

Isometric Exercises Handout

Information compiled by Karla Cook, Ben Marean, and Ben Barbier

Principles and Theory

Isometric (Greek "same length") exercises create no motion since there is no change in muscle length. Isometric muscle contractions are used in everyday functions such as maintaining good posture.

Historically, *isometric exercises* were thought effective to strengthen the body. Currently, they are used to strengthen specific muscles while in a specific position. While weight training builds strength through the entire range of motion, isometric exercise only builds strength at the position in which it is practiced.



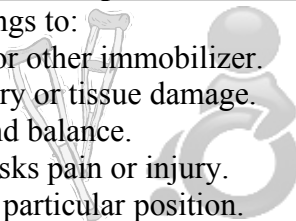
Intended Outcomes

Isometric exercises develop muscle strength by exerting a maximum contraction in one position. These exercises can help strengthen the muscles around a joint when no movement is allowed due to injury.

Common Conditions, Functional limitations, Impairments

Isometric exercise is used in rehabilitation settings to:

- * prevent muscle loss (atrophy) when in a cast or other immobilizer.
- * regain muscle control near a nerve after surgery or tissue damage.
- * increase control of muscles used in posture and balance.
- * increase muscle strength when joint motion risks pain or injury.
- * develop strength for a specific task while in a particular position.



Expected Feel or Experience

Isometric exercises take little time. To do an isometric exercise, perform a maximum contraction of the chosen muscle while resisting the action to prevent any movement. It is normal for the muscle to become tired or fatigued. It is very important that there be **no muscle or joint pain** when the muscle contracts.



Example steps of an isometric exercise:

1. Perform the contraction for 6-8 seconds.
2. Rest for 1-2 seconds.
3. Repeat these steps 5-10 times (repetitions).



Safety, Precautions, Contraindications

Remember these safety precautions for isometric exercise sessions:

- * Breathe, breathe, breathe. Avoid the tendency to hold the breath during isometric exercise. This is a common response and is known as the Valsalva maneuver. This can be dangerous by causing a rapid increase in blood pressure.
- * Intense isometric exercises is contraindicated for patients with a history of cardiac or vascular disorders.
- * Isometric exercises increase blood pressure which can increase risk of a ruptured blood vessel or irregular heartbeat.
- * Maintain rhythmic breathing, focusing on exhalation during the contraction, during isometric exercises.

Additional Information



For more information on isometric exercise, contact your Physical Therapist, Physical Therapist Assistant, Athletic Trainer, or Physician

The following books can be used for references on isometric exercise:

- Kisner, C. & Colby, C.A. (2007). Therapeutic Exercise Foundations and Techniques (5th ed). Philadelphia: FA Davis Company.
- Prentice, W. E. (1999). Rehabilitation Techniques in Sports Medicine (3rd ed). Boston: WCB McGraw-Hill.



Website with a good explanation and examples of isometrics:
www.sport-fitness-advisor.com/isometric-exercises.html