Assessment of lumbopelvic movement control in tennis players with and without low back pain

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Introduction
Low back pain (LBP) is common among tennis players. More than one third of professional tennis players reported LBP as reason for missing at least one tournament [1]. As impaired lumbar motor functions have been associated with LBP [2], it appears particularly relevant to assess lumbopelvic movement control in tennis players.

Purpose
To compare lumbopelvic movement control in tennis players with and without LBP.

Population
Twenty amateur competitor tennis players (male, 22.9 ± 3.0 years) participated in this study. Subjects were pooled into two groups: 10 players with LBP (mean pain duration: 3.1 ± 2.6 years, pain severity score: 3.5/10 on a pain visual analogue scale) and 10 players without current LBP.

Methods
The Bent Knee Fall Out (BKFO) test was used to assess the players’ ability to control movement of lumbopelvic region. BKFO was performed in supine position and monitored by means of two pressure biofeedback units (PBU) inflated to 40 mmHg and positioned under the lumbar spine of the participant (figure 1).

Analysis
A paired t-test (or Wilcoxon test if data were not normally distributed) was used to assess difference between dominant and non-dominant sides. An unpaired t-test or the Mann–Whitney test (depending on the normality and the homogeneity of the samples) was performed to compare performances of the two groups.

Results
The reliability of this test has been previously assessed. Players were instructed to make an active abduction-external rotation movement of the hip (45°) without concomitant lumbopelvic movement of the pelvis and low back (figure 2). Pressure modification (mmHg) was recorded, each side was assessed.

Discussion and conclusion
Tennis players with LBP experience similar alterations of motor control as those observed in sedentary people with LBP. However, it remains unclear if these alterations are the cause or the consequence of chronic LBP.

Implications
Further prospective studies should assess the cause or effect relationship and should determine whether motor control exercises are effective in tennis players with chronic LBP.

References

Acknowledgements
The first author would like to thank the University of Liege (ULg) for their financial support. The authors also thank Mrs. A. Depaifve for her kind technical assistance.

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| Table 1. Characteristics of the study population (mean ± sd) |
|---|---|---|---|---|
| Tennis Players | Age (years) | Weight (kg) | Height (cm) | Tennis Practice (years) | Tennis Training (hours/week) |
| No LBP | 22.7 ± 3.3 | 70 ± 16 | 176 ± 6.5 | 11 ± 3.5 | 4 ± 2.3 |
| LBP | 21 ± 3.3 | 68 ± 16 | 176 ± 6.5 | 11 ± 3.5 | 4 ± 2.3 |

Tennis players with LBP showed significantly higher (P<0.05) pain than players without LBP. Other characteristics were not significantly different between the two groups.