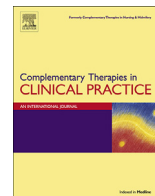




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Effects of yogic exercise on nonspecific neck pain in university students

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ABSTRACT

Objective: To assess the effects of yogic exercise on nonspecific neck pain in university students.

Methods: This study is a pretest-posttest design with a non-equivalent control group. Thirty-eight university students were selected by convenience sampling, with 18 assigned to an exercise group and 20 assigned to a control group. The yoga group participated in one-hour sessions of yogic exercise two days a week for eight weeks. The exercise comprised eight stages: relaxation, flexion of neck, extension of neck, right lateral flexion of neck, left lateral flexion of neck, right rotation of neck, left rotation of neck, and relaxation. Neck pain intensity was measured using a 100 mm visual analogue scale.

Results: The yoga group showed significantly decreased neck pain scores compared with those of the control group.

Conclusions: These findings indicate that yogic exercises could reduce neck pain in university students.

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1. Introduction

Currently, neck pain is an increasingly common health problem, with a reported prevalence of 6%–20% in the workforce and a 50% lifetime prevalence [1,2]. Neck pain has a negative impact on socio-economic status worldwide [3,4], and safe and cost-effective management is required for patients experiencing neck pain. In addition to middle-aged and elderly subjects, university students often experience neck pain. For example, neck pain comprised 34.6% and 9.5% of musculoskeletal disorders among nursing college students in Australia and Japan, respectively [5,6]. Factors contributing to neck pain include jobs or activities related to computer use, aging, injuries due to accidents, and life style choices, etc. [7]. Nonspecific neck pain may also be a result of psychological stress rather than any organic lesion [8]. Because the exact cause or underlying pathology of neck disorders is often unclear, treatments focus on relieving pain and stiffness [9].

In previous studies, yoga has been recommended as a complementary therapy for alleviation of neck-related pain [9–13]. A previous study suggested that yogic mind sound resonance technique (MSRT) reduced pain, tenderness, and disability, and improved flexibility in subjects with nonspecific neck pain [9]. Iyengar yoga was also reported to be effective for neck-related pain and disability

[1–3,10]. In systematic reviews, Iyengar yoga was strongly suggested to be effective for the treatment neck pain [11,12]. In earlier studies, most participants were older than 40 years of age, and only Iyengar yoga was evaluated. Another type of yoga, Greeva Sanchalana, was suggested to be effective for neck pain and tension related to prolonged desk work [13], although this has not previously been verified in a research study. Greeva Sanchalana means “neck movements”, and has been provided by Bihar Yoga Bharati (BYB) in India [13]. The Greeva Sanchalana consisted of movements such as flexion of neck, extension of neck, and rotation of neck and breathing, and awareness [13]. Unlike general neck movement, features of the Greeva Sanchalana are that breathing is performed simultaneously at each neck movement and awareness on the breath, mental counting and the moved physical area [13]. In another study, more severe neck pain was related to computer usage among university students [14]. The participants in the present study were university students who frequently used computers for academic activities and reported computer-associated neck pain. Therefore, this study aims to test the effectiveness of yoga exercise to alleviate nonspecific neck pain in university students.

2. Materials and methods

2.1. Design

This study is a pretest-posttest design with a non-equivalent

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control group to test the effect of yoga exercise on nonspecific neck pain in university students. The research design is presented in Fig. 1.

2.2. Location of the study

Yoga exercises were performed in a nursing classroom in the Health Science College of Kangwon National University.

2.3. Population and sample

Participants were recruited through a social networking service. The participants were nursing students in a university near the Samcheok-si area in South Korea. The inclusion criteria were as follows: willingness to participate in the study; and neck pain score greater than 40 points on the 100 mm Visual Analogue Scale for Pain (VASP) [2,15]. Exclusion criteria were specific neck pain; low or very high blood pressure; neck, shoulder, or spine diseases or disorders; and practice of yoga or other exercises within the preceding 12 weeks [10].

Sample size was estimated using G power 3.1 based on data from a previous study [16]. In total, 39 volunteers enrolled in the initial phase of the study. Each participant volunteered for the yoga or control group. After participants received detailed study information, they signed a written informed consent form and self-recorded the VASP score. One participant decided to take a break from university and dropped out of the yoga group. The remaining 38 participants completed the entire study, 18 in the yoga exercise group and 20 in the control group.

2.4. Study procedures

The study procedures were approved by the Institutional Review Board of Kangwon National University (KWNUIRB-2017-01-001-001). Study interventions were Greeva Sanchalana and

Shavasana of yoga. As described in Section 1, the Greeva Sanchalana means neck movements is effective for neck pain and tenderness related to prolonged desk work [13]. The Greeva Sanchalana combined postures with breathing and awareness. Shavasana means corpse pose is one of the relaxation asanas and relaxes the whole psycho-physiological system [13]. This yoga is provided by BYB as a type of Satyananda Yoga [13]. It consists of eight stages: relaxation, flexion of neck, extension of neck, right lateral flexion of neck, left lateral flexion of neck, right rotation of neck, left rotation of neck, and relaxation. The yoga was conducted in one-hour sessions two days a week for eight weeks under the guidance of a BYB-certified yoga instructor. As shown in Fig. 1, the intervention was performed in the order of Shavasana, Greeva Sanchalana, and Shavasana for 60 min. The intervention time was calculated by BYB's recommendation that each motion of the Greeva Sanchalana is practiced 10 times per session [13]. According to BYB, the longer duration of Shavasana depending on the available time, the better for relaxation [13]. Before the Greeva Sanchalana, the participants practiced Shavasana which lies flat on the back for about 10 min to relax their body and mind. Each stage of Greeva Sanchalana was processed for 5 min. The posture for Greeva Sanchalana is as follows. The participants "sit in the base position or a cross-legged pose with the hands resting on the knees in jnana or chin mudra and close their eyes" [13]. Under the guidance of the instructor, after inhalation, the participants "slowly move the head forward and try to touch the chin to the chest with exhalation and try to feel the stretch of the muscles in the front and back of the neck, and the loosening of the vertebrae in the neck" [13]. In this way, the next stage, such as the flexion, extension, and rotation of neck proceeded sequentially. After the Greeva Sanchalana, the participants practiced the Shavasana for 20 min to relax their neck.

The control group did not participate in the study's yoga classes. The quality of yoga exercise was maintained by the instructor through confirmation, feedback, and correction of yoga postures and movements of participants during each yoga class. The

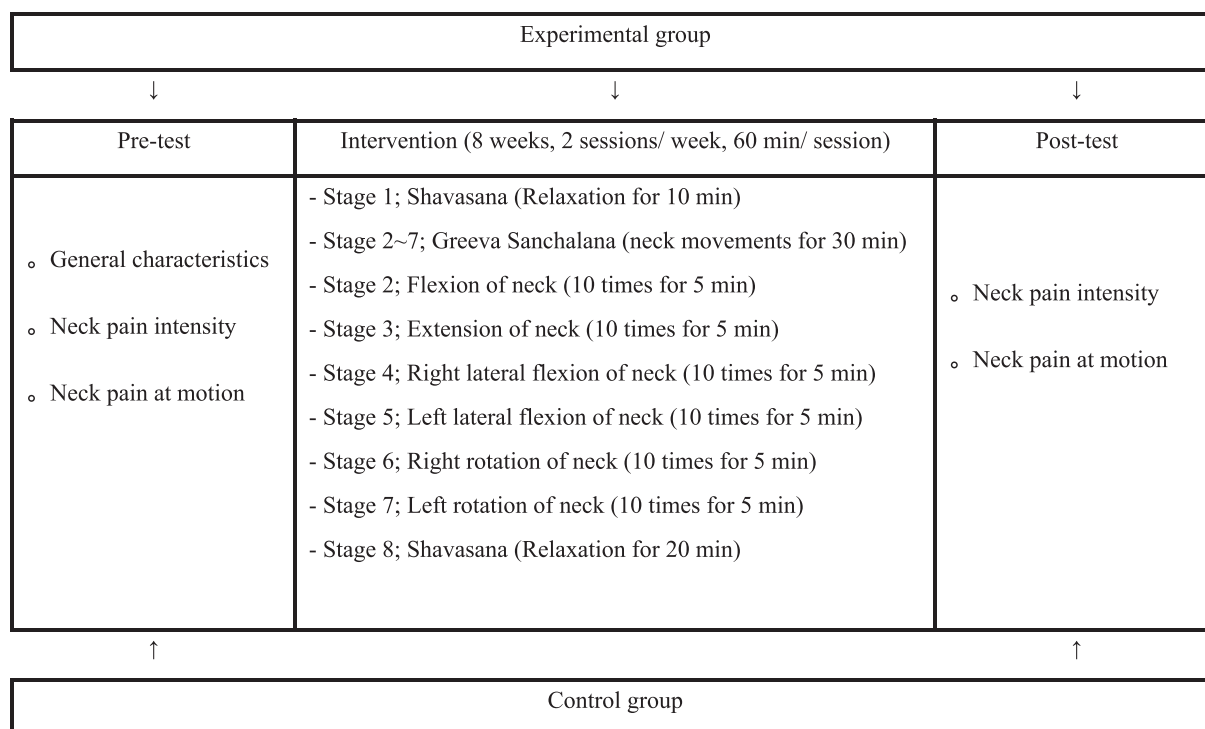


Fig. 1. Research design.

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