

Comparison in the Lumbar Lordosis Angle between Patients with Chronic Pain and Able-Bodied People

Hiroya Kudo¹, Toshifumi Dakeshita¹, Koishi Wakimoto¹, Atsuo Kato¹, Yoshihiro Uchida¹, Kazuyoshi Sakamoto²

1) Seisen Clinic of Orthopedics Shizuoka Japan; email: kudo@seisen.info

2) Center of Promotion of Alliances with Region, Industry and Government, The University of Electro-Communications, Tokyo, Japan



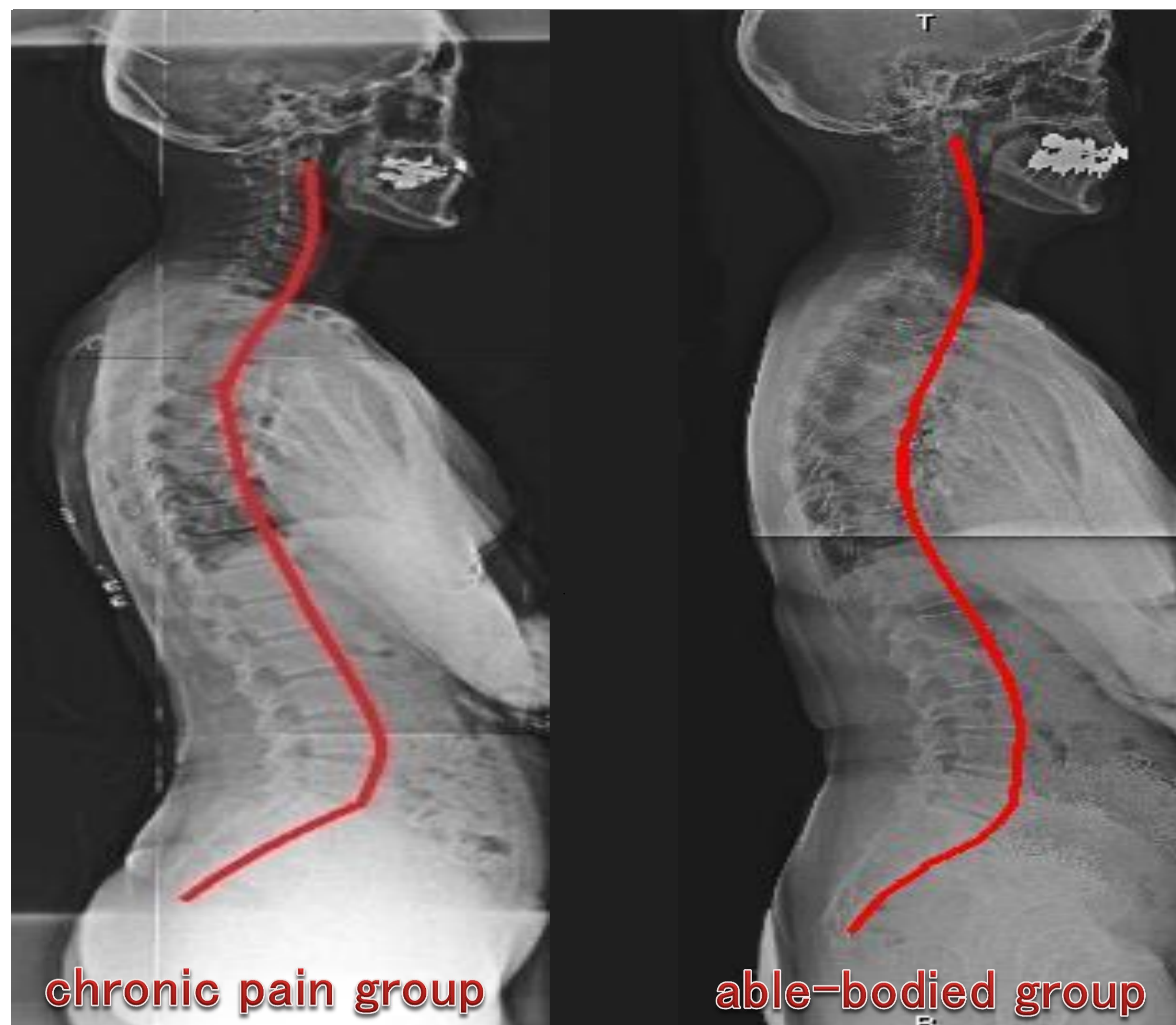
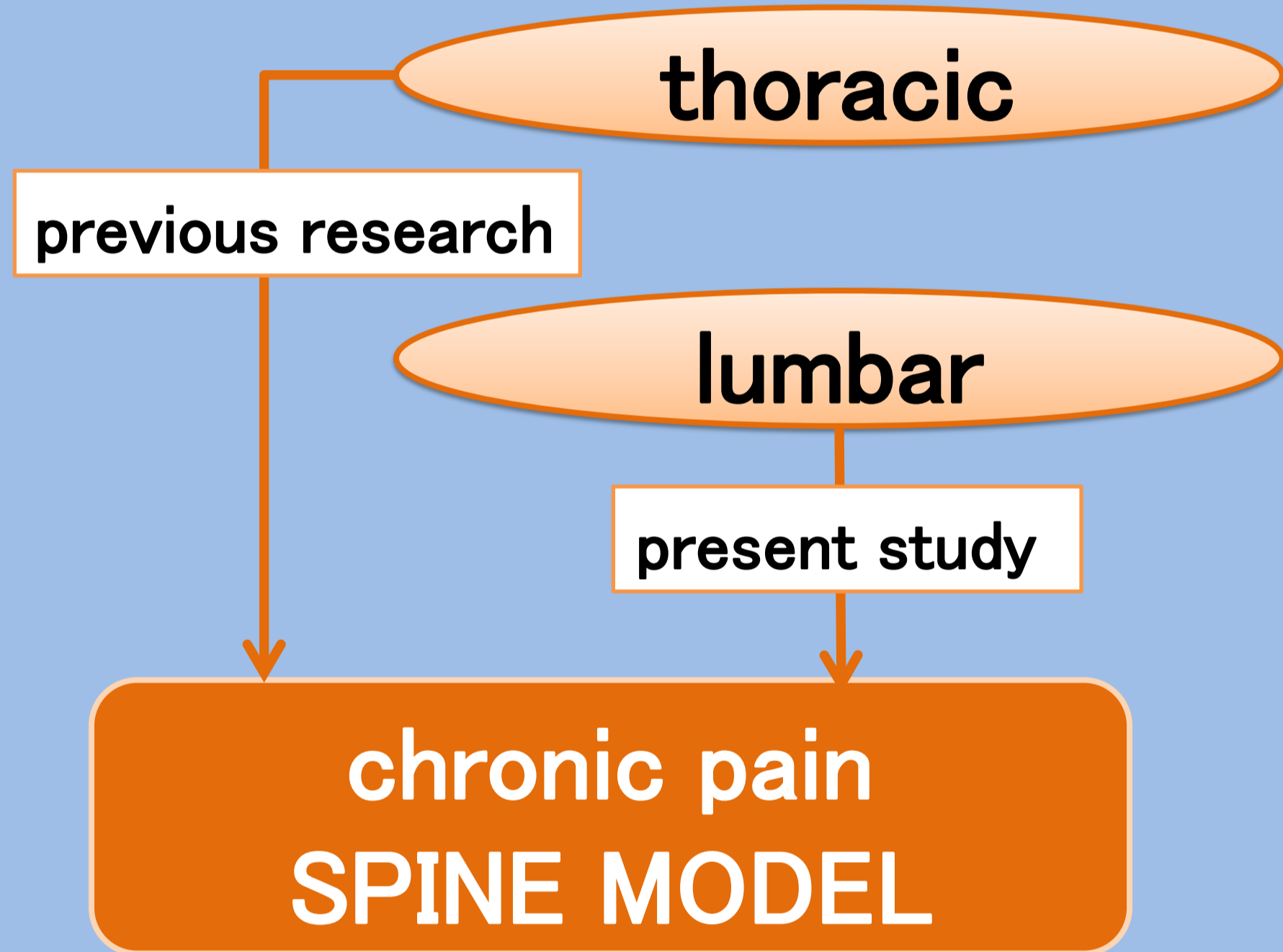
INTRODUCTION

Previous research

We have been focusing on the spinal curvature of patients with chronic pain (chronic pain group). thoracic kyphosis (particularly upper thoracic kyphosis) of the chronic pain group was significantly low, compared to able-bodied people (able-bodied group), but there was no significant difference in the lower thoracic kyphosis between both groups.

Present study

The curvature characteristics of the chronic pain group had been studied only in the thoracic vertebra. Therefore, our research focused on the lumbar lordosis angle in order to make a further investigation.



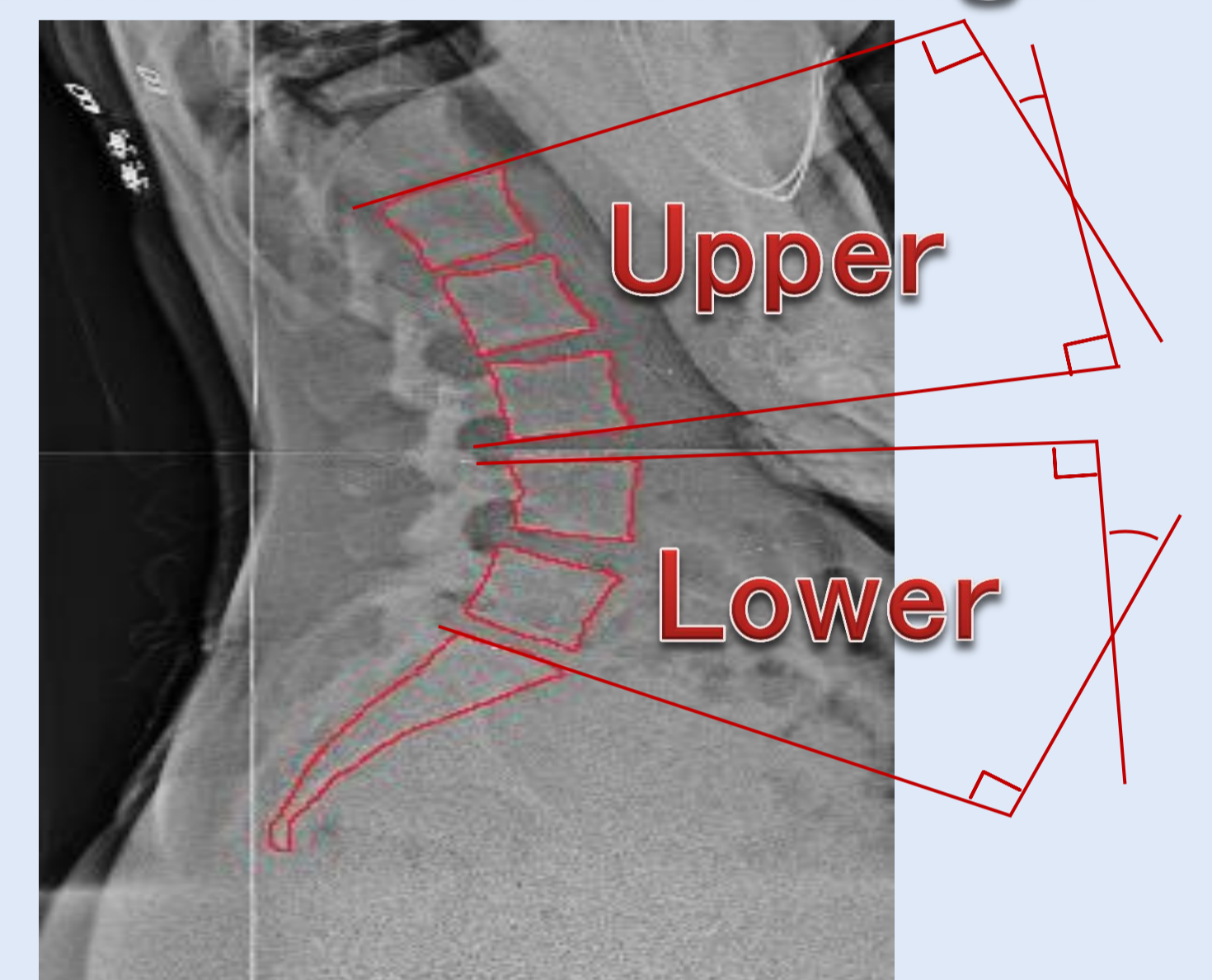
METHODS

Subjects 60 people:

- ① 30 able-bodied people (15 men and 15 women, average age of 26.8 ± 3.5)
- ② 30 patients with chronic pain (15 men and 15 women, average age of 27.2 ± 5.6).

Both the upper and the lower lumbar lordosis angles were identified from radiographs of the side of the lumbar vertebrae. In the research, the angle formed by the topside of L1 with the underside of L3 was defined as the upper lumbar lordosis angle. Also, the angle formed by the topside of L4 with the base of the sacrum was defined as the lower lumbar lordosis angle.

lumbar lordosis angle

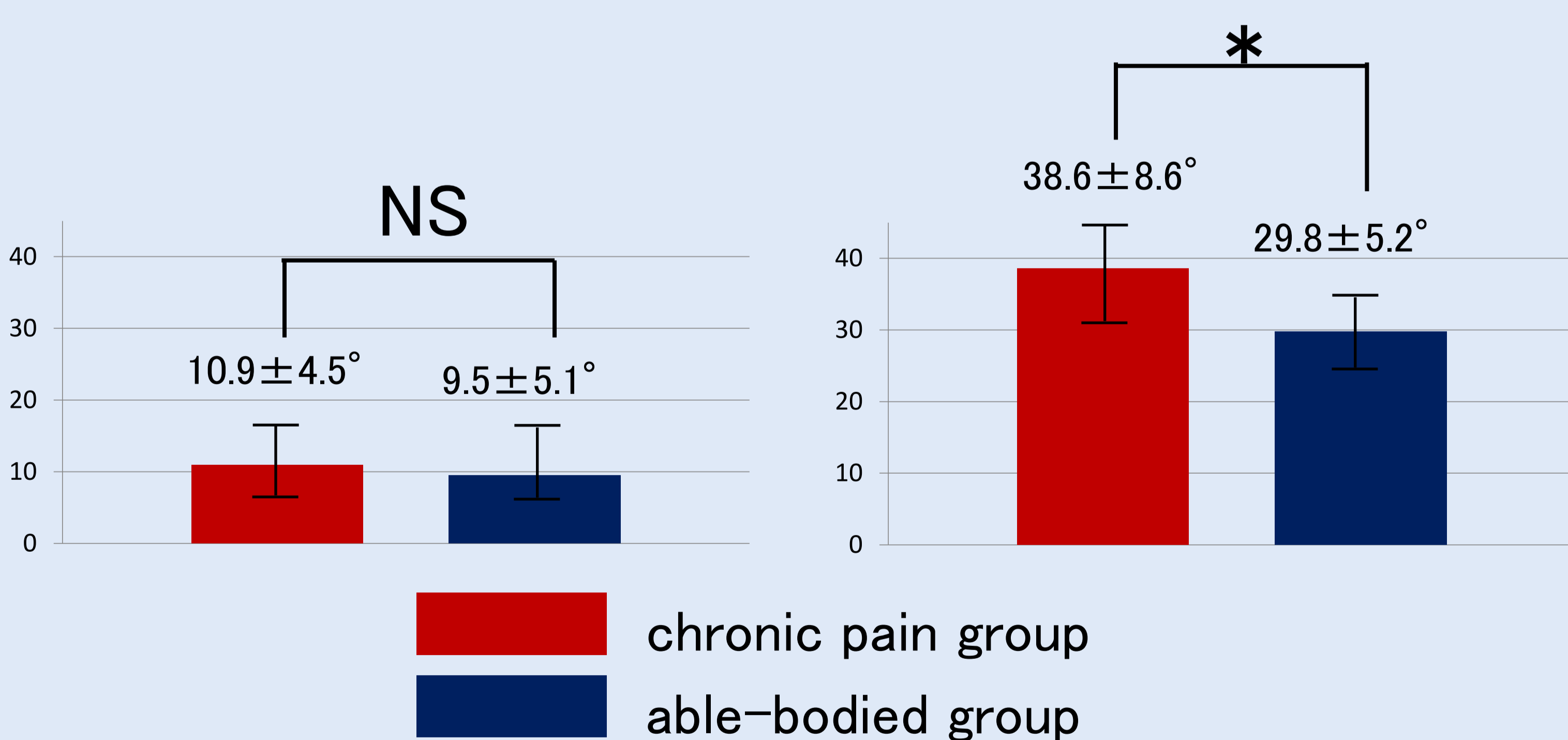


Then, a comparison was made in both angles between the chronic pain group and the able-bodied group. In the statistical test, Welch's t-test was used with less than 1% of a significance level.

RESULTS

N=60
Mean \pm SD

* $p < 0.01$
NS not significant



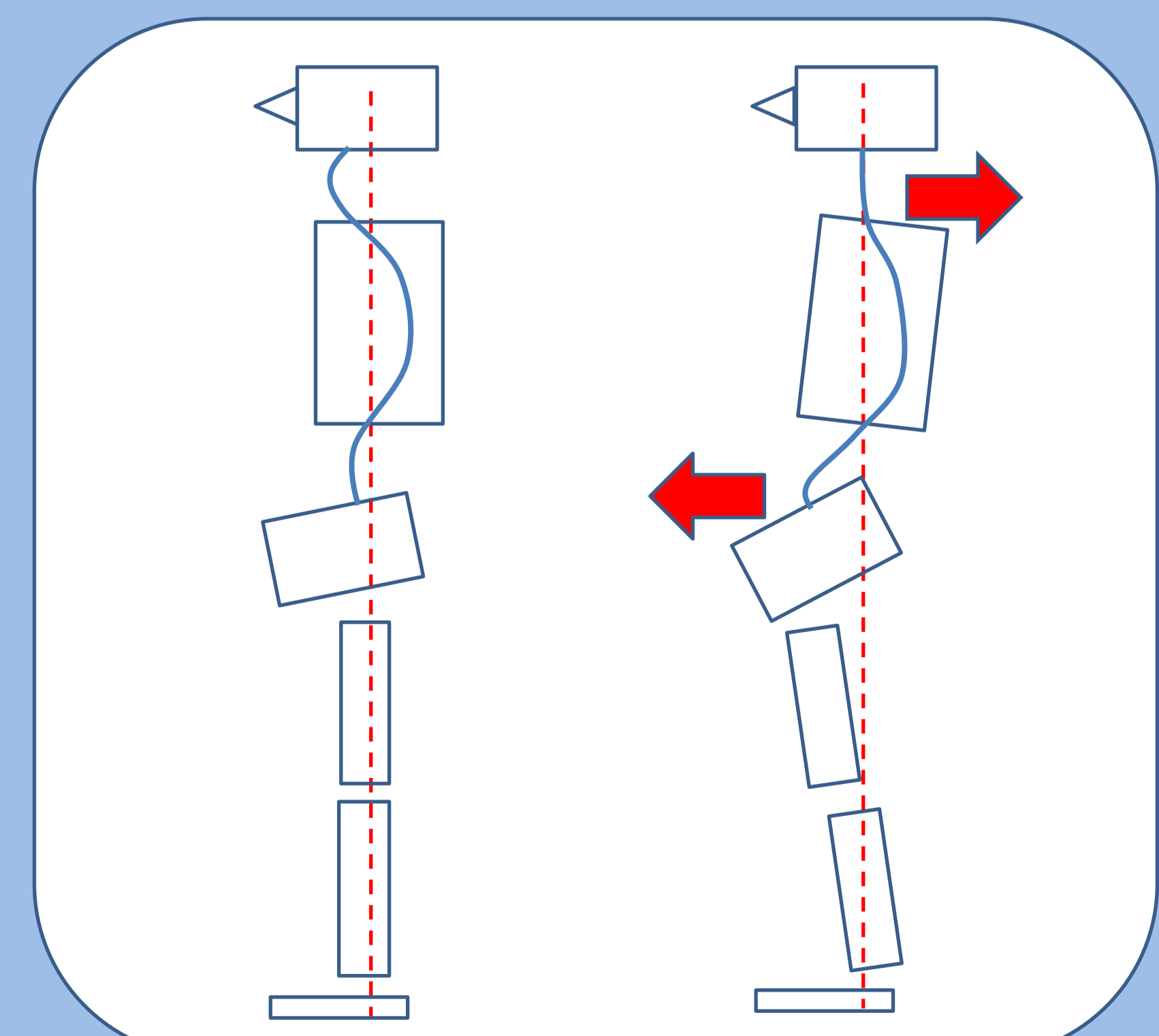
There was no significant difference in the upper lumbar lordosis angle between the chronic pain group ($10.9 \pm 4.5^\circ$) and the able-bodied group ($9.5 \pm 5.1^\circ$).

In contrast, the lower lumbar lordosis angle of the chronic pain group was $38.6 \pm 8.6^\circ$, which was higher than that of the able-bodied group ($29.8 \pm 5.2^\circ$). ($p < 0.01$)

CONCLUSION

The findings from past and our research showed that the chronic pain group had the upper thoracic kyphosis decreased but the lower lumbar lordosis angle increased.

According to researchers including Gelb D.E., thoracic kyphosis correlates with lumbar lordosis. Based on such report, it is assumed that the upper thoracic kyphosis and the lower lumbar lordosis affect each other and cause the unique posture of patients with chronic pain.



Our next challenge is to study not only a correlation between the upper thoracic kyphosis and the lower lumbar lordosis and its factors, but also the curvature characteristics of the entire vertebrae including the cervical spine.