



## Original research

# Leg lateral reach test: The reliability and correlation with thoraco-lumbo-pelvic rotation range



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## ARTICLE INFO

## Article history:

Received 23 June 2015

Received in revised form 12 April 2016

Accepted 14 April 2016

Available online 2 May 2016

## Keywords:

Leg lateral reach test

Range of motion

Thoraco-lumbo-pelvic rotation

Tape measurement

Trunk

## ABSTRACT

**Objectives:** The aim of the present study was to examine the intra- and inter-rater reliabilities of the leg lateral reach test as a screening tool for thoraco-lumbo-pelvic rotation and to assess the relationship between leg lateral reach distance and thoraco-lumbo-pelvic rotation range in a supine position.

**Design:** Controlled laboratory study.

**Methods:** Thirty-six physically active participants were recruited. The leg lateral reach test was performed over 2 days. In the first session, two testers measured the distance of the leg lateral reach to determine the within-day inter-rater reliability, and one tester repeated the measurement on day 2 to determine the intra-rater reliability between days. The leg lateral reach test was performed three times per leg, and the mean value was used for data analysis. Reliability was determined using the intraclass correlation coefficient, standard error of measurement, and minimal detectable change. The correlation between leg lateral reach distance and thoraco-lumbo-pelvic rotation range was determined using Pearson correlation.

**Results:** Almost perfect intra- and inter-rater reliabilities were shown for the test [intraclass correlation coefficient<sub>2,3</sub> = 0.97 (95% confidence interval = 0.914–0.984) and 0.99 (0.974–0.996), respectively]. The within-day inter-rater standard error of measurement was 1.40 cm, and the minimal detectable change was 3.87 cm. The between-day intra-rater standard error of measurement was 2.66 cm, and the minimal detectable change was 7.37 cm. The Pearson correlation showed a moderate to good correlation between the leg lateral reach distance and the thoraco-lumbo-pelvic rotation range ( $r = 0.73$ ).

**Conclusions:** The leg lateral reach screening test is reliable for measuring thoraco-lumbo-pelvic rotation range and allows for practical measurement of the thoraco-lumbo-pelvic rotation range in a supine position.

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## 1. Introduction

Many sports activities, such as golf and tennis, require extreme trunk rotation.<sup>1–3</sup> Decreased flexibility in trunk rotation can induce abnormal patterns of trunk movement and may result in low back injury or pain.<sup>3,4</sup> Thus, continuous observation of trunk flexibility in athletes who perform repetitive trunk rotation is necessary to prevent sport injuries as well as to provide rehabilitation guidance and monitor performance.

Clinicians and athletes need evaluation tools to assess trunk rotation flexibility and