

Physical and psychological effects of the relax chair in young adults

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Background

The effects by rocking chair and the glider intervention has reported in human (Watson, N. M., Wells, T. J., & Cox, C. , 1998; Snyder, M., Tseng, Y., Brandt, C., Croghan, C., Hanson, S., Constantine, R., Kirby, L.2001). These interventions are very convenient and are employed as a relatively safe option for improvements of negative emotion and physical stress. In addition, nurses play an important role in positive regulating patients’ emotional statuses in clinical setting. Although the researches about working environment of comfort/discomfort of office chair have been performed frequently (Singh, R., Carranza, Leon, D.A., Morrow, M.M., Vos-Draper, T.L., Mc Gree, M.E., Weaver, A.L., Woolley, S.M., Hallbeck, S., Gebhart, J.B., 2016; Zemp, R., Taylor, W.R., Lorenzetti, S., 2016; van Vledder, N., Louw, Q., 2015; Zemp, R., Taylor, W.R., Lorenzetti, S., 2015), the physical and psychological effectiveness by sitting on the rocking chair or the relax chair is less well-studied in adults. That is, conclusive study on the intervention effects for sitting-induced comfort is sparse. Therefore, we aimed to examine the physiological and psychological effects of the relax chair.

Specific Aim

The aim of this study was to examine the physiological and psychological effects of the relax chair in healthy young adults. We compared sitting in the relax chair with sitting in a normal chair as a control.

Methods & Materials

Study Design

This study performed a randomized control trial with a cross-over design, to elucidate the effects of the relax chair.

Participants

The twenty adult men (aged: 21.25 ± 0.7yrs) participated in the current study.

Relax Chair

This relax chair is manufactured by the company, Proassist. Ltd. in Japan, and has multiple functions of slow swaying, music for healing and imperceptible vibration. The relax chair is specially designed for the user to feel comfort, but evidence for the relief mechanisms have been not proven in human studies.



Measurements

Interventional efficacy was quantitatively evaluated as follows: chromogranin A (CgA) and immune-globulin A (IgA) in saliva, a visual analogue scale (VAS) for comfort, the State-Trait Anxiety Inventory-Form (STAI), and emotions evaluation using the Profile of Mood States II (POMS II).

• **Chromogranin A (CgA) and immune-globulin A (IgA)**

Chromogranin A (CgA) and immune-globulin A (IgA) in saliva were used as the indicator of acute stress. Also the CgA is increased by reflecting acute stress in humans. Conversely, the IgA is decreased by reaction of acute stress.

• **Visual analogue scales (range: 0-100) for comfort estimation**

The VAS for comfort estimation was a 10-cm linear scale with no numerical markings, ranging from “very unpleasant (0) to very pleasant (10)”. Participants evaluated by drawing a line on VAS scale with pen.

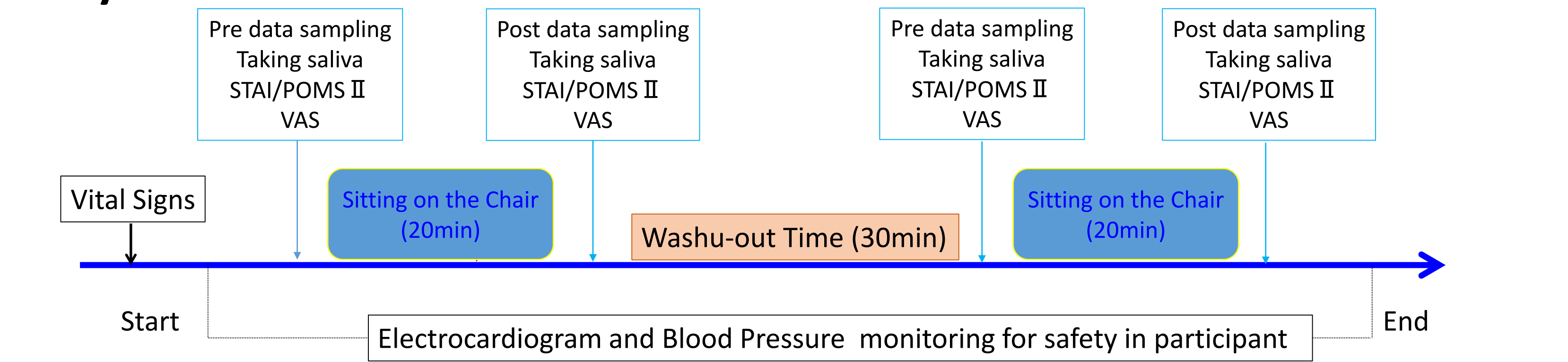
• **The Profile of Mood States II (POMS II) for emotions evaluation**

The brief Japanese version of the Profile of Mood States II (POMS II) was used to evaluate participants’ moods or emotions. The POMS II comprises a list of 35 questions, and classifies eight subscales, designed to assess confusion–bewilderment (CB), depression–dejection (DD), fatigue–inertia (FI), tension–anxiety (TA), vigor–activity (VA), friendliness (F), and total mood disturbance (TMD). Participants evaluated their moods and emotions on a five-point scale, ranging from “not at all” (0 points) to “quite frequently” (4 points).

• **The State-Trait Anxiety Inventory-Form (STAI) for anxiety estimation**

The State-Trait Anxiety Inventory (STAI) was used to evaluate the anxiety of participants. The STAI comprises 40 anxiety items grouped in two dimensions of state and trait.

Study Protocol



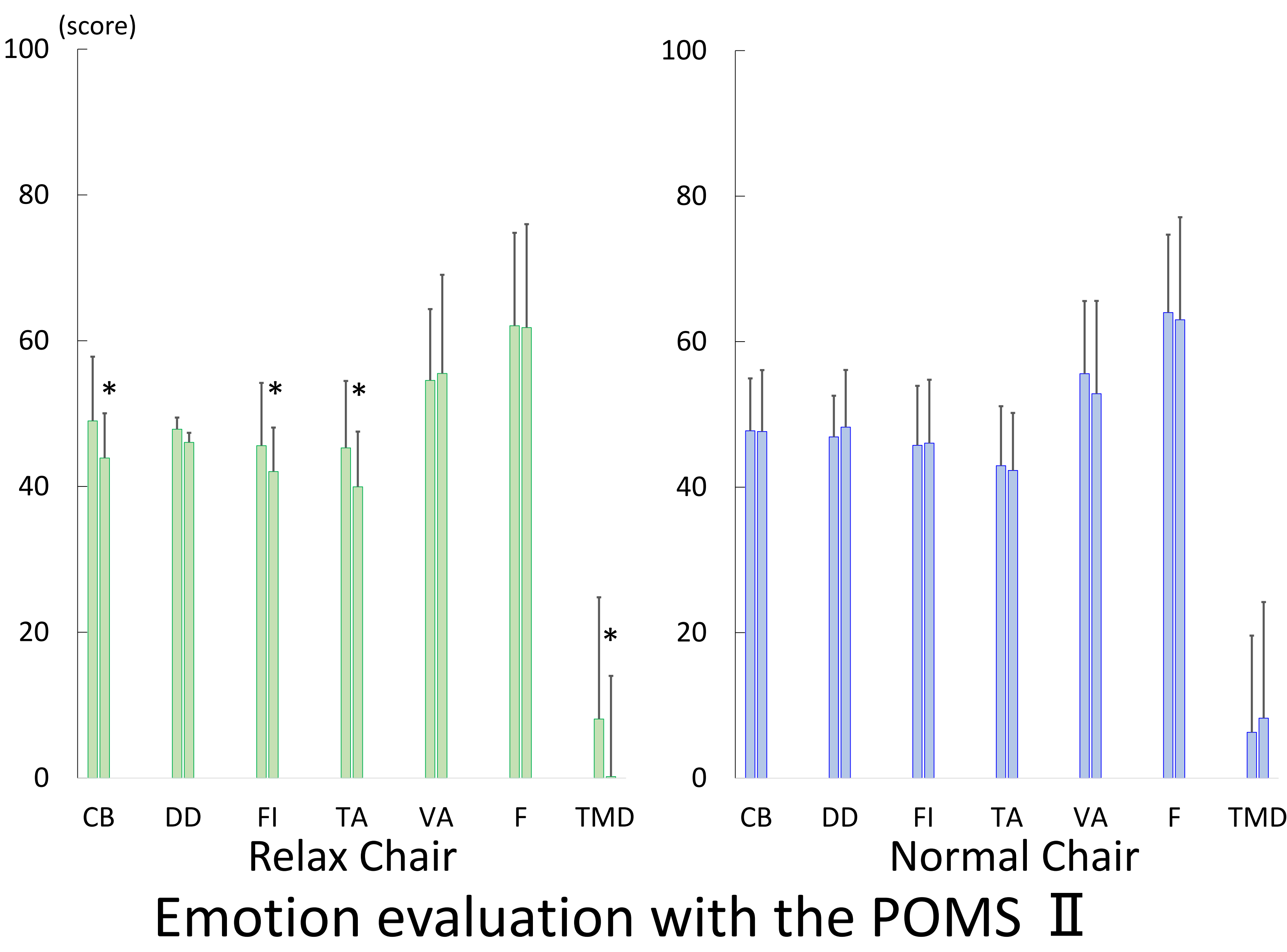
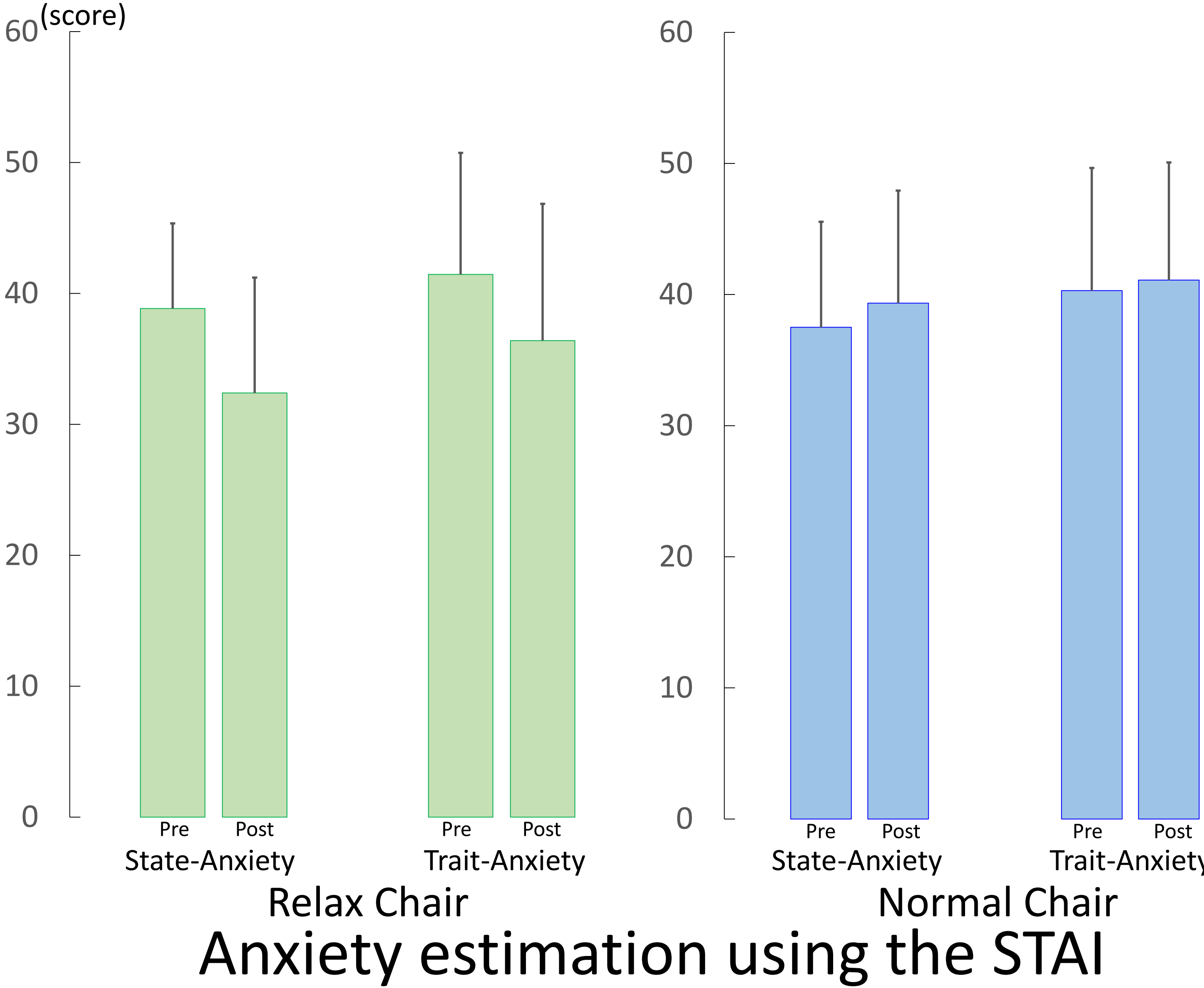
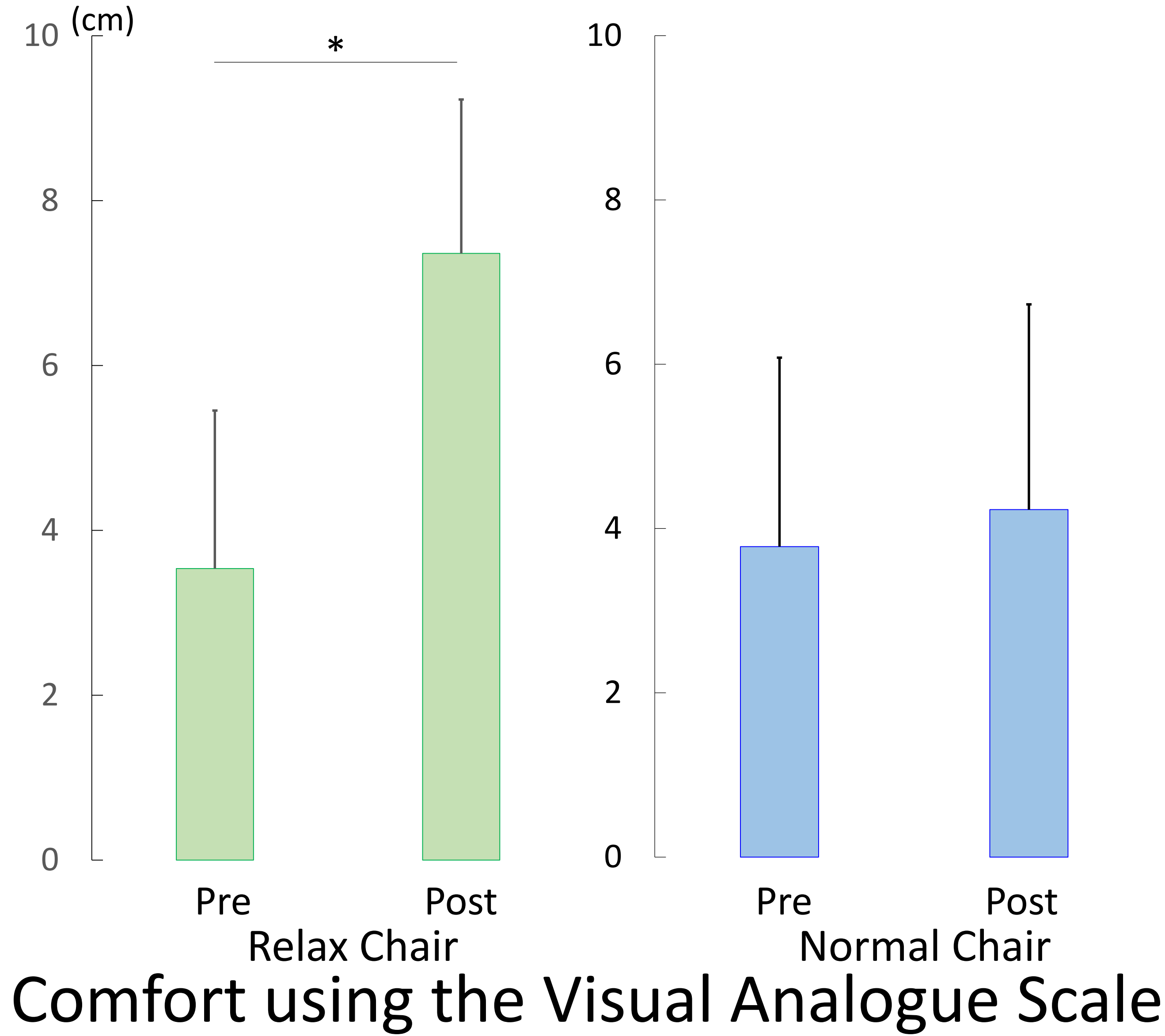
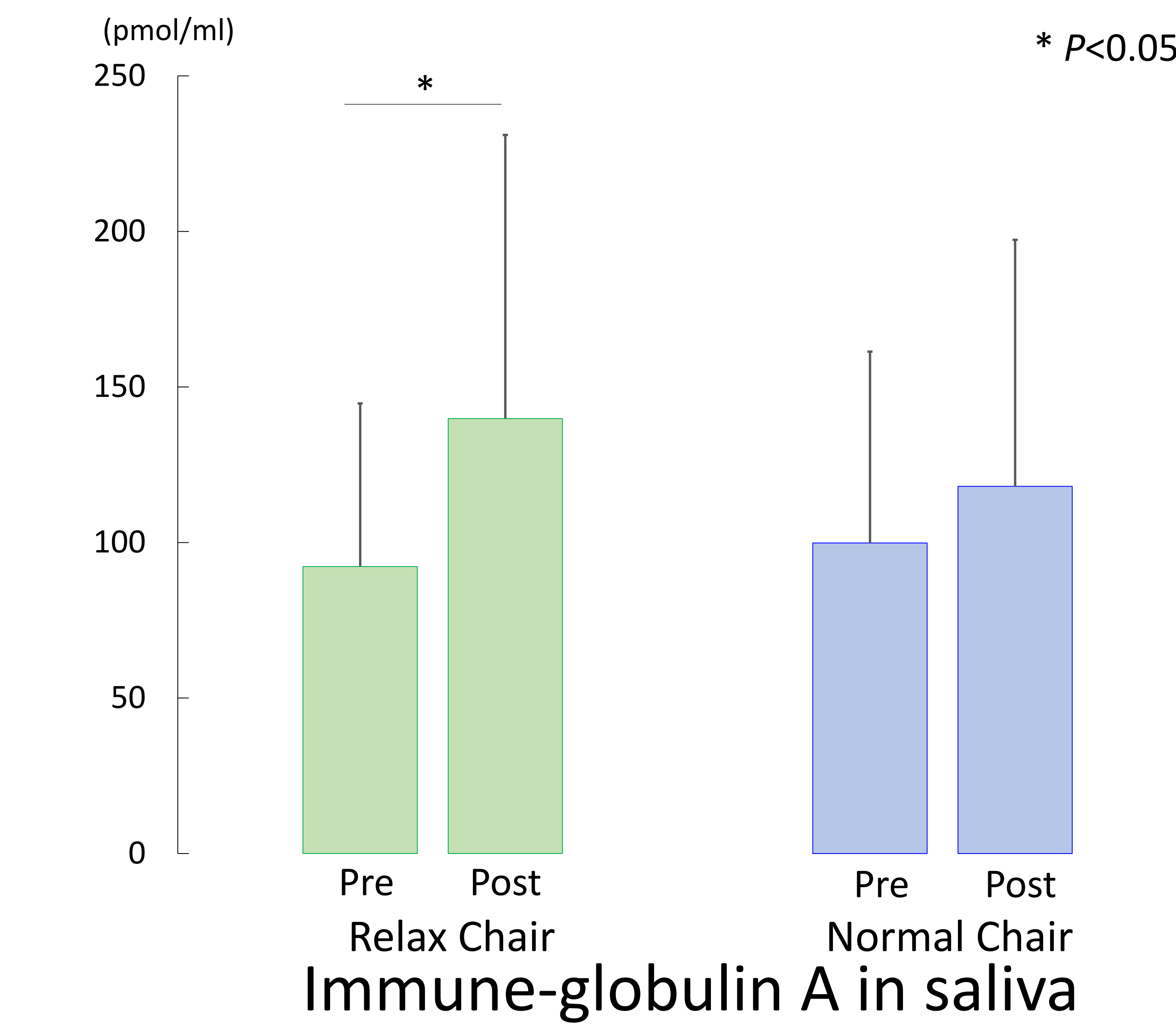
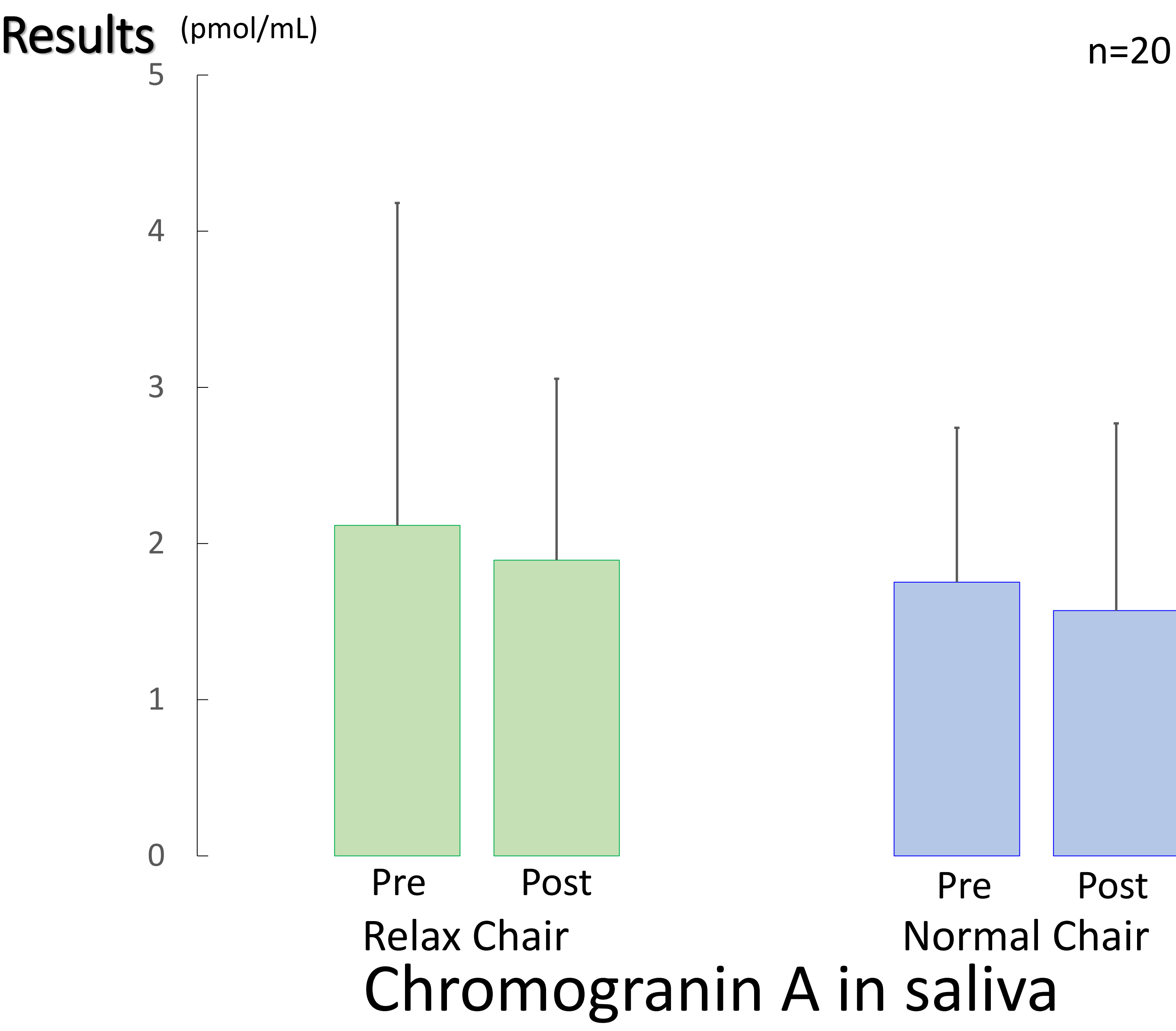
The study was conducted in an experimental room maintained at a temperature and humidity of 26.8 ± 2.7° C and 28.3 ± 3.5%, respectively. The participants sat in each chair for 20 minutes during the experiment. Sampling data were collected before and after sitting in each of the chairs and then compared.

Statistical Analysis

All data are expressed as mean ± standard deviation of the mean. The statistical analyses were carried out using the paired-*t* test. The criterion for statistical significance was *p*<0.05.

Ethical considerations

The study protocol was approved by the ethics committee of the Institutional Review Board, Kansai University of Social Welfare in Japan. The participants provided written informed consent to participate after receiving an explanation of the purpose and procedures of the study.



Conclusion

Acute physiological stress based on IgA in saliva was significantly inhibited after sitting on the relax chair for 20 minutes. Additionally, positive emotions were induced by sitting on the relax chair. Furthermore, sitting on the relax chair inhibited the expression of negative emotions. These findings reveal that sitting on the relax chair could temporary relieve not only physical stress, but also psychological stress such as anxiety and fatigue in healthy adults. Therefore, the relax chair could have possible implications for individuals with mood disorder or behavioral and psychological symptoms of dementia since sitting in the relax chair for 20 minutes is very brief and easy intervention. Thus, these findings reveal that sitting on the relax chair for 20 minutes could temporary relieve not only physical stress, but also psychological stress.

Acknowledgment

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References

Zemp, R., Taylor, W.R., Lorenzetti, S. (2016), Seat pan and backrest pressure distribution while sitting in office chairs. *Appl Ergon.* 53 Pt A:1-9. doi: 10.1016/j.apergo.2015.08.004.

Zemp, R., Taylor, W.R., Lorenzetti, S. (2015), Are pressure measurements effective in the assessment of office chair comfort/discomfort? A review. *Appl Ergon.* 48:273-82. doi: 10.1016/j.apergo.2014.12.010.

Singh, R., Carranza, Leon, D.A., Morrow, M.M., Vos-Draper, T.L., Mc Gree, M.E., Weaver, A.L., Woolley, S.M., Hallbeck, S., Gebhart, J.B. (2016), Effect of chair types on work-related musculoskeletal discomfort during vaginal surgery. *Am J Obstet Gynecol.* 215(5): 648.e1-648.e9. doi: 10.1016/j.ajog.2016.06.016.

Snyder, M., Tseng, Y., Brandt, C., Croghan, C., Hanson, S., Constantine, R., Kirby, L.(2001), A glider swing intervention for people with dementia. *Geriatr Nurs,* 22(2):86-90.

van Vledder, N., Louw, Q. (2015), The effect of a workstation chair and computer screen height adjustment on neck and upper back musculoskeletal pain and sitting comfort in office workers. *S Afr J Physiother.* 71(1):279. doi: 10.4102/sajp.v71i1.279.

Watson, N. M., Wells, T. J., & Cox, C. (1998). Rocking chair therapy for dementia patients: Its effect on psychosocial well-being and balance. *Am J Alzheimers Dis Other Demen,* 13(6), 296-308.