

### 3 RELEVANTE ORIGINALARBEITEN

#### 3.1 Wirksamkeit der Akupunktur bei ausgewählten Schmerzzerkrankungen

**Brinkhaus B**, Becker-Witt C, Jena S, Linde K, Streng A, Wagenpfeil S, Irnich D, Hummelsberger J, Melchart D, Willich SN. Acupuncture Randomized Trials (ART) in Patients with Chronic Low Back Pain and Osteoarthritis of the Knee – Design and Protocols. *Forsch Komplementarmed Klass Naturheilkd.* 2003;10:185-91.

**Brinkhaus B**, Witt CM, Jena S, Linde K, Streng A, Hummelsberger J, Irnich D, Hammes M, Pach D, Melchart D, Willich SN. Physician and Treatment Characteristics in a Randomised Multicenter Trial of Acupuncture in Patients with Osteoarthritis of the Knee (accepted in *Complementary Therapies in Medicine*, 04.05.2006)

**Brinkhaus B**, Witt CM, Jena S, Linde K, Streng A, Wagenpfeil S, Irnich D, Walther HU, Melchart D, Willich SN. Acupuncture in Patients with Chronic Low Back Pain – A Randomized Controlled Trial. *Arch Intern Med*, 2006:450-457.

Witt C, **Brinkhaus B**, Jena S, Linde K, Streng A, Wagenpfeil S, Hummelsberger J, Walther HU, Melchart D, Willich SN. Acupuncture in patients with osteoarthritis of the knee - a randomised trial. *Lancet* 2005;366:136-143.

**Brinkhaus B**, Becker-Witt C, Jena S, Linde K, Streng A, Wagenpfeil S, Irnich D, Hummelsberger J, Melchart D, Willich SN. Acupuncture Randomized Trials (ART) in Patients with Chronic Low Back Pain and Osteoarthritis of the Knee – Design and Protocols. *Forsch Komplementarmed Klass Naturheilkd.* 2003;10:185-91.

**BACKGROUND:** We report on the study design and protocols of two randomized controlled trials (Acupuncture Randomized Trials = ART) that investigate the efficacy of acupuncture in the treatment of chronic low back pain and osteoarthritis of the knee, respectively. **OBJECTIVE:** To investigate whether acupuncture is more efficacious than (a) no treatment or (b) minimal acupuncture in the treatment of low back pain and osteoarthritis. **DESIGN:** Two randomized, controlled, multicenter trials with three treatment arms and a total follow-up time of 52 weeks. **SETTING:** 30 practitioners and outpatient units in Germany specialized in acupuncture treatment. **PATIENTS:** 300 patients will be included in each study. In the low back pain trial, patients will be included according to clinical diagnosis. In the osteoarthritis pain trial, patients will be included according to the American College of Rheumatology criteria. **INTERVENTIONS:** Patients are randomly assigned to receive either (1) semi-standardized acupuncture (150 patients), (2) minimal acupuncture at non-acupuncture points (75 patients), or (3) no treatment for two months followed by semi-standardized acupuncture (75 patients, waiting list control). Acupuncture treatment consists of 12 sessions per patient over a period of 8 weeks. **MAIN OUTCOME MEASURE:** The main outcome measure is the difference between baseline and the end of the 8-week treatment period in the following parameters: pain intensity as measured by a visual analogue scale (VAS; 0-100 mm) in the low back pain trial and by the Western Ontario and McMaster Universities Osteoarthritis Score (WOMAC) in the osteoarthritis trial. **OUTLOOK:** The results of these two studies (available in 2004) will provide health care providers and policy makers with the information needed to make scientifically sound assessments of acupuncture therapy.

**Brinkhaus B**, Witt CM, Jena S, Linde K, Streng A, Hummelsberger J, Irnich D, Hammes M, Pach D, Melchart D, Willich SN. Physician and Treatment Characteristics in a Randomised Multicenter Trial of Acupuncture in Patients with Osteoarthritis of the Knee. *Complement Ther Med.* 2007;15:180-9.

**OBJECTIVE:** The aim of this paper is to describe the treatment and physician characteristics in a randomised trial of acupuncture for osteoarthritis of the knee. **DESIGN:** Three-armed, randomised, controlled multicentre trial with 1-year follow-up. **SETTING:** Twenty-eight outpatient centres in Germany. **INTERVENTIONS:** A total of 294 patients with osteoarthritis of the knee were randomised to 12 sessions of semi-standardised acupuncture (at least 6 local and 2 distant points needed per affected knee from a selection of predefined points, but individual choice of additional body or ear acupuncture points possible), 12 sessions of minimal acupuncture (superficial needling of at least 8 of 10 predefined, bilateral, distant non-acupuncture points) or a waiting list control (2 months no acupuncture). **OUTCOME:** Participating trial physicians and interventions. **RESULTS:** Forty-seven physicians specialised in acupuncture (mean age 43+/-8 years, 26 females) provided study interventions in 28 outpatient centres in Germany. The median duration of acupuncture training completed by participating physicians was 350 h (range 140-2508). The total number of needles used was 17.4+/-4.8 in the acupuncture group compared to 12.9+/-3.3 in the minimal acupuncture group. In total, 39 physicians (83%) stated that they would have treated patients in either a similar or in exactly the same way outside of the trial, whereas 7 (15%) stated that they would have treated patients differently (1 missing). **CONCLUSIONS:** Our documentation of the trial interventions shows that semi-standardised acupuncture strategy represents an acceptable compromise for efficacy studies. However, a substantial minority of participating trial physicians stated that they would have treated patients differently outside of the trial.

**Brinkhaus B**, Witt CM, Jena S, Linde K, Streng A, Wagenpfeil S, Irnich D, Walther HU, Melchart D, Willich SN. Acupuncture in Patients with Chronic Low Back Pain – A Randomized Controlled Trial. *Arch Intern Med*, 2006:450-457.

**BACKGROUND:** Acupuncture is widely used by patients with low back pain, although its effectiveness is unclear. We investigated the efficacy of acupuncture compared with minimal acupuncture and with no acupuncture in patients with chronic low back pain. **METHODS:** Patients were randomized to treatment with acupuncture, minimal acupuncture (superficial needling at nonacupuncture points), or a waiting list control. Acupuncture and minimal acupuncture were administered by specialized acupuncture physicians in 30 outpatient centers, and consisted of 12 sessions per patient over 8 weeks. Patients completed standardized questionnaires at baseline and at 8, 26, and 52 weeks after randomization. The primary outcome variable was the change in low back pain intensity from baseline to the end of week 8, as determined on a visual analog scale (range, 0-100 mm). **RESULTS:** A total of 298 patients (67.8% female; mean  $\pm$  SD age, 59  $\pm$  9 years) were included. Between baseline and week 8, pain intensity decreased by a mean  $\pm$  SD of 28.7  $\pm$  30.3 mm in the acupuncture group, 23.6  $\pm$  31.0 mm in the minimal acupuncture group, and 6.9  $\pm$  22.0 mm in the waiting list group. The difference for the acupuncture vs minimal acupuncture group was 5.1 mm (95% confidence interval, -3.7 to 13.9 mm;  $P = .26$ ), and the difference for the acupuncture vs waiting list group was 21.7 mm (95% confidence interval, 13.9-30.0 mm;  $P < .001$ ). Also, at 26 ( $P = .96$ ) and 52 ( $P = .61$ ) weeks, pain did not differ significantly between the acupuncture and the minimal acupuncture groups. **CONCLUSION:** Acupuncture was more effective in improving pain than no acupuncture treatment in patients with chronic low back pain, whereas there were no significant differences between acupuncture and minimal acupuncture.

Witt C, **Brinkhaus B**, Jena S, Linde K, Streng A, Wagenpfeil S, Hummelsberger J, Walther HU, Melchart D, Willich SN. Acupuncture in patients with osteoarthritis of the knee - a randomised trial. *Lancet* 2005;366:136-143.

**BACKGROUND:** Acupuncture is widely used by patients with chronic pain although there is little evidence of its effectiveness. We investigated the efficacy of acupuncture compared with minimal acupuncture and with no acupuncture in patients with osteoarthritis of the knee. **METHODS:** Patients with chronic osteoarthritis of the knee (Kellgren grade  $\leq$  2) were randomly assigned to acupuncture (n=150), minimal acupuncture (superficial needling at non-acupuncture points; n=76), or a waiting list control (n=74). Specialised physicians, in 28 outpatient centres, administered acupuncture and minimal acupuncture in 12 sessions over 8 weeks. Patients completed standard questionnaires at baseline and after 8 weeks, 26 weeks, and 52 weeks. The primary outcome was the Western Ontario and McMaster Universities Osteoarthritis (WOMAC) index at the end of week 8 (adjusted for baseline score). All main analyses were by intention to treat. **RESULTS:** 294 patients were enrolled from March 6, 2002, to January 17, 2003; eight patients were lost to follow-up after randomisation, but were included in the final analysis. The mean baseline-adjusted WOMAC index at week 8 was 26.9 (SE 1.4) in the acupuncture group, 35.8 (1.9) in the minimal acupuncture group, and 49.6 (2.0) in the waiting list group (treatment difference acupuncture vs minimal acupuncture -8.8, [95% CI -13.5 to -4.2],  $p=0.0002$ ; acupuncture vs waiting list -22.7 [-27.5 to -17.9],  $p<0.0001$ ). After 52 weeks the difference between the acupuncture and minimal acupuncture groups was no longer significant ( $p=0.08$ ). **INTERPRETATION:** After 8 weeks of treatment, pain and joint function are improved more with acupuncture than with minimal acupuncture or no acupuncture in patients with osteoarthritis of the knee. However, this benefit decreases over time.

### 3.2 Wirksamkeit der Akupunktur bei weiteren chronischen Erkrankungen

**Brinkhaus B**, Hummelsberger J, Kohnen R, Seufert J, Hempen C-H, Leonhardy H, Nögel R, Joos S, Hahn EG, Schuppan D. Acupuncture and Chinese herbal medicine in the treatment of patients with seasonal allergic rhinitis: a randomized-controlled clinical trial. *Allergy* 2004;59:953-60.

McCarney RW, Lasserson TJ, Linde K, **Brinkhaus B**. An overview of two Cochrane systematic reviews of complementary treatments for chronic asthma: acupuncture and homeopathy. *Respiratory Medicine* 2004;98:687-696.

Joos S, **Brinkhaus B**, Maluche C, Maupai N, Kohnen R, Krahmer N, Hahn EG, Schuppan D: Acupuncture and Moxibustion in the Treatment of Active Crohn's Disease – a Randomized Controlled Study. *Digestion* 2004;69:131-139.

Joos S, Wildau N, Kohnen R, Szecsenyi J, Schuppan D, Willich SN, Hahn EG, **Brinkhaus B**. Acupuncture and moxibustion in the treatment of ulcerative colitis – A Randomized controlled study. *Scandinavian Journal of Gastroenterology*, 2006,1-8,PrEview article.

**Brinkhaus B**, Hummelsberger J, Kohnen R, Seufert J, Hempen C-H, Leonhardy H, Nögel R, Joos S, Hahn EG, Schuppan D. Acupuncture and Chinese herbal medicine in the treatment of patients with seasonal allergic rhinitis: a randomized-controlled clinical trial. *Allergy* 2004;59:953-60.

**BACKGROUND:** Patients with allergic rhinitis (AR) increasingly use complementary medicine. The aim of this study was to determine whether traditional Chinese therapy is efficacious in patients suffering from seasonal AR. **METHODS:** Fifty-two patients between the ages of 20 and 58 who had typical symptoms of seasonal AR were assigned randomly and in a blinded fashion to (i) an active treatment group which received a semi-standardized treatment of acupuncture and Chinese herbal medicine, and (ii) a control group which received acupuncture applied to non-acupuncture points in addition to a non-specific Chinese herbal formula. All patients received acupuncture treatment once per week and the respective Chinese herbal formula as a decoction three times daily for a total of 6 weeks. Assessments were performed before, during, and 1 week after treatment. The change in severity of hay fever symptoms was the primary outcome measured on a visual analogue scale (VAS). **RESULTS:** Compared with patients in the control group, patients in the active treatment group showed a significant after-treatment improvement on the VAS ( $P = 0.006$ ) and Rhinitis Quality of Life Questionnaire ( $P = 0.015$ ). Improvement on the Global Assessment of Change Scale was noted in 85% of active treatment group participants vs 40% in the control group ( $P = 0.048$ ). No differences between the two groups could be detected with the Allergic Rhinitis Symptom Questionnaire. Both treatments were well-tolerated. **CONCLUSIONS:** The results of this study suggest that traditional Chinese therapy may be an efficacious and safe treatment option for patients with seasonal AR.

McCarney RW, Lasserson TJ, Linde K, **Brinkhaus B**. An overview of two Cochrane systematic reviews of complementary treatments for chronic asthma: acupuncture and homeopathy. *Respiratory Medicine* 2004;98:687-696.

**BACKGROUND:** Acupuncture and homeopathy are commonly used complementary treatments for chronic asthma. This review summarizes two recently updated Cochrane systematic reviews that assess the safety and efficacy of homeopathy or acupuncture in individuals with chronic stable asthma. **INCLUSION CRITERIA:** Only randomized-controlled trials were considered for inclusion. Statistical aggregation of the data was undertaken where possible. **SEARCH STRATEGY:** Searches for both reviews were done with the assistance of the Cochrane Airways Group, and through electronic alerts. **RESULTS: ACUPUNCTURE:** 11 studies with 324 participants met the inclusion criteria. Trial reporting was poor, and the trial quality was deemed inadequate to generalize the findings. There was variation in the type of active and sham acu punctures, the outcomes assessed and the time points measured. The points used in the sham arm of some studies are used for the treatment of asthma according to traditional Chinese medicine. Two studies used individualized treatment strategies, and one study used a combination strategy of formula acupuncture with the addition of individualized points. No statistically significant or clinically relevant effects were found for acupuncture compared with sham acupuncture. When data from two small studies were pooled, no difference in lung function was observed (post-treatment FEV1): standardized mean difference 0.12, 95% confidence interval 0.31 to 0.55). **CONCLUSION: ACUPUNCTURE:** There is not enough evidence to recommend the use of acupuncture in the treatment of asthma. Further research needs to be undertaken, and this should take into account the different types of acupuncture practiced. **RESULTS: HOMEOPATHY:** Six trials with a total of 556 people were included in the review. These trials were all placebo-controlled and double-blind, but were of variable quality. Standardized treatments in these trials are unlikely to represent common homeopathic practice where treatment tends to be individualized. The results of the studies are conflicting in terms of effects on lung function. There has been only a limited attempt to measure a "package of care" effect (i.e. the effect of the medication as well as the consultation, which is considered a vital part of individualized homeopathic practice). **CONCLUSION: HOMEOPATHY:** There is not enough evidence to reliably assess the possible role of homeopathy in the treatment of asthma. Further studies could assess whether individuals respond to a "package of care" rather than the homeopathic intervention alone.



Joos S, **Brinkhaus B**, Maluche C, Maupai N, Kohnen R, Kraemer N, Hahn EG, Schuppan D: Acupuncture and Moxibustion in the Treatment of Active Crohn's Disease – a Randomized Controlled Study. *Digestion* 2004;69:131-139.

**BACKGROUND:** Acupuncture has traditionally been used in the treatment of inflammatory bowel disease in China and is increasingly being applied in Western countries. The purpose of this study was to investigate the efficacy of acupuncture in the treatment of active Crohn's disease (CD). **METHODS:** A prospective, randomized, controlled, single-blind clinical trial was carried out to analyze the change in the CD activity index (CDAI) after treatment as a main outcome measure, and the changes in quality of life and general well-being, serum markers of inflammation (alpha(1)-acid glycoprotein, C-reactive protein) as secondary outcome measures. 51 patients with mild to moderately active CD were treated in a single center for complementary medicine by three trained acupuncturists and randomly assigned to receive either traditional acupuncture (TCM group, n = 27) or control treatment at non-acupuncture points (control group, n = 24). Patients were treated in 10 sessions over a period of 4 weeks and followed up for 12 weeks. **RESULTS:** In the TCM group the CDAI decreased from 250 +/- 51 to 163 +/- 56 points as compared with a mean decrease from 220 +/- 42 to 181 +/- 46 points in the control group (TCM vs. control group: p = 0.003). In both groups these changes were associated with improvements in general well-being and quality of life. With regard to general well-being, traditional acupuncture was superior to control treatment (p = 0.045). alpha(1)-acid glycoprotein concentration fell significantly only in the TCM group (p = 0.046). **CONCLUSIONS:** Apart from a marked placebo effect, traditional acupuncture offers an additional therapeutic benefit in patients with mild to moderately active CD.

Joos S, Wildau N, Kohnen R, Szecsenyi J, Schuppan D, Willich SN, Hahn EG, **Brinkhaus B**. Acupuncture and moxibustion in the treatment of ulcerative colitis – A Randomized controlled study. *Scand J Gastroenterol* 2006;41:1056-63.

**OBJECTIVE:** Acupuncture has traditionally been used in the treatment of inflammatory bowel disease in China and is increasingly applied in Western countries. The objective of this study was to investigate the efficacy of acupuncture and moxibustion in the treatment of active ulcerative colitis (UC). **MATERIAL AND METHODS:** In a prospective, randomized, controlled clinical trial 29 patients with mild to moderately active UC (mean age 37.8 +/- 12.0 years) were randomly assigned to receive either traditional acupuncture and moxa (TCM group, n = 15), or sham acupuncture consisting of superficial needling at non-acupuncture points (control group, CG, n = 14). All patients were treated in 10 sessions over a period of 5 weeks and followed-up for 16 weeks. The main outcome measure was the change in the Colitis Activity Index (CAI) after treatment; secondary outcome measures were changes in quality of life, general well-being and serum markers of inflammation. **RESULTS:** In the TCM group, the CAI decreased from 8.0 (+/- 3.7) to 4.2 (+/- 2.4) points and in the control group from 6.5 (+/- 3.4) to 4.8 (+/- 3.9) points (TCM versus CG: p = 0.048). In both groups these changes were associated with significant improvements in general well-being (TCM group: from 3.0 (+/- 1.8) to 1.8 (+/- 1.0); CG: from 3.2 (+/- 1.9) to 2.2 (+/- 1.7)) and quality of life (TCM group: from 146 (+/- 23) to 182 (+/- 18); CG: from 157 (+/- 20) to 183 (+/- 23)). No significant differences between the TCM and CG were found regarding these secondary outcome measures. **CONCLUSIONS:** Differences in efficacy between traditional acupuncture and sham acupuncture were small and significant only for CAI as the main outcome measure. Both traditional and sham acupuncture seem to offer an additional therapeutic benefit in patients with mild to moderately active UC.

### 3.3 Integration von Akupunktur und Komplementärmedizin in die Schulmedizin

**Brinkhaus B**, Joos S, Lindner M, Kohnen R, Witt C, Willich SN, Hahn EG. Integration of Complementary and Alternative Medicine in German Medical School Curricula - Contradictions between the Opinions of Decision Makers and the Status Quo. *Forsch Komplementarmed Klass Naturheilkd.* 2005;12:140-143.

Joos S, Rosemann T, Szecsenyi J, Hahn, EG, Willich SN, **Brinkhaus B**: Use of complementary and alternative medicine in Germany - a survey of patients with inflammatory bowel disease. *BMC Complement Altern Med.* 2006;6:19.

**Brinkhaus B**, Joos S, Lindner M, Kohnen R, Witt C, Willich SN, Hahn EG. Integration of Complementary and Alternative Medicine in German Medical School Curricula - Contradictions between the Opinions of Decision Makers and the Status Quo. *Forsch Komplementarmed Klass Naturheilkd.* 2005;12:140-143.

**INTRODUCTION:** There is a growing demand for complementary and alternative medicine (CAM) in Western societies. This trend has led to the gradual integration of CAM courses into medical school curricula. The aim of this study was to survey key decision makers at German medical schools with regard to their views on CAM and to examine the extent to which CAM has already been integrated in the German medical school system. **MATERIALS AND METHODS:** A questionnaire was sent to 753 clinic and institute directors at German medical schools. **RESULTS:** A total of 500 questionnaires (66%) were returned. 39% of respondents had a positive opinion of CAM, 27% had a neutral opinion and 31% had a negative opinion. 3% of respondents were unsure. The CAM therapies viewed most positively were osteopathy (52%), acupuncture (48%), and naturopathy (41%). Most respondents were in favor of integrating CAM into the medical system. However, a larger percentage favored its use in research (61%) and teaching (59%) rather than in the treatment of patients (58%). Only 191 respondents (38%) indicated that CAM treatment methods had been integrated into the curriculum of their respective medical schools. In these schools, CAM was mainly used in patient treatment (35%), followed by research (22%) and education (21%). **CONCLUSIONS:** Our data show that the majority of respondents were in favor of integrating CAM into medical school curricula. However, at the time of our survey, only a small percentage of medical schools had actually put this into practice. The reasons for this discrepancy are unclear and should be further investigated.

Joos S, Rosemann T, Szecsenyi J, Hahn, EG, Willich SN, **Brinkhaus B**: Use of complementary and alternative medicine in Germany - a survey of patients with inflammatory bowel disease. *BMC Complement Altern Med.* 2006;6:19.

**BACKGROUND:** Previous studies have suggested an increasing use of complementary and alternative medicine (CAM) in patients with inflammatory bowel disease (IBD). The aim of our study was to evaluate the use of CAM in German patients with IBD. **METHODS:** A questionnaire was offered to IBD patients participating in patient workshops which were organized by a self-help association, the German Crohn's and Colitis Association. The self-administered questionnaire included demographic and disease-related data as well as items analysing the extent of CAM use and satisfaction with CAM treatment. Seven commonly used CAM methods were predetermined on the questionnaire. **RESULTS:** 413 questionnaires were completed and included in the analysis (n = 153 male, n = 260 female; n = 246 Crohn's disease, n = 164 ulcerative colitis). 52 % of the patients reported CAM use in the present or past. In detail, homeopathy (55%), probiotics (43%), classical naturopathy (38%), *Boswellia serrata* extracts (36%) and acupuncture/Traditional Chinese Medicine (TCM) (33%) were the most frequently used CAM methods. Patients using probiotics, acupuncture and *Boswellia serrata* extracts (incense) reported more positive therapeutic effects than others. Within the statistical analysis no significant predictors for CAM use were found. 77% of the patients felt insufficiently informed about CAM. **CONCLUSION:** The use of CAM in IBD patients is very common in Germany, although a large proportion of patients felt that information about CAM is not sufficient. However, to provide an evidence-based approach more research in this field is desperately needed. Therefore, physicians should increasingly inform IBD patients about benefits and limitations of CAM treatment.