Patellofemoral pain syndrome (PFPS) is a clinically challenging condition commonly occurring in athletes. It accounts for 25% of all knee injuries in sports medicine clinics.

- PFPS has been associated with hip muscle weakness and altered neuromuscular control and trunk kinematics.
- However, the relationship between PFPS and trunk control is unclear.

The purpose of our study was to examine the relationship between trunk kinematics, neuromuscular control and PFPS in athletes.

Inclusion Criteria
- Athletes with and without knee pain
- Actively participating in a sport or athletic activity ≥ 3 times per week or ≥ 5-10 hours at the time of the study

Tests and Measures
- A cross-sectional design was used.
- Athletes completed a questionnaire pertaining to demographics, activity level, medical history, pain intensity and location.
- Knee pain was assessed using a numerical pain rating scale (0-10) as well as Lower Extremity Functional Scale (LEFS) scores.
- Surface EMG electrodes were used to record muscle activity (Figures 1-2). Core endurance and neuromuscular control were assessed using double leg lowering (Figure 3) and sidelying plank tests (Figure 4).
- A lateral step down test was used to assess and compare kinematics between groups using 3D video motion analysis. (Figures 5-6)

Data Analysis
- Results were compared between the two groups, athletes with PFPS and healthy athletes, using linear mixed models.

The range of trunk abduction-adduction showed a significant between-group difference (p=0.04; Healthy Group: 3.2±1.2°; PFPS group: 4.7±2.6°). No other significant results were found among variables tested.

PFPS may affect trunk control in the frontal plane during a lateral step down. The presence of this altered kinematic movement pattern of the trunk may be a significant clinical finding and associated with patellofemoral pain syndrome in athletes.

These findings may aid in the development of screening and intervention techniques to reduce the prevalence of PFPS in an athletic population.

Further research into the relationship between trunk kinematics, motor control and PFPS is needed.