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## Cross-correlation between spine and hip joint kinematics differs in healthy individuals and subgroups of ankylosing spondylitis patients

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**Background:** Ankylosing spondylitis (AS), which mainly affects the sacroiliac and spinal joints may alter hip mobility. The effects of syndesmophyte formation on the hip–spine relationship are poorly understood. Hence, we assessed spine and hip movement characteristics in healthy individuals and subgroups of patients with AS, with and without syndesmophytes during lateral trunk flexion.

**Materials & Methods:** The study design followed was an observational cohort study. Fifty adults with AS and 39 adults without AS (controls), were recruited from a medical centre. The patients were divided into two subgroups, namely the sacroiliitis (n=28) and syndesmophyte (n=22) subgroups. A motion system was used to record kinematic data during lateral trunk flexion. The cross-correlation coefficient (CCF) of motion between the spine and hip joint and coupling motion in the lumbar spine were analyzed.

**Results:** The sacroiliitis group exhibited higher thoracic flexion, pelvic pitch, and pelvic rotation than the other two groups. The syndesmophyte group had the smallest range of motion in all recorded motion. The maximal CCF and time lag of lumbar lateral flexion (LLF) with hip rotation, lumbar flexion, and hip abduction in the AS subgroups were significantly different from those in the control group. Syndesmophyte formation affected the lumbar–hip relation; whereas in the syndesmophyte group, LLF and hip abduction were weakly correlated and LLF and hip rotation were strongly correlated.

**Conclusion:** The kinematics and coordination between spinal, pelvic, and hip movement characteristics differ with the AS stage. Spinal mobility is a relevant treatment target because it is closely related to structural damage progression.

### Biography

Fang-Chuan is an Associate professor in the Department of Physical Therapy, Hungkuang University, Taiwan. He is the author of an article Cross-correlation between spine and hip joint kinematics differs in healthy individuals and subgroups of ankylosing spondylitis patients.

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