

**OPEN CLINICAL TRIAL FOR CEGANA VATHAM USING VARMAM  
PROCEDURE**

**I. INTRODUCTION:**

Most patients who present with neck pain have “non-specific (simple) neck pain,” where symptoms have a postural or mechanical basis. Aetiological factors are poorly understood[1] and are usually multifactorial, including poor posture, anxiety, depression, neck strain, and sporting or occupational activities.[2] Neck pain after whiplash injury also fits into this category, provided no bony injury or neurological deficit is present.[3] When mechanical factors are prominent, the condition is often referred to as “cervical spondylosis,” although the term is often applied to all non-specific neck pain. Mechanical and degenerative factors are more likely to be present in chronic neck pain.

In cervical spondylosis, degenerative changes start in the intervertebral discs with osteophyte formation and involvement of adjacent soft tissue structures. Many people over 30 show similar abnormalities on plain radiographs of the cervical spine, however, so the boundary between normal ageing and disease is difficult to define.[4] Even severe degenerative changes are often asymptomatic, but can lead to neck pain, stiffness, or neurological complications.

About two thirds of the population have neck pain at some time in their lives,[5] [6] and prevalence is highest in middle age. After back pain, neck pain is the most frequent musculoskeletal cause of consultation in primary care worldwide

Cervical spondylosis is usually diagnosed on clinical grounds alone, symptoms are cervical pain aggravated by movement, referred pain (occiput, between the shoulder blades, upper limbs), retro-orbital or temporal pain (from C1 to C2), cervical stiffness—reversible or irreversible, vague numbness, tingling, or weakness in upper limbs, dizziness or vertigo, poor balance, rarely, syncope, triggers migraine, “pseudo-angina”[15]. The signs are poorly localised tenderness, limited range of movements (forward flexion, backward extension, lateral flexion, and rotation to both sides), Minor neurological changes like inverted supinator jerks (unless complicated by myelopathy or radiculopathy) Although pain is predominantly in the cervical region, it can be referred to a wide area, and is characteristically exacerbated by neck movement. Neurological change should always be sought in the upper and lower limbs, but objective changes occur only when spondylosis is complicated by myelopathy or radiculopathy, or when unrelated causes like disc prolapse, thoracic outlet obstruction, brachial plexus disease, malignancy, or primary neurological disease are present.

## CCRS CLINICAL TRIAL PROTOCOLS

Currently, a balanced view of the management of neck pain cannot be given by discussing evidence based treatments only. Stress management and postural advice on daily activities, work, and hobbies may be useful in some patients. Patients should be advised to use only one pillow at night. When pain is severe, analgesics and anti-inflammatory agents are widely used, despite the lack of evidence that they work. Yoga, pilates and the Alexander technique all improve neck posture, but their value in treating neck pain is uncertain.

Acute neck pain not due to whiplash injury found limited evidence of benefit for manipulation or mobilisation therapy.[3] [4] No evidence exists for the efficacy of non-steroidal anti-inflammatory agents or analgesics. The evidence that muscle relaxants relieve pain more than placebo is weak, and the incidence of side effects like drowsiness is high. Studies of the early treatment of whiplash provide moderate evidence that early mobilisation physiotherapy[17-20] and advice to “act as usual”[21] are more effective than immobilisation and less active treatments in speeding up recovery and reducing chronic disability. Less evidence exists for the benefit of home exercise regimens,[22] pulsed electromagnetic field therapy,[23] and multimodal therapy.

Randomised controlled trials identified by systematic reviews[5-8] provide moderate evidence that various exercise regimens—using proprioceptive, strengthening, endurance, or coordination exercises—are more effective than usual care (analgesics, non-steroidal anti-inflammatory drugs, or muscle relaxants)[9 25] or stress management,[10 11] although not all studies have found exercise beneficial.[12] One randomised controlled trial found exercise plus infrared heat no more effective than transcutaneous electrical nerve stimulation plus heat at relieving pain at six weeks and six months, although both were better than heat alone.[26]

Randomised controlled trials included in systematic reviews of manual treatments (mobilisation physiotherapy or manipulation)[1, 4, 5 ,13-16] provide limited evidence that mobilisation physiotherapy[17 18] and manipulation[17] are more effective for chronic neck pain than less active treatments (drug treatment, education, counseling). However, manipulation has occasionally been associated with serious neurological complications (around 5-10 per 10 million manipulations).[27]Mobilisation, manipulation, and exercise seem to be equally effective.[19 20 28] A study comparing combined exercise and manipulation with either modality alone found the combination to be more effective at three months,[21] but no difference was seen compared with exercise alone at one and two years.[22] However, another pragmatic study found no advantage at six weeks or six months of adding manual therapy (63% of patients had mobilisation physiotherapy) or heat (shortwave diathermy) to exercise and advice.[23]Systematic reviews of weak randomised controlled trials provided no conclusive evidence about the

## CCRS CLINICAL TRIAL PROTOCOLS

effectiveness of acupuncture[24] or traction[25] compared with a range of other treatments in patients with chronic neck pain. The addition of psychotherapy techniques like cognitive behavioural therapy also added little to physical or mechanical treatment alone.[26].

Cegana vatham is equated with Cervical Spondylosis in Siddha. The signs and symptoms of "CeganaVatham" is described in the texts of "Yugi vaidhya sindhamani" and "Pararaja sekaram". In "Yugi vaidhya sindhamani" the disease is described with the following symptoms: pain below neck to lowback, pain both upper limbs, weight feeling over the body, depression and giddiness, burning in the both eyes, constipation and pain felt like scorpion bite over body . In "Para raja sekaram" the disease is described with the following symptoms Pain below neck to lowback, severe pain felt in both arms and numbness with tingling in the upper limbs. Siddha system of medicine emphasises different modalities of treatments and among them drugless therapy is considered to be supreme. Varmam therapy is a non-invasive procedure especially in treating musculo-skeletal disorders and neurological disorders.

Varmam therapy refers to the treatment of injured energy centres of the body which could be located in muscles, bones, nerves, joints or veins. It belongs to varmakalai which consists in two arts (kalai) opposed by essence: medical art (varmam) for curing injuries, and martial art. The treatment consists in locating injured point(s), pressing and massaging it (them) with an intensity which depends on injury and energy centres. The failure of standard treatment for the cervical spondylosis entails search for good treatment modalities in traditional system of medicine. It is the need of the hour to establish the non-invasive Varmam procedure for the treatment of cervical spondylosis

### **II. AIM**

To assess the therapeutic efficacy of Varmam Procedures in the treatment of Cegana vatham.

### **III. TRIAL DESIGN:**

Open controlled compared clinical study.

### **IV. PLACE OF STUDY:**

Siddha Central Research Institute, Chennai.  
Siddha Regional Research Institute, Trivandrum.

## CCRS CLINICAL TRIAL PROTOCOLS

### V. SAMPLE SIZE:

30 cases with Varmam application alone

### VI. TREATMENT

#### Stimulation of the following Varmam Points

In the neck

- |                       |                        |
|-----------------------|------------------------|
| 1. விலங்கு வர்மம்.    | Vi anku varmam         |
| 2. காக்கட்டை வர்மம்.  | K kkattai varmam       |
| 3. அகபுற தாரை வர்மம், | Aka, puṛa t rai varmam |
| 4. கிளிமுக வர்மம்.    | Kiḷimuka Varmam        |

In the hand

- |                           |                         |
|---------------------------|-------------------------|
| 1. கோச்சு வர்மம்.         | K ccu varmam            |
| 2. புற தாரை வர்மம்.       | Pura t rai varmam       |
| 3. குரு நாடி வர்மம்.      | Kuru n ti varmam        |
| 4. துதிக்கை வர்மம்.       | Tutikkai varmam         |
| 5. வெள்ளை வர்மம்.         | Ve ai varmam            |
| 6. பெருவிரல் கவளி வர்மம். | Peruviral kava i varmam |

### VII. DURATION OF TREATMENT: 7 days

### VIII. CRITERIA FOR INCLUSION

Corresponding to diagnostic standards of cervical spondylosis

- Patients with chief complaint of neck pain
- One or more symptoms - neck pain, neck stiffness attack one average per month for at least 3 months
- VAS scores more than 3 points at entry
- The result of antero-posterior and lateral radiograph corresponds to x-ray diagnostic standards of cervical spondylosis, or MR/CT scan shows the degeneration of cervical spine herniation.
- Age between 18- 60 years

## CCRS CLINICAL TRIAL PROTOCOLS

### **IX. CRITERIA FOR EXCLUSION**

Corresponding to the diagnostic standards of cervical spondylosis myelopathy;

- Suffering from severe systemic diseases such as diabetes mellitus, cardio-cerebro - vascular disease, tumors and diseases that researchers consider unsuitable for research.
- Having neck trauma/fracture/surgery history, neurologic impairment (such as myasthenia or abnormal spinal nerve reflex).
- Congenital spinal abnormality, systemic diseases of bones or joints.
- Pregnant or lactation period in women.
- Receiving current treatments for cervical spondylosis (medicine or non-medicine).

### **X. CRITERIA FOR WITHDRAWAL**

During the course of the trial there may be certain potential adverse threats and if any other side effects and other symptoms are observed then the trial drugs will be withdrawn and the patient will be treated symptomatically.

### **XI. METHODS OF ASSESSMENT**

Clinical assessment will be done (O) and every day till the completion of treatment (Form 2). The Lab investigations (Biochemical markers) will be recorded before treatment. The X-ray will be done before and after the completion of the treatment.

### **XII. PERIOD OF STUDY**

7 days

### **XIII. SUCCESS OF TREATMENT**

30% or more in mobilization without pain will be considered as significant improvement. .

### **XV. ETHICAL REVIEW**

Clearance certificate from Institutional Ethical Committee of respective institutes should be obtained. Investigator should be submitted along with patient's information sheet and informed consent form. Both these forms should be maintained in duplicate with one copy given to the patient at the time of entry to the trial.

---

CCRS CLINICAL TRIAL PROTOCOLS

**OPEN CLINICAL TRIAL FOR CEGANA VATHAM USING VARMAM  
PROCEDURE**

**CASE RECORD FORM I - SCREENING**

**BEFORE TREATMENT**

**(ENTER IN THE APPROPRIATE BOX)**

1. Code No. (of clinical trial)
2. Centre \_\_\_\_\_
3. Name of the subject \_\_\_\_\_
4. Gender                      Male                       Female
5. Date of Birth    Age (In Yrs)
- D D              M M              Y Y
6. Address: Permanent postal address with phone number / e-mail, if any

**CRITERIA OF INCLUSION**

- Patients with chief complaint of neck pain;
- One or more symptoms - neck pain, neck stiffness attack one average per month for at least 3 months;
- VAS score more than 3 points at entry
- The result of antero-posterior and lateral radiograph corresponds to x-ray diagnostic standards of cervical spondylosis or MRI/CT scan shows the degeneration of cervical spine.
- Age between 18~60 years

**EXCLUSION CRITERIA**

- Suffering from severe systemic diseases such as diabetes mellitus, cardio-cerebro-vascular disease, tumors and diseases that researchers consider unsuitable for research.

CCRS CLINICAL TRIAL PROTOCOLS

- Having neck trauma/fracture/cervical rib/surgery history, neurologic impairment (such as myasthenia or abnormal spinal nerve reflex).
- Congenital spinal abnormality, systemic diseases of bones or joints.
- Pregnant or lactation period in women.
- Receiving current treatments for cervical spondylosis (medicine or non-medicine).

A subject is eligible for admission, if 'yes' is the answer for inclusion and exclusion criteria

Date: \_\_\_\_\_

Signature of  
investigator: \_\_\_\_\_

**OPEN CLINICAL TRIAL FOR CEGANA VATHAM USING VARMAM  
PROCEDURE**

**CASE RECORD FORM II - HISTORY**

**BEFORE TREATMENT**

**(ENTER IN THE APPROPRIATE BOX)**

7. Code No. (of clinical trial)

8. Centre \_\_\_\_\_

9. Name of the subject \_\_\_\_\_

10. Serial No. of the subject

11. Gender                      Male                       Female

12. Date of Birth    Age (In Yrs)

D D              M M              Y Y

**13. Address: Permanent postal address with phone number / e-mail, if any**

CCRS CLINICAL TRIAL PROTOCOLS

14. Educational status :(Enter IN THE APPROPRIATE BOX)

Illiterate  Matriculation  Graduate  Postgraduate

15. Annual income  60,000 (enter <, >)

16. Occupation

17. The History of previous illness and treatment

18. History of present illness:	Grade	Present/absent
▪ Pain in neck	1	<input type="checkbox"/>
▪ Muscle pain restricting movements	2	<input type="checkbox"/>
▪ Stiffness	3	<input type="checkbox"/>
▪ Guidiness on movements	4	<input type="checkbox"/>
▪ Numbness in the limbs /Fingers	5	<input type="checkbox"/>
▪ Disequilibrium	6	<input type="checkbox"/>



**No pain**



**Worst pain ever**

---

0    1    2    3    4    5    6    7    8    9    10

CCRS CLINICAL TRIAL PROTOCOLS

Duration of above registered symptoms \_\_\_\_\_ days

19. Personal history:

	YES	NO
▪ Smoking	<input type="checkbox"/>	<input type="checkbox"/>
▪ Alcoholic	<input type="checkbox"/>	<input type="checkbox"/>
▪ Non-vegetarian Diet	<input type="checkbox"/>	<input type="checkbox"/>
▪ Udaliyal	<input type="checkbox"/>	<input type="checkbox"/>

Vali

Azhal

Iyam

Thontham

20. Physical examination

1. Built
2. Gait
3. Body Weight  kgs
4. Height
5. BMI
6. Temperature
7. Blood Pressure  mm/Hg
8. Pulse rate  /min
9. Respiratory rate  /min
10. Pallor Present  Absent
11. Jaundice

CCRS CLINICAL TRIAL PROTOCOLS

12. Koilonychia

13. Lymphadenopathy

Motor System		
Power		
Upper limb :	Right	Left
21.Shoulder ( flex, ext, abd, add, rotation )	<input type="checkbox"/>	<input type="checkbox"/>
22.Elbow ( flex, ext )	<input type="checkbox"/>	<input type="checkbox"/>
23.Wrist ( flex, ext, pro, sup, add, abd)	<input type="checkbox"/>	<input type="checkbox"/>
Lower limb	Right	Left
24.Hip ( flex, ext, abd, add, rotation )	<input type="checkbox"/>	<input type="checkbox"/>
25.Knee ( flex, ext )	<input type="checkbox"/>	<input type="checkbox"/>
26.Ankle ( dorsi & plantar flex, inv, ever )	<input type="checkbox"/>	<input type="checkbox"/>
Tone		
27.Hypertonia <input type="checkbox"/>	38.Hypotonia	<input type="checkbox"/>
Deep tendon reflexes	Right	Left
28.Biceps (C5 )	<input type="checkbox"/>	<input type="checkbox"/>
29.Triceps(C6,C7 )	<input type="checkbox"/>	<input type="checkbox"/>
30.Supinator(C5, C6 )	<input type="checkbox"/>	<input type="checkbox"/>
31. Knee( L3, L4 )	<input type="checkbox"/>	<input type="checkbox"/>
32.Ankle( S1 )	<input type="checkbox"/>	<input type="checkbox"/>
Superficial reflexes	Right	Left
33.Corneal / conjunctival reflex	<input type="checkbox"/>	<input type="checkbox"/>
34.Abdominal reflex	<input type="checkbox"/>	<input type="checkbox"/>
35.Cremasteric reflex	<input type="checkbox"/>	<input type="checkbox"/>
36.Plantar reflex	<input type="checkbox"/>	<input type="checkbox"/>

**UYIR THATHUKKAL**

VALI - ABSENT (0) NORMAL (1) DECREASED (2) INCREASED (3)

37. Uyirkkal (Pranan)

Digestion



---

38. Kizhnokkukkal (Abanan)

Excretion of Urine



---

Excretion of Faeces



---

39. Paravukal (Viyanan)

Blinking



---

Movement of limbs



---

40. Melnokkukkal (Uthanan)

Eloquence



---

Complexion



---

Hiccup



---

41. Nadukkal (Samanan)

Digestion



---

42. Nagan

Hearing



---

Thinking



---

Closing & opening of eyelids



---

43. Koorman

Winking of eyelids



---

Yawning



---

Closing of mouth



---

44. Kirukaran

Salivary secretions



---

Hunger



---

CCRS CLINICAL TRIAL PROTOCOLS

45. Devathathan

Ocular Movements  \_\_\_\_\_

Laziness  \_\_\_\_\_

AZHAL - ABSENT (0) NORMAL (1) DECREASED (2) INCREASED (3)

46. Aakkanaal (Anar pitham)

Digestion  \_\_\_\_\_

47. Vannayeri(Ranjagam)

Pallor  \_\_\_\_\_

48. Aattralangi(Sathagam)

Movements  \_\_\_\_\_

49. Olloli Thee (Prasagam)

Complexion  \_\_\_\_\_

Colour of Skin  \_\_\_\_\_

Brightness of Skin  \_\_\_\_\_

50. Nokkazhal(Alosagam)

Vision  \_\_\_\_\_

IYAM - ABSENT (0) NORMAL (1) DECREASED (2) INCREASED (3)

51. Aliiyam (Avalambagam)

Respiration  \_\_\_\_\_

52. Neerppiyam(Kilethagam)

Digestion  \_\_\_\_\_

53. Suvaikanaiyam (Pothagam)

Taste  \_\_\_\_\_

54. Niraivaiyam (Tharpagam)

Cooling of eyes  \_\_\_\_\_

CCRS CLINICAL TRIAL PROTOCOLS

55. Onriyaiyam (Santhigam)

Movements of joints

\_\_\_\_\_

VATHAM

PITHAM

KABAM

\_\_\_\_\_

**CENTRAL COUNCIL FOR RESEARCH IN SIDDHA**

**OPEN CLINICAL TRIAL FOR CEGANA VATHAM USING VARMAM  
PROCEDURE**

**FORM III - LABORATORY INVESTIGATION**

1. Code No. (of clinical trial)

1. Centre:

3. S.No. of patients \_\_\_\_\_

CCRS CLINICAL TRIAL PROTOCOLS

4. Name of the patient \_\_\_\_\_
5. Address \_\_\_\_\_  
\_\_\_\_\_
6. Gender Male  (1) Female  (2)
7. Date of birth    8. Age (Yrs)
9. Date of assessment \_\_\_\_\_

**Blood**

10. TC (Cells/Cumm) \_\_\_\_\_

**Differential Count**

11. P (%) \_\_\_\_\_ 12. L (%) \_\_\_\_\_ 13. E (%) \_\_\_\_\_ 14. M (%) \_\_\_\_\_ 15. B (%) \_\_\_\_\_

16. Hb (g/dl) \_\_\_\_\_.

17. ESR (1/2 hour.) \_\_\_\_\_ ESR (1 hour.) \_\_\_\_\_

18. Blood Sugar- Fasting (mg/dl) \_\_\_\_\_

19. Blood Sugar – PP (mg/dl) \_\_\_\_\_

20. Blood Urea (mg/dl) \_\_\_\_\_

21. S. Creatinine (mg/dl) \_\_\_\_\_

22. Uric acid (mg/dl) \_\_\_\_\_

**LIPID PROFILE**

23. Serum total Cholesterol (mg/dl) \_\_\_\_\_

24. S. Triglycerides (mg/dl) \_\_\_\_\_

25. HDL (mg/dl) \_\_\_\_\_

26. LDL (mg/dl) \_\_\_\_\_

27. VLDL (mg/dl) \_\_\_\_\_

CCRS CLINICAL TRIAL PROTOCOLS

**LIVER FUNCTION TESTS**

**Serum Bilirubin**

- 28. Total (mg/dl) \_\_\_\_\_
- 29. Direct (mg/dl) \_\_\_\_\_
- 30. SGOT (IU/L) \_\_\_\_\_
- 31. SGPT (IU/L) \_\_\_\_\_
- 32. Alk. Phosphatase (KA units) \_\_\_\_\_
- 33. Total proteins (gm/dl) \_\_\_\_\_
- 34. Albumin (gm/dl) \_\_\_\_\_
- 35. Globulin (gm/dl) \_\_\_\_\_
- 36. A/G Ratio \_\_\_\_\_

**Serum Electrolytes**

- 37. Sodium (mEq/L) \_\_\_\_\_
- 38. Potassium (mEq/L) \_\_\_\_\_

**39. X-RAY**

**Cervical spine AFFECTED JOINT – AP/LATERAL VIEW**

**40. CT SCAN/MRI – Cervical spine**

Sl.No.10-38 & 40 will be done before treatment 39 & 40 will be done before and after treatment.

Date: \_\_\_\_\_

Signature of Doctor \_\_\_\_\_

**References**

- 1. Binder AI. Neck pain syndromes. Clinical Evidence. Search date December 2006. [www.clinicalevidence.com/ceweb/conditions/msd/1103/1103\\_updates.jsp](http://www.clinicalevidence.com/ceweb/conditions/msd/1103/1103_updates.jsp).
- 2. Binder AI. Cervical pain syndromes. In: Isenberg DA, Maddison PJ, Woo P, Glass DN, Breedveld FC, eds. Oxford textbook of rheumatology. 3rd ed. Oxford: Oxford Medical Publications, 2004:1185-95.
- 3. Vernon HT, Humphreys BK, Hagino CA. A systematic review of conservative treatments for acute neck pain not due to whiplash. J Manipulative Physiol Ther 2005;28:443-8.

## CCRS CLINICAL TRIAL PROTOCOLS

4. Canadian Chiropractic Association, Canadian Federation of Chiropractic Regulatory Boards, Clinical Practice Guidelines Development Initiative, Guidelines Development Committee (GDC). Chiropractic clinical practice guideline: evidence-based treatment of adult neck pain not due to whiplash. *J Can Chiropr Assoc* 2005;49:158-209.
5. Aker PD, Gross AR, Goldsmith CH, Peloso P. Conservative management of mechanical neck pain: systematic overview and meta-analysis. *BMJ* 1996;313:1291-6.
6. Philadelphia Panel. Evidence-based clinical practice guidelines on selected rehabilitation interventions for neck pain. *Phys Ther* 2001;81:1701-17.
7. Sarig-Bahat H. Evidence for exercise therapy in mechanical neck disorders. *Man Ther* 2003;8:10-20.
8. Kay TM, Gross A, Goldsmith C, Santaguida PL, Hoving J, Brontfort G, et al, Cervical Overview Group. Exercises for mechanical neck disorders. *Cochrane Database Syst Rev* 2005;(3):CD004250.
9. Ylinen J, Takala E, Nykanen M, Hakkenen A, Malkia E, Pohjolainen T, et al. Active neck muscle training in the treatment of chronic neck pain in women: a randomized controlled trial. *JAMA* 2003;289:2509-16.
10. Waling K, Sundelin G, Ahlgren C, Jarvholm B. Perceived pain before and after three exercise programs—a controlled clinical trial of women with work-related trapezius myalgia. *Pain* 2000;85:201-7.
11. Waling K, Jaörvholm B, Sundelin G. Effects of training on female trapezius myalgia: an intervention study with a 3-year follow-up period. *Spine* 2002;27:789-96.
12. Viljanen M, Malmivaara A, Uitti J, Tinne M, Palmroos P, Laippala P. Effectiveness of dynamic muscle training, relaxation training, or ordinary activity for chronic neck pain: randomised controlled trial. *BMJ* 2003;327:475-7.
13. Hurwitz EL, Aker PD, Adams AH, Meeker WC, Shekelle PG. Manipulation and mobilization of the cervical spine: a systematic review of the literature. *Spine* 1996;21:1746-60.
14. Bronfort G, Haas M, Evans RL, Bouter LM. Efficacy of spinal manipulation and mobilization for low back pain and neck pain: a systematic review and best evidence synthesis. *Spine J* 2004;4:335-56.
15. Gross AK, Hoving JL, Haines TA, Goldsmith CH, Kay T, Aker P, et al, Cervical Overview Group. Manipulation and mobilisation for mechanical neck disorders. *Cochrane Database Syst Rev* 2004;(1):CD004249.
16. Oduneye F. Spinal manipulation for chronic neck pain. In: Bazian Ltd, ed. *STEER: Succinct and Timely Evaluated Reviews* 2004;4(4). Bazian Ltd and Wessex Institute for Health Research and Development, University of Southampton.

## CCRS CLINICAL TRIAL PROTOCOLS

17. Koes BW, Bouter LM, van Mameren H, Essers AH, Vestegen GM, Hofhuizen DM, et al. Randomised clinical trial of manipulative therapy and physiotherapy for persistent back and neck complaints: results of one year follow up. *BMJ* 1992;304:601-5.
18. Hoving J, Koes B, de Vet H, van der Wildt DA, Assendelft WJ, van Mameren H, et al. Manual therapy, physical therapy, or continued care by a general practitioner for patients with neck pain. A randomized, controlled trial. *Ann Intern Med* 2002;136:713-22.
19. Jordan A, Bendix T, Nielsen H, Hansen ER, Host D, Winkel A. Intensive training, physiotherapy, or manipulation for patients with chronic neck pain. A prospective, single-blinded, randomized clinical trial. *Spine* 1998;23:311-9.
20. Hurwitz EL, Morgenstern H, Harber P, Kominski GF, Yu F, Adams AH. A randomized trial of chiropractic manipulation and mobilization for patients with neck pain: clinical outcomes from the UCLA neck-pain study. *Am J Public Health* 2002;92:1634-41.
21. Bronfort G, Evans R, Nelson B, Aker PD, Goldsmith CH, Vernon H. A randomized clinical trial of exercise and spinal manipulation for patients with chronic neck pain. *Spine* 2001;26:788-97.
22. Evans R, Bronfort G, Nelson B, Goldsmith CH. Two-year follow-up of a randomized clinical trial of spinal manipulation and two types of exercise for patients with chronic neck pain. *Spine* 2002;27:2383-9.
23. Dzedzic K, Hill J, Lewis M, Sim J, Daniels J, Hay EM. Effectiveness of manual therapy or pulsed shortwave diathermy in addition to advice and exercise for neck disorders: a pragmatic randomized controlled trial in physical therapy clinics. *Arthritis Care Res* 2005;53:214-22.
24. White AR, Ernst E. A systematic review of randomized controlled trials of acupuncture for neck pain. *Rheumatology* 1999;38:143-7.
25. Van der Heijden GJ, Beurskens AJ, Koes BW, Assendelft WJ, de Vet HC, Bouter LM. The efficacy of traction for back and neck pain: a systematic, blinded review of randomized clinical trial methods. *Phys Ther* 1995;75:93-104.
26. Karjalainen K, Malmivaara A, Van Tulder M, Roine R, Jauhianen M, Hurri H, et al. Multidisciplinary biopsychosocial rehabilitation for neck and shoulder pain among working age adults. *Cochrane Database Syst Rev* 2002;(3):CD002194.
27. Boswell MV, Hansen HC, Trescot AM, Hirsch JA. Epidural steroids in the management of chronic spinal pain and radiculopathy. *Pain Physician* 2003;6:319-34.
28. Fouyas IP, Statham PF, Sandercock PA. Cochrane review on the role of surgery in cervical spondylotic radiculomyelopathy. *Spine* 2002;27:736-47.

## CCRS CLINICAL TRIAL PROTOCOLS

29. Persson LC, Carlsson CA, Carlsson JY. Long-lasting cervical radicular pain managed with surgery, physiotherapy, or a cervical collar: a prospective randomised study. *Spine* 1997;22:751-8.
30. Kannan Rajaram. (2007). *Varma pullikainl iruppitam*. kanyakumari: A.T.S.V.S.