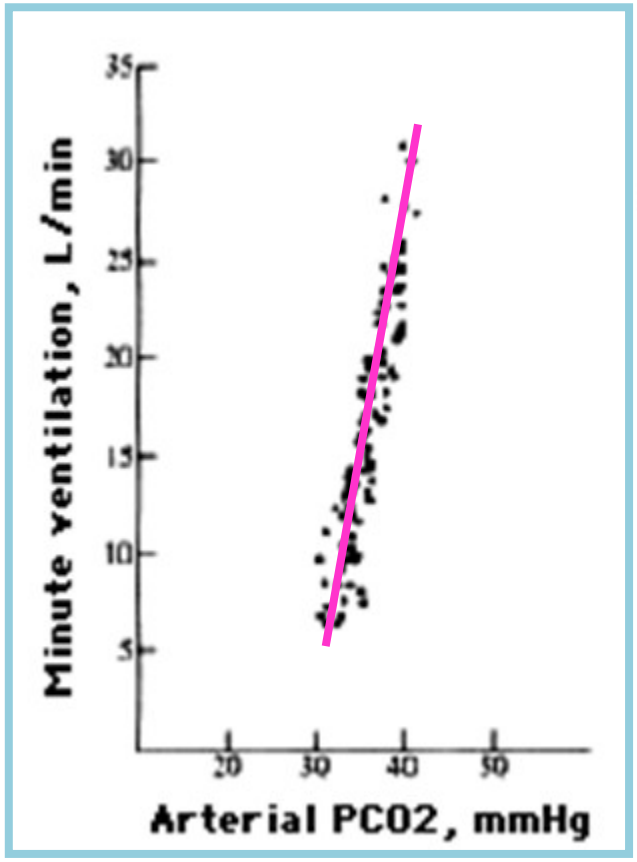


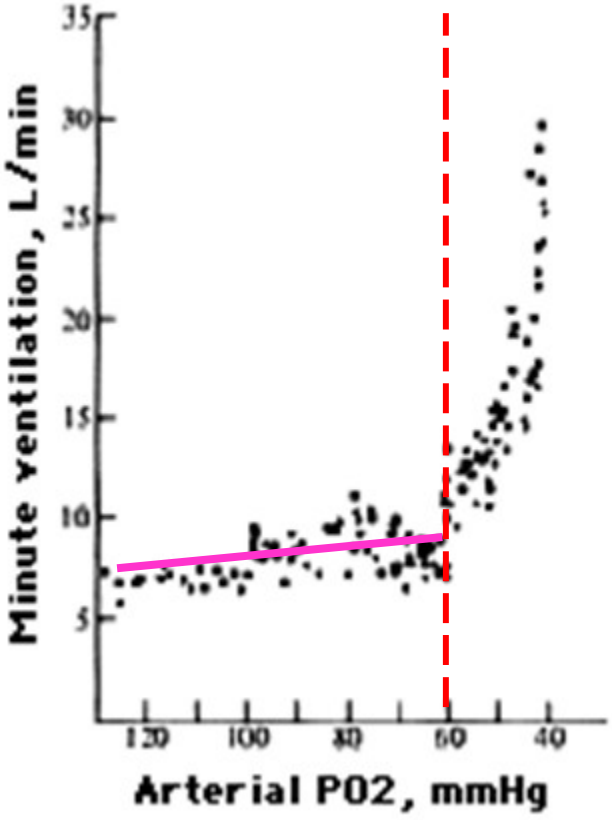
Central chemorecepteur

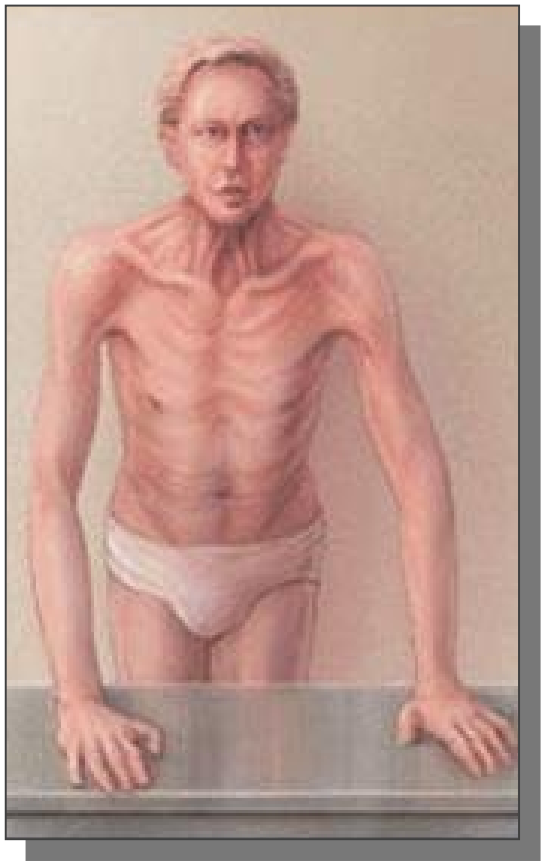


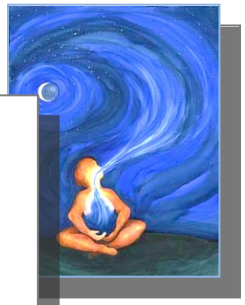
Peripheral chemorecepteur

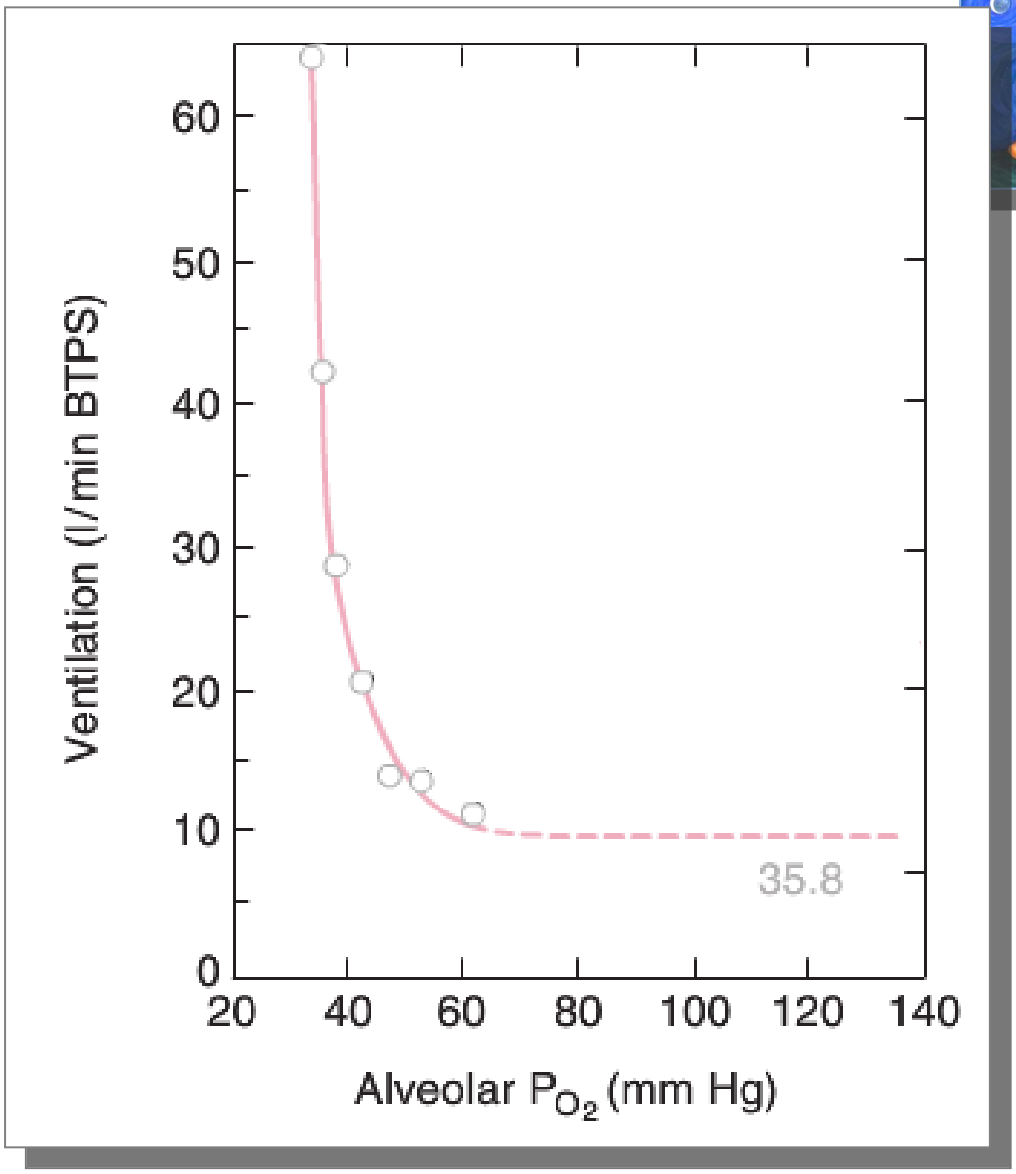


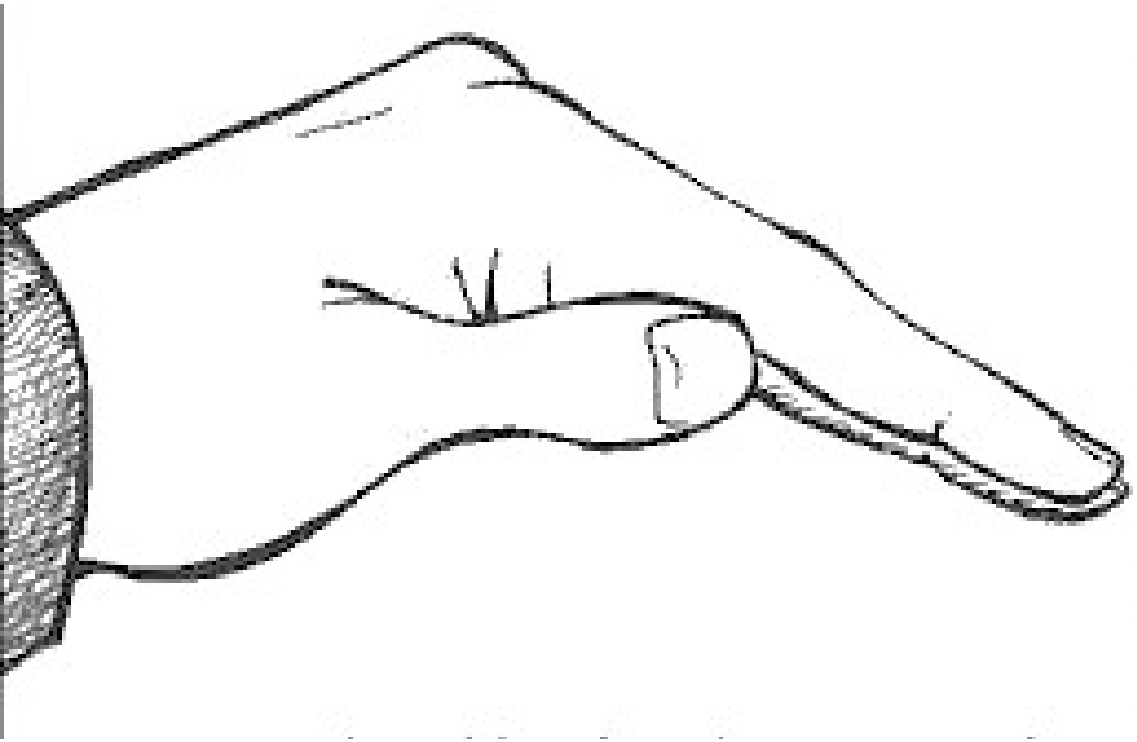

Minute ventilation, L/min
35
30
25
20
15
10
5
20
30
40
50
Arterial PCO2, mmHg

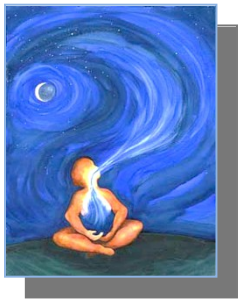

Minute ventilation, L/min
35
30
25
20
15
10
5
120
100
80
60
40
Arterial PO2, mmHg






Ventilation (l/min BTPS)
60
50
40
30
20
10
0
35.8
20
40
60
80
100
120
140
Alveolar P_{O_2} (mm Hg)

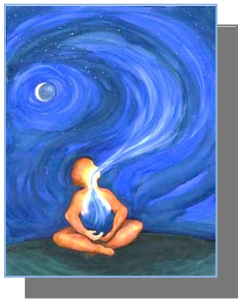




NOS PERCUSSIONS EN QUESTION

FAVORISERAIENT L'ÉVACUATION DES SÉCRÉTIONS

CONSENSUS 1994

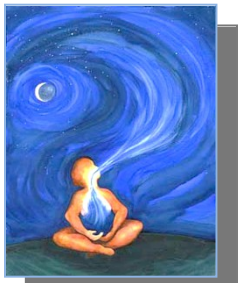


Dans l'état actuel de la question, les Percussions Thoraciques Manuelles ne peuvent être envisagées comme seul moyen de drainage bronchique. Des études méthodologiquement acceptables sont nécessaires pour apprécier de façon plus précise à la fois les mécanismes d'action et l'efficacité.

Lyon 1994

Mucus clearance by two-phase gas-liquid flow mechanism: asymmetric periodic flow model

CHONG S. KIM, ANTONIO J. IGLESIAS, AND MARVIN A. SACKNER
Pulmonary Division, University of Miami School of Medicine at Mount Sinai Medical Center, Miami Beach, Florida 33140



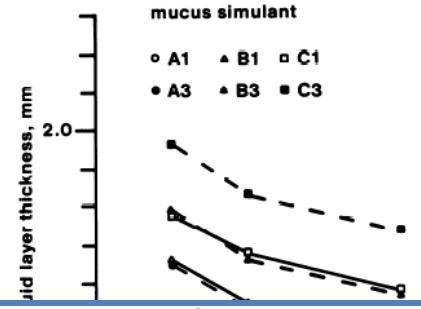


TABLE 5. *Critical mucus layer thickness required for mucus transport in horizontal tube*

PEIFR:	3.0	2.0	1.5
$\dot{V}E_p$:	60	40	30
Mucus simulants			
A1	0.47±0.01 (89)	0.70±0.02 (92)	0.87±0.02 (86)
A2	0.66±0.02 (76)	0.91±0.02 (76)	1.08±0.03 (77)
A3	0.52±0.01 (60)	0.74±0.03 (69)	0.94±0.02 (71)
B1	0.71±0.01 (87)	1.02±0.03 (94)	1.23±0.04 (93)
B2	0.80+0.02 (64)	0.97±0.03 (64)	1.14±0.02 (64)
B3	0.58±0.01 (51)	0.81±0.02 (61)	0.99±0.07 (62)
C1	1.08±0.03 (92)	1.24±0.04 (90)	1.38±0.04 (88)
C2	1.05±0.04 (65)	1.25±0.04 (69)	1.33±0.05 (68)
		0.88±0.03 (53)	1.07±0.04 (55)

nm for 1.0-cm-ID horizontal tube. ry flow rate; $\dot{V}E_p$, peak expiratory indicate percent of steady-state 4. For details of mucus simulants,

he square of mean airflow liquid layer is expected to low velocity and vice versa. riodic airflow, the unequal nequal shear forces in op- liquid layer may move ac- irflow velocity between the ifference in airflow velocity, ent. However, our results y governed by the absolute t by the difference between ory flow rate. Our results expiratory flow rate is kept ry flow rate, LLTS remains agnitude of the inspiratory tory flow rate approaches the expiratory flow rate.

two phases. The greater the difference in airflow velocity, the faster the liquid movement. However, our results indicate that LLTS is mainly governed by the absolute value of the higher airflow, not by the difference between the expiratory and inspiratory flow rate. Our results further show that when the expiratory flow rate is kept constant above the inspiratory flow rate, LLTS remains unaffected regardless of the magnitude of the inspiratory flow rate until the inspiratory flow rate approaches within 10% difference from the expiratory flow rate.

is further decreased.

DISCUSSION

Liquid layer transport speed. Theoretically, the shear stress on the liquid layer is directly proportional to the inertia force of airflow which is represented by the prod-

Although this seems to be in variance with the theoretical prediction, the reason becomes obvious when the flow characteristics in the two-phase flow model are closely analyzed.

In two-phase gas-liquid flow models, particularly in annular or stratified flow situation, the interfacial shear

J Appl Physiol 1987;62(3):959-971

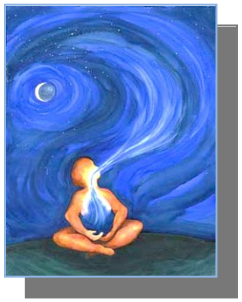


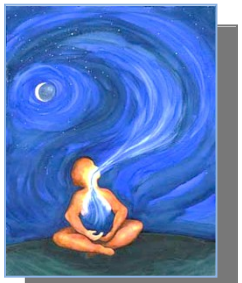
TABLE 1 Effects of physiotherapy interventions on peak flow rate respiratory volumes and stimulation of cough

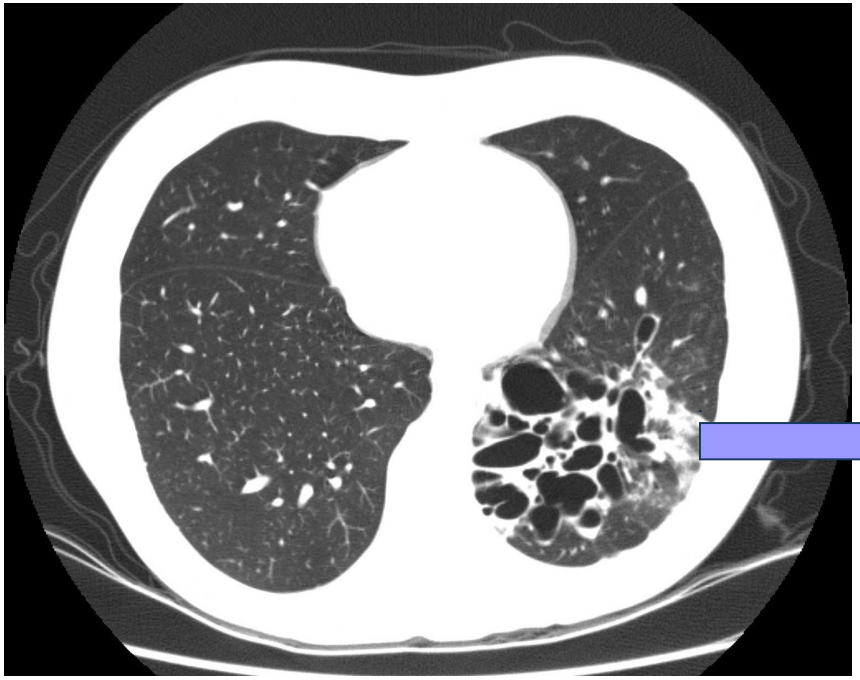
Intervention	Subjects n	PEFR $L \cdot s^{-1}$	PIFR $L \cdot s^{-1}$	PEFR/PIFR	V_I L	V_E L	Coughs stimulated
Vibration	17[¶]	1.58±0.73	1.06±0.27	1.51	1.78±0.87	2.44±1.06	0.7±1.0
Percussion	18	0.83±0.14***	0.84±0.10	0.99	0.91±0.37***	1.03±0.50	0.5±0.9
PEP	18	0.44±0.15***	0.96±0.20	0.47	1.64±0.40	1.96±0.57	0.5±0.6
Flutter®	17[¶]	1.13±0.30[#]	1.05±0.27	1.15	1.62±0.52	1.81±0.57	0.4±0.7
Acapella®	18	0.59±0.08***	0.98±0.27	0.64	1.55±0.46	1.68±0.50	0.8±1.0
TLC_{relax}	15[+]	0.66±0.16	1.01±0.40	0.73	1.79±0.66	2.24±0.79	0

Data are presented as mean±SD of means of each subject, unless otherwise stated. PEFR: peak expiratory flow rate; PIFR: peak inspiratory flow rate; V_I: inspiratory volume; V_E: expiratory volume; PEP: peak expiratory pressure; TLC_{relax}: total lung capacity positive expiration. [¶]: data lost due to technical difficulties (data from different interventions lost in different subjects); [+]: data only collected from stated number of subjects. p-values are significantly different from vibration. ***: $p<0.001$; [#]: $p=0.002$.

McCarren B., Eur Respir J 2006; 27: 1204–1209

BRONCHIECTASIES

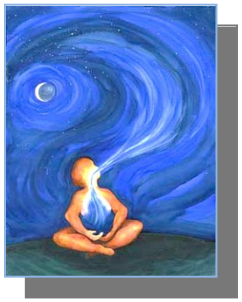




Absence de flux

Dilatation anormale, permanente et irréversible du calibre des bronches qui sont le siège d'une inflammation importante et d'une infection chronique

Quel traitement?



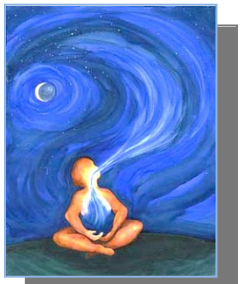
WIKIPEDIA
The Free Encyclopedia

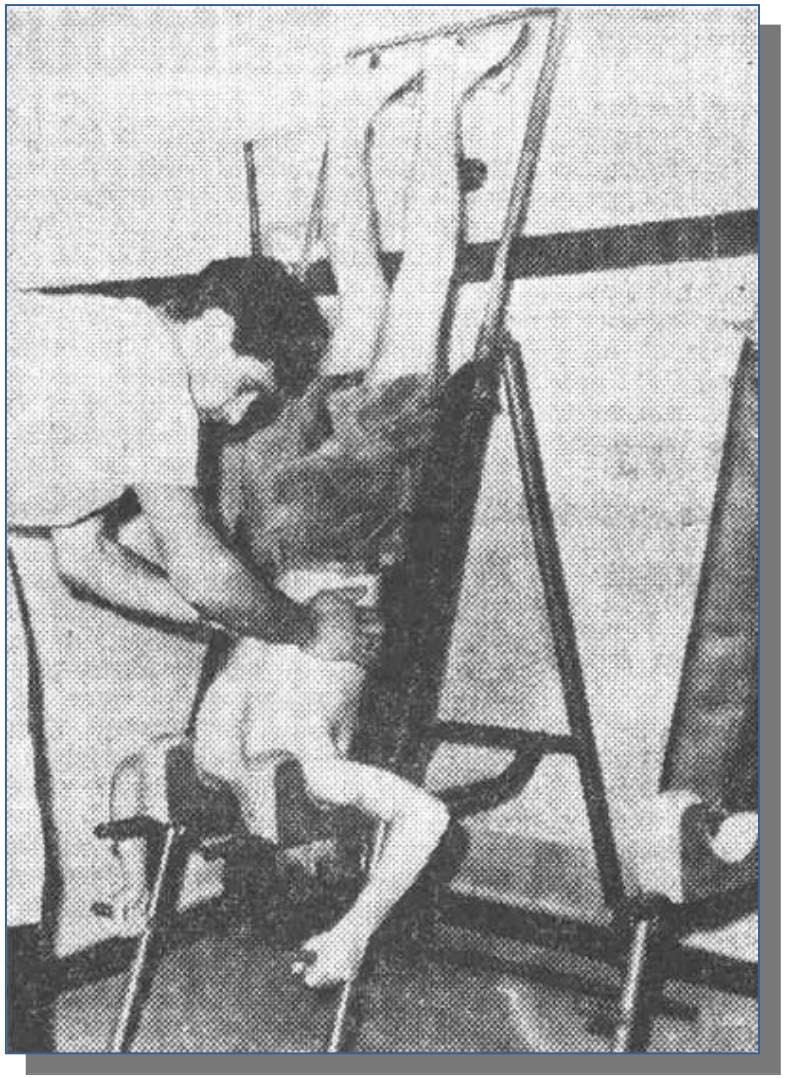
Postural drainage

From Wikipedia, the free encyclopedia

Drainage used in bronchiectasis and lung abscess. The patient's body is positioned so that the trachea is inclined downward and below the affected chest area.[1] Postural drainage is essential in treating bronchiectasis and patients must receive physiotherapy to learn to tip themselves into a position in which the lobe to be drained is uppermost at least three times daily for up to 30 minutes. The treatment is often used in conjunction with a technique for loosening secretions in the chest cavity called chest percussion. Chest percussion is performed by clapping the back or chest with a cupped hand. Alternatively, a mechanical vibrator may be used in some cases to facilitate loosening of secretions.[2] There are drainage positions for all segments of the lung. These positions can be modified depending on the patient's condition.

Ça fonctionne en vrai?

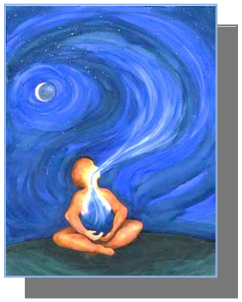


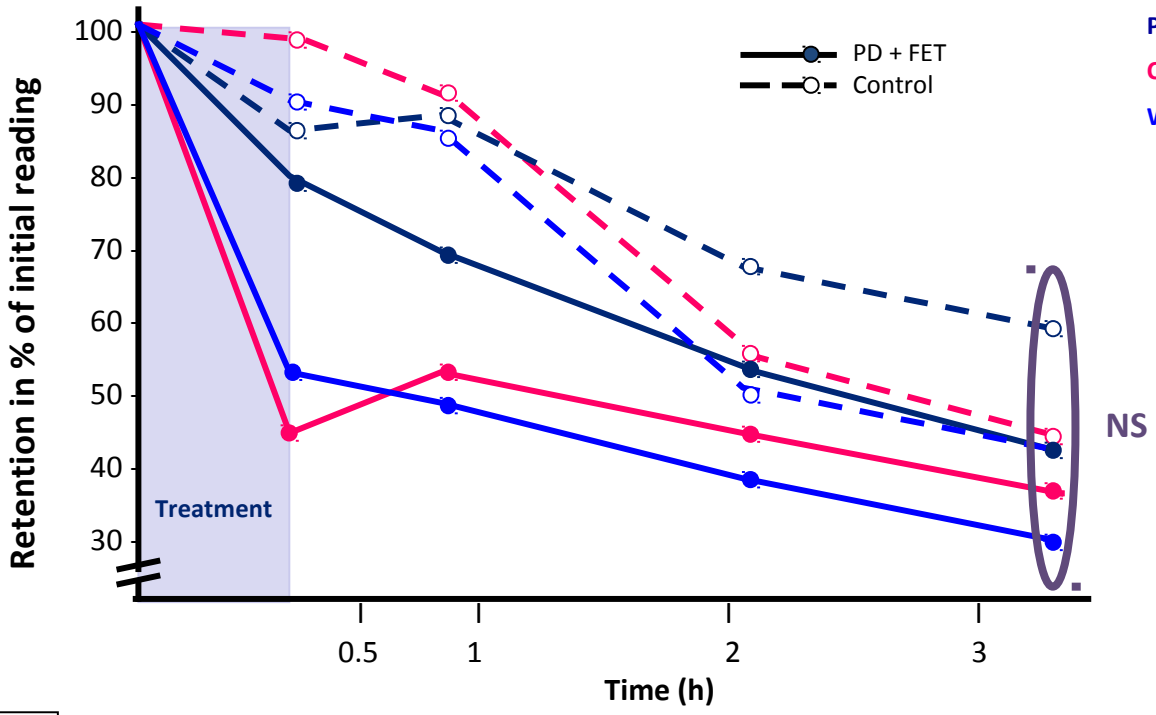


Les **postures** n'occupent plus, et de loin, la place prépondérante qui était la leur autrefois. L'image historique d'un sujet qui se désencombre « tête en bas » n'a plus lieu d'être. Un nombre limité de « postures », au sens restrictif d'une mise en position préalable du patient, peut être conservé : à **plat-ventre** dans certaines indications de réanimation, et en décubitus latéral pour aider à la ventilation.

Lyon 1994

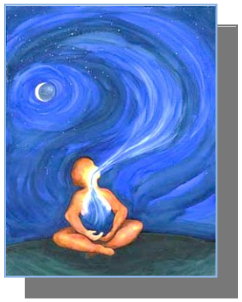
Bronchiectasies





10 CF patients

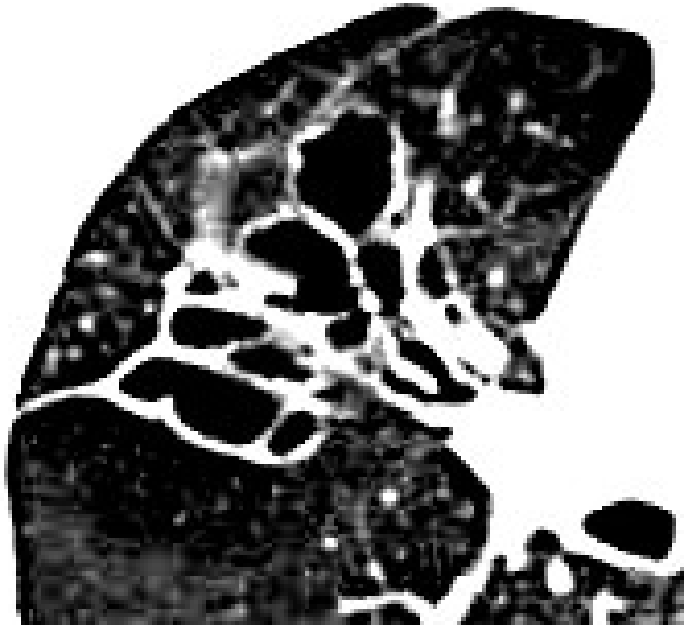
Mortensen J, Chest 1991;100;1350-1357



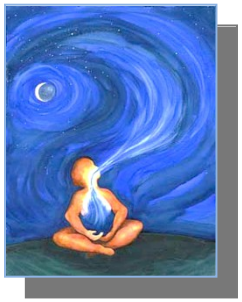
EDITORIAL

Physiotherapy in bronchiectasis: we have more patients, we need more evidence

M.Á. Martínez-García* and J.B. Soriano#,¶



Comment remédier…?



« Erreurs relevant de différences dans le geste thérapeutique (description et apprentissage) »

Formation plus basée sur l'EBP et définir les techniques physiologiquement

« Erreurs par mimétisme »

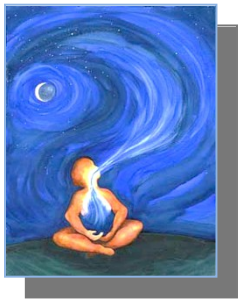
Passer d'une vision curative à une vision symptomatique

« Erreurs relevant d'habitudes dans les pratiques (idées reçues) »

Accroître notre esprit critique

« Erreurs liées à des défauts de connaissances théoriques »

Mettre sur pied un nouveau consensus?



EN GUISE DE CONCLUSION…
NI LEÇON, NI REPONSE!
JUSTE UNE REFLEXION…

N’EST-IL PAS TEMPS DE REVOIR LES FONDEMENTS DE NOS PENSÉES ET PRATIQUES


My mistakes
have a
certain logic