

## ARE SELF SNAGS EFFECTIVE FOR CHRONIC NECK PAIN?

## SUNT AUTO AANS-URILE EFICIENTE ÎN DUREREA CERVICALĂ CRONICĂ?

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**Key words:** Sustained Natural Apophyseal Glides; Neck Disability Index; Nonspecific neck pain

**Abstract**

**Objective** The purpose of the study was to investigate the effectiveness of self Sustained Natural Apophyseal Glides (SNAGs) on pain, active cervical Range of Motion and functional disability in chronic nonspecific neck pain.

**Design** Randomized Controlled Trial.

**Setting** Department of Musculoskeletal Physiotherapy, Pravara Rural Hospital (tertiary hospital), Loni, Tal- Rahata, Dist-Ahmednagar, Maharashtra State, India- 413 736.

**Participants** One hundred and three participants between 25-53 years of age with clinical diagnosis of chronic nonspecific neck pain.

**Interventions** Self SNAGs, therapist administered SNAGs and conventional physiotherapy for six weeks.

**Main outcome measures** The outcome measures used in the study were Numerical Pain Rating Scale (NPRS), Active Cervical Range of Motion (ACROM), and Neck Disability Index (NDI).

**Results** There was no significant difference in self administered SNAGS and therapist administered SNAGS in the treatment of chronic nonspecific neck pain over the period of six weeks.

**Conclusions** Patients with chronic nonspecific neck pain can be advised to perform Self Sustained Natural Apophyseal Glides (SNAGs) instead of therapist administered SNAGS.

**Cuvinte cheie:** Alunecări Apofiziale Naturale Susținute; Index de Dizabilitate a Gâtului; Durere Cervicală Nespecifică.

**Rezumat**

**Obiective** Scopul acestui studiu a fost investigarea eficienței Alunecărilor Apofiziale Naturale auto Susținute (AANS) asupra durerii, a gamei de mișcări cervicale active și a dizabilității funcționale în cazul durerii cervicale cronice nespecifice.

**Design** Probă Controlată Aleatorie.

**Locație** Secția de Kinetoterapie Musculoscheletală, Spitalul Rural Pravara (spital de gradul trei), Loni, Tal- Rahata, Dist-Ahmednagar, Statul Maharashtra, India- 413 736

**Participanți** O sută trei participanți cu vârste cuprinse între 25-53 de ani, cu diagnostic clinic de durere cervicală cronică nespecifică.

**Intervenții** Auto AANS-uri, AANS-uri administrate de către terapeut și kinetoterapie convențională timp de șase săptămâni.

**Principalele măsurători** Principalele măsurători utilizate în studiu au fost Scala Numerică a Durerii (SND), Gama de Mișcări Cervicale Active (GMCA) și Indexul de Dizabilitate a Gâtului (IDG).

**Rezultate** Nu au fost diferențe semnificative între AANS auto administrate și cele administrate de către terapeut în tratamentul durerii cervicale cronice nespecifice timp de șase săptămâni.

**Concluzii** Pacienții cu durere cervicală cronică nespecifică pot fi sfătuiți să-și administreze singuri AANS.

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## Introduction

It has been stated that all the living species with spine curvatures will experience spinal pain in their lifetime. Hence, neck pain is anticipated to be one of the common musculoskeletal ailment after low back pain with a mean point prevalence of 7.6% (range 5.9–38.7%) and mean lifetime prevalence of 48.5% (range 14.2–71.0%) [1]. It is estimated that about 10 – 50% population with neck pain will develop chronic symptoms [2-4]. Jette et al reported that patients with neck pain treated in outpatient physical therapy department, frame approximately 25% of all patients [5]. The economic burden due to neck disorders is high, including treatment costs, absence from the work place, and loss of productivity [6, 12].

Cervical disorders are almost as prevalent as low back pain and like low back pain, in most of the cases it is difficult to determine the actual cause of neck pain hence will be regarded as 'non-specific neck pain'[13, 14]. If we see the present world economy, is at critical point. Data released in 2009 by the Government of India the estimated population who lived below poverty line was 37%. A study by the Oxford Poverty and Human Development Initiative found that there were around 108.7 million below the poverty line in Maharashtra in 2007. So the treatment cost may create an extra financial burden in absence of well established health insurance. Hence, there is need for a cost effective approach that can minimize financial burden of patients with chronic nonspecific neck pain. Various orthopedic manual therapy approaches including Mulligan's approach have been considered for the management of chronic nonspecific neck pain.

Mulligan's mobilization with movement viz. SNAGS (sustained natural apophyseal glides) for neck pain can be performed by therapist or patient can perform this on his/her neck. At present, there is limited literature available about the effectiveness of self SNAGS on chronic nonspecific neck pain and hence the present study was carried out to uncover this clinical paradigm.

## Methods

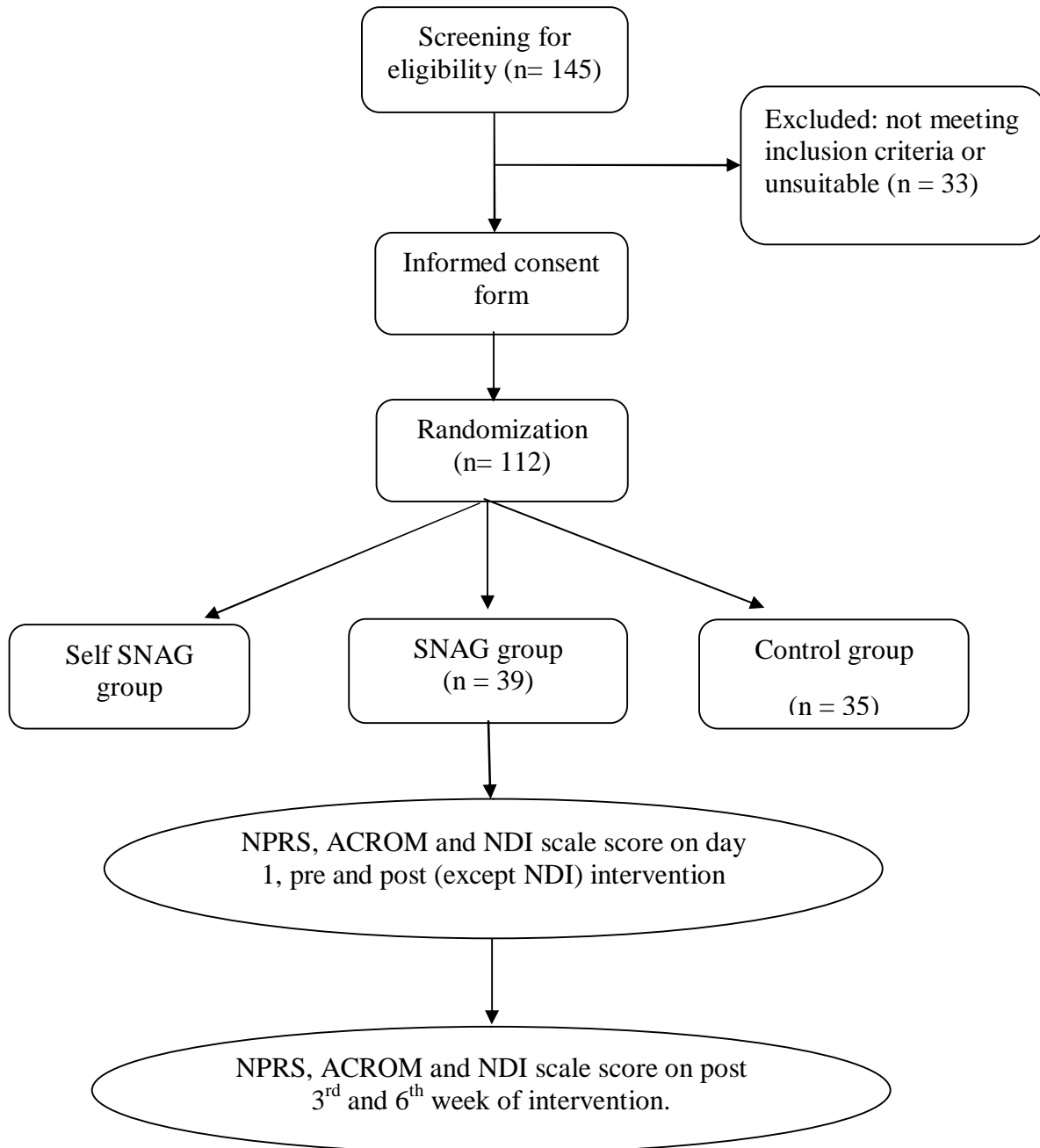
### *Subjects*

A total of one hundred and forty five volunteers from the Orthopaedic Department, Pravara Rural Hospital (Tertiary Hospital), Loni, Tal- Rahata, Dist-Ahmednagar, Maharashtra State, India- 413 736 from Jan 2011 to Nov 2011 were screened for the study and one hundred and twelve volunteers with chronic neck pain between 25 to 53 years of age were included in the study. Prior to the participation, a written informed consent was taken from all the participants. A total of nine participants dropped out of the study since they had time constrain.

Participants were included if there was a diagnosis of chronic (>3months) neck pain and those who had responded to application of SNAGs. Participants were excluded if they had any of the following: 1)Pregnancy 2)Trauma or tumor around the neck 3)Rheumatoid arthritis 4)Ankylosing spondylosis 5)Vertebro basilar insufficiency syndrome 6)Motor and sensory disturbances 7)Patients with radicular symptoms and 8)Multiple symptoms of Myelopathy.

### *Outcome measures*

The main outcome measures used in this study were Numerical Pain Rating Scale (NPRS) [15, 16] to measure the intensity of pain, Active Cervical Range of Motion (ACROM) [17, 18] as a mobility assessment tool, and Neck Disability Index (NDI) [17, 19-22] to check functional disability due to chronic nonspecific neck pain. All of these outcome measures used had considerably good reliability and validity.



**Flow Diagram showing the procedure of participant allocation**

### *Procedure*

The study received approval from Ethical Committee of Pravara Institute of Medical Sciences, Loni. After the screening and as the written informed consent were obtained from all the participants, they were allocated in three groups by lottery method: Self SNAGs group (n= 38), SNAGs group (n= 39), and Control group (n= 35).

On the first day of treatment, participants in self SNAGs were taught how to perform self SNAGs with mulligan mobilization belt as per the guidelines mention by Mulligan [23]. In the following sessions the participants were performing self SNAGs under the



therapist's supervision to minimize the error and for the better results. Three sets of six to ten repetitions were instructed to perform in each session.

Conventional treatment given to all three groups was Interferential Therapy [24] followed by stretching of cervical and upper quadrant muscles which include scalenes, upper trapezius, levator scapulae, pectoralis minor and major and strengthening of cervical muscles [25].

Participants in SNAGs group were treated with institutional therapist administered SNAGs as per the guidelines mentioned in Mulligan Concepts [23]. Three sets of six to ten repetitions were given by the principal investigator. In addition to that conventional physiotherapy was given to the participants.

Participants in Control group were treated with only conventional physiotherapy same as self SNAGs and SNAGs group.

## Results

Statistic analysis was carried out using the GraphPad InStat trial version. Confidence interval was set at 95%. Age, BMI, severity of neck pain, active cervical range of motion, and NDI at baseline for all three groups were analyzed with ANOVA.

A general linear model with a repeated measures factor of time (pre intervention and post intervention) and a between subjects (Self SNAGs, SNAGs and Control group) was used to determine the difference among the three groups in the intensity of pain, active ROM and related functional disability.

Baseline characteristics across three groups were similar and are summarized in table 1. No significant differences were detected between the three groups in terms of age, BMI, NPRS, ACROM, and NDI ( $p>0.05$ ).

**Table1: Demographic and Clinical Data of the participants in Self SNAGs, SNAGs and Control group.**

	<b>Self SNAGs Group</b>	<b>SNAGs group</b>	<b>Control Group</b>
Age	33.6±7.36	37.23±9.1	37.23±9.29
BMI	24.64±2.20	25.12±3.35	25.03±3.01
Male : Female	15:18	11:19	17:18
NDI score	37.09±7.53	36.37±8.10	36.4±7.05
NRS score	7.43±1.83	7.4±1.85	6.93±2.11
* Data are mean±SD (95% confidence intervals)			

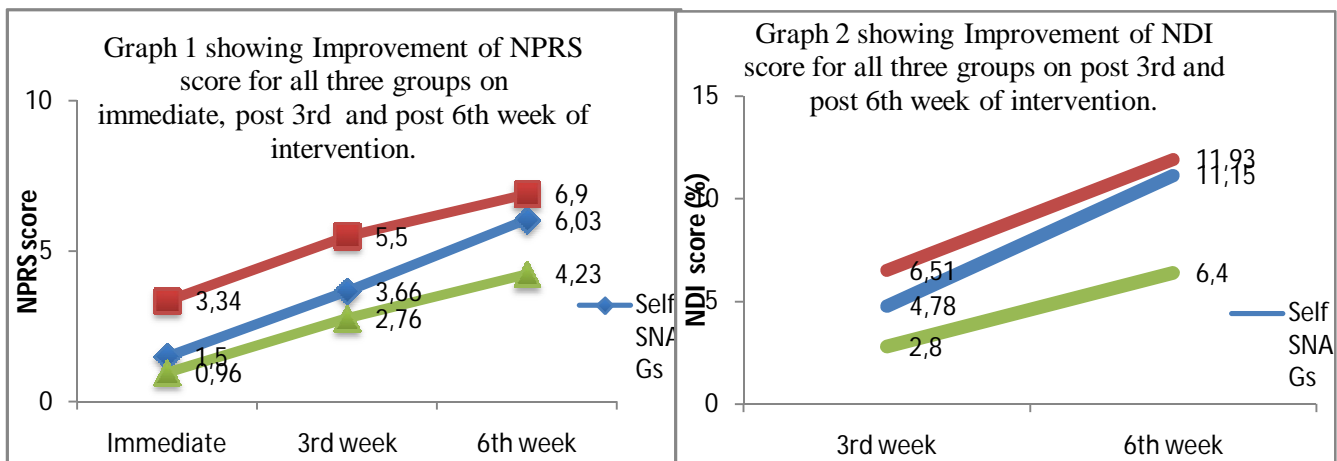
Hundred and twelve individuals with chronic neck pain had participated in the study and out of them nine participants did not complete the study. Two from the Self SNAGs group, four from the SNAGs group and three from the control group could not come to the follow up for the final evaluation because of the time constrain. No adverse effect was noted during the study period.

Significant differences in NPRS score (Graph 1) and active cervical range of motion was noted immediately after the first treatment and after three weeks of treatment. However, no significant difference was observed after six weeks of treatment (Table 2).

Neck disability index score was significant after three weeks of treatment but after six weeks of treatment no significant difference was observed in NDI (Graph 2). Thus, the result suggests uniform clinical benefits over the period of six weeks.

**Table 2: Improvement in active cervical range of motion in Self SNAGs, SNAGs and Control group**

ACROM	Self SNAGs Group			SNAGs Group			Control Group		
	Mean ± SD			Mean ± SD			Mean ± SD		
	Immediate	3 <sup>rd</sup> week	6 <sup>th</sup> week	Immediate	3 <sup>rd</sup> week	6 <sup>th</sup> week	Immediate	3 <sup>rd</sup> week	6 <sup>th</sup> week
Flexion	4.96±1.75	12.46±4.38	17.36±5.67	7.26±2.9	15.3±4.60	20.7±4.19	1.8±1.54	4.16±1.36	7.43±2.28
Extension	2.93±1.43	8.6±2.90	13.37±3.76	6.2±2.49	13.93±4.54	18.3±5.59	2.33±1.76	5.96±2.834	8.83±2.76
Rt side flexion	3.00±1.87	7.6±2.66	10.56±3.57	4.13±2.40	8.97±3.41	12.03±5.47	2.83±1.23	6.03±2.10	8.8±2.20
Lt side flexion	2.86±1.63	7.83±2.85	10.46±4.49	4.57±2.41	8.6±3.80	11.8±4.94	2.46±1.43	5.93±1.78	8.96±2.52
Rt rotation	4.46±2.36	8.73±2.75	10.96±3.7	6.1±4.35	9.67±4.07	13.73±6.25	2.43±1.13	6.2±2.49	10.8±3.32
Lt rotation	3.73±1.72	8.7±2.76	13.73±4.05	4.53±1.59	9.33±3.22	16.86±4.64	2.76±1.43	6.46±2.73	11.7±2.43



## Discussion

This study shows that therapist administered SNAGs and self SNAGs are equally effective over the period of six weeks in the treatment of chronic nonspecific neck pain although therapist administered SNAGs were found to be significantly better immediately after the first treatment and after three weeks of treatment.

Better results with therapist administered SNAGs could be due to accuracy of the technique and hands on therapeutic touch effect as compared to the self SNAGs or conventional physiotherapy wherein these two factors were lacking. This is in accordance with Toby Hall et al who reported similarly the effectiveness of C1-C2 self SNAGs in cervicogenic headache [26]. However, in present study self SNAGs were compared with therapist administered SNAGs and conventional physiotherapy unlike its comparison with placebo done by Toby et al and SNAGs were applied at lower cervical spine region mainly at C5-6 apophyseal joints and the outcome measures included NPRS, NDI and ACROM instead of headache index score.

Finally, the current study has various limitations which include small sample size, relatively short term intervention, limited follow up and the study had focused only on patients with chronic neck pain, and hence the findings are applicable to patients within this category only. Therefore, future studies with larger sample size, long term intervention period, and regular follow up is suggested. In addition to this, Effect of Self SNAGs on acute/subacute nonspecific neck pain may also be studied.

**Conclusions** Patients with chronic nonspecific neck pain can be advised to perform Self Sustained Natural Apophyseal Glides (SNAGs) instead of therapist administered SNAGS.

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*Conflict of interest:* None declared.

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