Abstract

Background: Limitation in the movement of the thoracic spine can cause excessive lumbar rotation and back pain; however, it is unclear whether increasing thoracic rotation reduces excessive lumbar rotation.

Objectives: To examine the effect of thoracic spine mobilization on the rotation angle of the lumbar spine during trunk rotation.

Design: Cohort study.

Methods: Twenty healthy volunteers participated in this study. Through physical exam, we identified and then mobilized three restricted vertebrae in the thoracic spine using a facet joint traction mobilization technique. Rotational movements of both the thoracic and lumbar spine were assessed pre- and post-intervention. Measurement items included: (1) lumbar
rotational angle measured using via magnetic resonance imaging taken in the lateral position with 45° of trunk rotation; and (2) thoracolumbar rotation range of motion in the sitting position. In post-hoc analysis, paired t-tests or Wilcoxon tests were used to examine the mean differences in these measurements and statistical analysis was performed using SPSS version 26.0.

**Results:** The thoracic rotation range significantly increased after intervention (pre-intervention: 50.0 ± 15.7°; post-intervention: 54.6 ± 17.4°), and the rotational angle of the lumbar spine significantly decreased after intervention (pre-intervention: 7.07 ± 1.65°; post-intervention: 5.90 ± 1.87°).

**Conclusions:** Our study demonstrated that increasing thoracic spine rotation using joint mobilization can reduce excessive lumbar rotation.