

EFFECT OF 6 WEEKS GREEVA SANCHALAN ON CERVICAL SPINE HEALTH AMONG MALE IT PROFESSIONALS

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Abstract

Purpose of present research was to study the effect of 6 weeks Greeva Sanchalan on Cervical Spine Health or work-related neck pain among male IT professionals. Quasi Pre-test Post-test Non-Equivalent research design used to achieve this objective. Non-Probability based Judgemental Sampling Technique, was used to screen samples from 2 different IT firms from Pune city, who were falling under the criteria of using laptop/desktop/computer for ≥ 5 hours/day, between 30-50 years of age group, experiencing neck pain/stiffness and were willing to participate in study. Neck Disability Index Questionnaire (NDI) includes 10 measuring sections such as neck pain, personal care, headache, lifting, reading, concentration, sleeping, work, driving, and recreation was used to collecting data. Using ABBA method, total selected 26 IT professionals, were divided into two groups, i.e., experimental ($n=13$) and control group ($n=13$). 6 weeks Greeva Sanchalan intervention was developed and implemented to experimental group's IT professionals only. After 6 weeks, post-test NDI scores were collected for all 26 IT professionals. NDI pre and post test scores were statistically analysed through Descriptive and Inferential statistics using SPSS software. Mean of pre and post NDI scores for experimental group was $7.92 (\pm 1.89)$ and $5.62 (\pm 1.26)$ respectively. Similarly Mean of pre and post NDI scores for control group was $7.54 (\pm 2.44)$ and $7.77 (\pm 2.98)$ respectively. On comparing the Mean of pre and post NDI scores with Neck Disability Index standard norms, all 26 IT professionals were falling within mild neck disability category. Mean of change in performance for experimental and control group's IT professionals were $2.31 (\pm 2.06)$ and $0.23 (\pm 1.74)$ respectively. Calculated mean difference of change in performance was 2.54 for 26 IT professionals. Calculated t-value was 3.40(24) at 0.05 significance level ($p=0.002$; $p<0.05$). According to statistical outcome, 6 weeks Greeva Sanchalan intervention benefitted in reducing neck pain/stiffness related to work among IT professionals, which relieved muscular tension of neck-shoulder region. It improves range of motion (CROM) of cervical pivot joint along with regaining neck muscles flexibility, which also strengthens neck muscles.

Key Words: Musculoskeletal Disorder, Cervical Spine Health, Greeva Sanchalan, Work Related Neck Pain, Therapeutic yogic practices.



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Introduction: An industrial shift to a service-oriented industry, and increased usages of computers/laptops in the workplace due to technology evolution bringing in more sedentary jobs. People involved in sedentary job culture growing much higher worldwide in last 20 years. The sedentary working life is one of the main causes of rising more Musculoskeletal Disorders (MSK) among computer professionals. Musculoskeletal disorder incidences seen significantly higher since an upward trend for computer usages recorded every year (Hoy, D. 2014; Safiri, S. 2020). Service-oriented industry domains such as IT, ITES, Telecom, Banking, customer care professionals are sitting at work for more than 95% of total working hours in a day are the most affected working domains at present (Ariens, G. A. 2001). Muscles, nerves, cartilage, tendons, joints injuries or disorders around the spine and spinal discs area is known as Musculoskeletal disorder. It is mainly characterized by muscular pain/stiffness, reduced range of movement, in the neck-shoulder-arm, and lumbosacral region. Pain in neck-shoulder region is identified as the most common MSK condition prevalent irrespective of age and gender.

The Bone and Joint Decade of year 2000-2010 on Neck Pain and associated disorders established “most people experience some degree of neck pain in their lifetime.” (Hallman, D. 2015). Neck Pain is a commonly seen among intensive computer users. It resulted due to various reasons, such as personal, psychological, ergonomic, and work-related factors. Several personal factors like age, gender, body mass index, hormonal imbalance associated with neck pain among computer professionals. Behavioural factors such as lack of physical activity, sleeping difficulties, smoking, alcohol consumption, etc also influences neck pain. Psychological factors, like job pressure, low self-esteem, and high stress level are also associated with neck pain among computer professionals. IT professionals with high-stress level along with sedentary lifestyle has a particularly high risk for neck pain (Holte, K. 2002; Korhonen, T. 2003; Wahlstrom, J. 2004). Workplace ergonomics like poor alignment of computer screen, height of desk and chair, etc also causes neck pain. Work-related factors include prolonged awkward sitting posture such as slouched & slumped shoulders & forward head position majorly amplified musculoskeletal discomfort (Bernard, B. 1997; Yang, J. F. 2012) among professionals.

Significant association was established between awkward prolonged sitting postures with repetitive work contributed to Work-Related Neck Pain (WRNP) (Cagnie, B. 2007; Chakraborty, S. 2020) in computer professionals. Computer/laptops/desktops usage for >4-6 hours daily is the main predictor of WRNP among IT professionals which caused by work-

related factors such as awkward sitting posture (Darivemula, S. B. 2016; Chakraborty S. 2020). Estimated 1year neck pain incidences from past studies varies between 10.4% to 21.3% among computer professionals more in urban areas compared with rural areas (Hoy, D. G. 2010). 59% of IT professionals reported WRNP where neck pain complaints were the topmost musculoskeletal disorder which are widely recorded in IT industries in India also (Vijay, S. A. 2013). Awkward sitting posture along with repetitive hand movements involves a static upper body (static neck) posture. In order to maintain that static neck posture, overstraining of neck-shoulder muscles happen, lead to stiffness in upper extremities which finally, causes neck pain. Musculoskeletal disorders such as neck pain affects employers through increase in absenteeism, reduced productivity, and an increase in medical costs. Similarly, employee also experience work life imbalance along with adverse effect in day-to-day activities with increased medical expenses.

Variety of preventive strategies evolved to address this upward trend of work-related musculoskeletal disorders among computer professionals. Pharmacotherapy (Non-steroidal anti-inflammatory drugs, Muscle relaxants), Vitamins and Supplements, Spinal manipulation, and Mobilization (therapeutic techniques), Exercise Therapy and Physical Therapy (Stretching, Strengthening and endurance, Yoga Practises, Passive mobilization, Mechanical traction, Stabilization), Acupuncture, and Low-Level Laser Therapy, Acupressure, cervical traction, trigger-point injections are various treatment modalities commonly used to treat neck pain (Malanga, A. G. 2012). Dynamic and aerobic exercises such as isometric neck strengthening, and neck-shoulder stretching along with flexibility exercises, are proved to be effective. (Tan, J.C. 1992; Wang, W. T. J. 1999; Dusunceli, Y. 2009). Yoga is one regularly used and popular forms of exercise that one can find around themselves in present. What distinguishes yoga from other forms of exercise is the fact that it integrates the achievement of spiritual wellbeing alongside physical wellbeing. The practice of yoga is based on the foundation of certain principles like breathing, proper exercise, diet, meditation, and realization.

Traditional Yogic practice to activate and mobilize these joints are Sanchalan Kriyas. This Sanchalan kriyas are specific ancient technique of yogic postures and dynamic movements that was introduced in 1956 by Swami Dharendra Brahmachari. Sanchalan Kriyas are muscle loosening and strengthening practices which are comparatively safe, repetitive, rhythmic, stretching movements synchronized with breathing. The simple, gentle joint movements are very useful to improve blood supply towards the different parts of joints like

cartilage, ligaments, etc. Sanchalan for neck joint is known as Greeva Sanchalan or Greeva Shakti Vikasaka. This Greeva Sanchalan is usually safe, cost-effective practice that works on improving the strength and flexibility of neck muscles thus effective for maintaining cervical spine health among computer professionals. Objective of present research was to determine the effect of 6 weeks Greeva Sanchalan on work related neck pain among IT professionals.

Materials and Method: Experimental Research Method was used to study the effect of 6 weeks Greeva Sanchalan on work related neck pain among male IT professionals from Pune city.

Participants: Target population was all male working IT professionals between 30-50 years age group who works on computer for ≥ 5 hours/day, experiencing work-related neck pain/stiffness. Non-probability based Judgemental Sampling Technique was used for sample selection. Out of total 30 screened male IT professionals, 26 samples were selected for study purpose. Experimental Pre-test Post-test non-equivalent research design was used.

Variables & Tools: 6-weeks Greeva Sanchalan intervention which comprised of specific slow, controlled, synchronized (breath), stretching, and strengthening neck movements, followed by specific asanas, enables loosening of muscles, and strengthening of ligaments, and joints of neck included was considered as independent variable. Sanchalan kriyas are specific ancient technique of yogic postures and dynamic movements that was introduced in 1956 by Swami Dharendra Brahmachari in India.

Cervical spine which comprised of 7 vertebral bodies (C1-C7) known as neck considered as dependent variable. Work-related neck pain was a pain experienced from the region of occiput till upper back, extending laterally to superior and outer limits of scapula region. In this research Cervical Spine Health was Work-Related Neck Pain, which has been assessed through scores achieved in Neck Disability Index (NDI) questionnaire.

NDI was developed by Howard Vernon and Silvano Mior in 1991 in Canada. It has a condition-specific 10 sections *such as neck pain, personal care, headache, lifting, reading, concentration, sleeping, work, driving, and recreation* (Vernon, H. 1991). NDI is most validated, possess strong psychometric characteristics, which make it useful in both clinical and field research settings. Each section has 0 to 5 rating scale, where 0 = 'No pain' and 5 = 'Worst imaginable pain', Time for tool administration was only 5 minutes.

Procedure: To study the effect of Greeva Sanchalan on Cervical spine health (work-related neck pain) among male IT Professionals, age between 30-50years, screened 30 professionals from 2 different IT firms from Pune city who were falling under the criteria of using

computer/laptop for ≥ 5 hours/day, experiencing neck pain/stiffness due to prolonged sitting work at computer screens. Neck Disability Index (NDI) was used as self-reported neck pain data collection tool. Administered the tool via converting it into google form link which was shared with all 30 screened participants through WhatsApp mode of web communication. From total 30 screened participants, 26 IT professionals were selected for further study. Through ABBA method, divided those 26 participants into 2 groups, i.e., experimental (n=13) and control groups (n=13). 6 weeks Greeva Sanchalan intervention was developed and implemented only to 13 participants from experimental group. Control group participants were asked to continue with their normal physical activity regime such as walking, cycling, running, gyming, exercises, yoga asanas etc. Post 6 weeks, same google form link of NDI questionnaire was shared with all 26 IT professionals for post-test data collection.

Results & Discussion: For 26 male IT professionals, collected pre and post NDI scores were statistically analysed by using descriptive, and inferential statistics using SPSS software. Change in performance was calculated by measuring the difference of post and pre-NDI scores. Descriptive statistics (Mean, SD and SEM) of Pre, Post and change in performance data for both experimental and control group were summarized as shown in below Table 1.1

Table 1.1 Descriptive Statistics of NDI Scores for exp & control group for 26 IT professionals

Group	NDI Scores	Mean	SEM	SD
Experimental	Pre-test	7.92	0.52	1.89
	Post-test	5.62	0.35	1.26
Change In Performance (Exp. Group)		-2.31	0.57	2.06
Control	Pre-test	7.54	0.68	2.44
	Post-test	7.77	0.83	2.98
Change In Performance (Control Group)		0.23	0.48	1.74

From Table 1.1, Mean of pre and post NDI scores for experimental group was 7.92 (± 1.89) at 0.52 SEM and 5.62, (± 1.26) at 0.35 SEM respectively. Similarly Mean of pre and post NDI scores was 7.54 (± 2.44) at 0.68 SEM and 7.77 (± 2.98) at SEM 0.83 respectively for control group. Mean of change in performance was 2.31 (± 2.06) at 0.57 SEM for experimental group and for control group Mean of change in performance was 0.23 (± 1.74) at 0.48 SEM.

Compared the change in performances of experimental group with control group through Independent Sample t-test via SPSS software. Significance level was calculated at 0.05 level of significance. To test null hypothesis statistically by using Independent Sample t-test, inferential statistics were calculated as shown in below Table 1.2

Table 1.2
Inferential Statistics for Change in Performance of NDI scores for 26 IT Professionals

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	SEM
Equal variances assumed	.79	.38	-3.40	24.00	.002	-2.54	0.75
Equal variances not assumed		↑	-3.40	23.36	.002	-2.54	0.75

From Table 1.2, Levene's Test for Equality of Variances, the calculated significance value was 0.38, which >0.05 level of significance, hence Equal Variances are assumed. Calculated mean difference of change in performance was 2.54 for 26 IT professionals. Calculated t-value was 3.40 (24) which showed significant difference at 0.05 level of significance (p=0.002; p<0.05). According to statistical analysis, null hypothesis (H₀) got rejected hence research hypothesis (H₁) was accepted, proved significant effect of 6 weeks Greeva Sanchalan on work related neck pain among male IT professionals.

Discussion: 6 weeks Greeva Sanchalan proved to be significantly effective for work related neck pain among IT professionals in present study. Yoga therapy, physical therapy, exercise therapy was found useful in reducing neck pain (Dusunceli, Y. 2009; Cox, L. G. 2019; Louw, S. 2017) in past researches. Yogasans practice increases cervical range of movement along with increasing flexibility and improved neck muscle strength were observed (Kim, S.D. 2016; Michalsen, A. 2012; Bayer, J. L. 2018). Dynamic-aerobic isometric neck strengthening exercises, along with neck and shoulder stretching and flexibility exercises, proved effective in neck pain management (Tan, J.C. 1992; Dusunceli, Y. 2009; Salmon, D. M. 2009). Yoga poses shows effective results in strengthening and stretching of cervical, & scapula-thoracic areas around neck and upper bounds of the shoulders region (Michalsen, A. 2012).

Despite the effective results of Greeva Sanchalan on work-related neck pain observed in present study, not many studies were found in literature review completely based on Yogic Greeva Sanchalan kriya to back the present results. Hence a further detailed research with good sample size along with monitoring long-term effects of 6 weeks Greeva Sanchalan intervention

is required to establish a strong base for Greeva Sanchalan effectiveness on work related neck pain.

Conclusion: According to statistical analysis, Greeva Sanchalan benefitted in reducing work-related neck pain, along with relieving muscular tension around neck-shoulder region by improving cervical range of motion, with increased neck flexibility, muscles strengthening. However, need of further detailed study with good sample size is required to concrete the efficacy of 6 weeks Greeva Sanchalan on work related neck pain among computer professionals.

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