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TREADMILL vs ROAD

Which method *really* is
better for your client?

COMMENTS

**"My biggest battle is
outside the ring"**

Revealed!

How to create a client for life

Male/female special

- *Training Tarzan and Jane together*
- *Working with the male executive*
- *Combating female training myths*

PLUS INDUSTRY NEWS THE LAST WORD NUTRITION RESEARCH REVIEW



**Premier
Training International**

Report: Ben Pratt

Q-angle theories

There are physical differences between men and women that need to be catered for by the modern-day personal trainer – the most obvious being that males have broad shoulders and a narrower pelvis, while females have a broad pelvis and narrower shoulders, resulting in a larger quadriceps angle (q-angle).

The q-angle is measured as the angle between the patella-tibial tuberosity to the patella-ASIS (anterior superior iliac spine). A female q-angle, which is larger than that of a male, averages 12.7° vs 10.2°.¹ This has often been postulated as being the reason why female athletes suffer a greater number of non-contact anterior cruciate ligament (ACL) tears than their male counterparts,^{2,3} the theory being that this greater q-angle creates a sharper angle of loading, increasing the likelihood of valgus movement of the knee.

However, to single out q-angle as being the lone culprit doesn't sit easy with me, since a broader pelvis is how God intended women to be. It seems harsh that nature would deal females a biomechanical disadvantage at the knee as a compensation for a wider pelvis to bear children. One extensive scientific review of 87 research papers on lower extremity injury could barely identify any evidence among the literature to support increased q-angle as the reason for increased ACL tears in females.⁴

However, a recent study did find females had an average anterior pelvic tilt of 3.5° compared to males who averaged 1.5°, as well as greater pronation of the foot.¹ Both these indicators were found to be significant factors in ACL rupture. This study also supported the conclusion that q-angle was not a significant indicator for ACL rupture. The results demonstrated that when increased anterior tilt of the pelvis and pronation of the foot combined in the same individual there was an increased likelihood of ACL injury. This was true whether the affected individual was male or female.

A further study agreed that anterior pelvic tilt and pronation of the foot were linked to increased ACL injury in females. However, this study also identified hyperextension of the knee, which often occurred in conjunction with anterior tilt, as being a significant factor in female ACL injury.⁵

Increased anterior tilt of the pelvis, hyperextension of the knee and pronation of the foot results in decreased loading of the



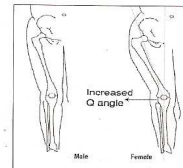
quadriceps, and greater loading upon internal ligaments to decelerate movements at the knee during running, jumping, twisting and turning,⁶ thereby increasing the chances of ligament damage. The incidence of these three factors combining was found to be more common in females, which may play a role in explaining the increased incidence of knee injury.

So how does this information provide us with a sensible training platform for female exercisers? Anterior tilt of the pelvis is associated with an overactive iliopsoas,⁷ while pronation of the foot is associated with an overactive calf complex.⁸ An overactive iliopsoas will inhibit its antagonist, the gluteals, which as a result becomes underactive.

The bottom line is females need greater emphasis on improving their dorsiflexion and performing exercises that encourage the gluteals and quadriceps to fire more effectively! Various methods of meeting these objectives are taught within the Premier Masters in Personal Training certification. Some examples are listed below.

1. Sagittal rotating med ball lunge
2. Frontal lunge with overhead med ball raise
3. Transverse lunge with low dumbbell reach

For a list of references visit www.fitpro.com/fitproreferences



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