

The Value of Isometric Training

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The aim of this article is to highlight some of the issues and misuses of isometric training both within rehabilitation and strength and conditioning. Isometric training is a frequent used and evidenced as a valued form of resistance training. Yet in some cases isometric exercise is used without great thought of what the goals of the exercise are and how it integrates with movement.



Isometric exercise is well evidenced particularly in tendinopathy patterns. Progressive loading of tendons via isometric exercise has great value to help manage symptoms and improve function alongside other methods of management. Decline squats like the image below are an exercise example that might be used as part of patella tendon rehabilitation.



Some other methods I use such as Postural Restoration Institute incorporate isometric exercise as part of their corrective exercises. The only other time I routinely use isometrics is when range of movement is restricted. For example, I currently have an athlete who is recovering from a quad tendon repair post rupture and at present is locked in a knee brace at 0 degrees. We have used isometric quad and hamstring exercises to load the respective muscles. Loading of the lower limb is difficult given the limited exercise choices available. In this case the use of isometrics is a safe way to load given the athletes current bracing restrictions.

That said, I don't think isometrics have a place in mainstream training in healthy asymptomatic individuals.

Where In Range?

Understanding when an isometric muscle contraction occurs during movement provides the majority of my reasoning why isometrics have limited value in asymptomatic individuals. An isometric contraction should be at the midpoint between eccentric and concentric muscle activity. Using a squat as an example, the midpoint occurs in the bottom position, at the point there is no movement in either direction (descending or ascending). Thus, isometric contraction in a squat occurs at one point along the movement. It might account for 1% of the total range continuum, with the eccentric portion (49.5%) and the concentric portion (49.5%) accounting for the rest. With this in mind, isometrics should only be conducted at the point an isometric contraction occurs during that movement. Holding at isometric squat at 90 degree knee flexion could therefore be applicable as for most this would be around the bottom point of a squat. But holding an isometric contraction at any other point along that range continuum doesn't seem to add up.

Duration

In addition, isometric contractions in movement occur over a split second, therefore why are we holding isometric contractions for prolonged periods. Such exercises don't equate to what occurs during normal movement. Unless you were training to set a world record in the plank, I don't understand the reasoning for training such a movement. Where would you see an athlete during competition holding a static abdominal contraction for 60 seconds? Then why do we train such patterns?



I hope this article might stimulate some discussion regarding isometric training. Please put any comments or questions up in the discussion forum.

Muscles don't work in isolation, and definitely don't work at one particular point on the muscle contraction continuum for prolonged periods.

Thanks for reading

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