

# ACUPUNCTUUR

VAN PROTOWETENSCHAP TOT WETENSCHAP.

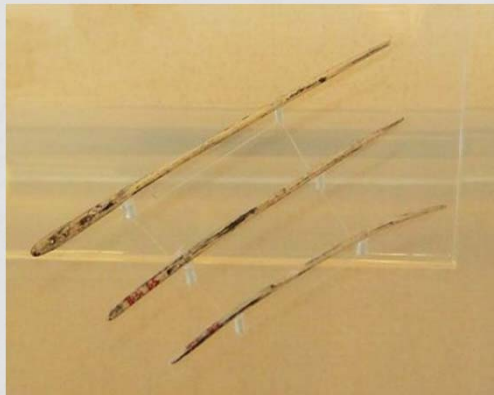


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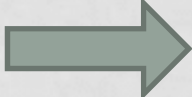
# CONTEXTUALISERING

*"Als je de toekomst wil bepalen, bestudeer dan het verleden."*  
Confucius



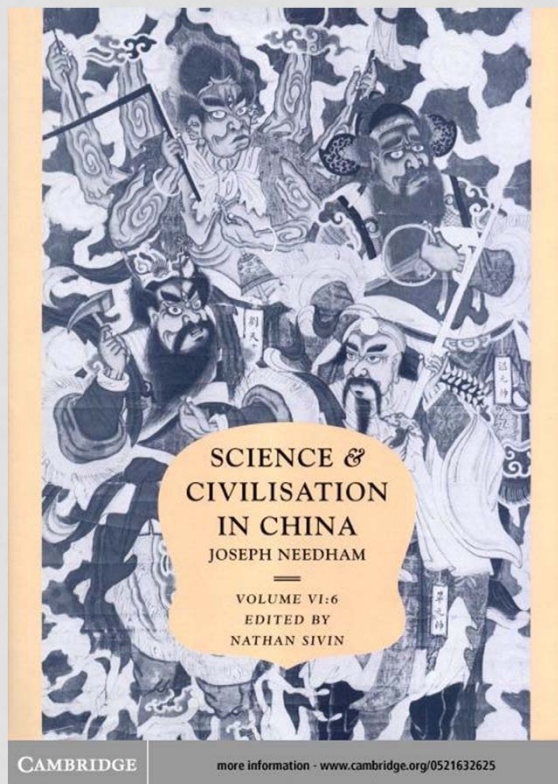
Bronzen en stenen naalden, gebruikt in Shang & Zhou dynastieën  
(1700-771 v. Chr)

# BEVINDINGEN ACUPUNCTUUR =HETEROGEEEN EN PLURALISTISCH

- Geleidelijk gegroeid, verspreid in ruimte en tijd.
- Gegroeid uit:
  - gezondheidsbevorderende praktijken
  - empirisme
  - naturalistische filosofieën
- Socio-culturele omstandigheden  evolutie/devolutie acupunctuur.

# DE 'NEEDHAM QUESTION'

Waarom werd China ingehaald door het Westen op het vlak van wetenschap en technologie?



SCIENCE &  
CIVILISATION  
IN CHINA  
JOSEPH NEEDHAM

VOLUME VI:6  
EDITED BY  
NATHAN SIVIN

CAMBRIDGE

more information - [www.cambridge.org/0521632625](http://www.cambridge.org/0521632625)

# ACUPUNCTUUR: HETEROGEEEN EN PLURALISTISCH

Chinese acupunctuur

- Klassiek
- Modern

Japanse acupunctuur

Koreaanse acupunctuur

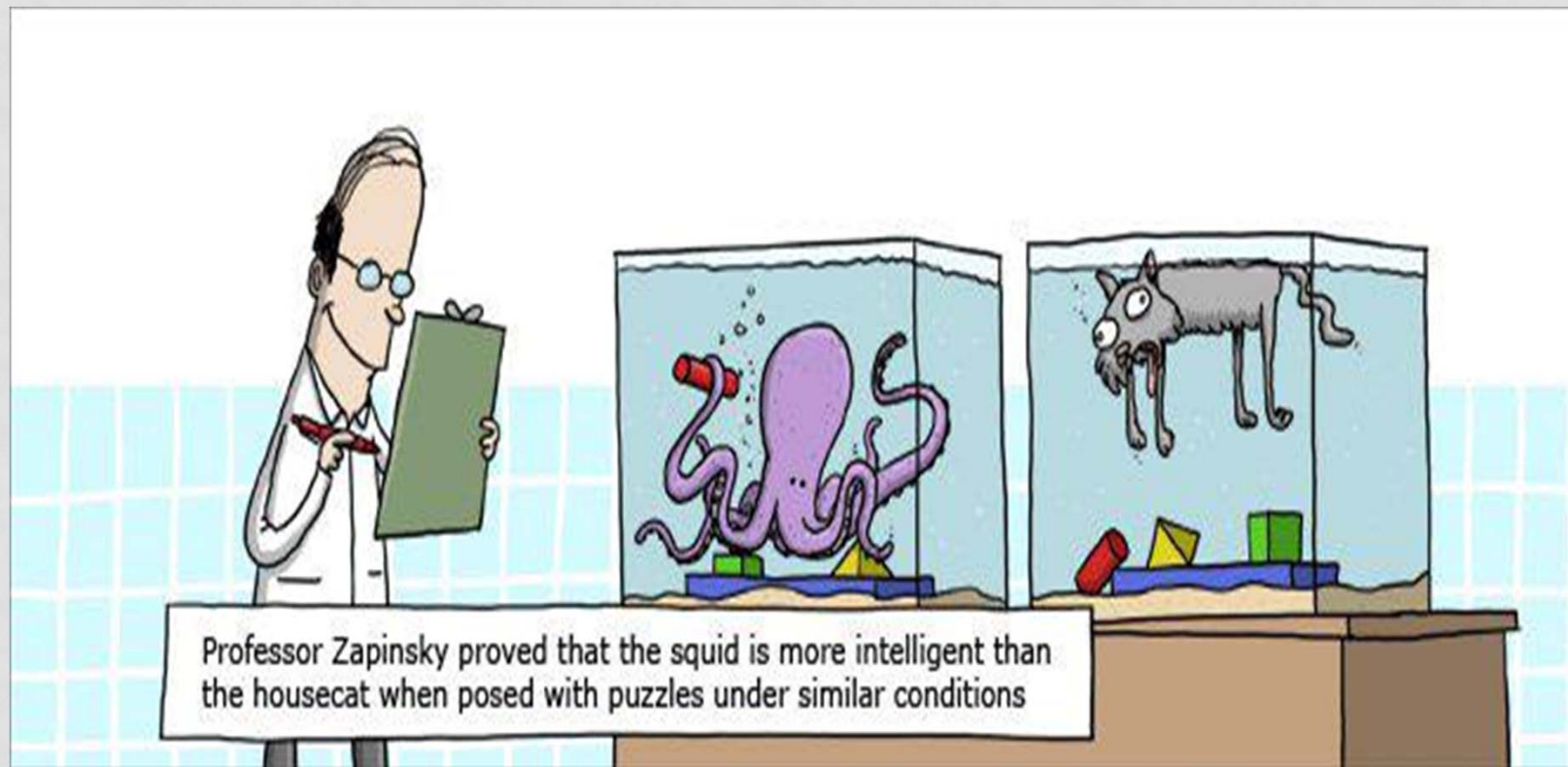
Vietnamese acupunctuur

Westerse acupunctuur

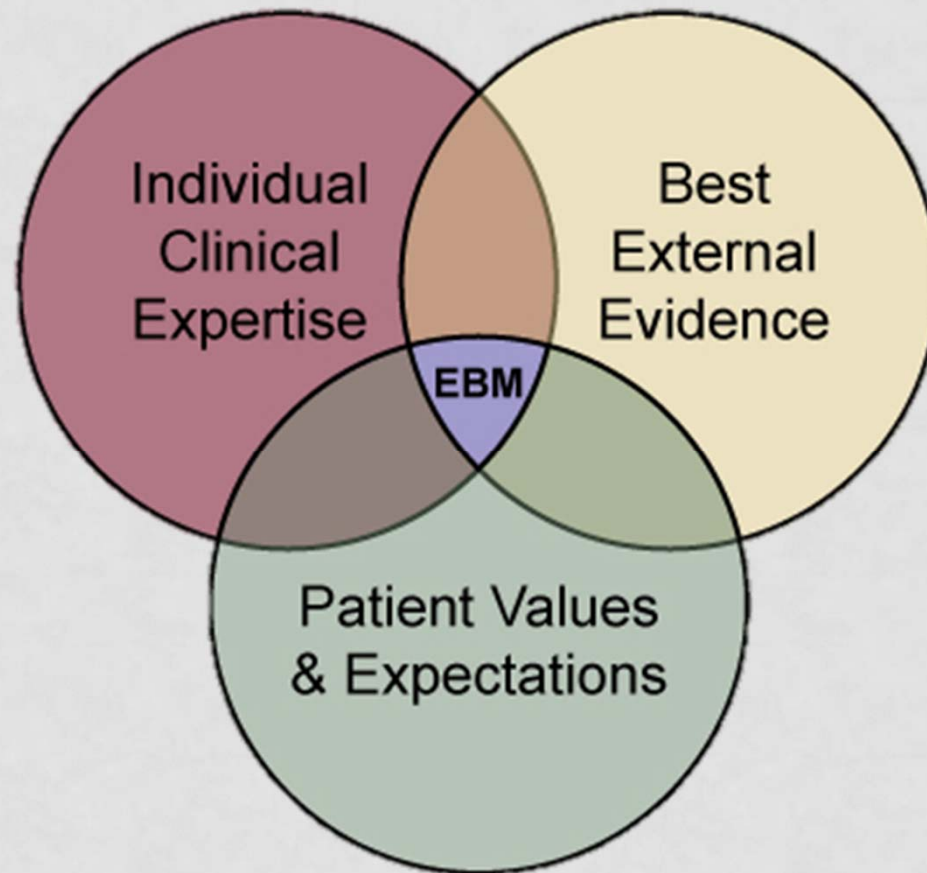
# EVIDENCE BASED PRAKTIJKEN VOOR ACUPUNCTUUR

*"Mensen prijzen wat ze kunnen begrijpen en beseffen niet hoe afhankelijk ze zijn van wat ze niet kennen"*

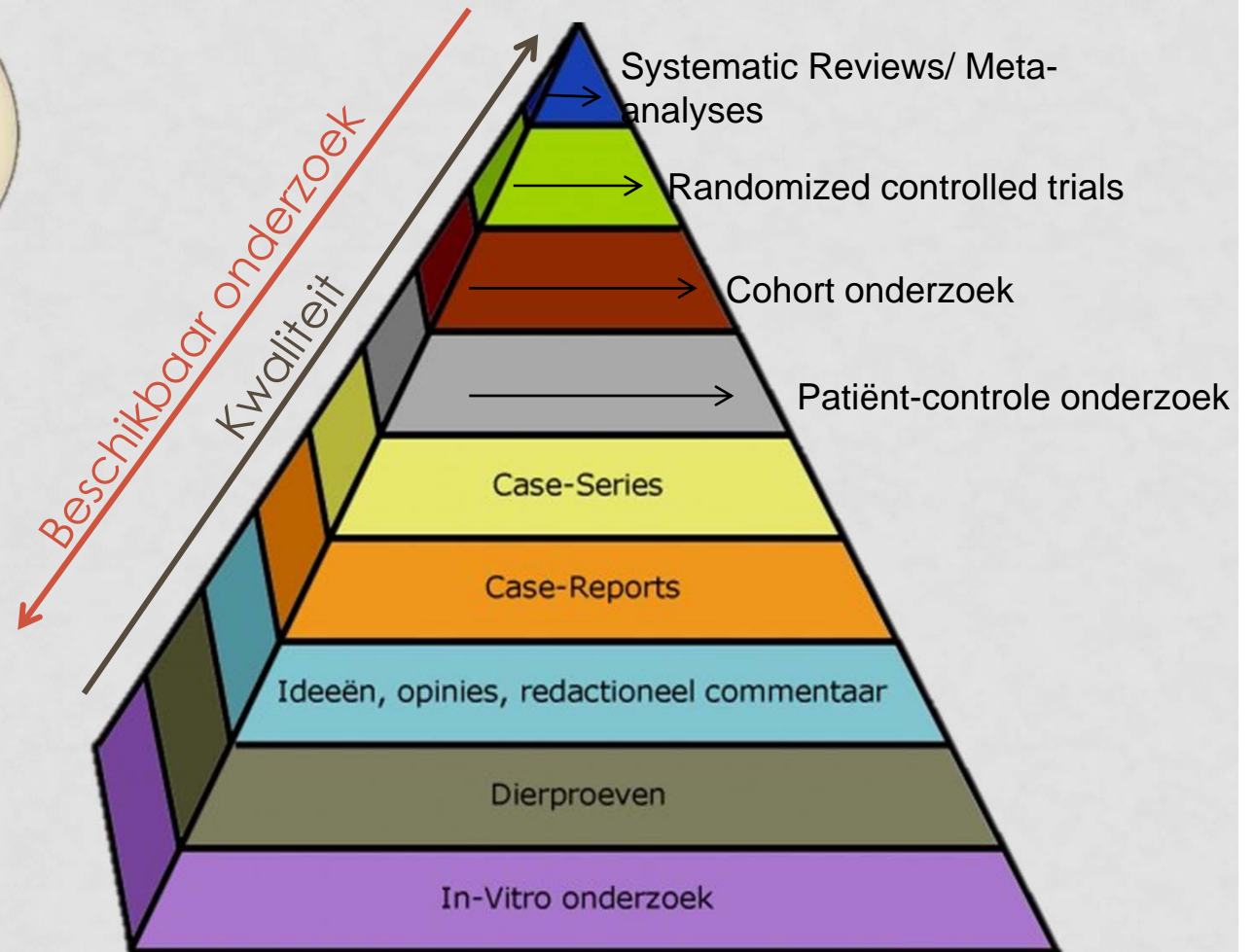
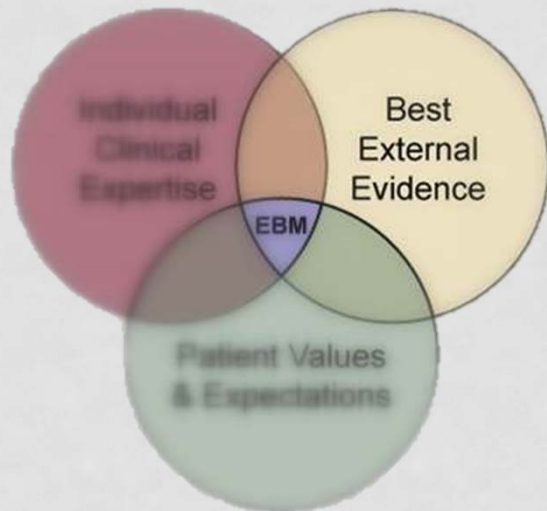
Zhuang Zi



# EVIDENCE BASED MEDICINE

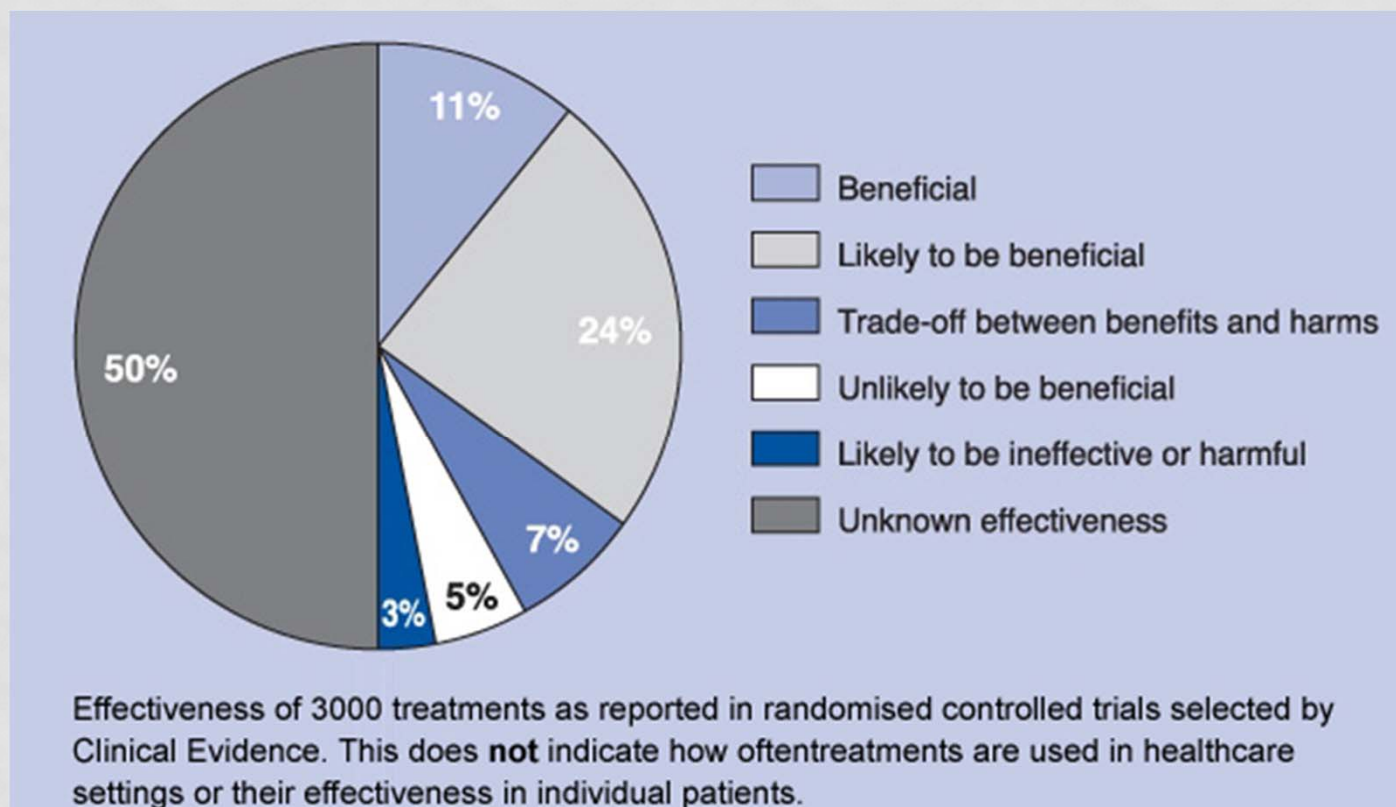


# EVIDENCE PIRAMIDE





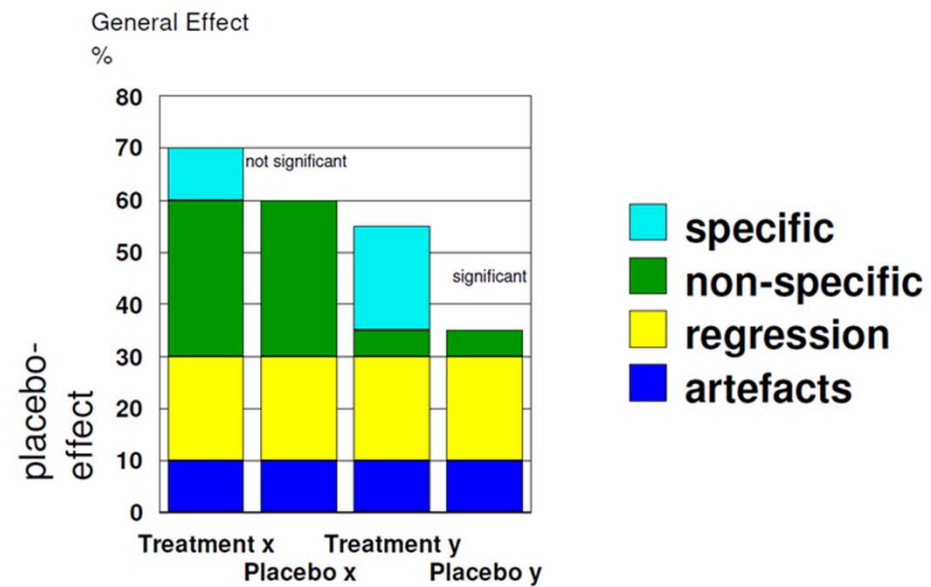
## DE CONTEXT: HOEVEEL WETEN WE CONCREET OVER CONVENTIONELE BEHANDELINGEN?



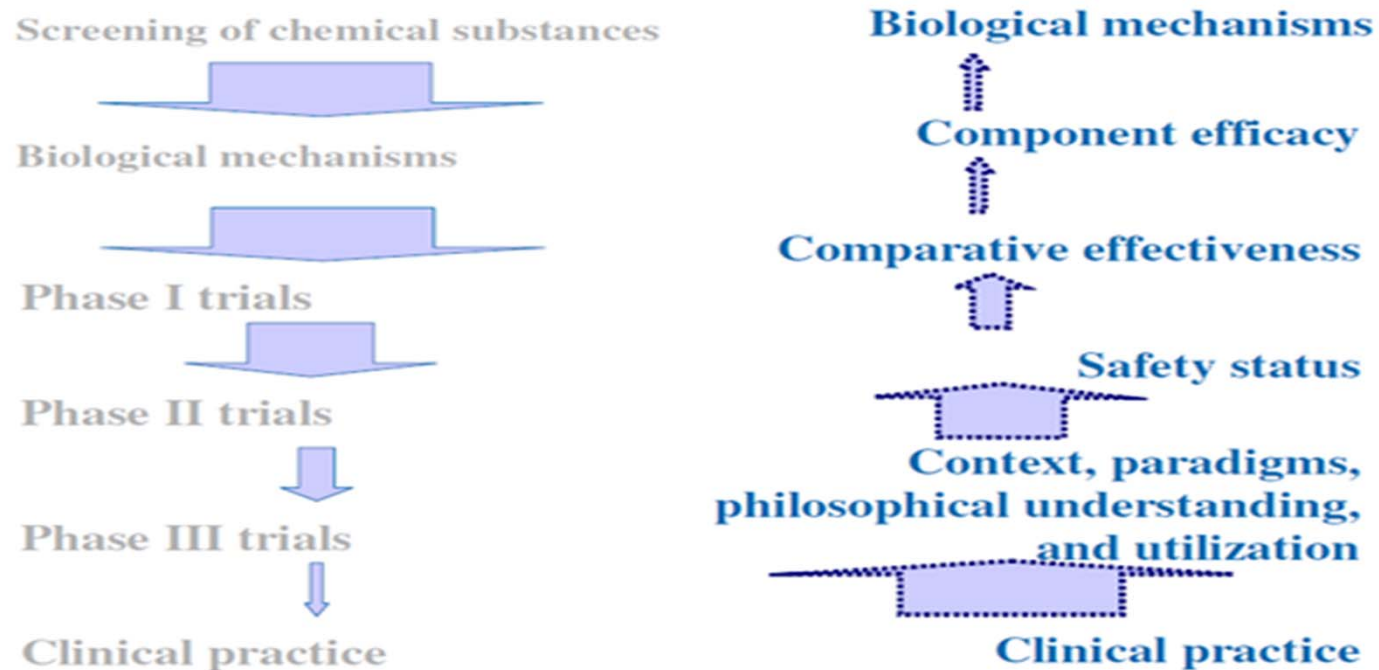
**BMJ Clinical Evidence**

<http://clinicalevidence.bmj.com/x/set/static/cms/efficacy-categorisations.html>

# SPECIFIEKE EN NON-SPECIFIEKE EFFECTEN



# ONDERZOEKSSTRATEGIËN



**Figure 1**  
**Research strategies in drug trials and CAM (proposed).** Phases that contrast the proposed phased research strategy in CAM (dark arrows) with that conventionally used in drug trials (light arrows).

# EVOLUTIE WETENSCHAPPELIJK ONDERZOEK

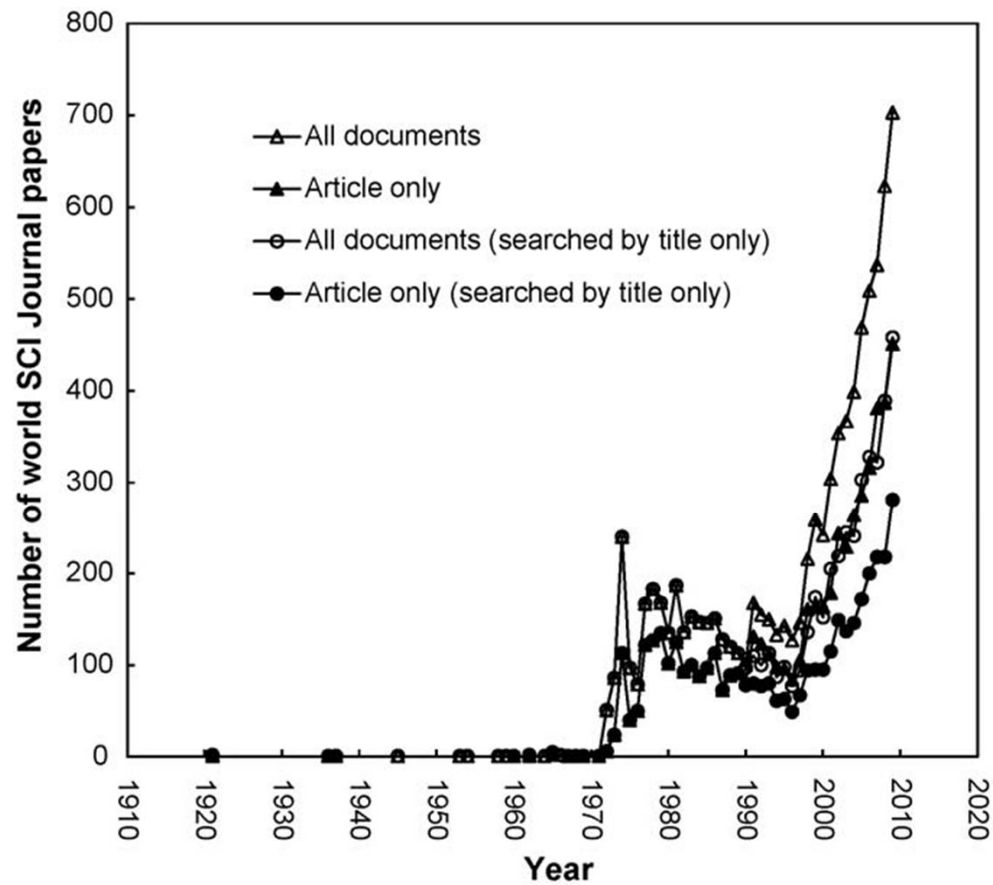


Fig. 1. Number of SCI-Expanded journals' papers referring to "electroacupuncture", "electro-acupuncture", "acupoint\*", "acupunctur\*", and "percutaneous electrical nerve stimulation" since 1900.

ONLINE FIRST

## Acupuncture for Chronic Pain

### *Individual Patient Data Meta-analysis*

Andrew J. Vickers, DPhil; Angel M. Cronin, MS; Alexandra C. Maschino, BS; George Lewith, MD; Hugh MacPherson, PhD; Nadine E. Foster, DPhil; Karen J. Sherman, PhD; Claudia M. Witt, MD; Klaus Linde, MD; for the Acupuncture Trialists' Collaboration

.... "significant difference between true and sham acupuncture indicate that acupuncture is more than a placebo" (effect size ~0.2)

**Methods:** We conducted a systematic review to iden-

These results were robust to a variety of sensitivity analy-

.... significant difference between true acupuncture and standard care (effect size ~0.5)

patients analyzed.

acupuncture indicate that acupuncture is more than a placebo. However, these differences are relatively modest, suggesting that factors in addition to the specific effects of needling are important contributors to the therapeutic

**Results:** In the primary analysis, including all eligible RCTs, acupuncture was superior to both sham and no-

Vickers et al. Archives of Internal Medicine, 2012.  
doi: 10.1001/archmed.2012.3654

# COCHRANE REVIEWS

Acupunctuur bewezen effectief voor sommige maar niet alle pijnen:

Positief: - migraine

- spanningshoofdpijn
- nekklachten
- perifere artritis

Aanbevelingen: - schouderpijn

- tenniselleboog
- lage rugpijn
- geassisteerde reproductie

# GEVOLG

Sommige landen nemen acupunctuur op  
in **EBM adviezen**

VK: raadt acupunctuur aan voor lage rugpijn,  
migraine en spanningshoofdpijn

VS: acupunctuur als Essential Health Benefit  
opgenomen in 20 staten (Obama Care)

België: terug te vinden tussen EBM adviezen van  
EBMPractice.net

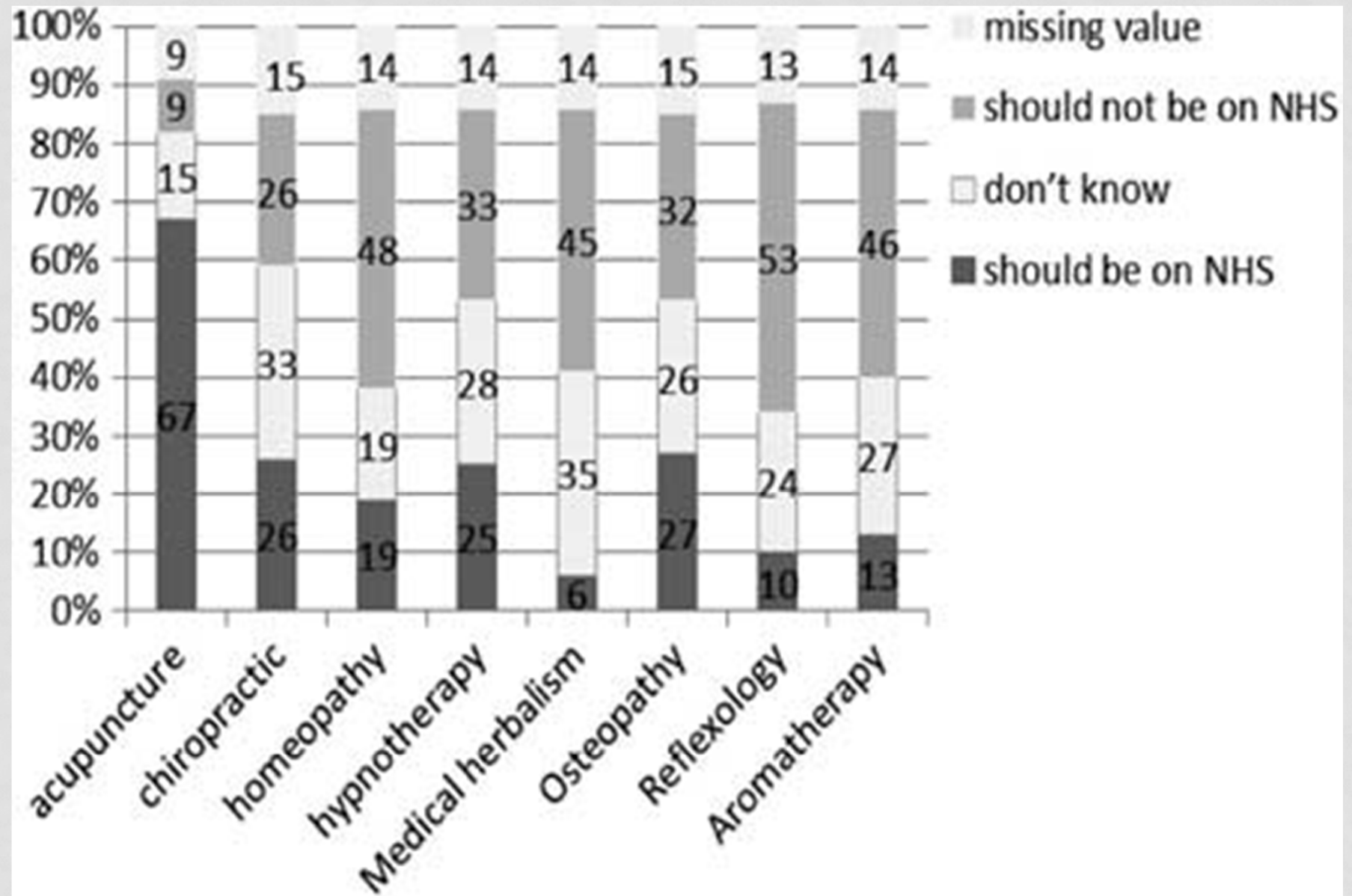


Figure 2 Bar chart to illustrate the response of GPs as to whether CAMs should be provided by the NHS in 2010.



# ANDERE INDICATIES

Uit RCT's: acupunctuur kan efficiënt zijn voor:

- Hooikoorts
- Fantoempijnen
- Hik bij kankerpatiënten
- Depressie
- Posttraumatisch stressyndroom
- Herstel na CVS
- Autismespectrumstoornissen
- Tandpijn
- Pijn tijdens de bevalling
- Droge ogen

# WERKINGSMECHANISMEN

**EJP**

European Journal of Pain

ORIGINAL ARTICLE

## **Does acupuncture activate endogenous analgesia in chronic whiplash-associated disorders? A randomized crossover trial**

Y. Tobbacx<sup>1,3,4</sup>, M. Meeus<sup>1</sup>, L. Wauters<sup>4</sup>, P. De Vilder<sup>4</sup>, J. Roose<sup>5</sup>, Tom Verhaeghe<sup>5</sup>, J. Nijs<sup>1,2</sup>

1 Chronic Pain and Chronic Fatigue Research Group (CHROPIVER), Department of Human Physiology, Faculty of Physical Education & Physiotherapy, Vrije Universiteit Brussel, Belgium

2 Department of Physical Medicine and Physiotherapy, University Hospital Brussels, Belgium

3 De Zuil, Centre for Chronic Pain Treatment and Relaxation Therapy, Westerlo, Belgium

4 Belgian Acupuncture Federation, Schoten, Belgium

5 European Federation of Oriental Medicine, Eigenbilzen, Belgium

### **Correspondence**

Jo Nijs

E-mail: Jo.Nijs@vub.ac.be

### **Funding sources**

### **Abstract**

**Background:** Many patients with chronic pain, including those with chronic whiplash-associated disorders (WAD), show features of central sensitization. Randomized trials examining whether treatments are able to

# HOW ACUPUNCTURE WORKS

## Biochemistry

### 1. Influence on neurotransmitters and neurohormones excretion in different brain structures:

- endogenous opioids, nitric oxide, serotonin, noradrenalin, oxytocin, vasopressin, anandamide, neuropeptide Y.

### 2. Influence on c-fos gene expression.

### 3. Neuroprotective action after ischemic stroke:

- activation of PI3K/Akt path, Brain-Derived Neurotrophic Factor (BDNF), and Glial cell-Derived Neurotrophic Factor (GDNF).
- ↓ apoptosis.

### 4. Anti-inflammatory action after ischemic stroke:

- ↓ TLR4/NF- $\kappa$ B path.

### 5. Promotion of neurogenesis after injury:

- ↑ nestin positive cells (stem cells), NF200-positive cells and GFAP - positive cells.

## Respiratory system

### 1. Reduction of bronchial inflammation:

- ↓ amount of eosinophils, leukocytes, and pro-inflammatory proteins (S100A8, RAGE, S100A11).
- ↑ amount of anti-inflammatory proteins (CC10, ANXA5, sRAGE).

### 2. Reduction of inflammation and swelling in nose.

## Genitourinary system

### Uterus and ovaries:

- normalization of androgen receptors, p75 neurotrophin receptor, NGF gene expression in polycystic ovaries.
- regulation of COX-2 and prostaglandins excretion in pregnant uterus.

## Immune system

### 1. Anti-inflammatory action

Influence on excretion and action of:

- neuropeptides (-endorphin, bradykinin, substance P, neurokinin A, Calcitonin Gene Related Peptide, Vasoactive Intestinal Peptide)
- cytokines (IL-1, IL-2, IL-4, IL-6, IL-10, IFN- $\gamma$ , TNF- $\alpha$ , $\beta$ ),
- other vasoactive substances (NO, serotonin, eicosanoids).

### 2. Regulation of leukocyte subpopulations in peripheral blood:

- CD2<sup>+</sup>, CD4<sup>+</sup>, CD8<sup>+</sup>, CD11b<sup>+</sup>, CD16<sup>+</sup>, CD19<sup>+</sup>, CD56<sup>+</sup>.

### 3. Promotion of NK cells production and activity.

## Mechanisms of signal transmission

### 1. Neural Theory:

- local action - activation of nerves,
- reflexive action - influence on specific spinal cord segment,
- central action - influence on brain activity.

### 2. Nitric oxide (NO) in neuro-vascular transmission model.

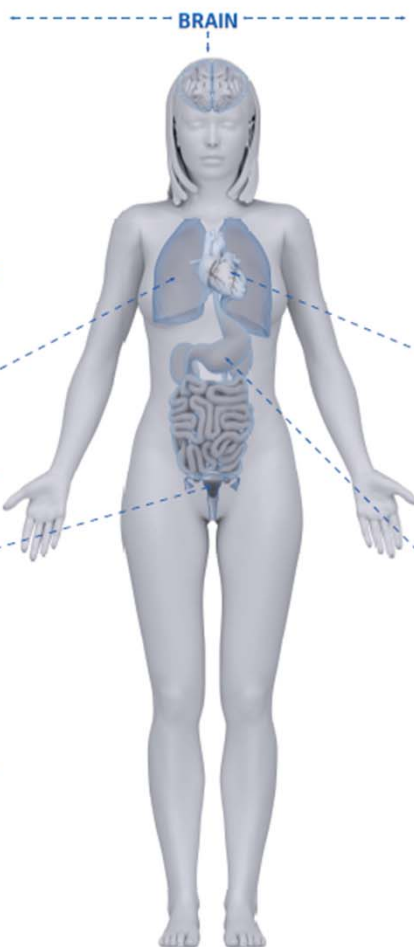
### 3. Prino vessels.

### 4. Electromagnetic fields.

### 5. Mechanical signaling along connective tissue fibers:

- winding of connective tissue around the needle and deformation of collagen fibers matrix,
- active remodeling of fibroblast's cytoskeletons in connective tissue - transduction.

## BRAIN



## Neuroimaging

### 1. Functional Magnetic Resonance Imaging (fMRI):

- point-specific changes in blood distribution in brain areas associated with functions related to traditionally described point activity.

### 2. Positron Emission Tomography (PET):

- stimulation of different points results in different clinical effect and changes in glucose metabolism in different, but point-specific areas of brain.

### 3. Electroencephalography (EEG):

- point-specific changes in electric brain activity related to clinical effects.

### 4. Magnetoencephalography (MEG):

- different oscillation patterns for acupoint and non-acupoints.

## Cardio-vascular system

### 1. Heart:

- influence on heart rate and ECG morphology.

### 2. Vessels:

- influence on blood pressure,
- point-specific influence on increasing blood flow and decreasing vascular resistance in specific arteries.

## Digestive system, metabolic disturbances

### 1. Stomach:

- protection from ulceration due to c-fos expression in solitary tract.

### 2. Intestines:

- influence on mast cells proliferation, excretion of substance P, Vasoactive Intestinal Peptide, nitric oxide.

## Others

### Eye:

- ↑ tear proteins gene expression.

### Skin:

- ↑ nitric oxide and local circulation,
- ↓ inflammation, acceleration of wounds healing.

### Peritoneum (in experimental peritonitis):

- ↑ interleukin IL-10,
- ↓ inflammatory cell infiltration and vascular permeability.

## Biophysical Characteristics

### 1. Acoustic:

- different sound transmission - diagnosis.

### 2. Thermal:

- lines of higher temperature along meridians after acupuncture - diagnosis.

### 3. Optical:

- meridians - areas of high luminance differences in light transmission.

### 4. Magnetic:

- stable circular current of electromagnetic and chemical oscillation along the low electric resistance pathway.

### 5. Migration of isotope:

- movement of  $^{99m}TcO_4^-$  - along channel - low hydraulic resistance.

### 6. Electric:

- low electric resistance.

# DE VEILIGHEID VAN ACUPUNCTUUR

TABLE 1. COMPARISON WITH RATES OF 'FAINTING' IN PROSPECTIVE STUDIES

<i>Study</i>	<i>Country of study</i>	<i>Number/treatments</i>	<i>Incidence rate (%)</i>
He et al. 2012 <sup>1</sup>	China	468/1,500,000,000 <sup>a</sup>	0.0003
Chen et al. 1990 <sup>40</sup>	Taiwan	55/28,285	0.194
Yamashita et al. 1999 <sup>41b</sup>	Japan	0/65,482	0
Yamashita et al. 2000 <sup>42b</sup>	Japan	0/1441	0
Park et al. 2010 <sup>43b</sup>	Korea	0/3071	0
MacPherson et al. 2001 + 2001 <sup>44,45b</sup>	U.K.	4/34,407	0.012
White et al. 2001 <sup>46</sup>	U.K.	6/31,822	0.019
Witt et al. 2011 <sup>47</sup>	Germany	62/2,200,000 (treatments) 62/229,230 (patients)	0.003 0.027

<sup>a</sup>This number of 1.5 billion treatments is probably very conservative.

<sup>b</sup>The authors distinguish between the milder "feeling faint" and the more severe "fainting." The numbers here are for reports of actual fainting.

# DE VEILIGHEID VAN ACUPUNCTUUR

TABLE 2. COMPARISON WITH RATES OF PNEUMOTHORAX IN PROSPECTIVE STUDIES

<i>Study</i>	<i>Country of study</i>	<i>Number/ treatments</i>	<i>Incidence rate (%)</i>
He et al. 2012 <sup>1</sup>	China	307/1,500,000,000	0.0002
Yamashita et al. 1999 <sup>41</sup>	Japan	0/65,482	0
Yamashita et al. 2000 <sup>42</sup>	Japan	0/1441	0
Park et al. 2010 <sup>43</sup>	Korea	0/3071	0
MacPherson et al. 2001 + 2001 <sup>44,45</sup>	U.K.	0/34,407	0
White et al. 2001 <sup>46</sup>	U.K.	0/31,822	0
Witt et al. 2011 <sup>47</sup>	Germany	2/2,200,000 (treatments) 2/229,230 (patients)	0.00009 0.0009
Melchart et al. 2004 <sup>50</sup>	Germany	2/ >760,000 (treatments) 2/97,733	0.00026 0.002

# Acupuncture and safety

**Forschende  
Komplementärmedizin**  
Wissenschaft • Praxis • Perspektiven

Original Article- Originalarbeit

Forsch Komplementmed 2009;16:91-97  
DOI: [10.1159/000209315](https://doi.org/10.1159/000209315)

Published online: April 9, 2009

## **Safety of Acupuncture: Results of a Prospective Observational Study with 229,230 Patients and Introduction of a Medical Information and Consent Form**

Claudia M. Witt\* Daniel Pach\* Benno Brinkhaus\* Katja Wruck\* Brigitte Tag\*  
Sigrid Mank\* Stefan N. Willich\*

\*Institute for Social Medicine, Epidemiology, and Health Economics, Charité University Medical Center, Berlin, Germany

\*Chair of Criminal Law, Criminal Proceeding and Medical Law, University of Zurich, Switzerland

### **Key Words**

Acupuncture · Safety · Adverse effects · Adverse events · Informed  
consent · Information and consent forms

### **Schlüsselwörter**

Akupunktur · Sicherheit · Nebenwirkungen · Unerwünschte  
Ereignisse · Informierte Einwilligung · Aufklärungsbogen

Approx. 2 million treatments ..... Two patients experienced a pneumothorax (one needed hospital treatment, the other observation only).

# KOSTENEFFICIËNTIE VAN ACUPUNCTUUR

Syst. review:

acupunctuur is een kostenefficiënte behandeling voor:

- Nekpijn
- Dysmenorhea
- Hoofdpijn en migraine
- Lage rugpijn
- Pijn bij osteoartritis

## BESLUIT:

- Acupunctuur is heterogeen en pluralistisch
- Steeds meer degelijk onderzoek over acupunctuur
- Acupunctuur bewezen werkzaam en efficiënt voor een aantal aandoeningen
- Acupunctuur opgenomen in Evidence Based guidelines in een aantal landen
- Acupunctuur is veilig en kostenefficiënt gebleken