ABSTRACT

**Background:** The low back is the most common injury location in pole vaulters, and low back pain (LBP) can easily become chronic. Therefore, knowing the physical characteristics of athletes experiencing repeated LBP may be beneficial for recovery and injury prevention.

**Purpose:** The purpose of this study was to describe and analyze the physical characteristics of pole vaulters with chronic LBP.

**Study Design:** A cross-sectional study

**Methods:** Twenty male pole vaulters participated in this study. A questionnaire was used to garner descriptive and personal data, including personal best performance in the pole vault. Additionally, the following physical characteristics were measured: 1) isokinetic muscle strength of hip and knee flexors and extensors, 2) active/passive range of motion and muscle flexibility in multiple joints and regions, 3) performance on the Functional Movement Screen™ (FMS™) and 4) spinal column alignment. Subjects were categorized using the questionnaire and divided into two groups, one with and one without chronic LBP.

**Results:** The personal best performance and angle on the active straight leg raise test (SLR) were significantly lower and smaller, respectively, in the chronic LBP group than in the non-chronic LBP group. Additionally, the difference between the passive SLR angle and active SLR angle (ΔSLR) was significantly larger in the chronic LBP group than in the non-chronic LBP group. Those with chronic LBP had more likely to have a FMS™ composite score ≤14.

**Conclusion:** The active SLR angle and ΔSLR were significantly smaller and larger, respectively, in the chronic LBP group than in the non-chronic LBP group. This may be because of the poor stability of trunk or incompetence of the kinetic chain required for raising the lower limbs. The chronic LBP group had a significantly higher probability of having an FMS™ composite score of ≤14. It may be important to examine the active straight leg raise (vs. passive only), and fundamental movements as screened by the FMS™ in pole vaulters.

**Level of Evidence:** 2b.

**Keywords:** chronic low back pain, functional movement screen, physical factors, pole vault