

# Wie zijn geschiedenis...

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medisch fysioloog en kinderfysiotherapeut

# stelling

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Fysiotherapeuten zijn te veel gefocused op symptomen (*de door het NIP en anderen gepropageerde oriëntatie op het stoornissen-niveau uit de ICDH heeft daar significant aan bijgedragen*)

Vraag : is een classificatie wel geschikt als taal?

Fysiotherapeuten gaan te veel uit van de therapie in plaats van het onderliggend mechanisme

# de koude pasgeborenen

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Een asfyctische pasgeborene

Temperatuur

Fysiologie van het brein

Therapie

# uitgangspunt

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Een afwezigheid van bewijs betekent geen bewijs van afwezigheid

Fysiotherapie stoelt op verworvenheden en inzichten van de (patho)fysiologie

Fysio-*therapie* behoort derhalve altijd fysio-*logisch* te zijn

# twee voorbeelden

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Longfysiologie en longfysiotherapie

Neurofysiologie (neurogene inflammatie) en fysiotherapie

# cystische fibrose

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Erfelijke aandoening

Endocriene problemen

Pulmonale problemen (taaie mucus productie)

Recidiverende luchtweginfecties

15/04/19



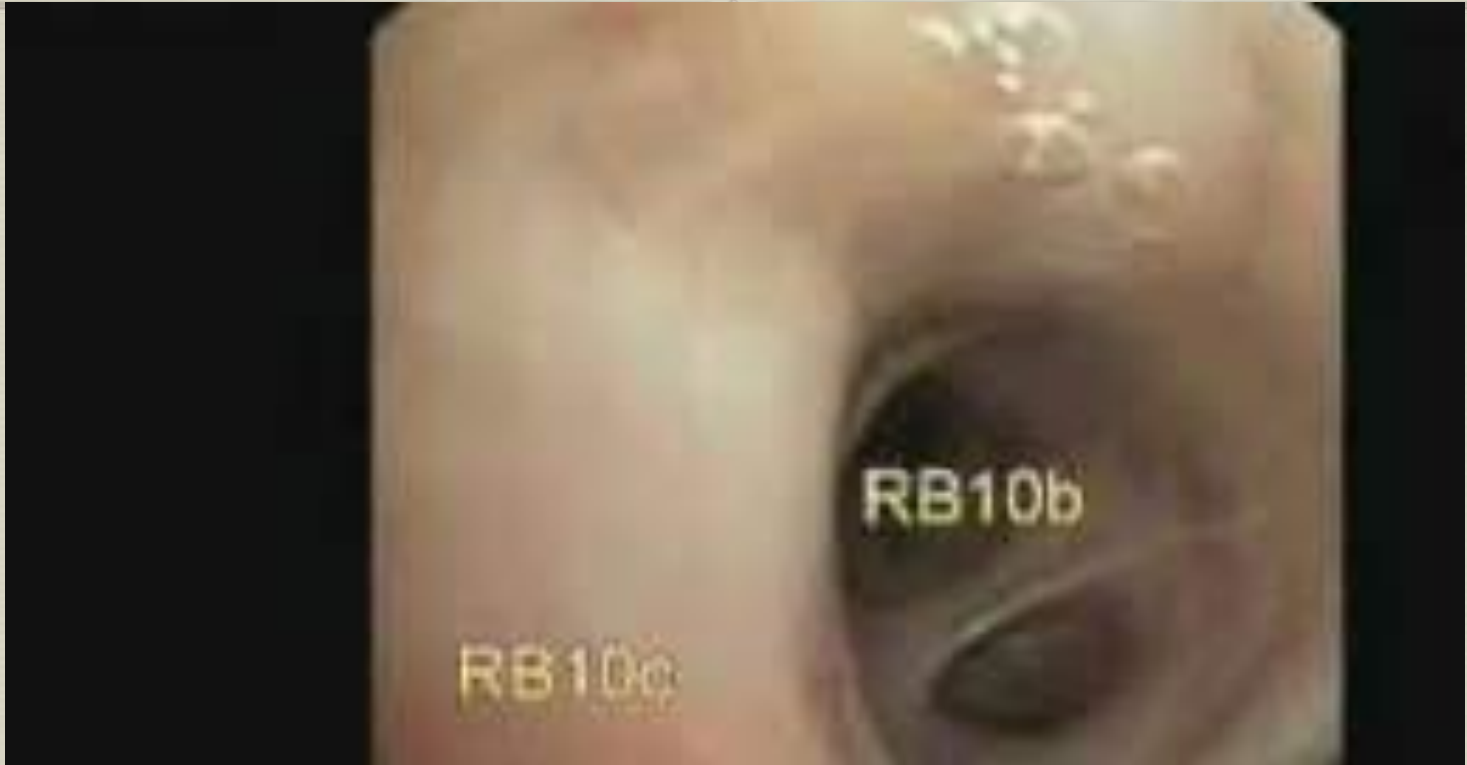
Sex: Age:

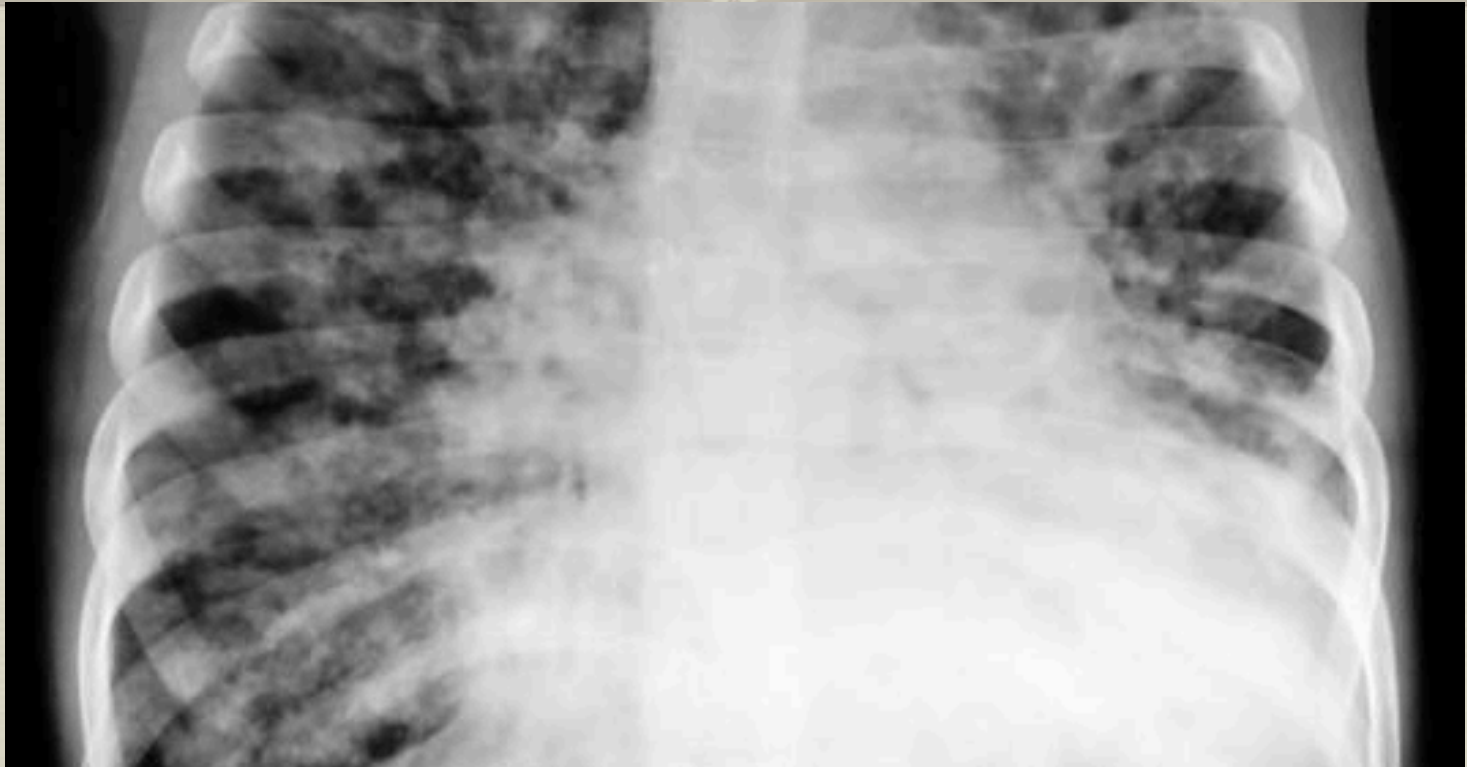
07/11/2011  
09:42:48

CVP: 18  
D.F: 1  
Eti: 3 Cr: N









# fysiotherapie : de idee

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Door trillingen toegediend via de thoraxwand laat het slijm los

: tapotage/ battre à l' air comprimé

: trilmachines

: hoestmachines

### References

- <sup>1</sup> Stimson, V, Oppenheimer, E, and Thorley, A, *British Medical Journal*, 1978, **1**, 1190.
- <sup>2</sup> Hitchins, L, et al, *British Journal of Addiction*, 1971, **66**, 129.
- <sup>3</sup> Vaillant, G E, *American Journal of Psychiatry*, 1966, **123**, 573.
- <sup>4</sup> Vaillant, G E, *Archives of General Psychiatry*, 1970, **1**, 1163.
- <sup>5</sup> Stimson, G V, and Ogborne, A C, *Lancet*, 1970, **1**, 1163.
- <sup>6</sup> Stimson, G V, and Ogborne, A C, *International Journal of Addiction*, 1975, **10**, 1061.
- <sup>7</sup> Ogborne, A C, and Stimson, G V, *International Journal of Addiction*, 1975, **10**, 1061.
- <sup>8</sup> Thorley, A, Oppenheimer, E, and Stimson, G V, *British Journal of Psychiatry*, 1977, **130**, 565.

(Accepted 26 July 1979)

## New mechanical aid to physiotherapy in cystic fibrosis

K A FLOWER, R I EDEN, L LOMAX, N M MANN, JEAN BURGESS

*British Medical Journal*, 1979, **2**, 630-631

### Summary and conclusions

The force of impact and frequency of percussion by physiotherapists and parents of children with cystic fibrosis were analysed on a special test rig and incor-

The main components of physiotherapy to segments of the lung during postural drainage are percussion, assisted panting, squeezing, and shaking of the chest. The secretions loosened in this way are removed by spontaneous or controlled coughing. The best chest treatment is given by physiotherapists in hospitals and their outpatient departments but most chest therapy is given at home. Capable and conscientious parents, however, may be handicapped if they have more than one child with cystic fibrosis or are themselves unwell. Less co-oper-

BRITISH MEDICAL JOURNAL 15 SEPTEMBER 1979

mina Children's Hospital, Utrecht, in association with Drs J Van der Laag and J D Van Gool and Mr P J M Helders, superintendent physiotherapist (fig 2).

## Results

The frequency of percussion attained by physiotherapists depended on their special skills. They could be divided into two groups. A

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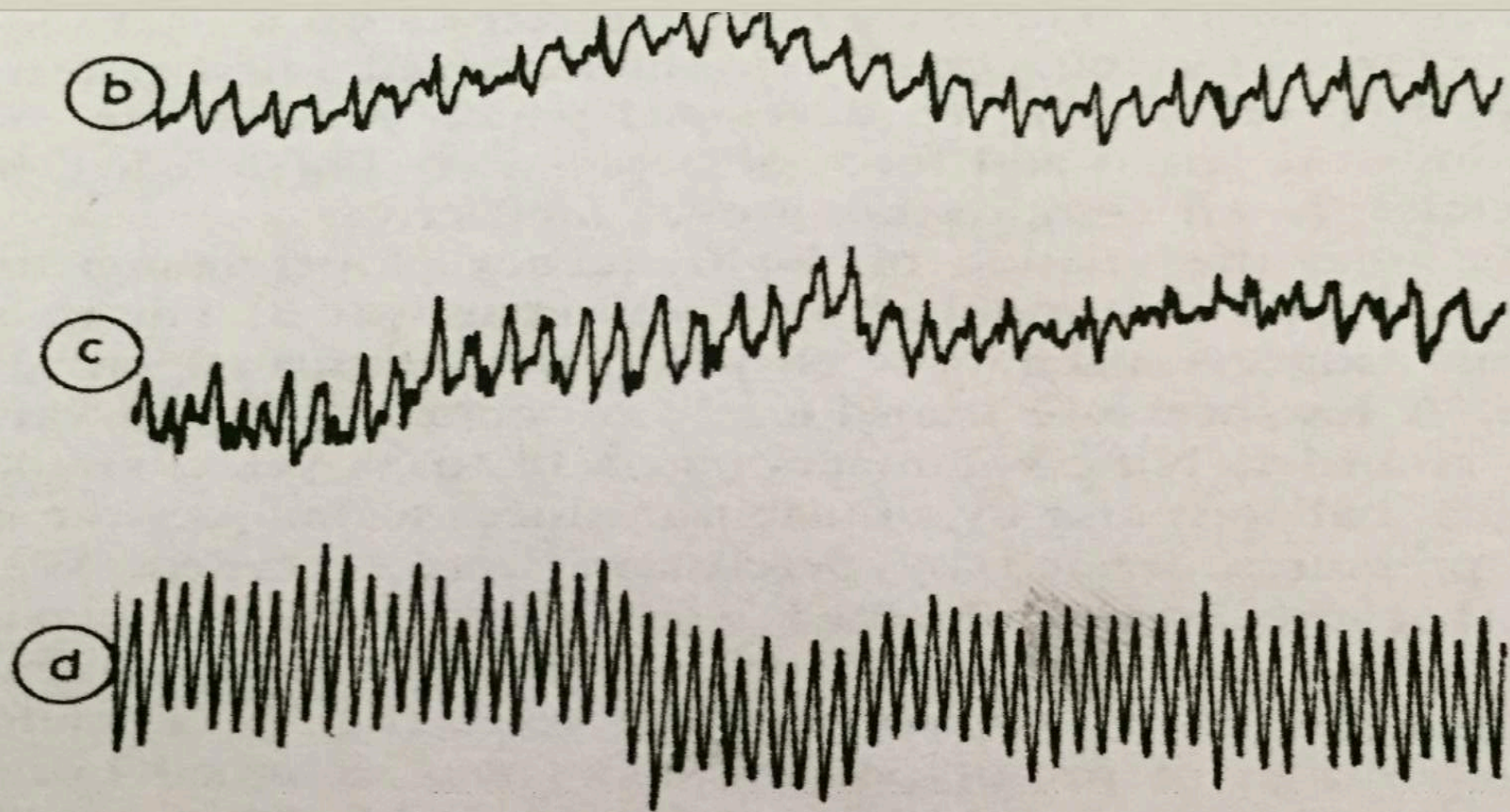


FIG 2—Traces of intrathoracic pressures. Tracings *a*, *b*, and *c*, showing differences in pressures of 11.5 cm H<sub>2</sub>O, 13.5 cm H<sub>2</sub>O, and 15.4 cm H<sub>2</sub>O respectively, were produced manually by physiotherapists (tracings *a* and *b* were produced by Dutch female and male physiotherapists respectively, and tracing *c* by a British female physiotherapist). Tracing *d*, showing a difference in pressure of 36.5 cm H<sub>2</sub>O, was produced by the Salford percussor.

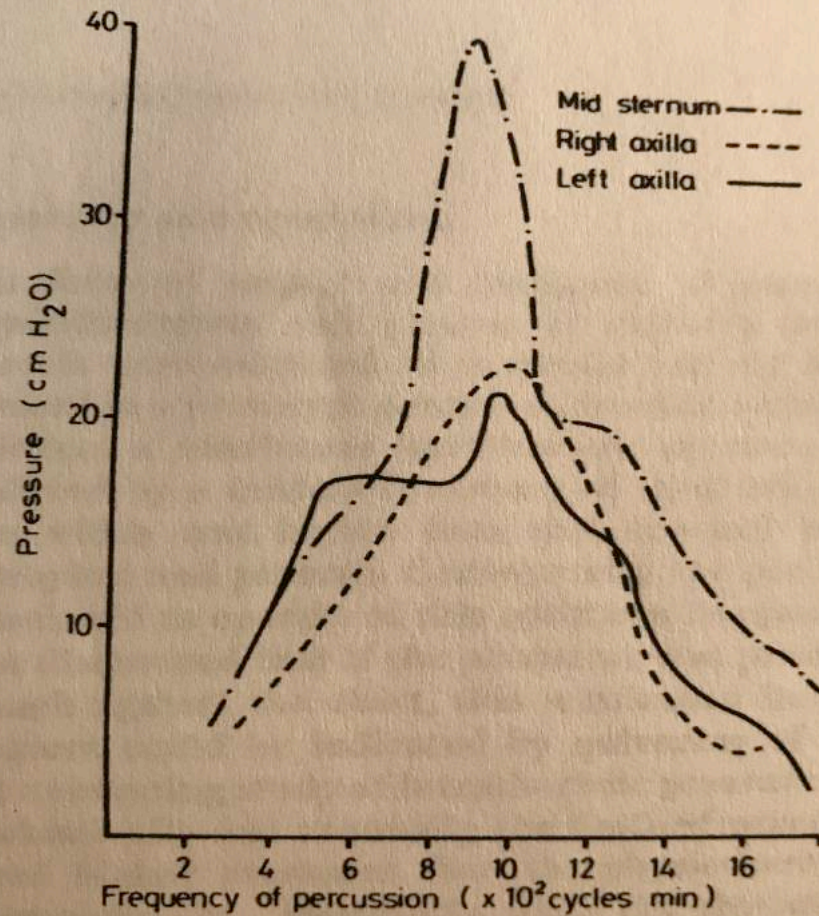


FIG 1—Relation between intrathoracic pressure and frequency of percussion.

# longdynamica

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Intra-pulmonale druk gaat omhoog en omlaag met de ademhaling

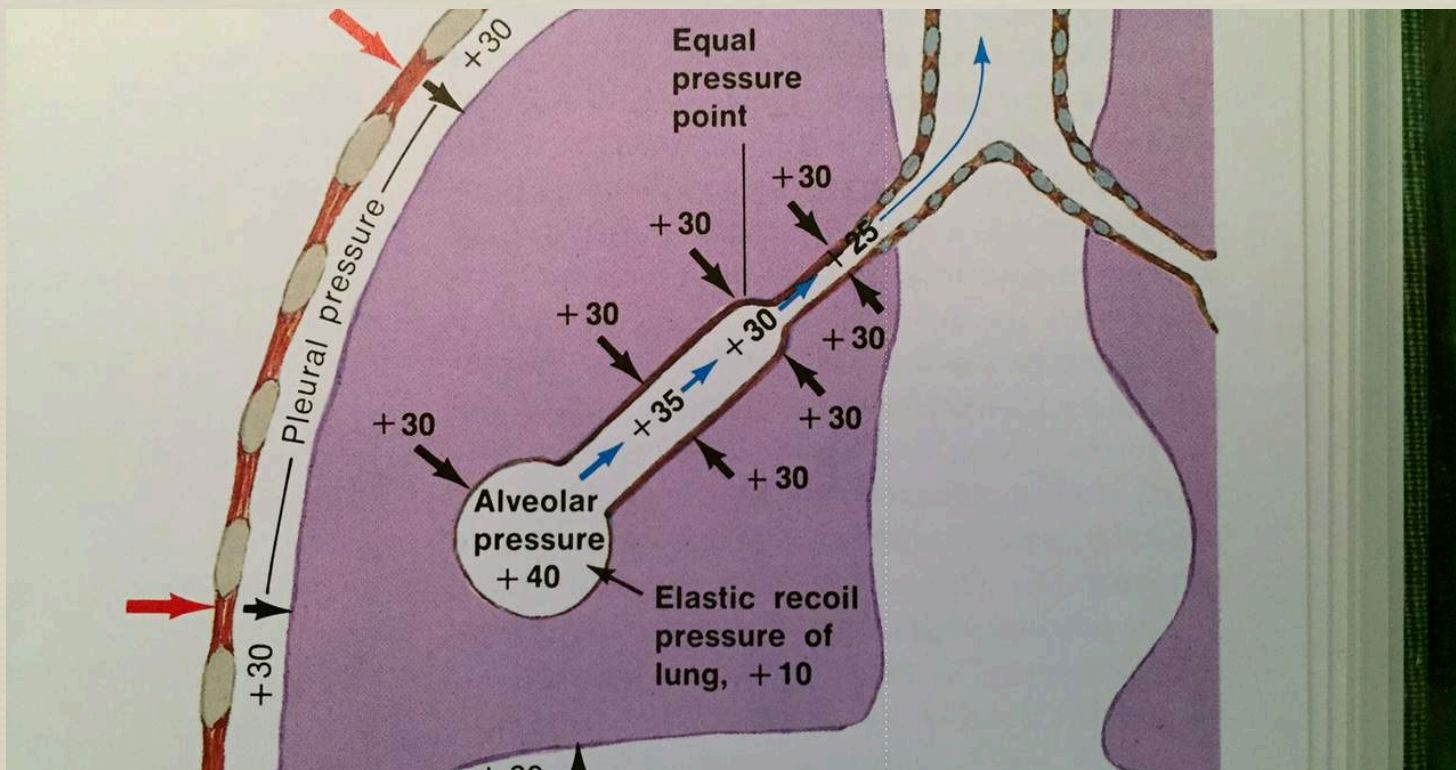
Intra-pleurale druk verandert ook tijdens de ademhaling en is minder dan de intra-pulmonale druk

Dit drukverschil creëert de kracht dat de uitgerekte longen tegen de thoraxwand aandrukt

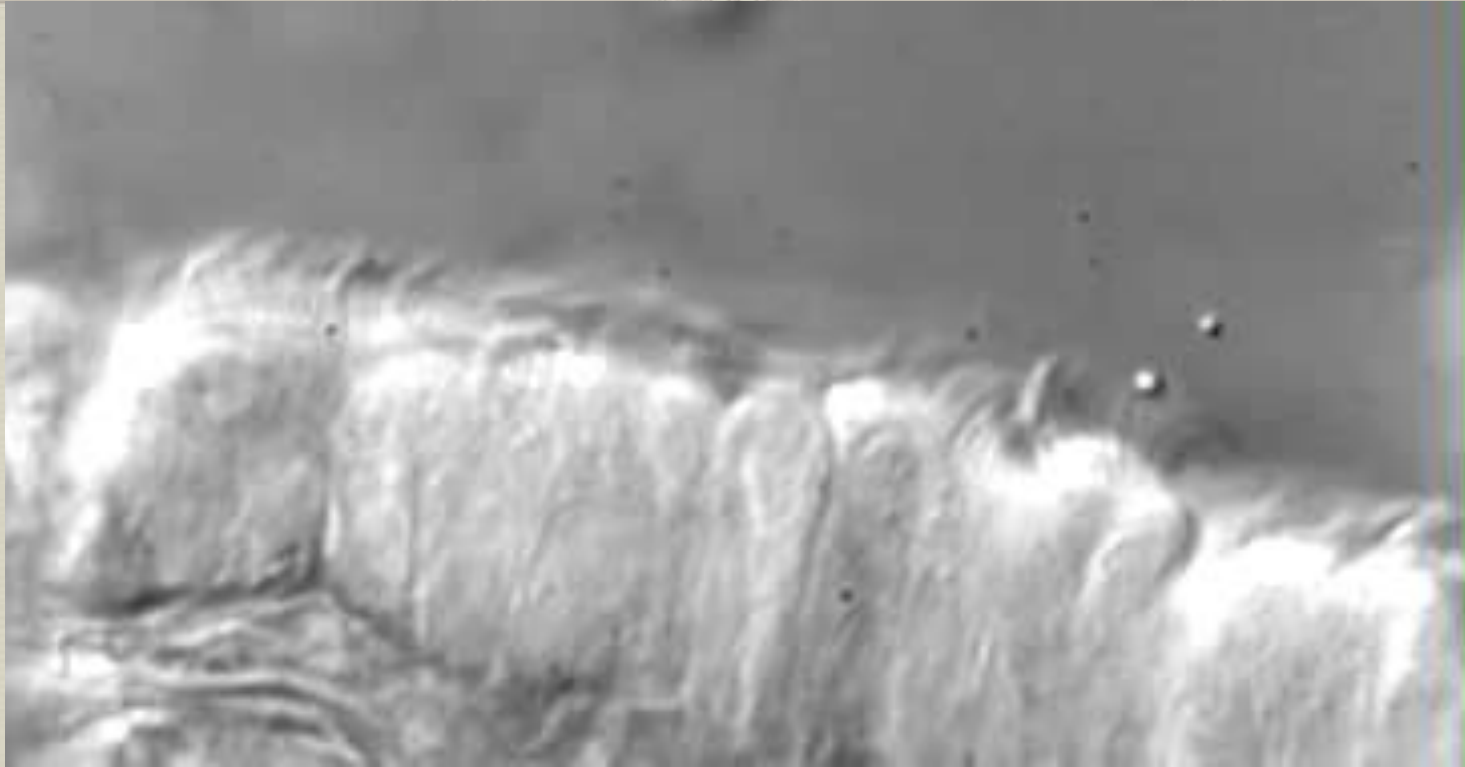


# de fysiologie : klaring

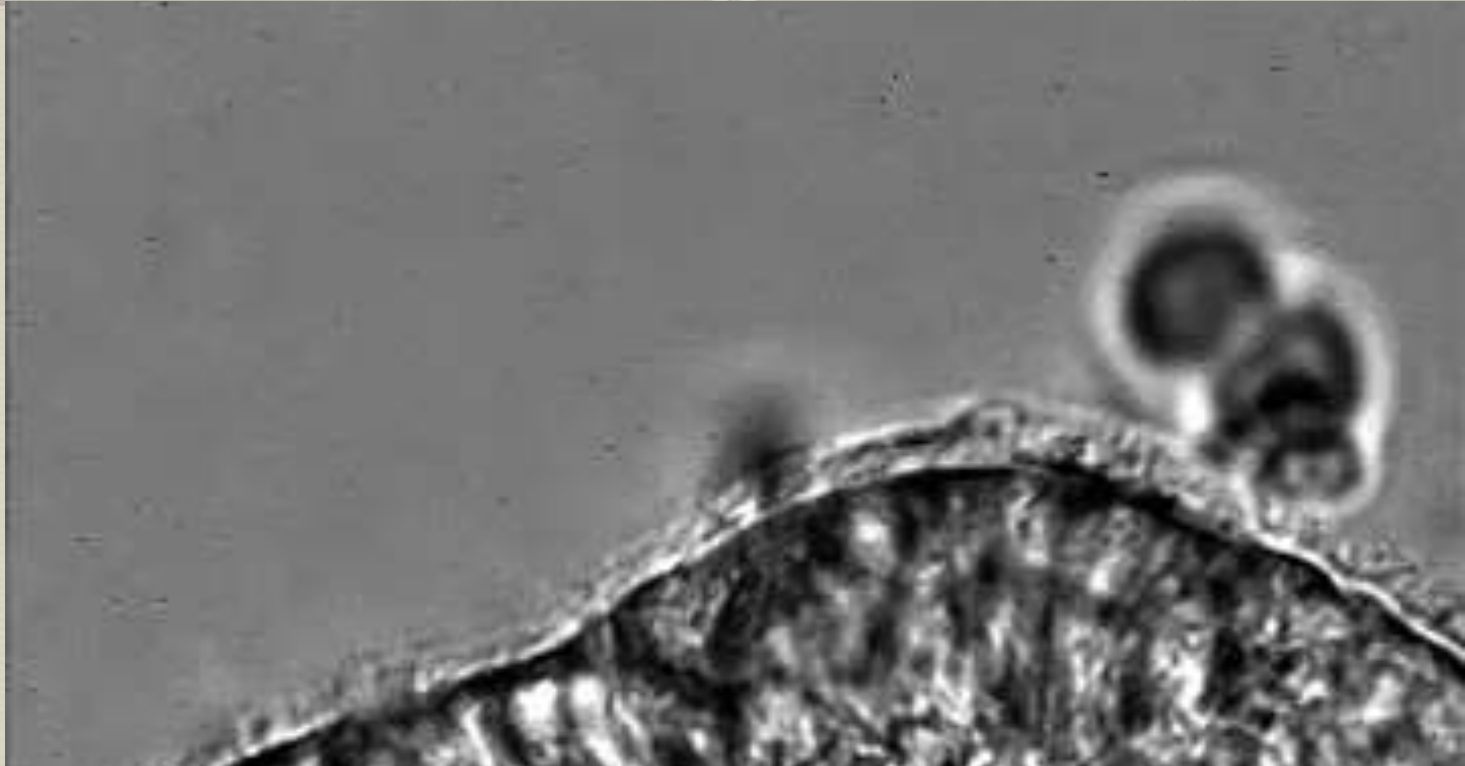
Drukveranderingen : Equal Pressure Point ( EPP)



## Mucociliair transport ( ciliae en tapis roulant)



## Explosieve uitademing : hoesten



# geforceerde expiratie

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Krachtige uitademing (= 'huff') met open mond en open glottis

Bij 'huffen' verplaatst mucus zich naar centraal

Goed uitgevoerd leidt het tot een maximale luchtstroom met minimale luchtwegcollaps

# vandaag

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Tapotage nauwelijks (?) / niet meer toegepast

De op fysiologische principes gebaseerde, wetenschappelijk meermalen bewezen, effectieve ACBT methode is de standaard

JAMA 2006 Oct 18;296(15):1851-7.

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Pre-operative intensive inspiratory muscle training (IMT) to prevent post-operative pulmonary complications (PPC's) in high-risk patients undergoing CABG surgery: a randomized clinical trial

*Hulzebos EH, Helders PJM, Favié NJ, De Bie RA, Brutel de la Riviere A, van Meeteren NL.*

Conclusion: Pre-operative IMT reduces the incidence of PPC's and duration of postoperative hospitalization in patients at high risk of developing a pulmonary complications undergoing CABG surgery

# les



Is alles wat logisch klinkt of lijkt ook écht fysio-logisch?

# reumatoïde artritis

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Auto-immuun pathologie

T-cel systeem ontspoord

Doorgaans poly-articulair

Chronisch, grillig beloop











# observaties.....

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Bij mensen met een bestaande RA en een verworven hemiplegie na een CVA bij zag men aan de verlamde zijde geen ontstekingsverschijnselen meer in de gewrichten ....

Vraag :

Brengt rust de oplossing?

Is het zenuwstelsel betrokken bij RA?

# beleid toen

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Bedrust kuren

Medicatie

Passief bewegen van de gewrichten

Warmte pakkingen van de gewrichten

Science, 1984, Nov 2;226(4674):547-9.

*Intraneuronal substance P contributes to the severity of experimental arthritis.*

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*Levine JD et al,*

Abstract. There is evidence that substance P is a peptide neurotransmitter of some unmyelinated primary afferent nociceptors and that its release from the peripheral terminals of primary afferent fibers mediates neurogenic inflammation. The investigators examined whether substance P also contributes to the severity of adjuvant-induced arthritis, an inflammatory disease in rats. They found that, in the rat, joints that developed more severe arthritis (ankles) were more densely innervated by substance P-containing primary afferent neurons than were joints that developed less severe arthritis (knees). Infusion of substance P into the knee increased the severity of arthritis; injection of a substance P receptor antagonist did not. These results suggest a significant physiological difference between joints that develop mild and severe arthritis and **indicate that release of intraneuronal substance P in joints contributes to the severity of the arthritis.**

Neurosci Lett, 1987, Mar 9;74(3):315-9.

*Release of substance P from the spinal dorsal horn is enhanced in polyarthritic rats*

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*Oku R, Satoh M, Takagi H.*

*Abstract.* Using in situ spinal dorsal horn perfusing method in decerebrated rats, we measured the release of immunoreactive substance P (iSP) in polyarthritic rats. The spontaneous release of iSP from the dorsal horn in the polyarthritic rats was significantly accelerated over that in control non-inflamed rats. **Passive movements of the inflamed ankle joint evoked a significant increase in the release of iSP, while a similar movement of the non-inflamed joint led to no such increase.** These results suggest that the facilitated release of iSP from the primary afferent terminals in the spinal dorsal horn in polyarthritic rats possibly plays a role in transmission of chronic pain of inflamed joints.



## Role of substance P in inflammatory arthritis

N E Garrett, P I Mapp, S C Cruwys, B L Kidd, D R Blake

The neuropeptide substance P (SP) has wide ranging effects on many cell types. Nilsson *et al* showed that SP could stimulate connective tissue cell growth by stimulating DNA synthesis in human skin fibroblasts and arterial smooth muscle cells in vitro.<sup>1</sup> Substance P has also been implicated in inflammation owing to its effects on cells associated with acute and chronic inflammatory responses. Substance P promotes chemotaxis of human monocytes, and this appears to be an SP receptor mediated effect as it is blocked by D-amino acid analogues of SP.<sup>2</sup>

( $\alpha$ ,  $\beta$ , and  $\gamma$  preprotachykinin) or RNA splicing, and all three can. However,  $\alpha$  preprotachykinin encode for SP, whereas  $\beta$  and  $\gamma$  mRNA can also encode for other tachykinins.<sup>9</sup>

Substance P is widely distributed in the central and peripheral nervous system and is synthesised in the cell bodies of nerves located in the dorsal root ganglia. SP synthesis SP is distributed to peripheral nerve terminals via a transport system.<sup>13</sup> The rate



Arthritis Rheum, 1994, Nov;37(11):1578-82.

*Effects of local heat and cold treatment on surface and articular temperature of arthritic knees*

*Oosterveld FG, Rasker JJ.*

Abstract. The traditional model, that intra-articular temperature is decreased by superficial heat and increased by superficial cold, must be discarded. **In arthritis patients, intra-articular temperature is increased by superficial heat and decreased by superficial cold.** This has clear consequences for treatment policy.

# oeps.....



De fysiotherapeutische interventie had dus niet alleen een **averechts** effect, maar ook een zeer **óngevenst** effect!

# beleid nu

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Immunosuppressiva

Actief bewegprogramma

Aandacht voor fysieke fitheid en training

# les

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Ga nooit uit van een therapie of een verrichting, maar van een onderliggend (patho)fysiologisch proces en stem daar de interventie op af

Anders gezegd: weet waarom, je wanneer, wat, doet!

# om mee te nemen

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Biologische mechanismen gehoorzamen geen therapeutische methode of een anatomische indeling waar veel onderwijsprogramma's in de fysiotherapie van uitgaan ( de nek, de schouder, de heup, de knie etc), maar werken via signalisatie, interactie, en volgens de wetmatigheden van de fysiologie ( reparatie, adaptatie, compensatie)

*Let op : in tegenstelling tot de fysio-therapie kent de fysio-logie kent geen normalisatie*

# en.....



Het belang van een eigen onderzoeksdomein !

Op dit moment staat de zelfstandigheid van de fysiotherapie  
als vakgebied ter discussie!

# De les uit het verleden

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Fysio-*therapie* behoort altijd fysio-*logisch* te zijn



tot ziens

