

Lay Summary

Facioscapulohumeral muscular dystrophy (FSHD) is one of the most common types of muscular dystrophy, characterized by progressive muscle atrophy. The loss of muscle mass may result in reduced strength and impaired physical performance, greatly limiting the ability to complete activities of daily living. As there is currently no cure for FSHD, clinicians and researchers have focused on identifying therapeutic interventions to better support the muscle metabolic health of those affected. Obtaining sufficient daily consumption of dietary protein is crucial for preserving muscle mass and functionality. When ingesting dietary protein, the body breaks it down into smaller components called amino acids. These amino acids are essential for repairing and building muscle tissue. For individuals with FSHD, the loss of muscle mass may be caused by the body breaking down muscle faster than it can rebuild it. Given the crucial role of dietary protein in maintaining muscle mass, overall health, and functional capacity, there is an urgent need to accurately determine whole-body metabolic protein requirements in adults with FSHD. The indicator amino acid oxidation (IAAO) technique offers a non-invasive approach for assessing protein requirements, through the collection of breath and urine samples from participants. The IAAO utilizes the principle that when 1 amino acid is deficient in the body, then all other amino acids will be broken down. As consumption of dietary protein increases, the breakdown of amino acids will decrease, reflecting their incorporation into the muscles. Once the body receives the desired number of amino acids to build muscle, the rate of breakdown will plateau, demonstrating that the body's protein requirements are met. To date, studies have utilized this technique to determine protein requirements in populations including young children and pregnant women, safely and accurately. This research will provide critical insights into protein metabolism in adults with FSHD, addressing a significant gap in the current literature. Establishing precise protein requirements will enhance clinical care, offering targeted and effective nutritional strategies to mitigate muscle atrophy and improve individual's quality of life and functional independence.