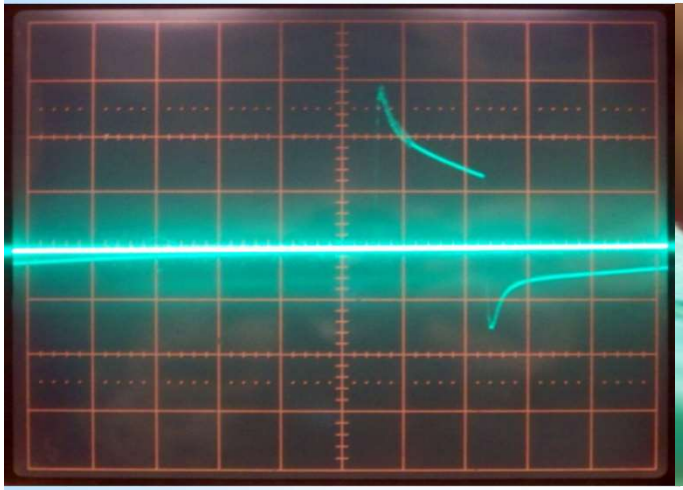
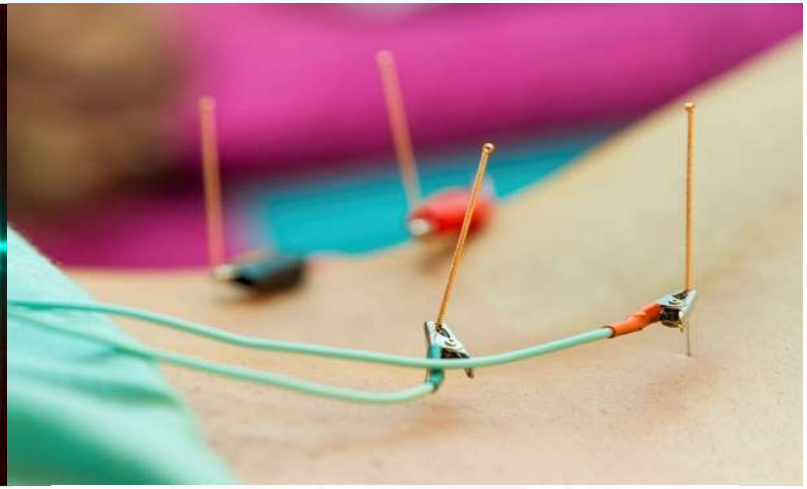
GMT 2000
AGOPUNTURA E DINTORNI

INTRODUZIONE

A TECHNICHE E METODI ELETTROAGOPUNTURALI





Società Italiana Agopuntura Veterinaria

Albert Garoli

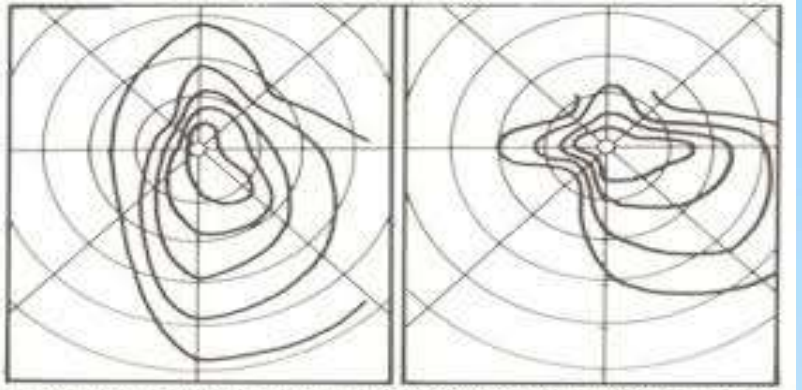
Fondamenti

L'Elettro-agopuntura (EAP) è stata adottata in Cina a partire dal 1934 ed è ancora oggi molto utilizzata, come metodo di stimolo specifico degli aghi infissi.
Consente di trattare tramite correnti di vario tipo, intensità e frequenza, quando il caso lo richiede. Viene particolarmente utilizzata:

-nel dolore cronico
-negli spasmi
-nelle nevralgie da deficit
-nelle paralisi
-nelle obesità
-nelle dipendenze
-nella rigenerazione tissutale (assieme a FIR)
-nell'ipo-motilità viscerale

NOTA: E' SEMPRE IMPORTANTE DEFINIRE FORME DA DEFICIT E FORME DA ECCESSO ELETTROFISIOLOGICO. DA APPROFONDIRE I CRITERI

PROPRIETA' ELETTRICA DEI PUNTI DI AGOPUNTURA


ELECTRICAL CONDUCTIVITY MAPS OF SKIN AT ACUPUNCTURE POINTS

Bioelectromagnetics. 2008 May;29(4):245-56. doi: 10.1002/bem.20403.

Electrical properties of acupuncture points and meridians: a systematic review.

Ahn AC[1], Colbert AP, Anderson BJ, Martinsen OG, Hammerschlag R, Cina S, Wayne PM, Langevin HM.

Author information

Abstract

According to conventional wisdom within the acupuncture community, acupuncture points and meridians are special conduits for electrical signals. This view gained popularity after anecdotal reports and clinical studies asserted that these anatomical structures are characterized by lower electrical impedance compared to adjacent controls. To ascertain whether evidence exists to support or refute this claim, we conducted a systematic review of studies directly evaluating the electrical characteristics of acupuncture structures and appropriate controls. We searched seven electronic databases until August 2007, hand-searched references, and consulted technical experts. We limited the review to primary data human studies published in English. A quality scoring system was created and employed for this review. A total of 16 articles representing 18 studies met inclusion criteria: 9 examining acupuncture points and 9 examining meridians. Five out of 9 point studies showed positive association between acupuncture points and lower electrical resistance and impedance, while 7 out of 9 meridian studies showed positive association between acupuncture meridians and lower electrical impedance and higher capacitance. The studies were generally poor in quality and limited by small sample size and multiple confounders. Based on this review, the evidence does not conclusively support the claim that acupuncture points or meridians are electrically distinguishable. However, the preliminary findings are suggestive and offer future directions for research based on in-depth interpretation of the data.

PMID: 18240287 DOI: 10.1002/bem.20403

Bioelettricità – la base della vita

L’energia vitale o bioelettrica è la base di ogni insegnamento della medicina funzionale, della medicina manuale e della TCM. La premessa che l’elettricità è in grado di controllare il tessuto vitale ha ricevuto un notevole impulso nel mondo moderno grazie al lavoro del **Dr. Becker un pioniere nel campo della rigenerazione e della relazione di questa con le correnti elettriche negli esseri viventi.**

Egli ha trovato alcune informazioni utili sul processo terapeutico nella teoria a lungo dimenticata dei Vitalisti del XVIII secolo secondo i quali l’elettricità è essenziale per il processo vitale.

Le aree focali algiche sono normalmente caratterizzate da un elevazione della temperatura di 0.2-0.6 gradi Celsius e possono mostrare **una resistenza elettrica ampiamente diminuita,** fino ad 1/100 delle aree circostanti. Dopo un’esperienza ormai ventennale possiamo confermare il legame tra resistenza elettrica e dolore.

Qi e correnti bio-elettriche naturali o simulate seguono gli stessi criteri.

Bioelettricità – la base della vita

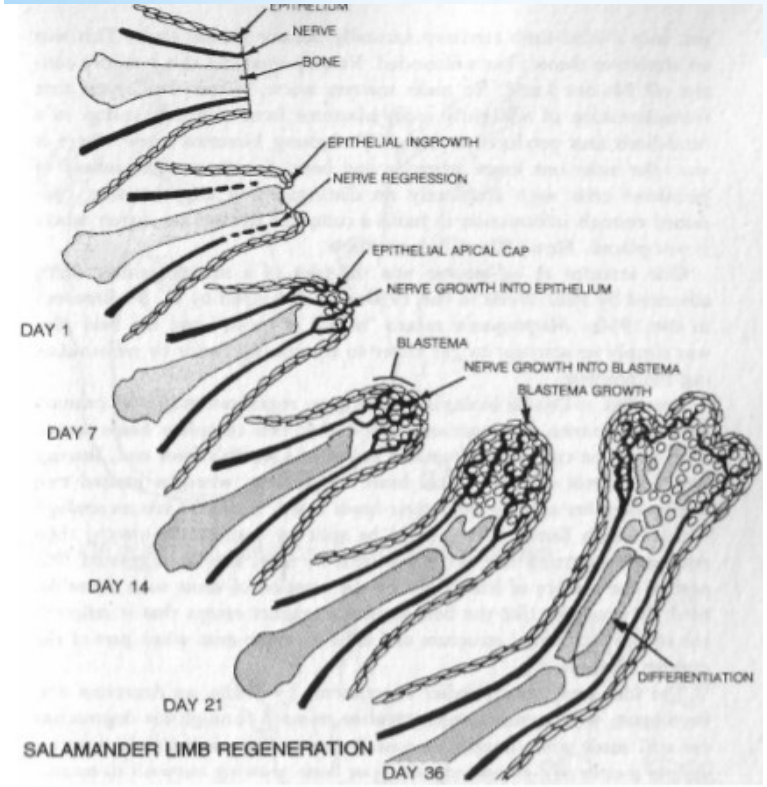
L’energia vitale è IL VERO PARADIGMA che separa la medicina orientale da quella occidentale, nel presente e nel passato.

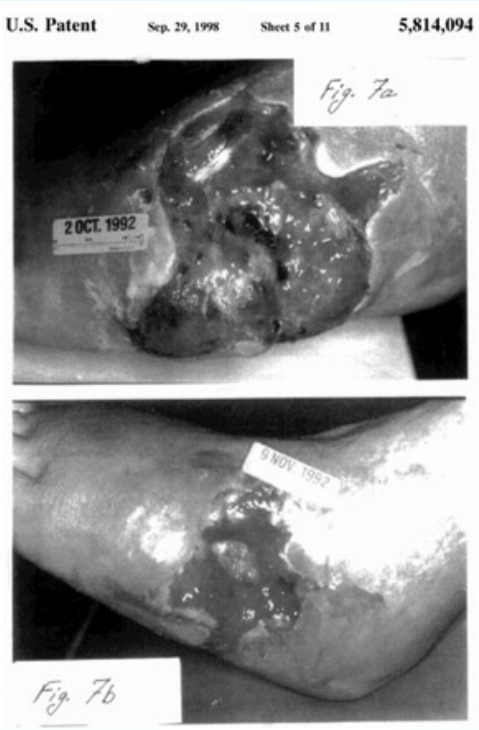
Due grandi campi di applicazione

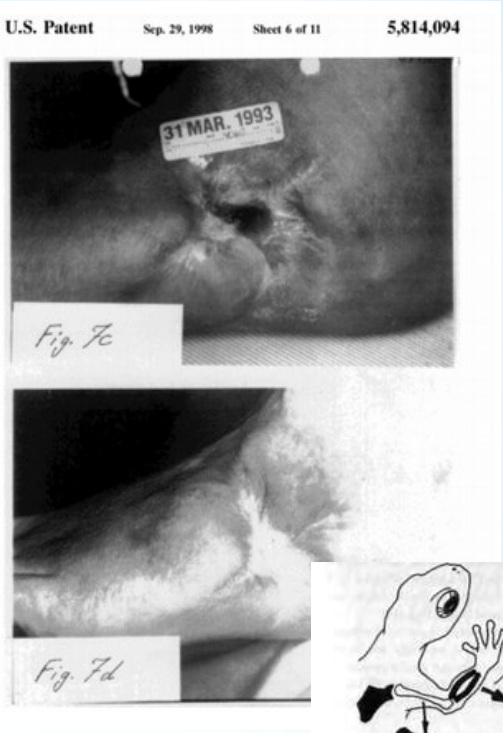
1) Stimolo TROFICO (BREVE DURATA, INTERMITTENTE, BASSE FREQUENZE

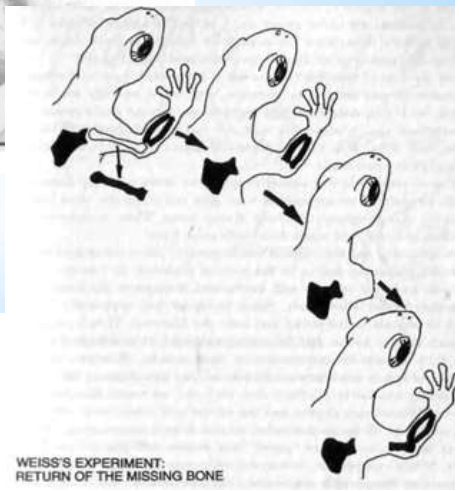
2) Stimolo DISPERSIVO (o sedativo o scrambler. LUNGA DURATA, CONTINUO, ALTE F.)

Robert O Becker e la rigenerazione tissutale









Science. 1961 Jul 14;134(3472):101-2.

Search for Evidence of Axial Current Flow in Peripheral Nerves of Salamander.

Becker RO.

Abstract

The demonstrated association of the d-c bioelectric field with central nervous system elements implies the longitudinal flow of charge carriers within that system. Transverse d-c voltages, attributed to the Hall effect, have been obtained from the extremities of intact salamanders under circumstances suggesting such electric current. These voltages disappeared after nerve section, and their magnitude was related to the depth of anesthesia.

PMID: 17807392 DOI: 10.1126/science.134.3472.101

PROPRIETA' ELETTRICA DEI PUNTI DI AGOPUNTURA

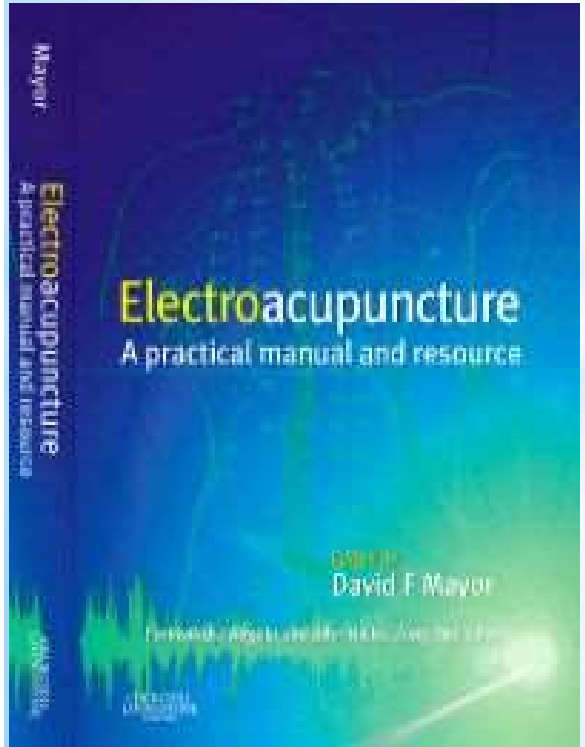
-Becker, R. O., Reichmanis, M., Marino, A. A., Spadaro, J. A. (1976). Electrophysiological correlates of acupuncture points and meridians. Psychoenergetic Systems, 1, 105-112.

-Cho, H. Z., Chung, S. C., Lee, H. J., Wong, E. K., Min, B. I. (2006). Correction for Cho et al.,New findings of the correlation between acupoints and corresponding brain cortices using functional MRI. Proceedings of the National Academy of the Sciences, 103(27).

-Jones, J. P., Bae, Y. K., Wilson, L., So, C. S., Kidney, D. D. (2004). Ultrasonic imaging and characterization of acupuncture points in classical oriental medicine. Acoustical Imaging, 27, 527-533

-Jones, J. P., Bae, Y. K. (2004). Ultrasonic visualization and stimulation of classical oriental acupuncture points. Medical Acupuncture, 15, 24-26.

*-Becker, R. O. (1961). "Search for Evidence of Axial Current Flow in Peripheral Nerves of Salamander". Science. **134** (3472): 101–2. doi:10.1126/science.134.3472.101. PMID 17807392.*



David F. Mayor

Miglioramento della fisiologia cellulare

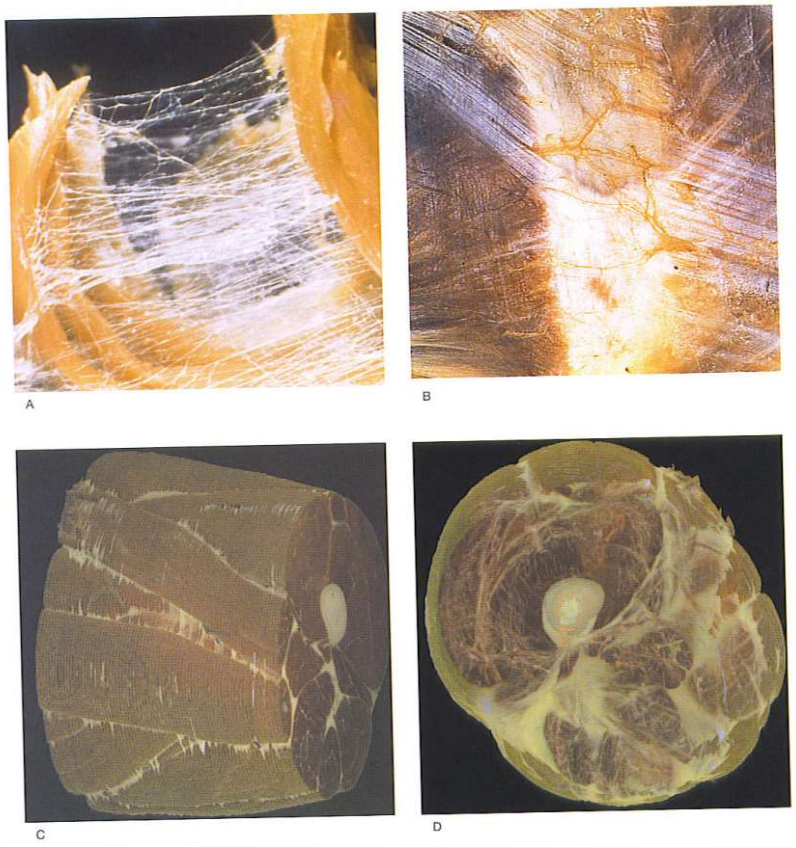
La micro elettrostimolazione differisce totalmente dall'uso delle correnti applicate all'ago. La stimolazione **con microampere è stata anche definita "biostimolazione"** o "terapia bioelettrica" per via della sua capacità di stimolare la fisiologia e la crescita cellulare e SIMULARE normali debolissime correnti elettriche endogene. In uno studio con importanti implicazioni sull'elettroterapia con microcorrenti, Cheng et al. (1982), sono stati esaminati gli effetti delle correnti elettriche di varia intensità su tre variabili essenziali per il processo terapeutico:
la generazione di adenosina trifosfato (ATP), la sintesi proteica e il trasporto della membrana. **A 50 µA, la generazione di ATP nella pelle dei topi era aumentata di quasi il 500%.** Che cosa succedeva con una stimolazione più intensa? Tra i 1,000 e i 5,000 µA (1 a 5 milliampere), la generazione di ATP diminuiva bruscamente e a 5,000 µA (5 milliampere) scendeva al di sotto del normale livello base.
Un quadro molto simile si ha con il trasporto di aminoacido e la sintesi proteica.

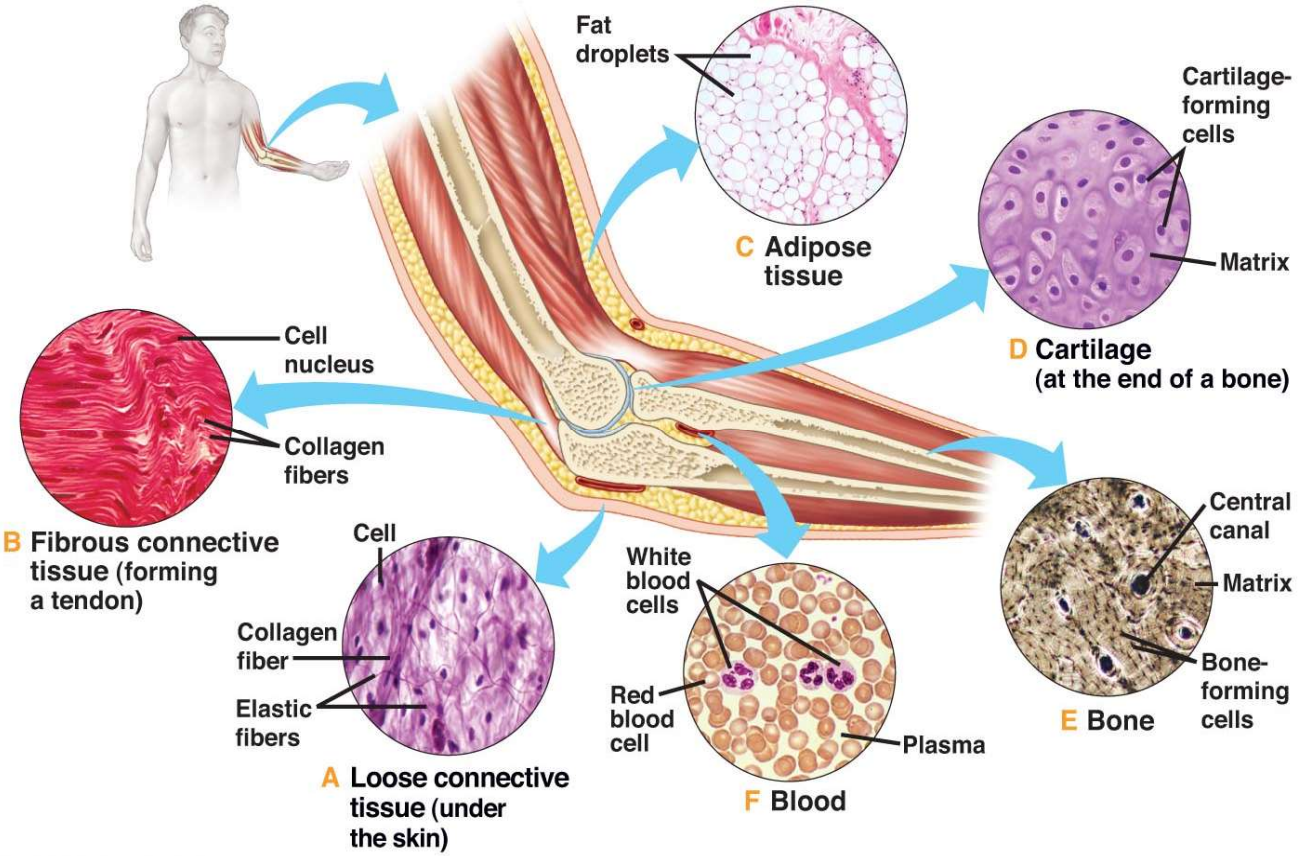
Il trasporto di aminoacido era aumentato del 30-40% oltre il livello standard con un'intensità di corrente pari a 100-500 µA. Con l'aumento dell'intensità, gli effetti biostimolatori erano invertiti, con correnti di oltre 1,000 µA la captazione di acido aminoisobutirrico era diminuita dal 20 al 73% inibendo la sintesi proteica del 50%.
La stimolazione elettrica illustrata nel saggio di Picker Overview of Therapeutic Electrical Stimulation è stata utilizzata per diversi anni nel trattamento della frattura ossea non tumorale (Brighten 1981;Friedenberg 1966; Friedenberg 1981; Yasuda 1953).

TESSUTI E ELETTROAGOPUNTURA

Compattezza, idratazione e dispersione salina, stato termico e fisico chimico dei vari tessuti influenzano la trasmissione dell'impulso meccanico ed elettrico.

Le qualità elettriche dei tessuti dipendono da fattori molteplici.



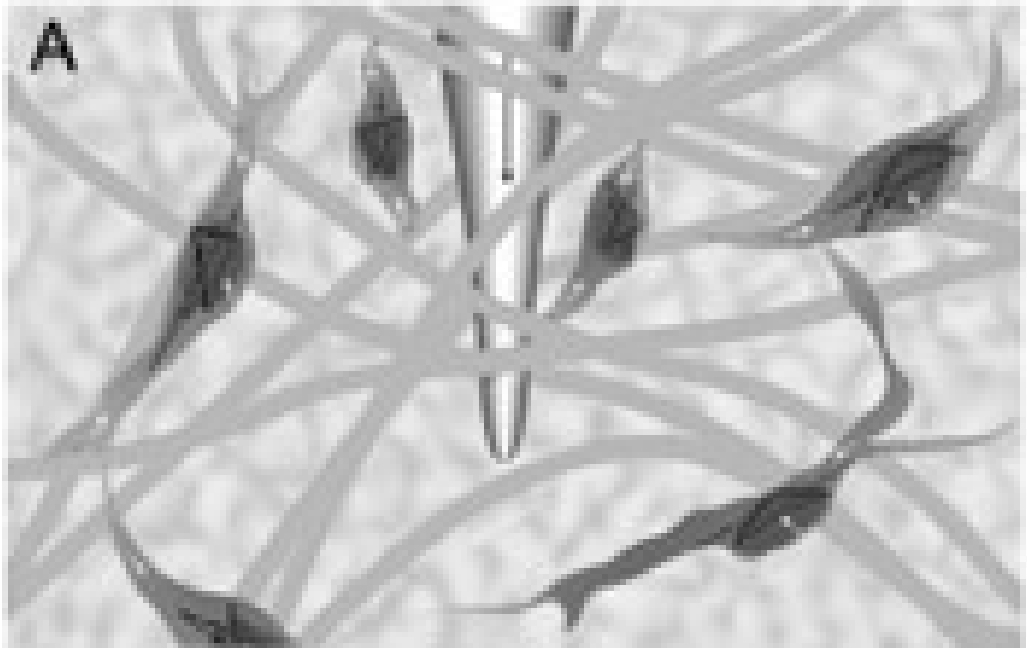


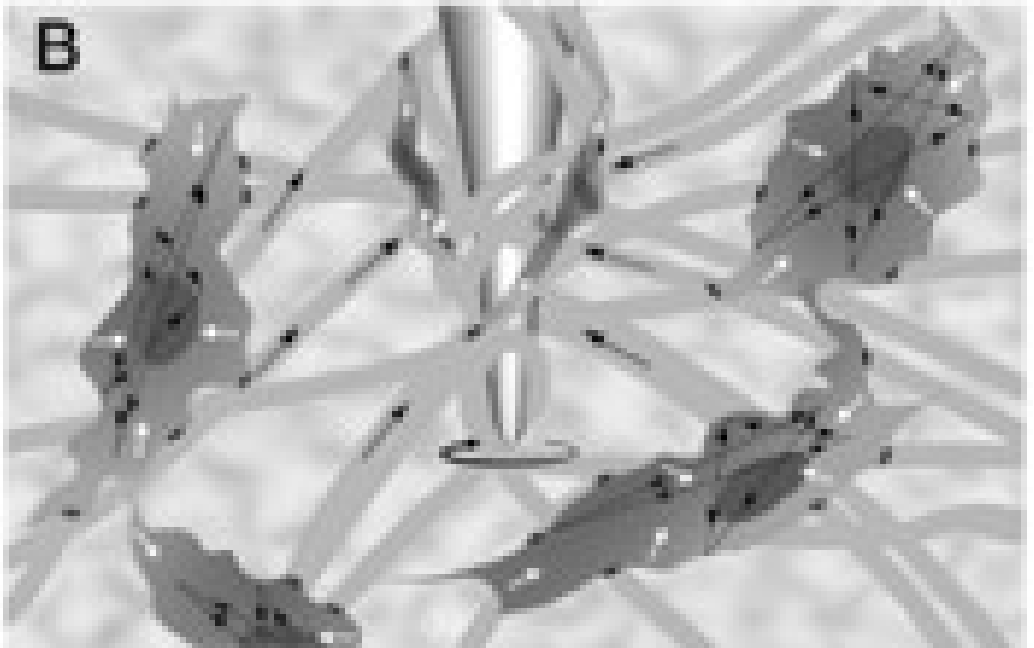
Importante lo stimolo elettroagopuntura le su tessuto vascolarizzato

INFORMAZIONE IMPORTANTE: Trasduzione elettro-meccanica

Il risultato dello stimolo meccanico sui esercitato dall'ago sui fibroblasti viene dipende dalla qualità del medium di trasduzione.

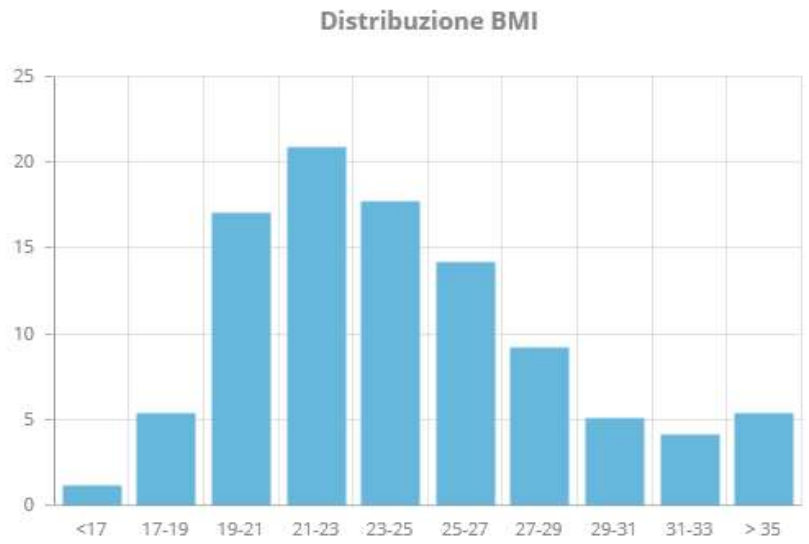
Lo stimolo elettrico impone ritmi di tensione e rilassamento che si possono modulare.

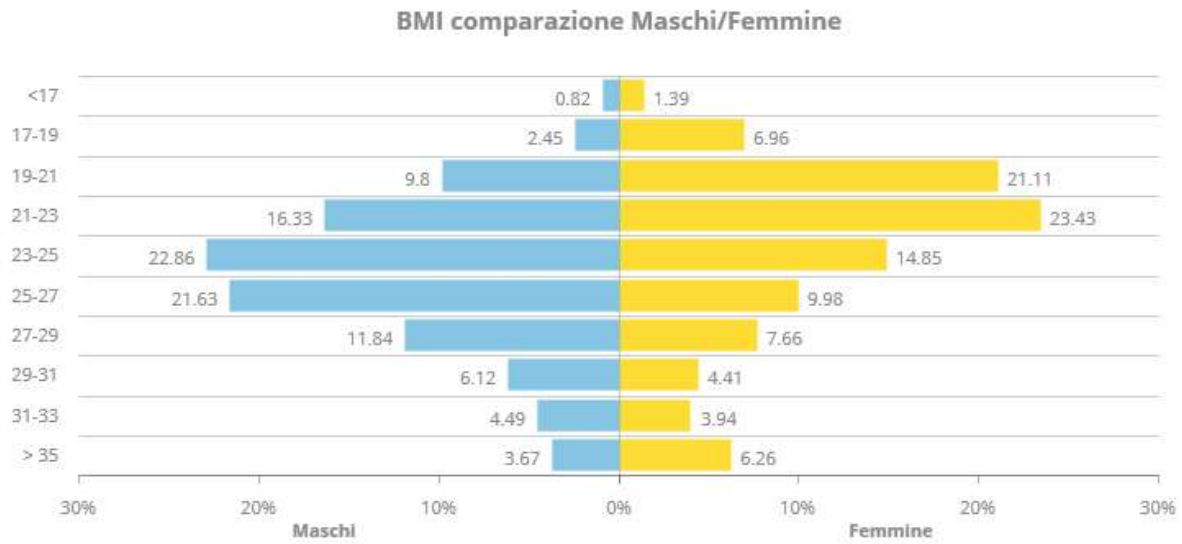




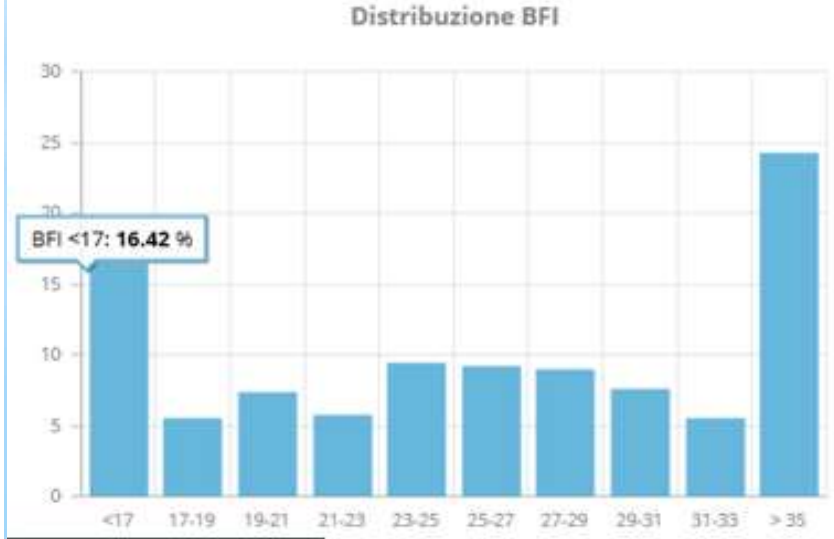
Indici BMI BFI composizione corporea

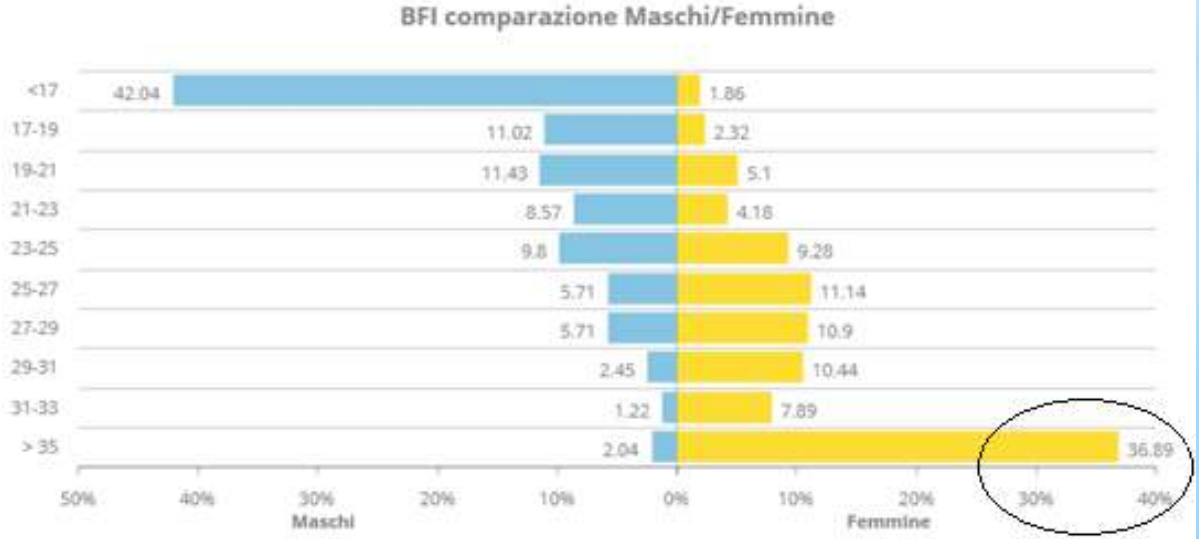
Statistiche BMI





Statistiche BFI





Secondo i nostri risultati preliminari l'associazione più significativa per parametri di conferma è:

BMI+ >

-YANG DEFICIENCY
-QI STASIS
-BLOOD STASIS

BMI- >
-QI DEFICIENCY

In condizioni di deficit di Sangue, qi o yang la risposta è molto lenta

In azzenza di De qi la risposta e minima

Title Study of the correlation between body mass index of health-monitoring population and TCM-based constitution.

Authors Gao Fei; Wang GuoWei; Li Jian; Shang JuJu; Gao XinShuang; Liu HongXu

Journal World Journal of Integrated Traditional and Western Medicine 2010 Vol. 5 No. 2 pp. 126-129

ISSN 1673-6613

Record Number 20103157989

Abstract

Objective: To study of the correlation between body mass index (BMI) of health-monitoring population and TCM-based constitution and analyze whether BMI is the risk factor of TCM-based constitution. Methods: 624 cases of health-monitoring information in the Disease Prevention Center of Beijing Hospital of Traditional Chinese Medicine affiliated to Capital Medical University were investigated. Of them, 188 cases were male and 436 cases female. The records were performed according to the data of height and body mass measured on the spot. BMI=body mass (kg)/height^2 (m^2). In reference with 8 categories of TCM-based constitution in the standard of "TCM Constitution Classification and Evaluation" of China Association of Traditional Chinese Medicine, the correlation study and logistic regression study between BMI and TCM-based constitution were conducted with SPSS15.0 software. Results: 1. The statistic difference presented in whether yang deficiency constitution, blood stasis constitution and qi stagnation constitution were existed relevant with BMI (P<0.05); 2. The positive correlation displayed between three constitutions named yang deficiency, blood stasis and qi stagnation with BMI ($0 < r < 1$).

While BMI increased, the risks of yang deficiency, blood stasis and qi stagnation constitutions were upgraded. Conclusion: The higher MBI than the normal level is the risk factor of the formation of yang deficiency, blood stasis and qi stagnation constitutions. It is significant positively to control the body mass so as to prevent from these three TCM-based constitutions. Additionally, the survival quality can be improved and the incidence of cardiocerebrovascular accident decreases possibly.

Fondamenti

L’elettrostimolazione, viene anche solitamente impiegata con successo:

1 con scopo analgesico prima e dopo interventi chirurgici

2 nel trattamento di traumi per accelerare la rigenerazione trattando direttamente la zona affetta e alcuni punti periferici con frequenze basse (entro i 5 Hz)

3 nel trattamento delle assuefazioni in soggetti con note carenze di oppiacei endogeni e o serotonina (frequenze generalmente attorno ai 10 Hz)

4 nel recupero di lesioni nervose da trauma, infezione o neuropatie periferiche con frequenze più elevate

5 con polo negativo sul punto dolente e polo positivo sul punto distale,usando basse frequenze (meno di 5 Hz) in caso di dolori generalizzati con lesioni e più elevate se si trattano esiti di traumi o lesioni nervose (es. paralisi del facciale).

NOTA:

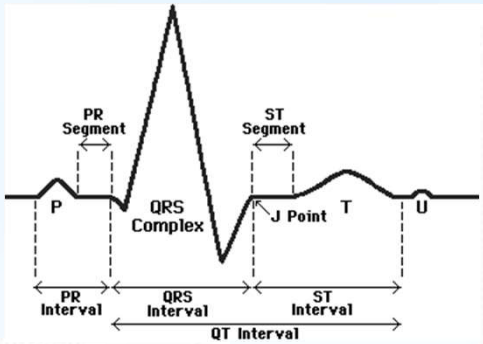
Nell'esperienza clinica elettroagopunturale si nota che alcuni punti somministrati per una simile o identica diagnosi sono più efficaci su alcuni soggetti, piuttosto che in altri e ne spieghiamo il perché più avanti.

APPLICAZIONI IDEALI

Deficit di Qi

Stasi del Qi

Stasi di Qi e Xue



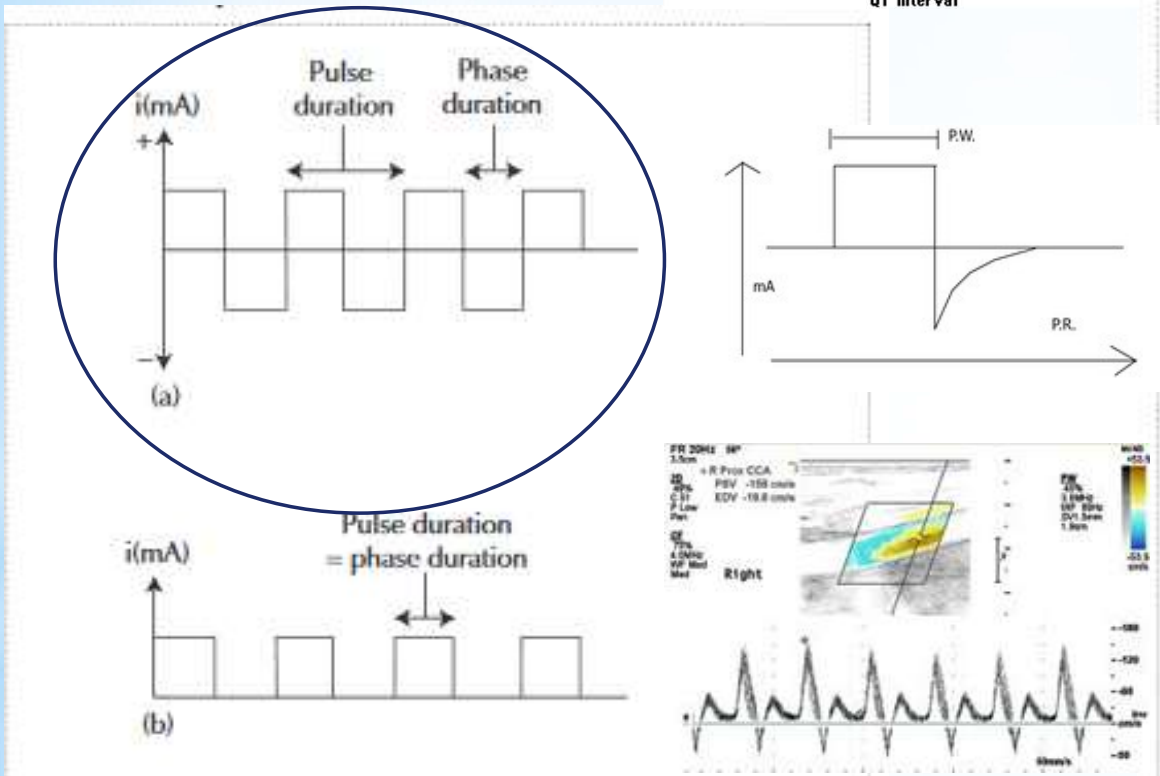


Fig 1. (a) Biphasic square wave current; (b) Monophasic square wave current. This figure also shows pulse duration. (Adapted from Mayor 2007, with permission.)

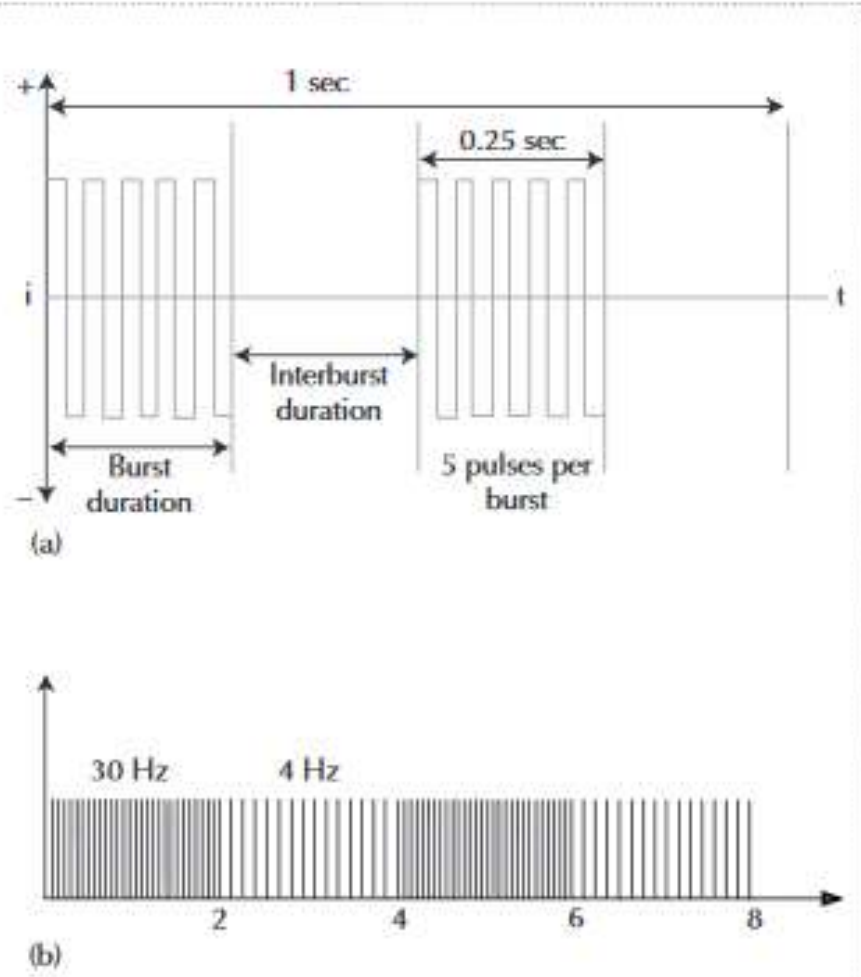


Fig 2. (a) 2 Hz intermittent (or 'burst') current, with an internal frequency of 20 Hz; (b) Dense-disperse mode (4/30 Hz DD), repeating every 4 seconds. (Adapted from Mayor 2007, with permission.)

Note di utilità pratica:

0 E' molto importante escludere tutti i casi di contro-indicazione all'uso di correnti (pacemakers ecc.)
1 La stimolazione INTERMITTENTE HIGH LOW FREQUENCY è la più efficace nel dolore
2 Le stimolazioni HIGH sono utili in cranio-puntura, anestesia, sindromi wei, paralisi
3 Le frequenze attorno ai 2 Hz e attorno ai 100 Hz inducono selettivamente (finestra di Adey,) il rilascio di dinorfine ed encefaline.

4 Dal 1973 grazie ad autori vari (*Campbell* e *Taub*, *Halley* e *Torebiark*) sappiamo che :

a) 100 hz e 20-30 hz inducono riduzione della sensibilità nervosa sulle fibre *A delta* ben mielinizzate e a conduzione rapida
b) 5-10 Hz riducono la sensibilità delle fibre C, (non mielinizzate) a conduzione lenta

5 frequenze dense disperse (modulate) o discontinue (con pause) risultano più efficaci

Le aree focali algiche sono normalmente caratterizzate da un elevazione della temperatura di 0.2-0.6 gradi Celsius e possono mostrare **una resistenza elettrica ampiamente diminuita,** fino ad 1/100 delle aree circostanti.

APPLICAZIONI IDEALI

FREQUENZA:

BASSA FREQUENZA= 'low frequency' (LF) 1-4 Hz

MEDIA = da 5 a 50 con effetti fisiologici importanti a 10 Hz

ALTA FREQUENZA = 'high frequency' (HF) would be 50-2000 Hz

AMPIEZZA

La resistenza elettrica del corpo umano trattato con elettroagopuntura è in media di 250 Ohm. Il picco dell'impulso non è inferiore a 40mA.

10-80 milliamps è il range comune.
NELLA MICROELETTROSTIMOLAZIONE RIGENERATIVA SI USANO INVECE MICRO AMPERES!

FORMA

La forma più utilizzata è asimmetrica bipolare, anche detta «onda cinese»

Effects of Electroacupuncture of Different Frequencies on the Release Profile of Endogenous Opioid Peptides in the Central Nerve System of Goats

Li-Li Cheng,[1] **Ming-Xing Ding**,[1] Cheng Xiong,[1] Min-Yan Zhou,[1] Zheng-Ying Qiu,[1] and Qiong Wang[1]

Show more

Academic Editor: Wolfgang Schwarz

Received	Revised	Accepted	Published
26 Jul 2012	11 Sep 2012	16 Sep 2012	24 Oct 2012

Abstract

To investigate the release profile of met-enkephalin, β-endorphin, and dynorphin-A in ruminants' CNS, goats were stimulated by electroacupuncture of 0, 2, 40, 60, 80, or 100 Hz for 30 min. The pain threshold was measured using potassium iontophoresis. The peptide levels were determined with SABC immunohistochemisty. The results showed that 60 Hz increased pain threshold by 91%; its increasing rate was higher ($P < 0.01$) than any other frequency did. 2 Hz and 100 Hz increased met-enkephalin immunoactivities ($P < 0.05$) in nucleus accumbens, septal area, caudate nucleus, amygdala, paraventricular nucleus of hypothalamus, periaqueductal gray, dorsal raphe nucleus, and locus ceruleus. The two frequencies elicited β-endorphin release ($P < 0.05$) in nucleus accumbens, septal area, supraoptic nucleus, ventromedial nucleus of hypothalamus, periaqueductal gray, dorsal raphe nucleus, locus ceruleus, solitary nucleus and amygdala. 60 Hz increased ($P < 0.05$) met-enkephalin or β-endorphin immunoactivities in the nuclei and areas mentioned above, and habenular nucleus, substantia nigra, parabrachial nucleus, and nucleus raphe magnus. High frequencies increased dynorphin-A release ($P < 0.05$) in spinal cord dorsal horn and most analgesia-related nuclei. It suggested that 60 Hz induced the simultaneous release of the three peptides in extensive analgesia-related nuclei and areas of the CNS, which may be contributive to optimal analgesic effects and species variation.

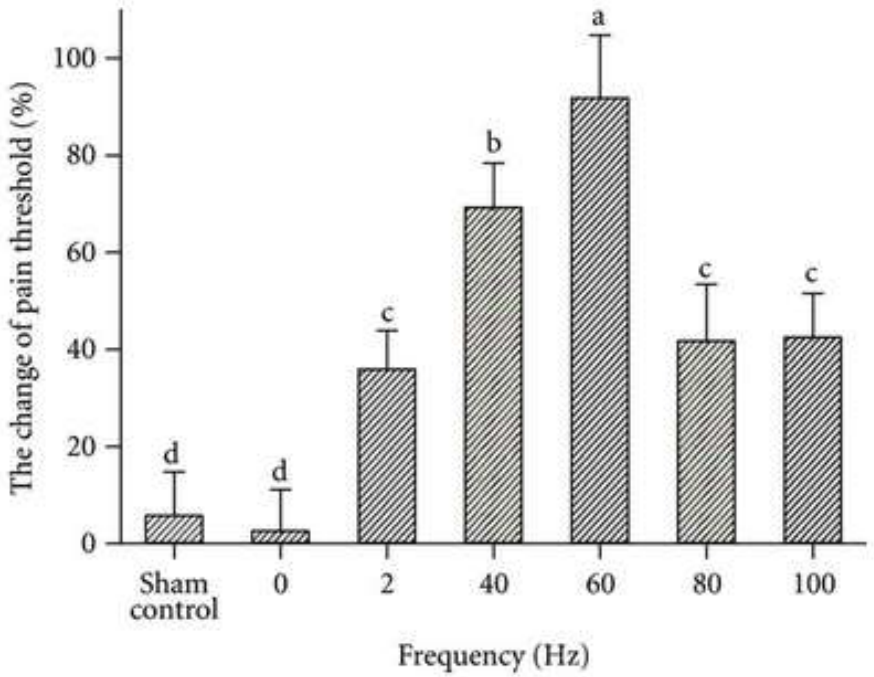


Figure 2

Pain threshold of goats stimulated by different frequencies (mean ± SD, %, $n = 7$). The same letter indicated that no significant difference in pain threshold between two frequencies ($P > 0.05$), and different letter indicated significant difference ($P < 0.05$).

2-4 Hz	50-200 Hz
Pulse duration of around 200 μsec appropriate	Pulse duration of 80–100 sec optimum
May be used locally or distally (at extrasegmental or contralateral acupoints, for example)	Used locally (for instance at ipsilateral rather than contralateral points)
Has segmental and supraspinal neurophysiological effects	Has segmental effects (large diameter fibres inhibit pain signals in small diameter fibres in the spine)
Releases β -endorphin and Met- enkephalin neurotransmitters in the brain	Releases dynorphin in the spinal cord (and other peptides in the brain)
Strong stimulation elicits deqi-like sensation	High intensity may be uncomfortable
LF does not produce muscle spasm at high intensity (in normal muscle)	HF may result in uncomfortable tetany (but may also be useful for spasticity)
Intermittent pulse trains at high intensity may result in uncomfortable tetany	Intermittent pulse trains at low intensity enhance comfort
Central effects mean analgesia has slow onset and lasts longer – 30 minutes may suffice for ongoing effect (cumulative)	Spinal mechanism means analgesia has rapid onset and does not last long – longer periods of treatment may be necessary
No 'tolerance' develops from such short treatments	Tolerance may develop from longterm use
Tends to be used more for chronic pain	Tends to be used more for acute pain
For deep, aching, throbbing pain	For superficial pain associated with inflammation
May be helpful for neuralgia and other neuropathic pain (contralateral or distal)	May be helpful for neuralgia and other neuropathic pain (local)
	May benefit peripheral (sensory) nerve injury
May be used in hyperaesthesia (especially if cutaneous)	May aggravate hyperaesthesia
Used for flaccid paralysis (stroke, Bell's palsy)	Used for spasticity

› Zhongguo Ying Yong Sheng Li Xue Za Zhi. 2002 May;18(2):128-31.

[Effect of electroacupuncture with different frequencies on neuropathic pain in a rat model]

[Article in Chinese]

Rui-Qing Sun [1], He-Chun Wang, Yun Wang

Affiliations + expand

PMID: 21179794

Abstract

Aim: Our previous studies showed that electroacupuncture (EA) could inhibited radiant heat induced pain and acute or chronic inflammatory pain in rats. In the present study, we observed whether EA with different frequencies could suppress neuropathic pain.

Methods: L5/L6 nerve ligation model was used to assess the effect of EA on neuropathic pain. Mechanical allodynia was represented by 50% withdrawal threshold, while cold-induced ongoing pain was detected by the number of paw lift in 5 min when the rat was put on a 5 degrees cold plate. Han's acupoint nerve stimulator (HANS) was connected to needles inserted into acupoints "jiaji" and "Zusanli" in both sides. The parameters were: (intensity: 0.5-1-2 mA, 10 min each; frequency 2 Hz or 100 Hz; pulse width: 0.6 ms for 2 Hz, 0.2 ms for 100 Hz).

Results: EA of both 2 Hz and 100 Hz could relieve the mechanical allodynia, where 2 Hz could induce the effect with shorter latency; they could also relieve the cold-induced ongoing pain, where the effect of 2 Hz outlasted the EA session by up to 48 h after repetitive stimulations over several weeks; a significant relieving effect on cold-induced ongoing pain could also be induced by needle insertion without stimulation.

Conclusion: EA could relieve neuropathic pain, the analgesic effect of 2 Hz EA is higher than 100 Hz EA.

DOLORE NEUROPATICO

2Hz meglio di 100Hz

Anesthesiology. Author manuscript; available in PMC 2015 Feb 1.
Published in final edited form as:
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doi: 10.1097/ALN.0000000000000101

PMCID: PMC3947586
NIHMSID: NIHMS544619
PMID: 24322588

Mechanisms of Acupuncture-Electroacupuncture on Persistent Pain

Ruixin Zhang, Ph.D.,[†,¶] Lixing Lao, Ph.D.,[•,¶] Ke Ren, Ph.D.,[‡] and Brian M. Berman, M.D.[§]

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Abstract

Go to:

In the last decade, preclinical investigations of electroacupuncture mechanisms on persistent tissue-injury (inflammatory), nerve-injury (neuropathic), cancer, and visceral pain have increased. These studies show that electroacupuncture activates the nervous system differently in health than in pain conditions, alleviates both sensory and affective inflammatory pain, and inhibits inflammatory and neuropathic pain more effectively at 2–10 Hz than at 100 Hz. Electroacupuncture blocks pain by activating a variety of bioactive chemicals through peripheral, spinal, and supraspinal mechanisms. These include opioids, which desensitize peripheral nociceptors and reduce pro-inflammatory cytokines peripherally and in the spinal cord, and serotonin and norepinephrine, which decrease spinal n-methyl-d-aspartate receptor subunit GluN1 phosphorylation. Additional studies suggest that electroacupuncture, when combined with low dosages of conventional analgesics, provides effective pain management that can forestall the side effects of often-debilitating pharmaceuticals.

4.3. Different Frequencies Induced the Release Profile of EOPs in the CNS of Goats

The veterinary practice proved that frequencies of 40 to 100 Hz are believed to be proper for analgesia of ruminants [5]. But there is a lack of studies to specify this frequency range. In the present study, the increasing magnitude of the pain threshold in goats stimulated by 60 Hz was greater than that by the frequency of 100, 80, 40, or 2 Hz. Obviously, the analgesic effect by 60 Hz was better than that by the others. It is well documented that EOPs exhibit a frequency-dependent response in EA-produced analgesia in rats [42–44]. Low frequency (2 Hz) exerts antinociceptive effects mainly by enhancing the release of ENK and β-EP, whereas high frequency (100 Hz) produces antinociceptive effects by facilitating the release of DYN [44]. However, the release profile of goats' EOPs induced by different frequencies is not clear yet. In this study, 2 Hz and 100 Hz induced M-ENK to increase significantly in ACB, SA, CAU, AMY, PVH, PAG, DR, and LC and caused β-EP to increase significantly in ACB, SA, SON, VMH, PAG, DR, LC, SOL, and AMY. 60 Hz promoted the release of M-ENK or β-EP in the measured nuclei except in ARC. Therefore, 60 Hz activated more nuclei and areas to release M-ENK and β-EP than 2 or 100 Hz did in ruminants. EOPs participate in extensively physiological modulations. Their roles in EA-induced analgesia are verified by microinjecting EOP and its antagonist or antibody into some nuclei in rats. Levels of M-ENK in ACB [45], SA [46], CAU [47], PAG [48], or DR [48], AMY [49], and SN [50, 51] were proved to affect EA-induced analgesic effect. Either were the levels of β-EP in ACB [52], SA [46], CAU [53], PAG [54], DR [55], LC [56], NRM [56], HB [57], or ARC [58]. Our results showed that EA elevated the levels of M-ENK or β-EP in these nuclei of goats. Besides, we also found that M-ENK or β-EP immunoactivities increased in LC, PBN, VMH, SOL, SON, and PVH. It is seen that high frequencies can induce the simultaneous release of M-ENK or β-EP in a broader spectrum of nuclei in ruminants than in rats.

Role of DYN-A in EA-induced analgesia in the brain is controversial. Han and Xie [59] found that DYN-A did not produce EA-induced analgesia when it was microinjected into the cerebral ventricle of rats. Zhang et al. [60] made the opposite conclusion with DYN-A microinjection. In this study, EA induced DYN-A to increase in many analgesia-related nuclei in the CNS. The DYN-A immunoactivities induced by 100 Hz were significantly different from those by 60 Hz in the measured nuclei and areas except VMH and GI. It is shown that VMH and GI in the release of DYN-A were sensitive to both 100 Hz and 60 Hz. Whether the release of DYN-A takes part in EA analgesic modulation in the CNS of ruminants needs to be studied.

Release of DYN-A induced by 100 Hz in the SCD can produce a potent analgesic effect in rats [61]. In this study, EA of high frequencies induced DYN-A to increase in the SCD. This increase was in accordance with that of Han [61]. However, the increase in β-EP immunoactivities of the SCD and its correlation with the pain threshold values were different from the report of some studies in rats [62]. This discrepancy might be caused by the variation of the species or the studied spinal fragment. In this study, SCD samples were taken from the spinal cord adjacent to the medulla oblongata rather than the lumbar spinal cord.

Studies in rats showed that stimulation at 2 Hz and 100 Hz alternatively elicited the full release of M-ENK, β-EP, and DYN-A in the CNS, which produced a synergistic effect stronger than that at 2 Hz or 100 Hz alone [63]. Veterinary practice verifies that the mode of alternating stimulation with low and high frequencies can also induce more potent analgesic effect. However, the releasing modalities of EOPs which are induced by this stimulation mode in ruminants are worthy to be investigated.

4.4. Animal Species Variation of EA-Induced Analgesia

During the last decades, our understanding of how the brain processes acupuncture analgesia has undergone considerable development. But the major results of related researches are primarily obtained from small experimental animals such as rats, rabbits, dogs and monkeys. There are many factors which affect the EA-induced analgesic effect. Besides frequencies and acupoints, species-specificity has an important impact on EA analgesia. Studies showed that EA in combination with anesthetics led to reduce the dosage of the anesthetics in human, rat, and goat by 45%–55%, 50%–60%, and over 75%, respectively [12, 13]. Obviously, ruminants should be optimal model animals for research on the mechanisms of EA-induced analgesia. Our results showed that high frequencies motivated the simultaneous release of the three EOPs in the extensive analgesia-related nuclei and areas in the CNS, which may be conducive to explain why EA induced more potent analgesia in ruminants than in rats.

5. Conclusion

60 Hz was an optimal frequency for acupuncture-induced analgesia in goats and induced the simultaneous release of M-ENK, β-EP, and DYN-A in most of analgesia-related nuclei and areas in the CNS.

Acknowledgments

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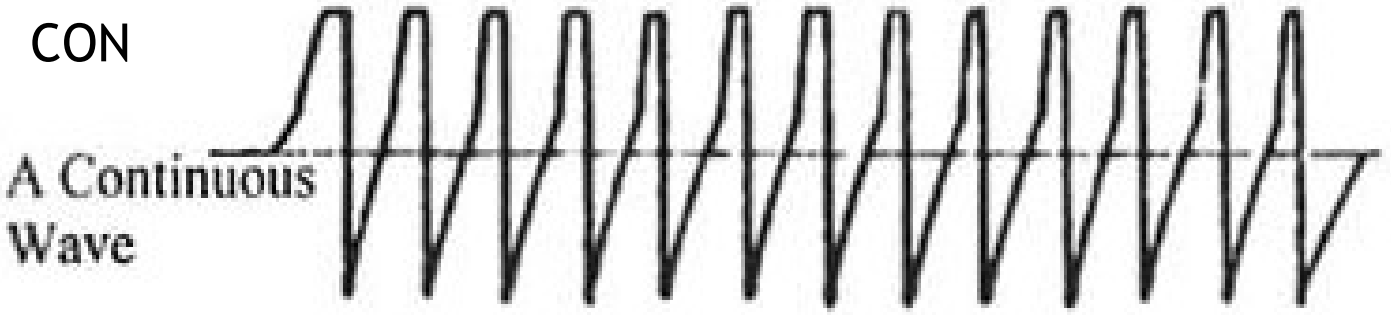
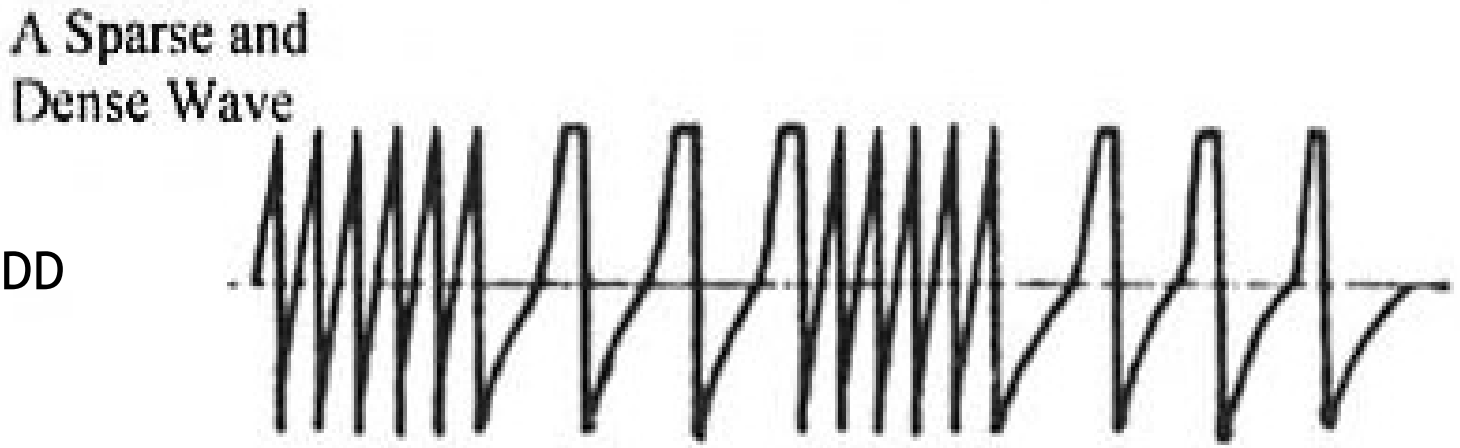
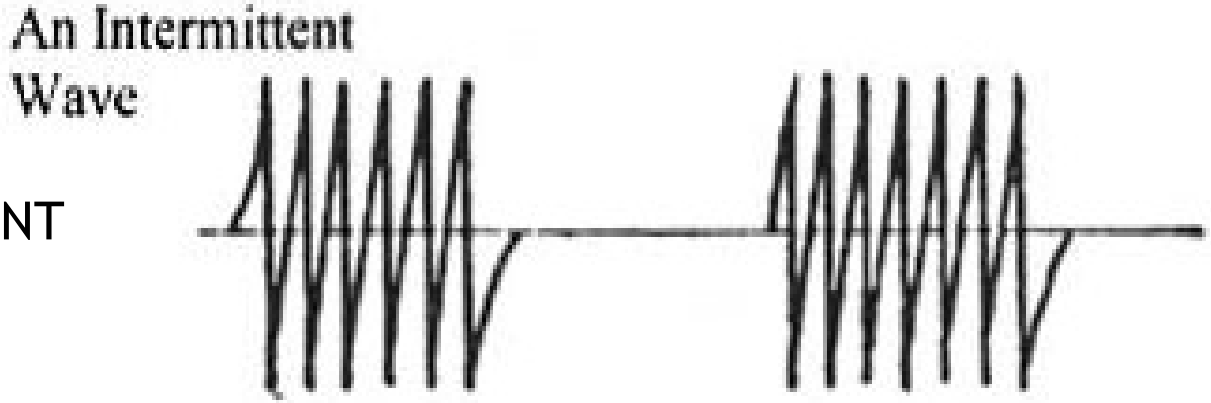
FREQUENZE ALTERNATIVE

CON





DD



INT

Table 3 Survey of various studies which examine EA and TENS and consequent nerve type activation.

Study	Type of stimulation	Pulse durations	Nerves involved
Bouhassira *et al* 1986	EA	2 ms	Aδ: 0.25-0.5 mA C: 1-2 mA
Green *et al.* 1995 *	EA	0.25 ms	Aδ: 2.5 mA C: 25 mA
Kashiba and Ueda 1991	EA	0.1 ms	10 V: immunohistochemistry – release of SP and CGRP
Men and Matsui 1994	TENS	0.1 ms	Aβ : 0.219 mA Aδ : 0.413 mA C : 2.1 mA
Okada *et al.* 1996	EA	2 ms	50 mA – supramaximal compound action potential for C-fibres
Toda 1978	EA	0.1 ms	T=threshold for Aβ = 0.053 mA 4xT=Aδ threshold

Note di utilità pratica:

E’ molto importante escludere tutti i casi di contro-indicazione all’uso di correnti (pacemakers ecc.)

1 La stimolazione INTERMITTENTE HIGH LOW FREQUENCY è la più efficace nel dolore

2 Le stimolazioni HIGH sono utili in craniopuntura, anestesia, sindromi wei, paralisi

3 Le frequenze attorno ai 2 Hz e attorno ai 100 Hz inducono selettivamente (finestra di Adey,) il rilascio di dinorfine ed encefaline.

4 Dal 1973 grazie ad autori vari (Campbell e Taub, Halley e Torebiark) sappiamo che :

a) 100 hz e 20-30 hz inducono riduzione della sensibilità nervosa sulle fibre A delta ben mielinizzate e a conduzione rapida
b) 5-10 Hz riducono la sensibilità delle fibre C, (non mielinizzate) a conduzione lenta

5 usare FREQUENZE dense disperse (modulate) o discontinue (con pause)

Le aree focali algiche sono normalmente caratterizzate da un elevazione della temperatura di 0.2-0.6 gradi Celsius e possono mostrare **una resistenza elettrica ampiamente diminuita,** fino ad 1/100 delle aree circostanti.

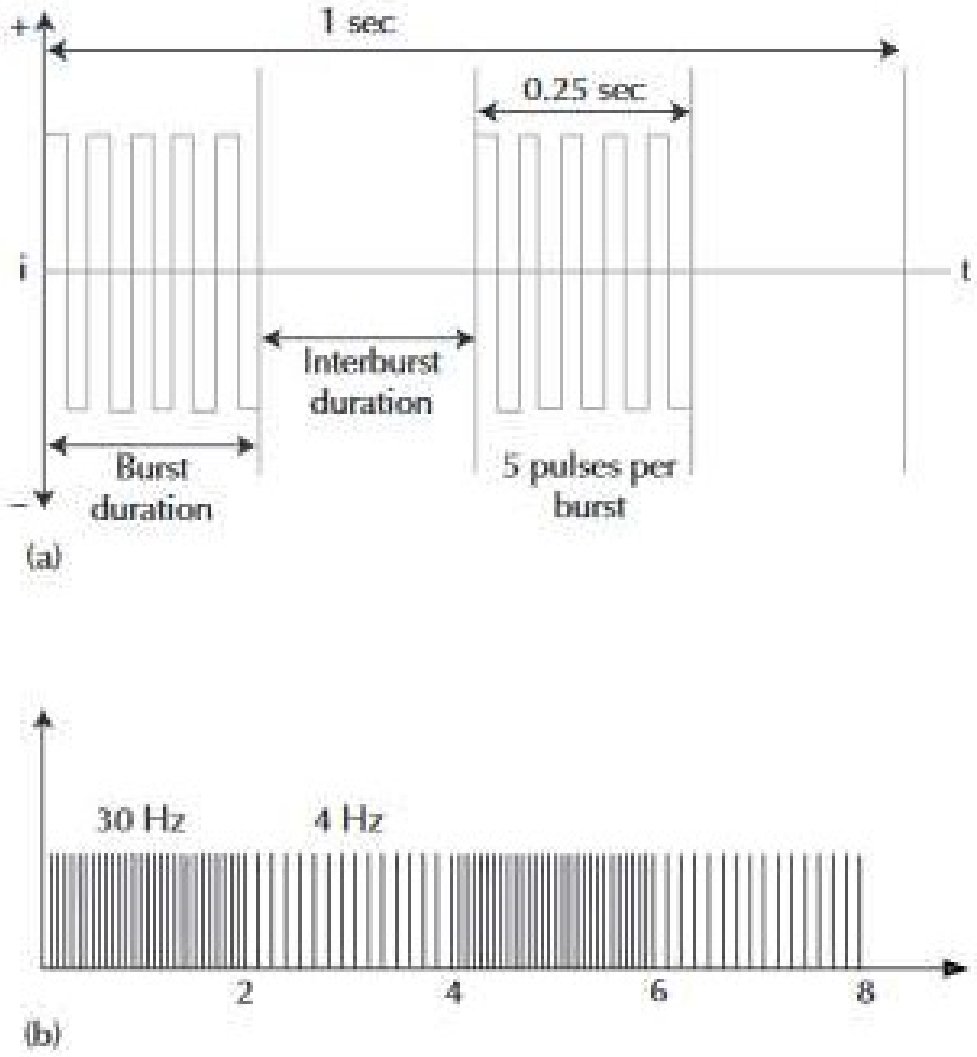


Fig 2. (a) 2 Hz intermittent (or 'burst') current, with an internal frequency of 20 Hz; (b) Dense-disperse mode (4/30 Hz DD), repeating every 4 seconds. (Adapted from Mayor 2007, with permission.)

Altro esempio di DD

Note di utilità pratica:

Secondo gli studi sostenuti dalla National Natural Science Foundation of China e da una sovvenzione del NIDA, USA le applicazioni pratiche più semplici sono le seguenti:

La bassa frequenza (2 Hz) è in grado di accelerare il rilascio di encefaline ed endorfine mentre la stimolazione ad alta frequenza (100 Hz) nell'uomo e (30 Hz) nel ratto e nel coniglio) è più efficace nell'accelerare il rilascio di dinorfine nel midollo spinale.

Il parametro migliore per il controllo del dolore è una modalità di stimolazione densa e dispersa (DD) in cui 2 Hz sono alternati a 100 Hz, ciascuno della durata di 3 secondi.

Con questo parametro speciale, tutti e 3 i tipi di peptidi oppioidi vengono rilasciati contemporaneamente, producendo così un effetto analgesico sinergico. Ciò è stato dimostrato non solo nei ratti ma anche nell'uomo.

Gli spasmi muscolari causati da lesioni spinali sono stati trattati meglio con una stimolazione a 100 Hz che rilascia selettivamente la dinorfina, con conseguente soppressione del segnale motorio e miglioramento degli spasmi muscolari.

RIATTIVAZIONE DEI CIRCITI DINORFINA-DIPENDENTI PER IL TRATTAMENTO DELLE «WITHDRAWAL SYNDROMES» DA OPPIOIDI.

- 100-Hz EA or 100 Hz was very effective in ameliorating the morphine withdraw syndrome in rats and humans.
- Methods: Rats were made dependent on morphine by repeated morphine injection (5—140 mg/kg bid X 8 days)
- Evidences: A marked increase in tail flick latency was observed: The effect of 100 Hz EA could be blocked by naloxone at 20 mg/kg, but not at 1 mg/kg.
- **Conclusion:**

1. 100-Hz EA induced analgesia observed in morphine dependent rats is mediated by kappa-opioid receptors.
2. a significant decreases of the concentration of dynophin A (1-17) immunoreactivity was observed in the spinal perfusate in morphine-dependent rates that could be bought back to normal level by 100-Hz EA
3. 100-Hz EA was every effective in suppressing NX= precipitated morphine withdrawal syndrome.
4. The effect of EA could be prevented by intrathecal administration of nor-BNI (2.5 micrograms/20microliters, a kappa- opioid receptor antagonist, or dynophine A (1-13) antibodies administered 10 min prior to EA
5. The steady state spinal dynophin release is low in morphine-dependent rates, it can be activated by 100-Hz EA stimulation, which may be responsible for eliciting an analgesic effect and ameliorating morphine withdrawal syndrome.

Wu LZ, Cui CL, Tian JB, Ji D, Han JS, Brain Res, 1999 Dec 18;851(1-2):209-6

- Applied electro-acupuncture to the spinal nerve root by inserting needles under x-ay imaging in 3 cases of radicular sciatica
- In all 3 cases, symptoms were markedly reduced immediately after treatment.
- Sustained effect was noticeably longer than that of spinal nerve blocks in 2 of the pervious cases.
- Suggest the descending inhibitory control, inhibitory control at the spinal level. Inhibition of potential activity by hyper-polarization of nerve endings or changes in nerve blood flow may be involved in the mechanism of the EA.
- Results suggest the EA to the spinal nerve root may be superior to lumbar spinal nerve block when it is applied appropriately.

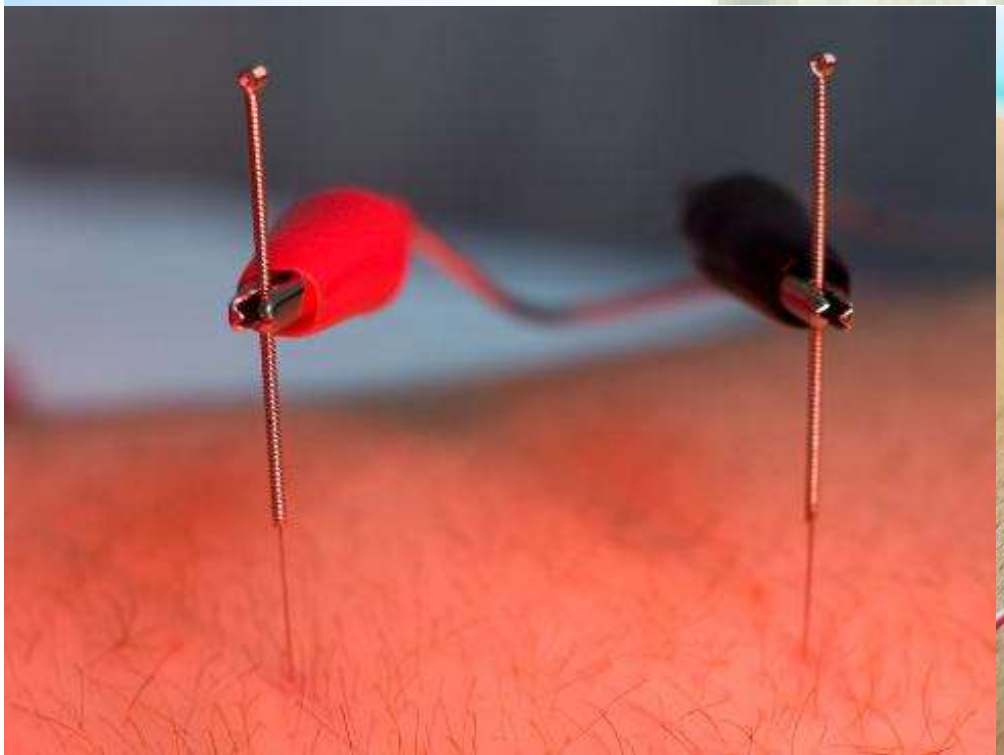
Acupuncture in Medicine 2005 March; 23(1):27-30

Electro-acupuncture direct to spinal nerves as an alternative to selective spinal nerve block in patients with radicular sciatica.

- a cohort study by **Motohiro Inoue**, Tatsuya Hojo, Tadashi Yano, Yasukazu Katsumi

INFORMAZIONI DI BASE

NO



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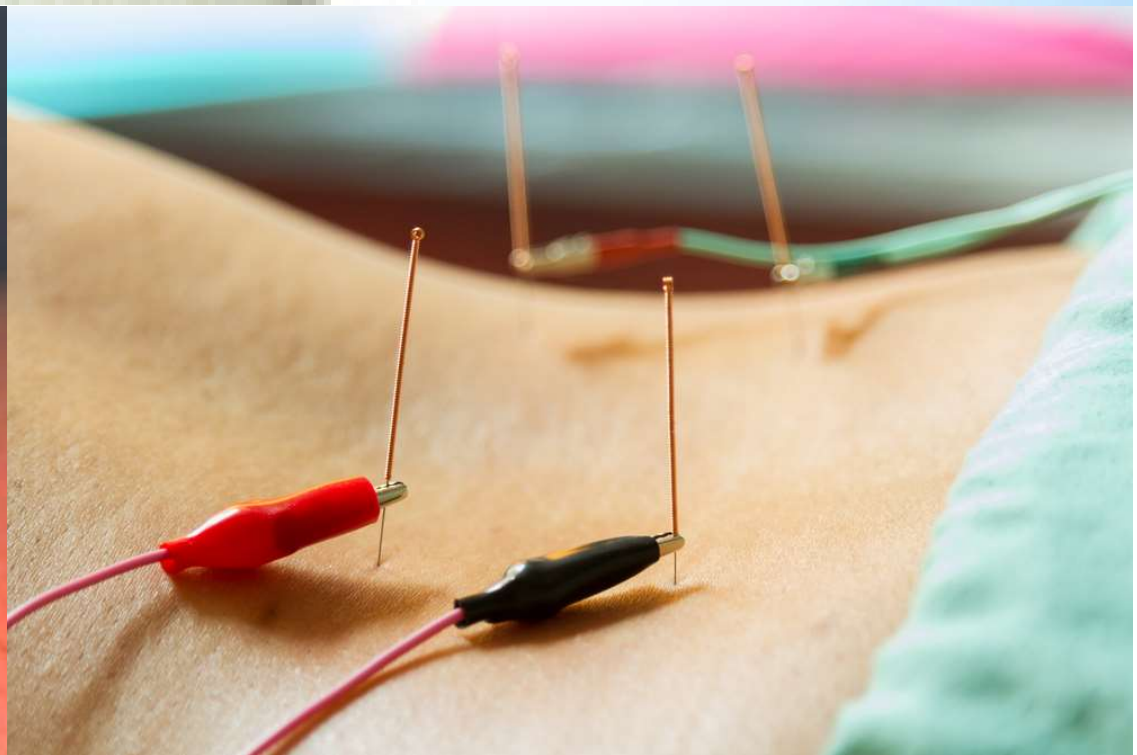


Funzionamento del WQ-6F

Regolazione delle forme d'onda.

Ampiezza: Esistono due tipi, a seconda della selezione: interruttore ad ampiezza costante (CA) o a modulazione di ampiezza (AM).

Frequenze: Sono controllate dalle manopole e dagli interruttori, come come segue:
f1: frequenze fisse
f2: frequenze variabili

m: moltiplicatore

Frequenza di uscita F = mf

Le frequenze alternative di una forma d'onda variabile comprendente due frequenze sono controllate dalla manopola Frequenza alternativa (F at).

Per i principianti, collegare l'altoparlante di monitoraggio alla presa di uscita e praticare la procedura sopra descritta per familiarizzare con le diverse combinazioni di forme d'onda e frequenze di uscita. L'altoparlante di monitoraggio può essere utilizzato anche per controllare le prese di uscita e i cavi

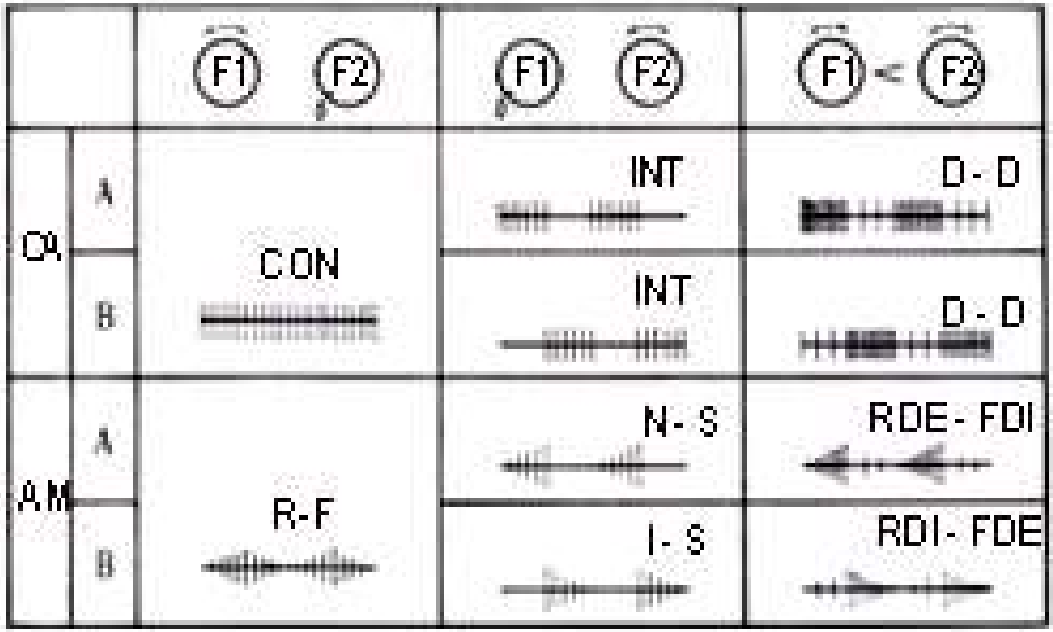
Output	Section A: 1, 2 , 3 , 4 channels. Both 1, 2 and 3 , 4 can be connected in parallel into one channel. Section B : 5 , 6, 7 channels. These three channels can be connected in series into one channel as a needleless therapy output.
Waveforms type series	There are 8 patterns: continuous, intermittent, dense - disperse, rise - fall (undulatory), normal sawtooth, inverse sawtooth, rise dense - fall disperse, fall dense - rise disperse (refer to table 1) . The alternating frequency of every variable wave form varies from 14 -25c/min with continuous adjustment.
Amplitude of impulse	The electric resistance of the human body under needling is about 250 Ohm - the peak current of the impulse is not lower than 40mA(10V)
Waveform type	Asymmetrical bipolar impulse

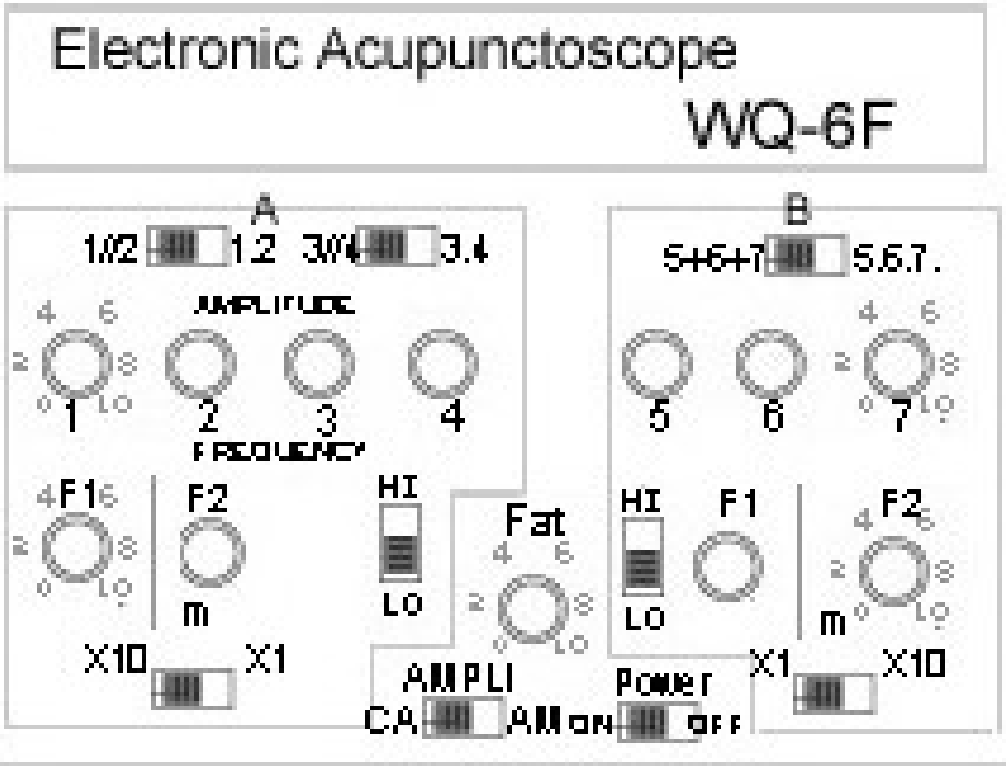
Frequencies and width of impulse

Section	A		B
Multiplier M	x 10	x 1	x 10
Frequency F (c/s)	0 - 200	0 - 20	0 - 200
Width T (μs)	400 - 600	600 - 800	200 - 300

CON: continuous (disperse & dense)
D - D: dense - disperse
N - S: normal saw tooth
RDE - FDI: rise dense - fall disperse
INT: intermittent
R -F: rise - fall (undulatory)
I -S: inverse saw tooth
RDI -FDE: rise disperse - fall dense

OPERATION DIAGRAM OF WAVEFORMS





A: Section A-- B: Section B
F1: Fixed frequencies
F2: Variable frequencies
m: Multiplier
Hi: High amplitude
Lo: Low amplitude
CA: Constant amplitude
AM: Amplitude modulation
1,2;3,4;5,6,7: Channels work separately
1//2;3//4: parallel connection
5+6+7: series connection
Fat: alternative frequencies of variable waveform

AS SUPER 4 digital

CARATTERISTICHE TECNICHE

forma d'onda:	rettangolare bifasica
tipo stimolazione	continua- denso dispersa- modulazione di frequenza - modulazione di ampiezza - burst - random. frequenze di nogier
frequenza:	1-120 hz
intensità:	max 20 mA
ampiezza impulso:	50 - 300 µs
alimentazione	rete o batterie microstilo (incluse)
dimensioni	17,5 x 11 x 5,5 cm
peso	121 g (esclusobatterie)

Program group

Select a program group (1.0 to 9.0) by pressing the **P** key.
To scroll through the program groups, press the **P** key as often as necessary until you have selected the program group of your choice.
Once you have reached the last program group, you will return to the first one.

Subprogram

Select a subprogram by pressing the **E** key.
To scroll through the subprograms, press the **E** key as often as necessary until you have selected the subprogram of your choice.
Once you have reached the last subprogram, you will return to the first one.

Example: Selecting the program 2.2 (Han 3)

Turn ON the device by pressing the ● key.
Press the **P** key until 2.0 is shown on the upper left side of the display. You have selected the program group no. 2.

Press the **E** key until 2.2 is shown on the upper left side of the display. You have now selected the subprogram no. 2.2.
The stimulation can then be started by increasing the intensity with the ▲▼ keys of each connected channel.

Description of the programs

Program no.	Name	Fixed parameters	Free parameters for own settings
1	**Standards** **Continuous stimulation with one frequency and one pulse width**		
1.0	Low frequency	2 Hz, 210 µs, 30 min	1-120 Hz, 50-300 µs, 10-90 min
1.1	High frequency	100 Hz, 120 µs, 30 min	1-120 Hz, 50-300 µs, 10-90 min
1.2	Gentle low frequency	2 Hz, 150 µs, 30 min	1-120 Hz, 50-300 µs, 10-90 min
1.3	Gentle high frequency	80 Hz, 70 µs, 30 min	1-120 Hz, 50-300 µs, 10-90 min
2	**Han stimulation (according to Prof. Han)** **These programs run with 2 different phases (different frequencies and pulse widths) which alternate every few seconds.**		
2.0	Han stimulation 1	Alternating 2 Hz, 210 µs, 3 s ↔ 100 Hz, 120 µs, 3 s, 30 min	/
2.1	Han stimulation 2	Alternating 2 Hz, 210 µs, 4 s ↔ 100 Hz, 120 µs, 2 s, 30 min	/
2.2	Han stimulation 2	Alternating 2 Hz, 210 µs, 2 s ↔ 100 Hz, 120 µs, 4 s, 30 min	/

3	**Free Han stimulation: free parameter settings** **These programs run with 2 different phases (different frequencies and pulse widths) which alternate every few seconds.**		
3.0	Free Han stimulation 1	Alternating 2 Hz, 210 µs, 3 s ↔ 100 Hz, 120 µs, 3 s, 30 min	Alternating F1: 1-120 Hz, 50-300 µs for 3 s F2: 1-120 Hz, 50-300 µs for 3 s 10-90 min
3.1	Free Han stimulation 2	Alternating 2 Hz, 210 µs, 3 s ↔ 100 Hz, 120 µs, 3 s, 30 min	Alternating F1: 1-120 Hz, 50-300 µs for 3 s F2: 1-120 Hz, 50-300 µs for 3 s 10-90 min
3.2	Free Han stimulation 3	Alternating 2 Hz, 210 µs, 3 s ↔ 100 Hz, 120 µs, 3 s, 30 min	Alternating F1: 1-120 Hz, 50-300 µs for 3 s F2: 1-120 Hz, 50-300 µs for 3 s 10-90 min

Programmi custom

Program no.	Name	Fixed parameters	Free parameters for own settings
4	**Frequency modulation (FM) - The frequency is automatically modified within a specific range: Min frequency - Max frequency - Min frequency The pulse width is constantly adapted depending on the frequency.**		
4.0	Frequency modulation 1	60 Hz ↔ 120 Hz, 120 µs ↔ 100 µs in 60 s, 30 min	/
4.1	Frequency modulation 2	2 Hz ↔ 120 Hz, 210 µs ↔100 µs in 60 s, 30 min	/
4.2	Frequency modulation 3	2 Hz ↔ 15 Hz, 210 µs ↔ 200 µs in 60 s, 30 min	/
5	**Pulse width modulation - The program uses a fixed frequency but the pulse width is automatically modified within a specific range: Min pulse width - Max pulse width - Min pulse width**		
5.0	Pulse width modulation 1	2 Hz, 100 µs ↔ 210 µs in 120 s, 30 min	/
5.1	Pulse width modulation 2	15 Hz, 100 µs ↔ 210 µs in 120 s, 30 min	/
5.2	Pulse width modulation 3	80 Hz, 60 µs ↔ 150 µs in 120 s, 30 min	/

Table 3 Survey of various studies which examine EA and TENS and consequent nerve type activation.

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Bouhassira *et al* 1986	EA	2 ms	Aδ: 0.25-0.5 mA C: 1-2 mA
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Okada *et al.* 1996	EA	2 ms	50 mA – supramaximal compound action potential for C-fibres
Toda 1978	EA	0.1 ms	T=threshold for Aβ = 0.053 mA 4xT=Aδ threshold

> Chin J Integr Med. 2021 Jun;27(6):446-454. doi: 10.1007/s11655-021-2865-0. Epub 2021 Mar 4.

Wide Pulse Width Electroacupuncture Ameliorates Denervation-Induced Skeletal Muscle Atrophy in Rats via IGF-1/PI3K/Akt Pathway

Xiao-Qing Huang [1], Jin-Sen Xu [1 2], Xiao-Ran Ye [1 2], Xuan Chen [3]

Affiliations + expand

PMID: 33660125 DOI: 10.1007/s11655-021-2865-0

Abstract

Objective: To evaluate the effect of the pulse width of electroacupuncture (EA) in the treatment of denervation-induced skeletal muscle atrophy in rats and examine the role of insulin-like growth factor 1 (IGF-1)/phosphatidylinositol 3-kinase (PI3K)/Akt signaling pathway during EA.

Methods: Sciatic nerve functional index (SFI), muscle wet weight and the cross-sectional area (CSA) of the gastrocnemius muscle were analyzed after treatment in model rats with EA of various pulse widths (0.5, 50, 100 and 200 ms). The apoptosis index (AI) and paired box (PAX)3 and PAX7 protein expression were also determined. Further, the mRNA and protein expressions of components of IGF-1/PI3K/Akt pathway and their downstream targets were determined, along with the inhibiting effect of the pathway with a PI3-specific inhibitor.

Results: EA with a pulse width of 200 ms was found to have the best effect with regard to increasing SFI, CSA and muscle weight, decreasing AI, and increasing the expression of PAX3 and PAX7. The IGF-1/PI3K/Akt pathway was found to be activated by denervation, although the downstream forkhead box O (FoxO) pathway was not suppressed by its activation. The PI3K/Akt pathway and its downstream molecule mammalian target of rapamycin (mTOR) were up-regulated further by EA to promote muscle protein synthesis. Meanwhile, the expressions of downstream FoxO and F-box protein 32 (ATROGIN-1) were down-regulated to reduce protein degradation.

Conclusions: EA with 200-ms pulse width was found to have a more significant effect than 0.5-ms EA. The positive effects of EA disappeared after inhibition of the PI3K/Akt pathway.

9	**Programs according to Peter De Vilder and Lieven Wauters TSEA group: Traditional and Scientific approach to Electro-Acupuncture**		
9.0	TSEA standard high frequency (for non opioid pain treatment)	80 Hz, 180 µs, 20 min	/
9.1	TSEA standard low frequency (for opioid pain treatment)	2 Hz, 180 µs, 20 min	/
9.2	Sensitive high frequency (pain treatment in sensitive regions, eg. face, scalp)	80 Hz, 60 µs, 20 min	/
9.3	Burst sensitive (pain treatment in sensitive regions, eg. face, scalp)	100 Hz, (60 µs) impulse packages for 0.25 s, then 0.25 s pause (2 Hz), 20 min	/
9.4	Frequency modulation (alternative to 9.0 to avoid accommodation)	20 ↔ 100 Hz in 8 s, 180 µs, 20 min	/
9.5	Hypertonic (for spastic muscles, contractions of the muscles)	100 Hz, 300 µs, 20 min	/
9.6	Edemas	4 Hz, 180 µs, 20 min	/
9.7	Energetic tonification after TSEA	3 sequences: Seq. 1: 2 Hz 180 µs, 7 min Seq. 2: 4 Hz 180 µs, 7 min Seq. 3: 6 Hz 180 µs, 7 min 21 min in total	/
9.8	Energetic sedation after TSEA	3 sequences: Seq. 1: 80 Hz 180 µs, 5 min Seq. 2: 100 Hz 180 µs, 5 min Seq. 3: 120 Hz 180 µs, 5 min 15 min in total	/

ALCUNI ORGANI SONO PIU SENSIBILI ALLE FLUTTUAZIONI ELETTRICHE

Auton Neurosci. 2003 Oct 31;108(1-2):50-6.

Ovarian blood flow responses to electro-acupuncture stimulation at different frequencies and intensities in anaesthetized rats.

Stener-Victorin E[1], Kobayashi R, Kurosawa M.

Author information

Abstract

The purpose of the present study was to investigate changes in ovarian blood flow (OBF) in response to electro-acupuncture (EA) stimulation at different frequencies and intensities in anaesthetized rats. Whether the ovarian sympathetic nerves were involved in OBF responses was elucidated by severance of the ovarian sympathetic nerves. In addition, how changes in the systemic circulation affected OBF was evaluated by continuously recording blood pressure. OBF was measured on the surface of the left ovary using laser Doppler flowmeter. Acupuncture needles with a diameter of 0.3 mm were inserted bilaterally into the abdominal and the hindlimb muscles and connected to an electrical stimulator. Two frequencies-2 Hz (low) and 80 Hz (high)-with three different intensities-1.5, 3, and 6 mA-were applied for 35 s. Both low- and high-frequency EA at 1.5 mA and high-frequency EA at 3 mA had no effect on OBF or mean arterial blood pressure (MAP). Low-frequency EA at 3 and 6 mA elicited significant increases in OBF. In contrast, high-frequency EA with an intensity of 6 mA evoked significant decreases in OBF, followed by decreases in MAP. After severance of the ovarian sympathetic nerves, the increases in the OBF responses to low-frequency EA at 3 and 6 mA were totally abolished, and the responses at 6 mA showed a tendency to decrease, probably because of concomitant decreases in MAP. The decreased OBF and MAP responses to high-frequency EA at 6 mA remained after the ovarian sympathectomy, and the difference in the responses before and after ovarian sympathectomy was nonsignificant. In conclusion, the present study showed that low-frequency EA stimulation increases OBF as a reflex response via the ovarian sympathetic nerves, whereas high-frequency EA stimulation decreases OBF as a passive response following systemic circulatory changes.

PARESI FACCIALE (Bell's Palsy)

Poichè l'agopuntura è un mezzo di stimolazione meccanica dei tessuti è fondamentale considerare la qualità dei tessuti stessi da un punto di vista fisico-chimico. A maggior ragione con l'uso dei metodi di elettrostimolazione le componenti fisiche chimiche del tessuto influenzano l'effetto del trattamento.

EVITARE NELLE NEVRALGIE TRIGEMINALI TUTTI GLI STIMOLI CONTINUI (DC) O DENSI, DENSI DISPERSI

PARESI FACCIALE (Bell's Palsy)

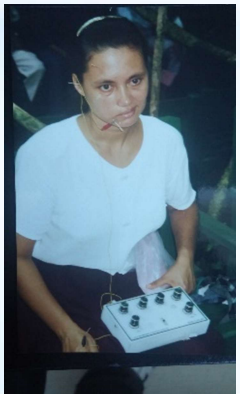
PARALISI DEL FACCIALE: non utilizzare l'elettroagopuntura nella fase iniziale, in quanto può provocare spasmi, può essere utilizzata nella fase successiva

Yang LX, Zhou XG [Flexible application of electroacupuncture in treatment of peripheral facial paralysis]. Chinese Acupuncture and Moxibustion (Zhongguo Zhenjiu). 2004; 24(11): 803-4

Wang TM [Clinical observations on the treatment of peripheral facial paralysis by electroacupuncture with intermittent waves]. Shanghai Journal of Acupuncture and Moxibustion (Shanghai Zhenjiu Zazhi). 2004; 23(1): 13-14

VERSO LA FINE DELLA TERAPIA ST6 E ST 4 con 2 e 5 hz DD per indurre stimolo trofico.

IN QUESTI RCT LA CW-DD HA DATO RISULTATI SIGNIFICATIVAMENTE MIGLIORI RISPETTO ALLA SOLA CW. Questo conferma la necessità costante di stimoli fasici.



Per la chiusura incompleta dell'occhio: *Taiyang* (punto extra) e *Zanzhu* (BL-2) o *Sibai* (ST-2). Per arricciare il naso: *Yingxiang* (LI-20), *Quanliao* (SI-18) *Xiaguan* (ST- 7). Per gonfiare le gote: *Dicang* (ST-4) e *Jiache* (ST-6) o *Xiaguan* (ST-7 e *Di-cang* (ST-4). Per la deviazione del filtrum: *Heliao* (LI- 19) e *Dicang* (ST-4). Parametri utilizzati per la paralisi del facciale: onda continua con fre-quenza 30 Hz.

SINDROME DEL TUNNEL CARPALE

BASE: PC6, PC7 + PUNTI IN CORRISPONDENZA DEI METAMERI C7

PARAMETRI ELETTRICI: 10 Hz DD

Am J Chin Med. 2014;42(2):303-14. doi: 10.1142/S0192415X14500207.

Clinical effectiveness of acupuncture for carpal tunnel syndrome.

Ho CY[1], Lin HC, Lee YC, Chou LW, Kuo TW, Chang HW, Chen YS, Lo SF.

Author information

Abstract

Acupuncture and electroacupuncture treatments of symptomatic carpal tunnel syndrome (CTS) may improve symptoms and aid nerve repair as well as improve sensory and motor functions. However, limited evidence is available regarding the effects of these treatments based on comprehensive evaluation methods. This research completed the treatment and evaluation of 26 patients with confirmed CTS. Participants were divided into two treatment groups based on a modified neurophysiological grading scale. Of the total number of participants, 15 received acupuncture and 11 received electroacupuncture on both upper limbs. Acupoints were PC-7 (Daling) and PC-6 (Neiguan) along the pericardial meridian compatible with the median nerve tract. The treatment program consisted of 24 sessions of 15 min duration over 6 weeks. After electroacupuncture treatments, symptom severity was evaluated using the short clinical questionnaire by Lo and Chiang, which indicated improvements in the respective symptom severity score. After the acupuncture treatment, grip strength in the major symptomatic side in CTS patients could be significantly increased. Electrophysiology evaluation likewise indicated a significant increase in the distal median motor amplitude of the palm-wrist segment. In addition, Tinel's sign significantly decreased in the major symptomatic side. Our findings indicated that electroacupuncture could improve symptomatology, while acupuncture could exert positive therapeutic effects for CTS patients, as evidenced by improved symptomatology, grip strength, electrophysiological function, and physical provocation sign.

SINDROMI FLACCIDE (WEI):

▫ *PARAPLEGIA*: primo gruppo: *Biguan* (ST-31), *Futu* (ST-32), *Zusanli* (ST-36), e *Jiexi* (ST-41), secondo gruppo: *Zhibian* (BL-54), *Chengfu* (BL -36), *Yin-men* (BL-37), *Weizhong* (BL-40), *Chengshan* (BL-57), e *Kunlun* (BL-60).

CORRENTE: DENSA DISPERSA + INT A 100HZ

▫ *EMIPLEGIA:* arti superiori *Jigu* (LI-16), *Jianyu* (LI-15), *Jianliao* (TR-14),*Binao* (LI-14), *Quchi* (LI-11), *Waiguan* (TR-5), *Shousanli* (LI-10) e *He-gu* (LI-4).

ARTI INFERIORI: *Huantiao* (GB-30), *Biguan* (ST-31), *Zusanli* (ST-36), *Yanglingquan* (GB-34), *Sanyinjiao* (SP-6) e *Jiexi* (ST-41).

LOMBOSCIATALGIE

Gli elementi tipici del dolore, l'irradiarsi del sintomo ed altri segni devono indicare che tipo di trattamento applicare. Le alte frequenze riducono il sintomo algico.

GB-30, BL-54, GB-34, GB-39, BL-37e BL-40

PARAMETRI: 2 hz INT

IN ASSENZA DI REFERTI DI IMAGING CONCLUSIVI PER CAUSE DISCALI è molto importante valutare le componenti:

1 Intestinali
2 Piriformi
3 Renali- (ileopsoas)
4 Uterine-prostatiche
5 Depressive (ormonali)
6 Termiche (ipotermia)

Acupuncture points:

GB 25, UB-23, UB-25, UB-27, UB-29
Ashi points on the hwatuojiaji

Electrical Stimulation:

2 Hz, for 15 to 20 minutes or maximum tolerable

Treatment Protocol:

Severe pain: three times a week for two weeks, then reduce to two times a week

Chronic pain: once a week for 6 week, followed by once a month.

-Cheng, Xinnong. Chinese Acupuncture and Moxibustion. 5th ed. Beijing: Foreign Languages Press, 2004

ERNIA LOMBARE

GB-39, BL-28, BL-40 E HUATUOJIAJI

PARAMETRI: DD 1-40 Hz DEBOLE INTENSITA’

FRATTURE

Intensità molto bassa!!

Radiograph of fracture at reduction

Radiograph of fracture at 12 weeks

Acupuncture points:

- **Humerus fracture: Li-15, Li-11**
- **Femoral fracture: Sp10, St-31**
- **Use points at the center of the fracture and at the ends of the fracture zone**

Electrical Stimulation:

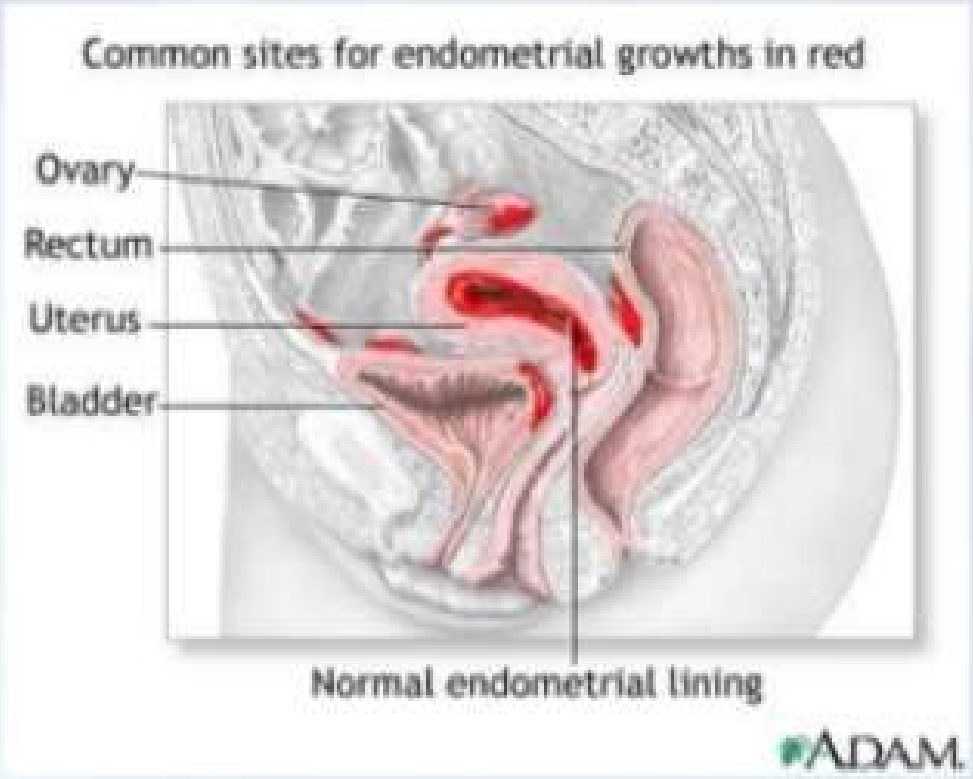
High-low frequency intermittent for 30 minutes per session.

Treatment Protocol:

Once every other day for 10 sessions, followed by twice a week for four weeks, then reduce to once a week for six weeks.

-Mayor, David. Electro acupuncture. 2007, Spain: Elsevier Ltd.

DISMENNOREA



Acupuncture Points:

- GV-4 (guanyuan)
- St-29 (guilai)
- SP-6 (sanyinjiao)
- Liv-3 (taichong)
- SP-8 (diji)

Electrical Stimulation:

High-low frequency with continues stimulation for 15-20 minutes per session.

Treatment Protocol:

Once a week or increased frequency one week before menstruation.

Mayor, David. Electro acupuncture. 2007, Spain: Elsevier Ltd.

DOLORE ADDOMINALE POST OPERATORIO

- **Acupuncture points:**
  St-25 (tain shu), St-36, bilateral
  Ren 6, Ren 10 and auricular points

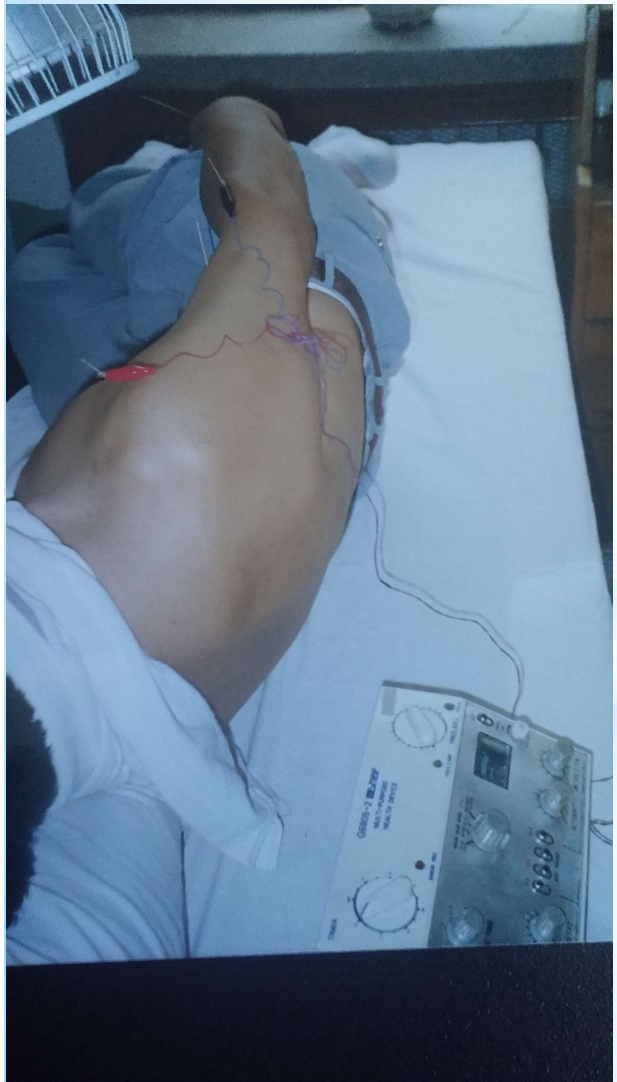
- **Electrical Stimulation:**
  8-10 hz and continues frequency for 20-30 minutes.

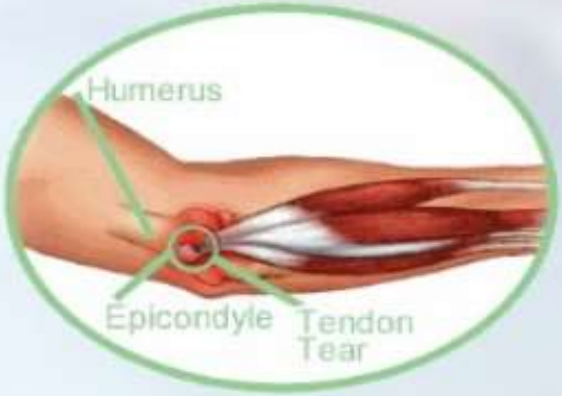
- **Treatment Protocol:**
  Once a day or twice a day for the severe cases that followed withdraw of anesthesia.

-Mayor, David. Electro acupuncture. 2007, P 255, Spain: Elsevier Ltd.

CERVICOBRACHIALGIA

Brachialgia e epicondilite rispondono bene allo stimolo DD e TDP.





Acupuncture points:

- Li-15 (jian yu)
- TB-14, (jian liao)
- SI-9, (jian zhen)
- TB-13 (nao hui)
- Li-14 (binao)
- Li-11 (quchi)

Electrical Stimulation:

High and low frequency intermittent for 20 minutes with infrared therapy.

Treatment Protocol:

Two times a week for three weeks, followed by once a week for four weeks.

-Cheng, Xinnong. Chinese Acupuncture and Moxibustion. 5th ed. Beijing: Foreign Languages Press, 2004

OSTEO ARTROSI E DISTURBI CAPSULA ARTICOLARE GINOCCHIO

attraverso le fibre C (non mielinizzate) ed in relazione con i metameri midollari L3/L4 e L5/S1:

Sp 10

Gb 34

He Ding

Xi Yin

In relazione al metamero S1

Bl 40 (vescica)

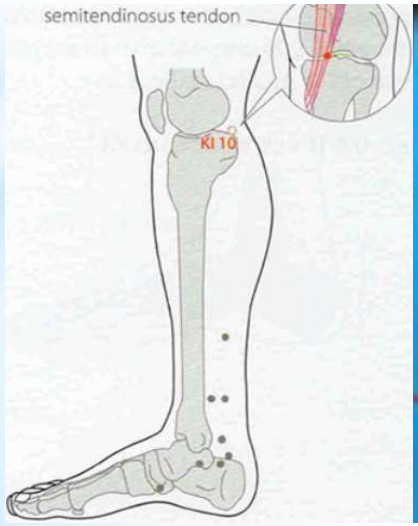
In relazione al metamero 2

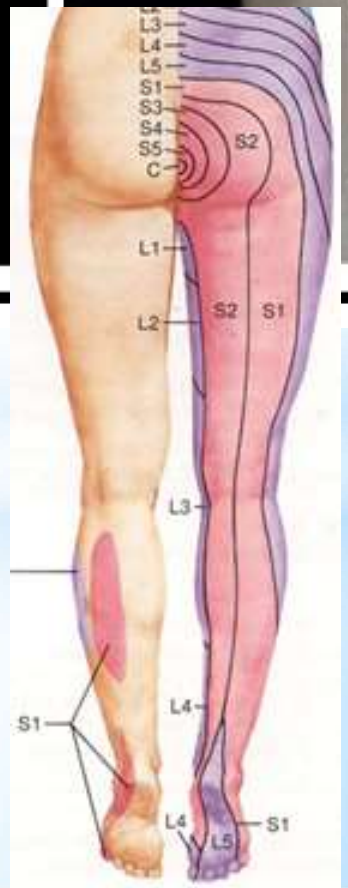
Kd 10

Specialmente con

Segni di Umidità

Calore nel Jiao inf





The American Journal of Chinese Medicine | Vol. 45, No. 05, pp. 965-985 (2017)

Electro-Acupuncture is Beneficial for Knee Osteoarthritis: The Evidence from Meta-Analysis of Randomized Controlled Trials

Na Chen, Jing Wang, Attilio Mucelli, Xu Zhang and Changqing Wang

https://doi.org/10.1142/S0192415X17500513 | **Cited by:** 44

LESIONE DEI LEGAMENTI

Acupuncture points:

- St-34 (liang qiu)
- St 35 (Dubi)

Electrical Stimulation:

High and low frequency intermittent for 20 minutes, then continued with low frequency for 10 more minutes.

Treatment Protocol:

Acute stage: three times a week for two weeks.
Chronic stage: Two times a week for 4 weeks.

-Cheng, Xinnong. Chinese Acupuncture and Moxibustion. 5th ed. Beijing: Foreign Languages Press, 2004

OSTEO ARTROSI E DISTURBI CAPSULA ARTICOLARE GINOCCHIO

attraverso le fibre C (non mielinizzate) ed in relazione con i metameri midollari L3/L4 e L5/S1:

Sp 10 (vasto mediale, innervazione L2)

Electroacupuncture inhibits chronification of the acute pain of knee osteoarthritis: study protocol for a randomized controlled trial.

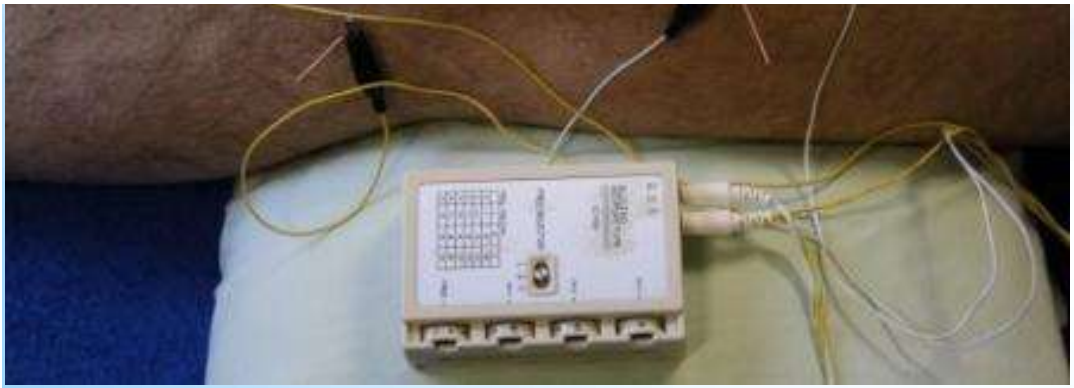
Shen LL, Huang GF, Tian W, Yu LL, Yuan XC, Zhang ZQ, Yin J, Ma CY, Cai GW, Li JW, Ding MQ, He W, Gao XY, Zhu B, Jing XH, Li M - Trials (2015)

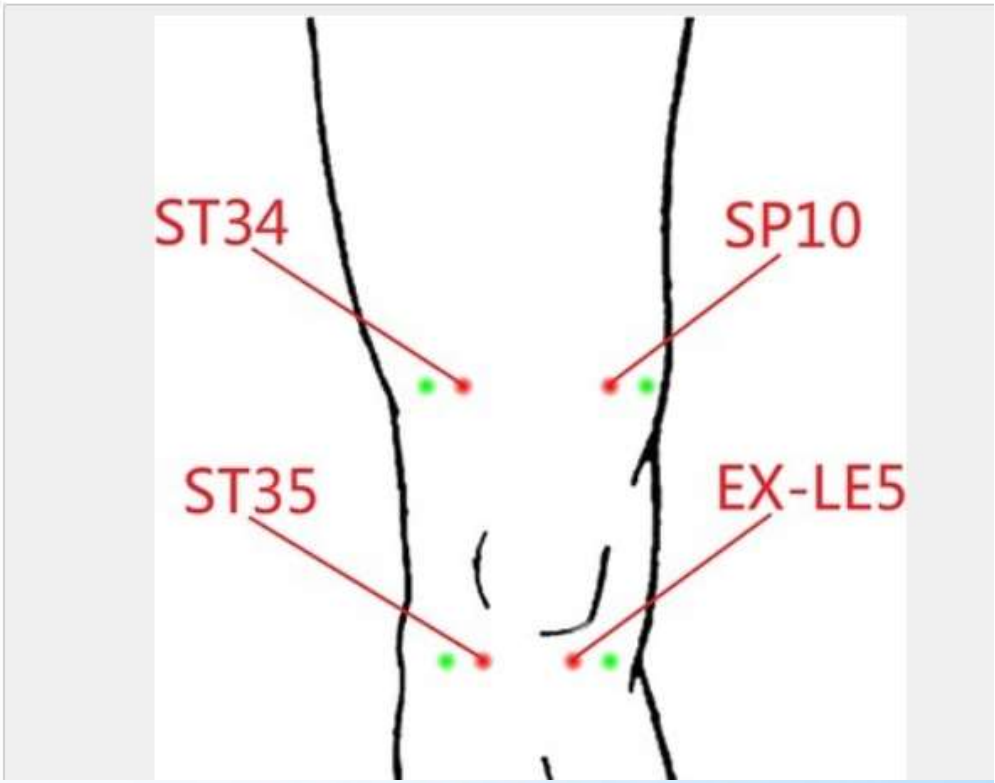
Bottom Line: DNIC function in knee osteoarthritis (KOA) patients has been demonstrated to gradually decrease during the development of chronic pain.In order to determine the best stage of KOA for effective EA intervention, patients within the treatment groups also will be divided into four stages.The primary outcomes are Visual Analog Scale (VAS), DNIC function and the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC).

View Article: PubMed Central - PubMed

Affiliation: Department of Neurobiology, School of Basic Medicine, Tongji Medical College of Huazhong University of Science and Technology, No.13 Hang Kong Road, Wuhan, 430030, P. R. China. 434454364@qq.com.

ABSTRACT





Zhong Xi Yi Jie He Xue Bao. 2012 Jun;10(6):655-62.

Case-control study on the association between qi-stagnation and insomnia.

Jiang XL[1], Zhang Y, Lei Y, Hu GF, Zhang ZG, Xiao ZJ.

Author information

Abstract

OBJECTIVE: To investigate the relationship between insomnia and qi-stagnation by using the international standardized measurement of sleep quality and the Traditional Chinese Medicine (TCM) Constitution Scales.

METHODS: A survey by means of the TCM Constitution Scales, the Pittsburgh Sleep Quality Index (PSQI), Epworth Sleepiness Scale (ESS) and the Deep Sleep Scale (DSS) in 169 participants aged between 16 and 80 years old was conducted. Comparison was made to examine the sleep quality and insomnia symptoms in the qi-stagnation group and other-constitution group.

RESULTS: Univariate analysis found that the qi-stagnation group had a significantly increased risk of difficulty in falling asleep (OR=3.012, and 95% CI 1.310 to 6.923 for PSQI; OR=3.016, and 95% CI 1.358 to 6.709 for DSS) and early waking (OR=3.545, and 95% CI 1.229 to 10.232 for PSQI; OR=2.742, and 95% CI 1.072 to 7.014 for DSS), while the other-constitution group had a significant risk of dreaminess (OR=2.419, and 95% CI 1.154 to 5.072 for PSQI; OR=2.561, and 95% CI 1.116 to 5.880 for DSS). A dose-effect relationship existed between insomnia symptoms and qi-stagnation. Qi-stagnation significantly increased the risk of difficulty in falling asleep and early waking.

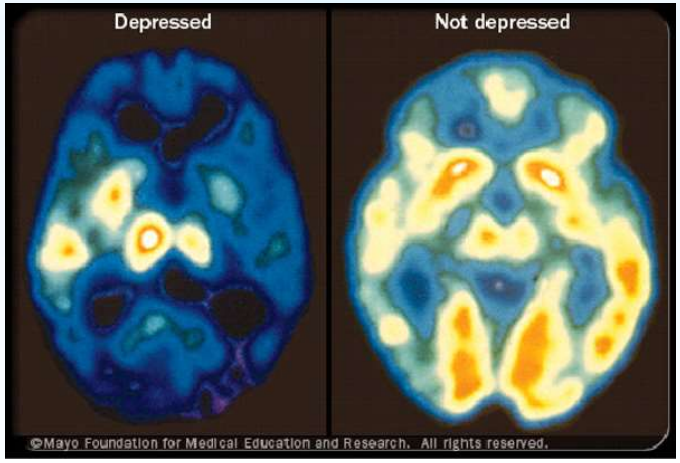
CONCLUSION: This case-control study revealed that there is a statistically significant association between qi-stagnation and insomnia. Based on this study, we recommend that further research should be conducted for the rehabilitative care and cure of insomnia from the perspective of TCM constitution.

INSONNIA (ipervigilanza)

Poichè l'agopuntura è un mezzo di stimolazione meccanica dei tessuti è fondamentale considerare la qualità dei tessuti stessi da un punto di vista fisico-chimico. A maggior ragione con l'uso dei metodi di elettrostimolazione le componenti fisiche chimiche del tessuto influenzano l'effetto del trattamento.

FORME DEPRESSIVE

L'EAP viene utilizzata anche come mezzo di stimolo in determinate forme depressive. Le forme d'onda sempre bifasiche e modulate e non a 100- 77 e 0.5 Hz.



Biull Eksp Biol Med. 1984 May;97(5):515-6.

[Effect of transcutaneous transcerebral electrostimulation as electroanesthesia on the beta-endorphin content of the cerebrospinal fluid and blood plasma].

[Article in Russian]

Kuzin MI, Avrutskiĭ MIa, Shliuznikov BM, Lakhter MA, Panchenko LF.

Abstract

The beta-endorphin content was measured in the cerebrospinal fluid (CSF) and blood plasma of patients before and after 30 minutes of transcutaneous transcerebral electric stimulation in the electric anesthesia mode. The output current was biphasic and rectangular. It was composed of high-frequency pulse trains (peak-to-peak intensity 250-300 mA, frequency 167 kHz) modulated by low frequency (77 Hz). Electrical stimulation resulted in an appreciable increase in the beta-endorphin content in the CSF and blood plasma of patients. The data obtained attest to the intensification of the neuromodulator release to the CSF and blood plasma and to the involvement of the endorphinergic brain systems in the realization of the analgetic effect of transcutaneous transcerebral electric stimulation.

PMID: 6326889

BMC Complementary and Alternative Medicine

RESEARCH ARTICLE | OPEN ACCESS | OPEN PEER REVIEW

Electroacupuncture at acupoint ST 37(Shangjuxu) improves function of the enteric nervous system in a novel mouse constipation model

Chao Liang†, Kaiyue Wang†, Bin Xu and Zhi Yu ✉

† Contributed equally

BMC Complementary and Alternative Medicine BMC series – open, inclusive and trusted 2016 **16**:392

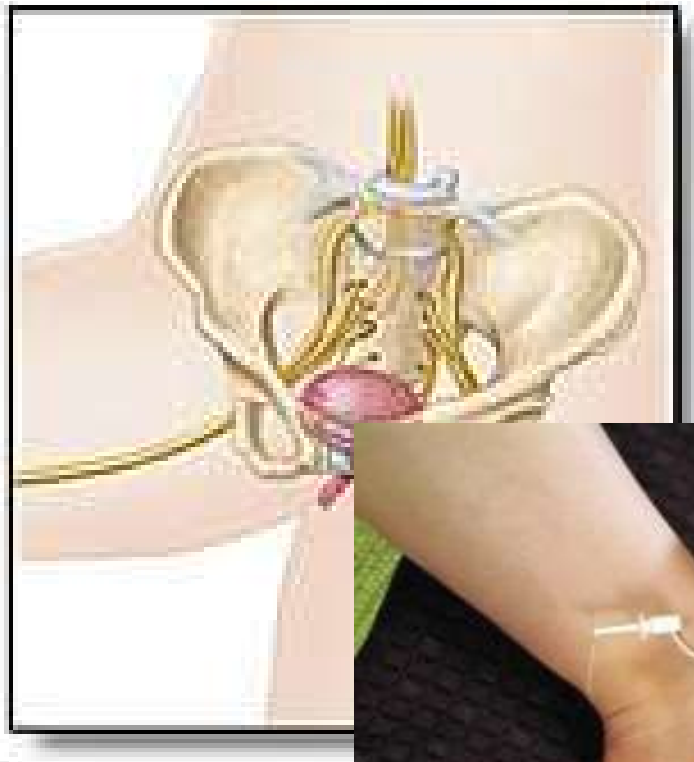
ST 37 a 2-15 HZ

AMPIEZZA in GENERALE 1 mA

TEMPO 15-20 min per 3 giorni

Percutaneous tibial nerve stimulation (PTNS)

La PTNS è una forma di elettrostimolazione adatta per:
Sindrome Vescica Iperattiva
Vescica neurologica
Cistite interstiziale
Incontinenza



SP 6 con ago
Elettrodo passivo

Effectiveness of Percutaneous Posterior Tibial Nerve Stimulation for Overactive Bladder: A Systematic Review and Meta-Analysis

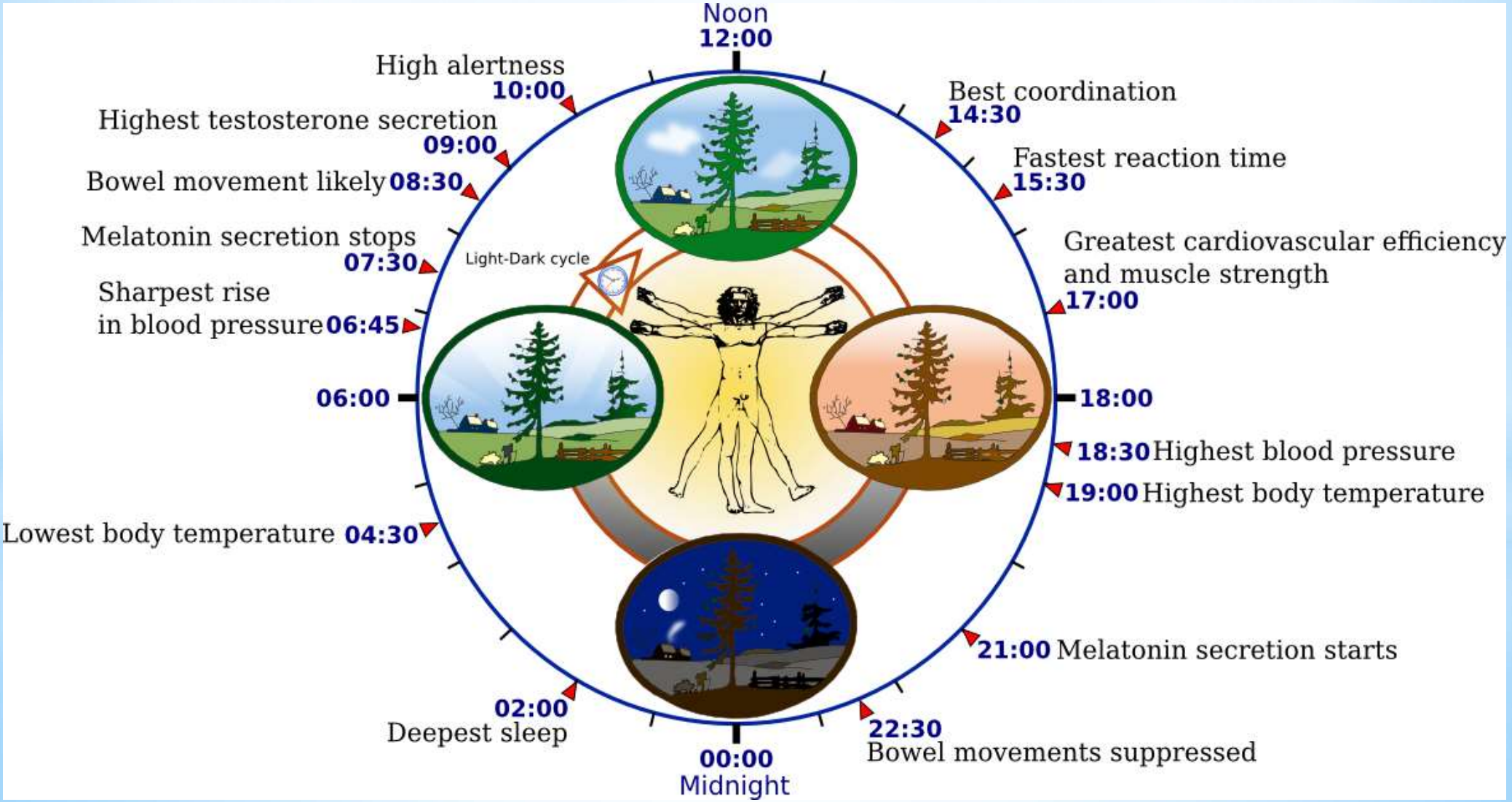
C. Burton,* A. Sajja, and P.M. Latthe

Department of Obstetrics & Gynaecology, Birmingham Women's NHS Foundation Trust, Birmingham, United Kingdom

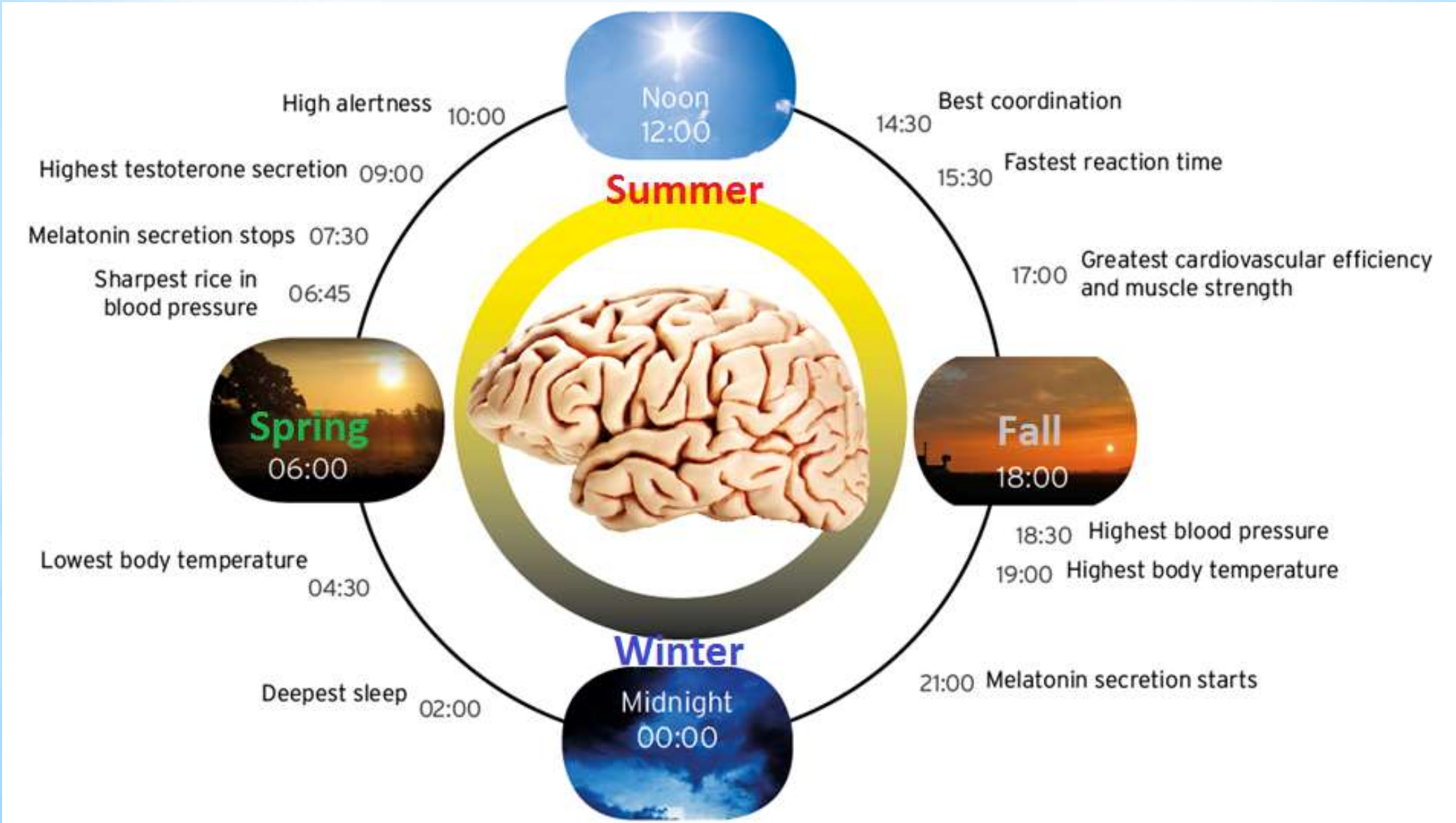
Aim: To evaluate the effectiveness of posterior percutaneous tibial nerve stimulation (PTNS) in treating overactive bladder (OAB) symptoms by systematic review of the literature. **Methods:** Systematic literature search was carried out (up to April 2011) using relevant search terms in Medline, EMBASE, CINAHL, CENTRAL, National Library for Health, MetaRegister of controlled trials, LILACS, and Google Scholar. Relevant randomized controlled trials (RCTs) and prospective studies were selected and then analyzed by two-independent reviewers. Meta-analysis was performed with random effects model using STATA 8 for non-randomized prospective studies and with Review Manager 5.1 for RCTs. **Results:** The studies report variable initial success rates (37–82%) for treating OAB symptoms with PTNS. Four randomized trials compared PTNS with Sham treatment showing a significant difference favoring PTNS [RR 7.02 95% confidence interval (CI) 1.69–29.17]. Two randomized trials compared PTNS with antimuscarinic medication with no significant difference in the change in bladder diary parameters between the treatments. Ten prospective non-randomized studies were included. The definitions of success were varied. The pooled subjective success rate was 61.4% (95% CI 57.5–71.8) and objective success rate was 60.6% (95% CI 49.2–74.7). **Conclusion:** There is evidence of significant improvement in OAB symptoms using PTNS which is comparable to the effect of antimuscarinics but with a better side effect profile. The studies included in the review only considered short-term outcomes after initial treatment. In order to recommend PTNS as a practical treatment option, long-term data and health economic analysis are needed. *Neurourol. Urodynam.* © 2012 Wiley Periodicals, Inc.

Key words: detrusor overactivity; overactive bladder; peripheral neuromodulation; PTNS; SANS; urgency incontinence

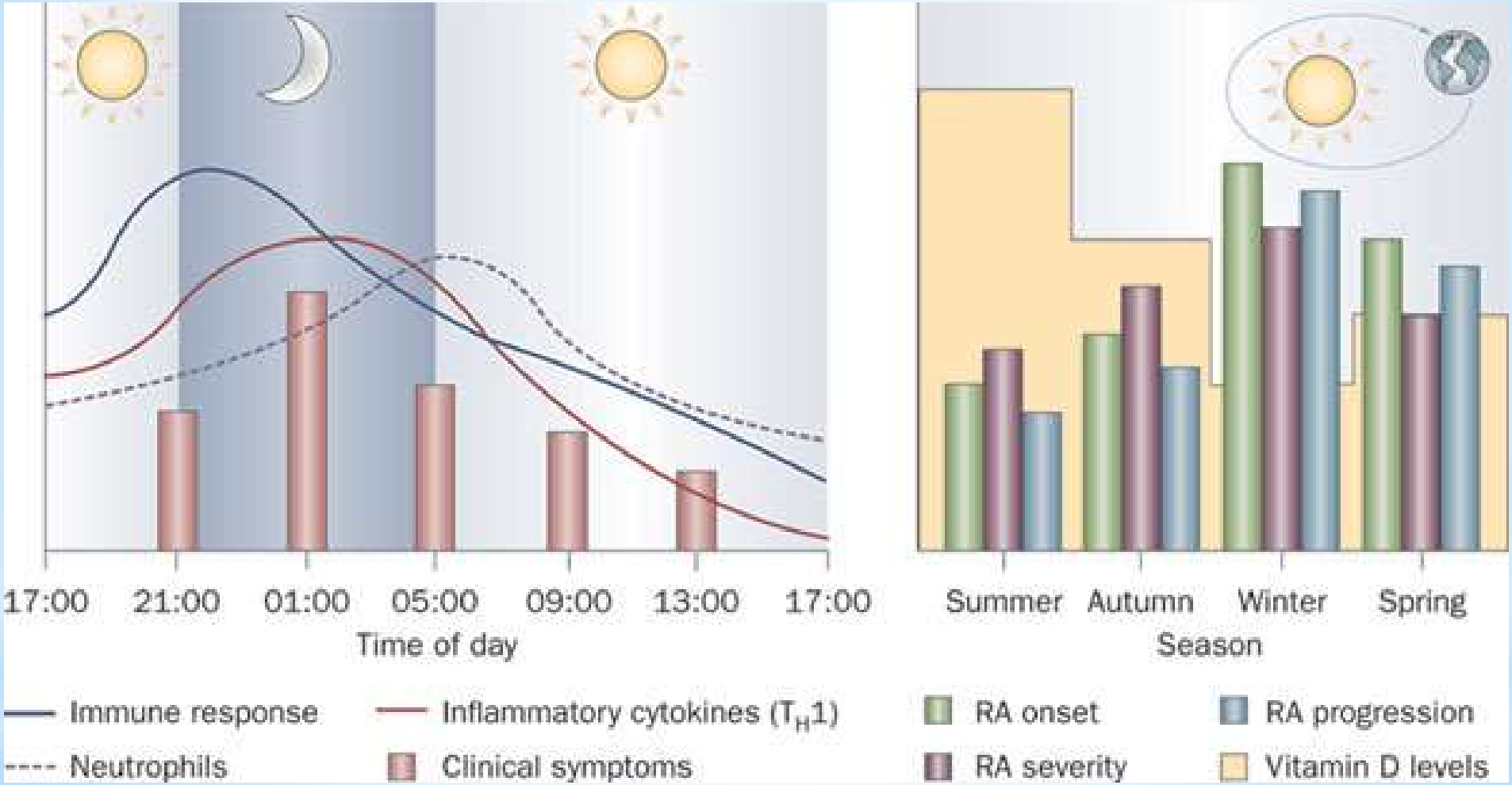
Adattamento Circadiano & fluttuazioni elettriche



Adattamento Stagionale & fluttuazioni elettriche

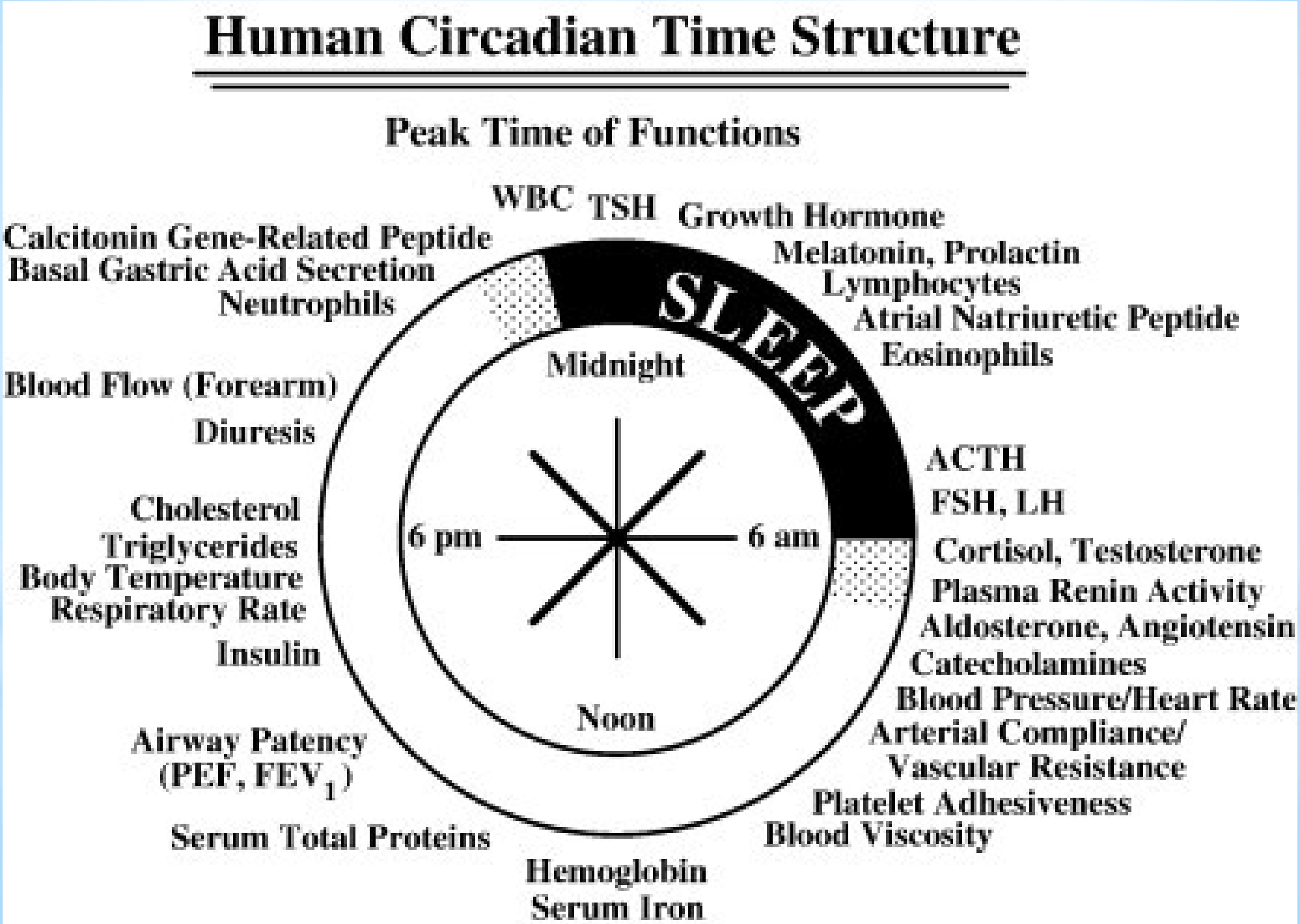


Adattamento Circannuale

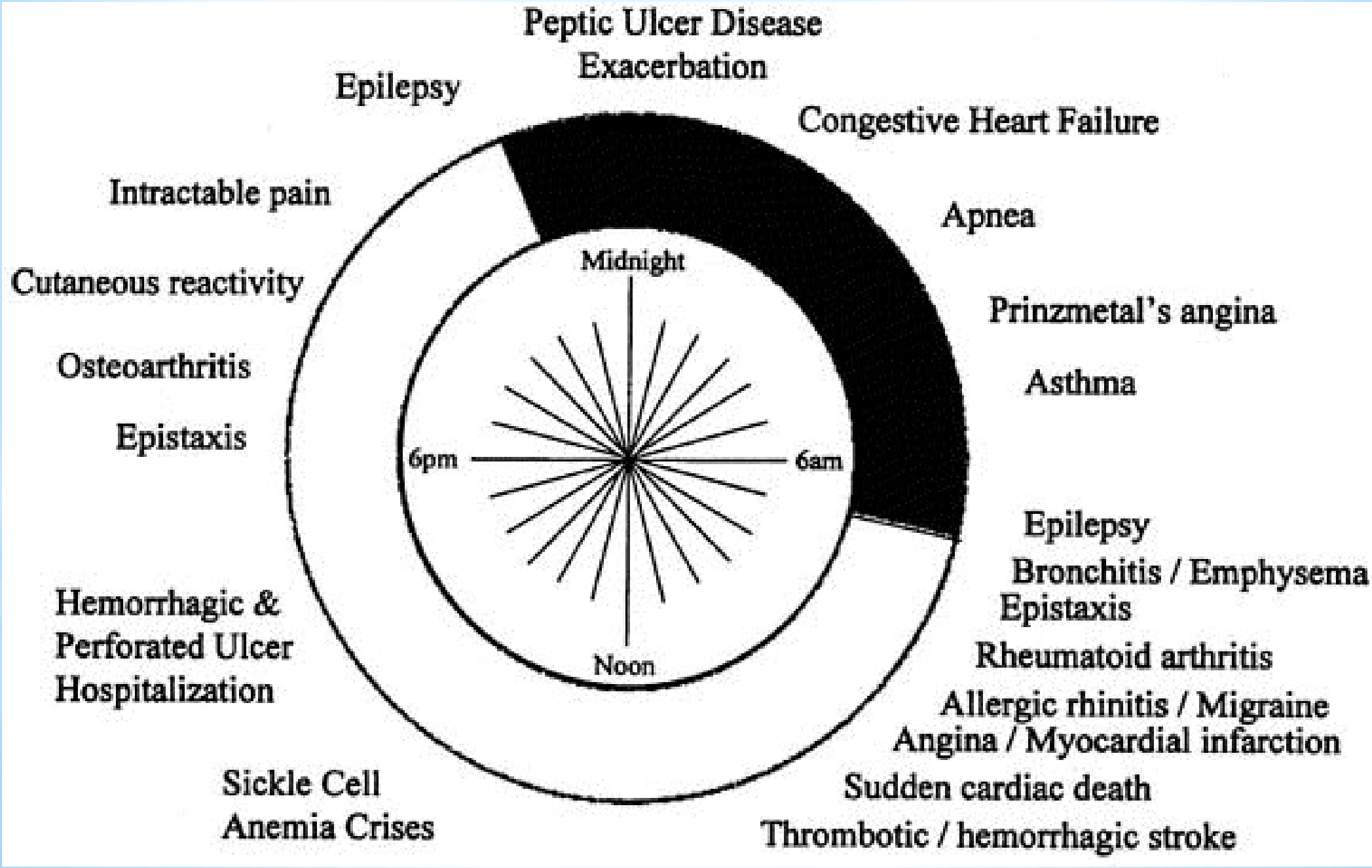


Esempio di adattamento circadiano e circannuale. In pazienti affetti da artrite reumatoide il peggioramento è invernale ed in correlazione con le fluttuazioni termiche e solari.

Cronobiologia circadiana



Cronobiologia circadiana



Cronobiologia