

Females with Patellofemoral Pain Syndrome have weak hip muscles: a Systematic Review

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Topic:

Hip strength in females with patellofemoral pain syndrome (PFPS)

What they did:

They reviewed 5 studies examining females suffering from PFPS, measuring hip muscle strength on the affected side compared to the unaffected side and compared to healthy individuals

Measurement:

They used handheld dynamometers to measure max isometric strength (using the make test).

Results:

There is strong evidence for deficits in hip external rotation, abduction and extension; moderate evidence for deficits in hip flexion and internal rotation; no evidence for hip adduction compared with healthy individuals. There is moderate evidence for deficits in hip external rotation and abduction compared with the unaffected side.

Conclusion:

There is a substantial difference in hip muscle strength of the affected side of females suffering PFPS compared with healthy individuals, and smaller deficits in strength when compared with the unaffected side.

Discussion:

It is unclear whether deficits in hip muscle strength are the cause or effect of PFPS. These studies do not provide any evidence about the usefulness of increasing hip muscle strength in PFPS. It is also unclear whether participants with PFPS preserved their knees by undertaking smaller amounts of daily activities thus developing a muscle strength deficit in both hips, or if participants with PFPS already had less muscle strength in both hips before developing PFPS in one leg, making them more likely to develop PFPS in the unaffected leg in the long term.

Issues with the study:

Reliability: The position of the hip being measured was different in one study – external rotation strength was measured in prone rather than in sitting with hips flexed to 90 degrees. In prone, there was no significant decrease in external rotation or abduction strength compared with healthy controls – hypothesis: different lines of action affected the muscle's ability to generate force. They didn't measure hip muscle endurance – this may be an important causal factor in the development of PFPS since the syndrome occurs predominantly in endurance sports. Perhaps there is a greater deficit in hip muscle endurance than strength.

Other points of interest:

Factors proposed to cause PFPS:

- Patellar malalignment
- Increased Q angle
- Quadriceps weakness
- Decreased flexibility of the lower extremity
- Overuse
- Muscle imbalance

Females (62%) are significantly more at risk of experiencing PFPS than men (38%) – suggestions for this are: anatomical, hormonal and neuromuscular (i.e. deficit in hip muscle strength) factors. Females also have reduced hip strength compared to men. Athletes who sustained a lower extremity injury during the season have a significant reduction in hip abduction and external rotation strength at the beginning of the season compared with those not sustaining an injury

Females show greater IR of the femur during running than men, and also have a tendency to have larger hip adduction during activities such as running and single leg drop, leading to increased lateral patellar contact pressure (due to an increase in the dynamic Q angle).