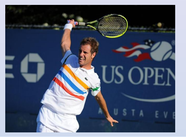
Assessment of lumbopelvic movement control in tennis players with and without low back pain



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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 [I].

As impaired lumbar motor functions have been associated with LBP [II], 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.

Table I. Characteristics of the study population (mean ± *s*).

Tennis Players	Age (years)	Weight (kg)	Height (cm)	Tennis Practice (years)	Tennis Training (hours/week)
No LBP	22.7±2.9	67.2±6.0	178.2±6.7	9.1±3.7	4.4±3.5
LBP	23.1±3.2	79.4±7.4	182.2±7.8	11.9±6.6	5.2±3.3

Tennis players with LBP appeared significantly heavier ($P<0.01$) than players without LBP. Other characteristics were not significantly different between the two groups.

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).

Figure 1: PBU positioning

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.

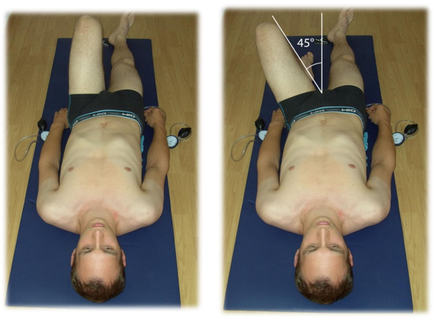


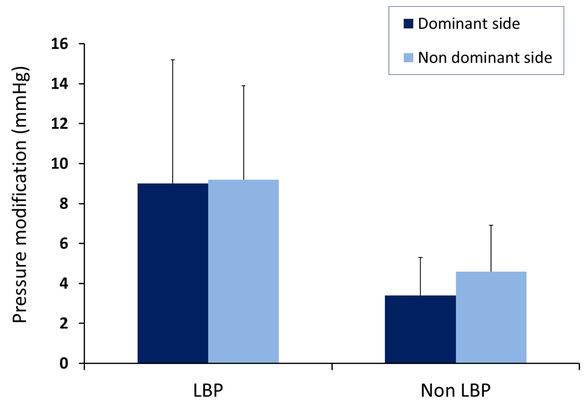
Figure 2: BKFO test

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



Tennis players with LBP had a worse lumbopelvic movement control than players without LBP both for dominant (9.0 mm Hg vs 3.4 mmHg, $P<0.05$) as well for the non-dominant side (9.1 mmHg vs 4.6 mmHg, $P<0.05$).

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

I. Hainline (1995) "Low back injury" Clin Sports Med 14(1): 241-265.

II. Hodge (2003) "Pain and motor control of the lumbopelvic region: effect and possible mechanisms" J Electromyo Kinesio 13: 361-370.

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