

Are we giving too much weight to muscle loss after surgery and other therapies for obesity?

- David Creel, PhD, RD, CDCES, ACSM-CEP
- Cleveland Clinic
- Enterprise Obesity Center



No relevant disclosures



“Muscle function
and health should
be our focus”

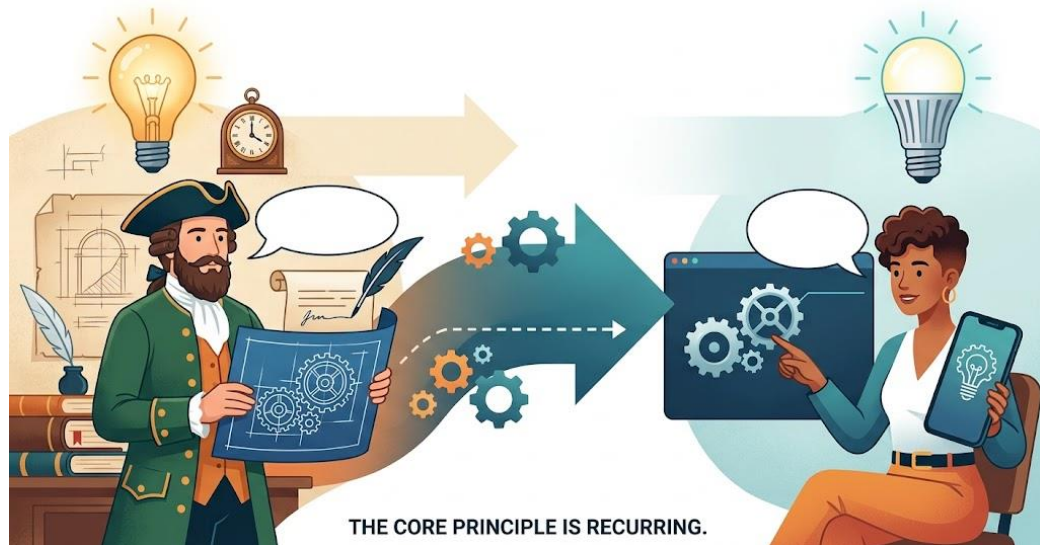


“We don’t really know
what we are measuring”

This is not a new phenomenon

1950's Keys and Brozek

1984- Webster, Hesp and Garrow -25% of weight loss is FFM



► [Obes Rev.](#) Author manuscript; available in PMC: 2015 Apr 1.

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Weight Loss Composition is One-Fourth Fat-Free Mass: A Critical Review and Critique of This Widely Cited Rule

[Steven B Heymsfield](#)¹, [M C Cristina Gonzalez](#)², [Wei Shen](#)³, [Leanne Redman](#)¹, [Diana Thomas](#)⁴

Current Obesity Reports (2024) 13:35–50
<https://doi.org/10.1007/s13679-023-00539-8>

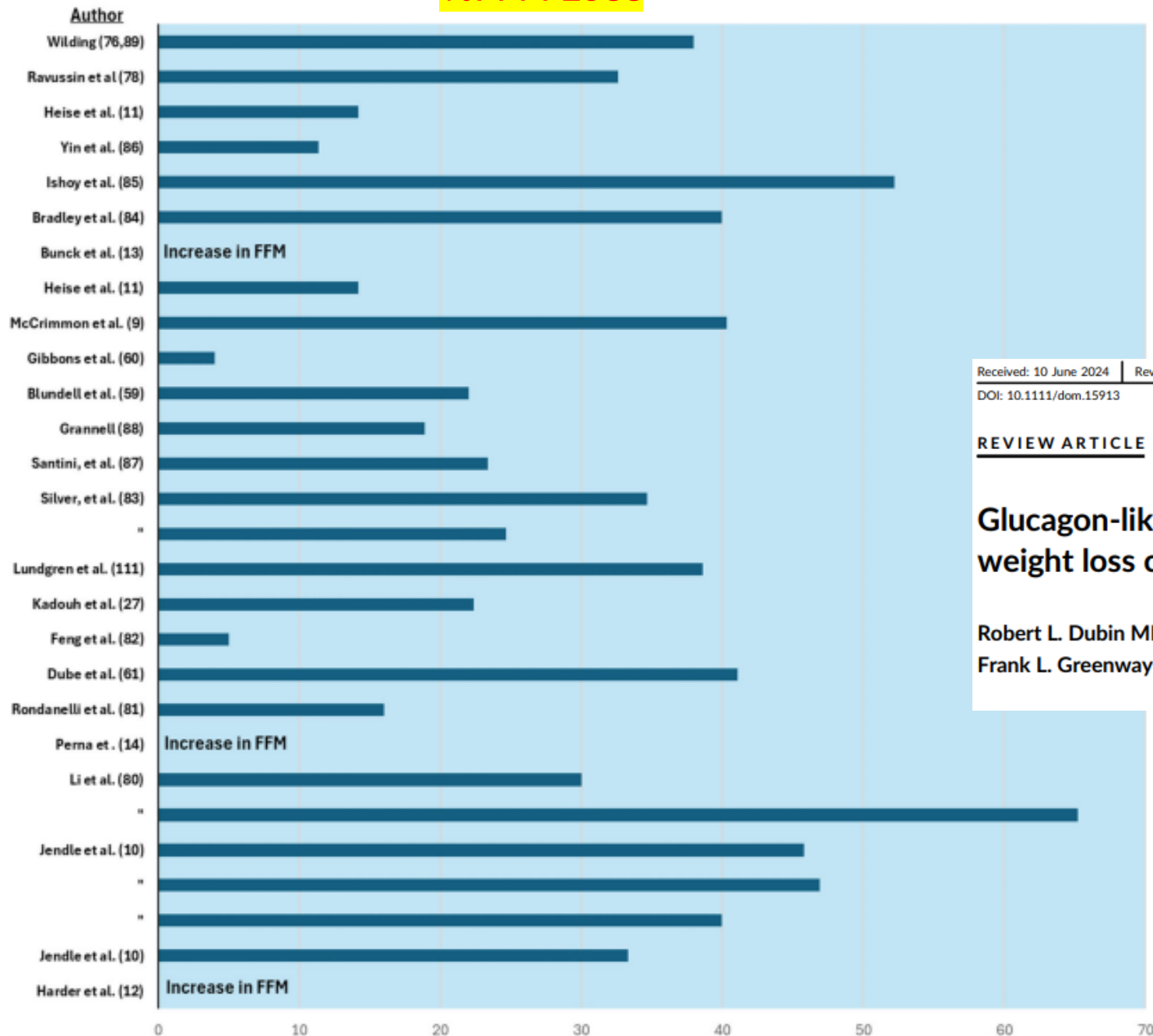
REVIEW

The Physiological Effects of Weight-Cycling: A Review of Current Evidence

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%FFM Loss



Studies evaluating % fat-free mass loss in proportion to total body weight loss using GLP-1 RA-based agents

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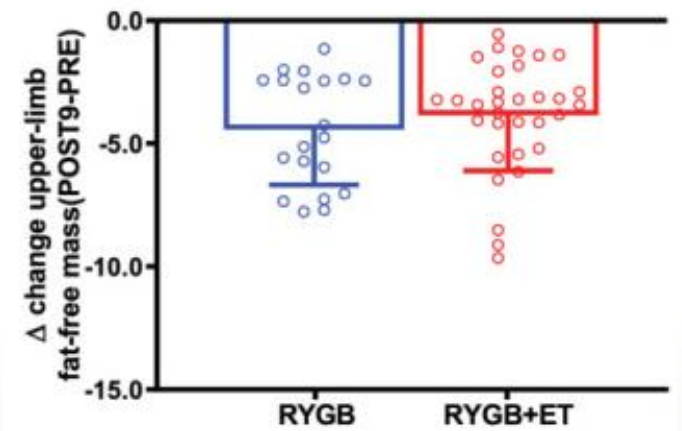
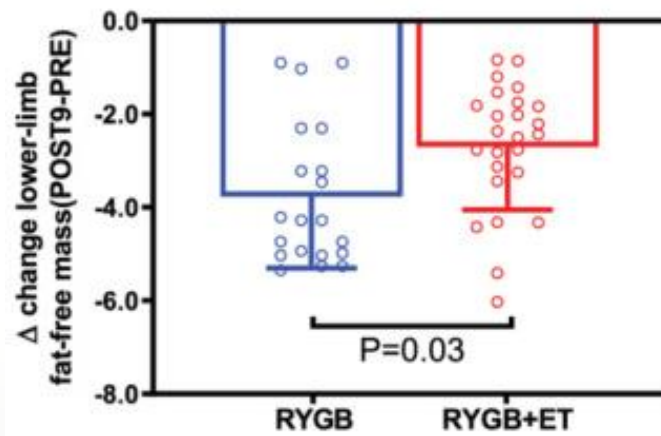
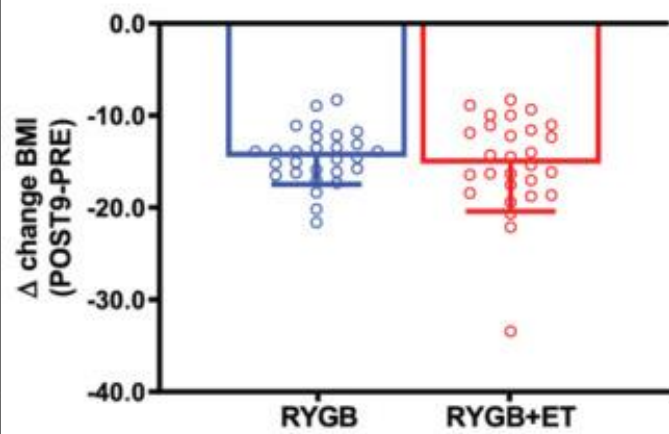
DOI: 10.1111/dom.15913

REVIEW ARTICLE

WILEY

Glucagon-like peptide-1 receptor agonist-based agents and weight loss composition: Filling the gaps

Robert L. Dubin MD | Steven B. Heymsfield MD | Eric Ravussin PhD | Frank L. Greenway MD



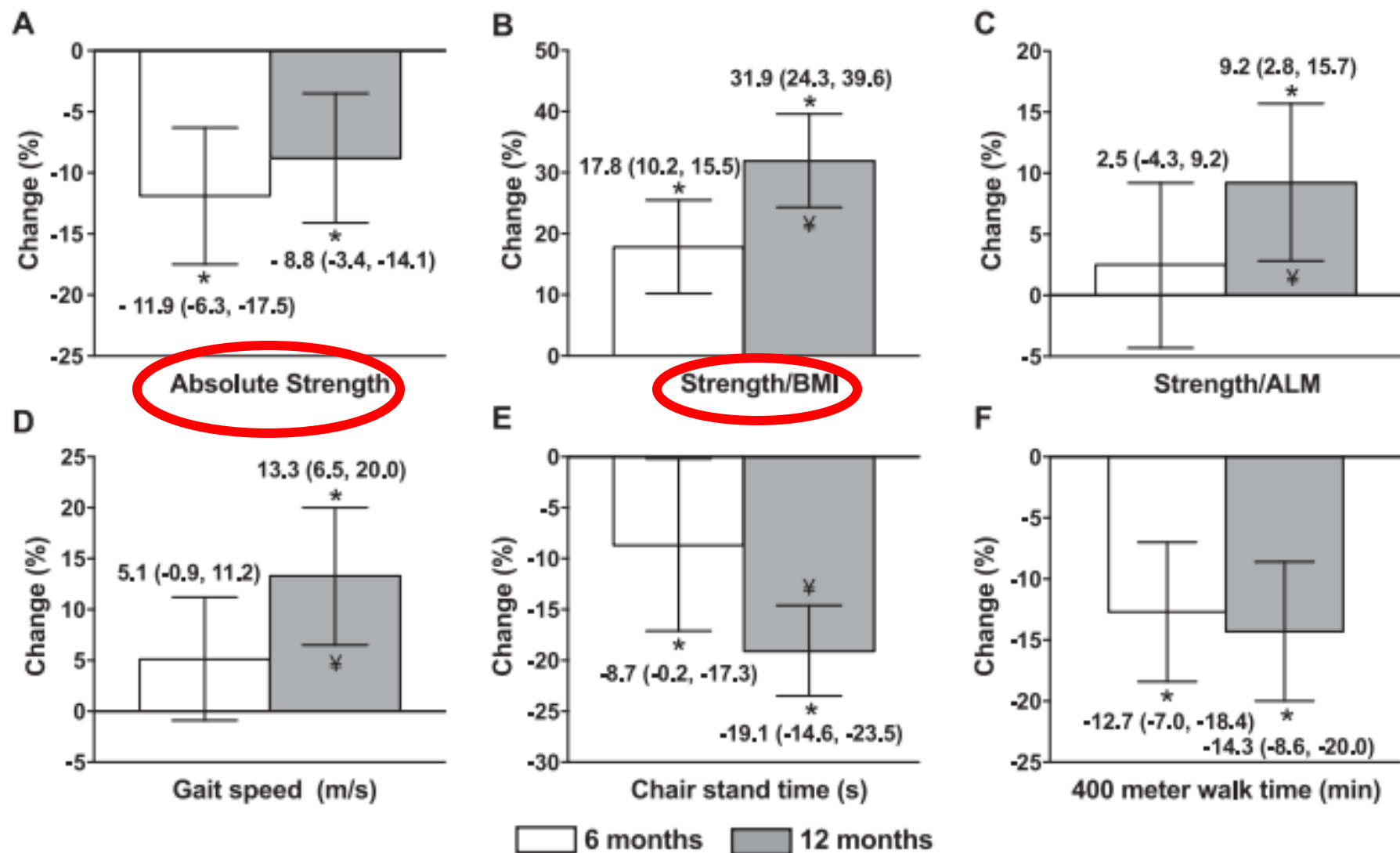


Figure 3. Percentage changes in (A) absolute and (B and C) relative strength and (D–F) physical performance measures 6 and 12 mo after Roux-en-Y gastric bypass. Values are means and 95% CIs. N = 46 for 6-mo changes; N = 44 for 12-mo changes. **P* < 0.01 compared with baseline by paired *t* test. ‡, 12 mo significantly different than 6 mo by paired *t* test (*P* < 0.05).

Strength and Function with Substantial Weight Loss

	Absolute Strength	Relative Strength	Functional Testing
Weight Loss	Decrease	Maintain/Improve	Improve
Weight Loss + Training	Decrease/Maintain	Improve +	Improve +

Considerations: Calorie deficit, baseline fitness, age, nutritional factors

Functional Testing: Timed Up and Go, 6 min walk test, sit to stand, etc.

Which version has better hand grip strength?



BEFORE: 340 LBS | OCT 2021



AFTER: 135 LBS | OCT 2023 | 205 LBS LOST

Diabetes
Cholesterol
Knee pain
Sleep Apnea
Relative Strength

“We don’t know what we are measuring”

- Fat-free mass and skeletal muscle are not the same thing
 - About 50% of FFM is muscle
 - Water
 - Bone
 - Organs
 - Connective tissue



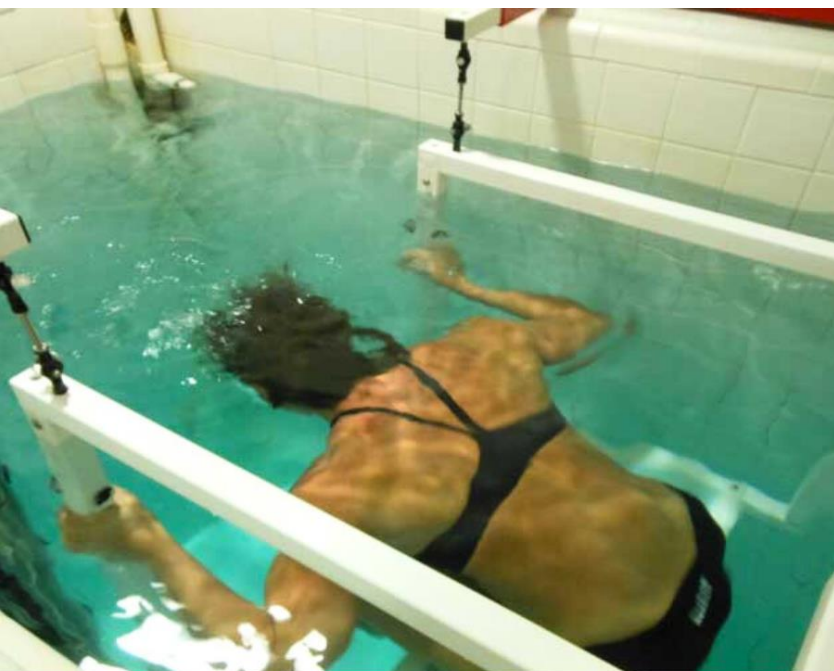
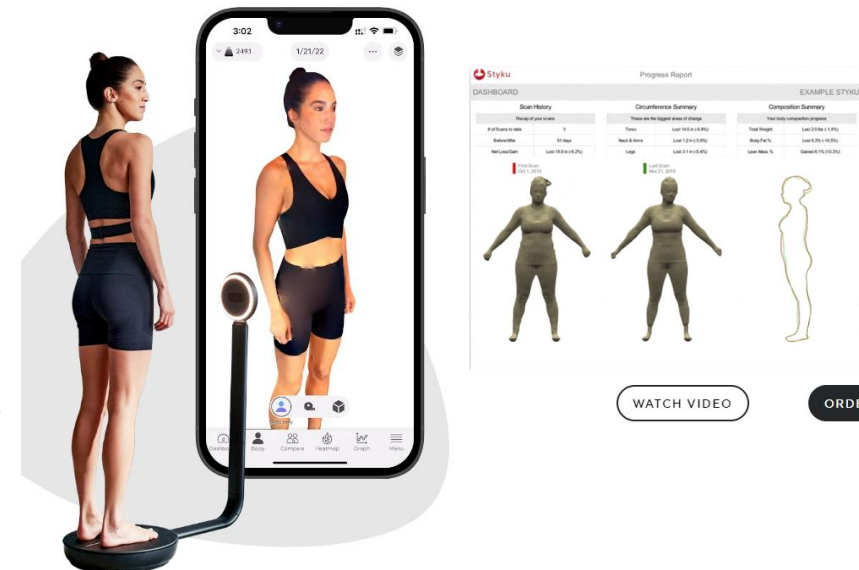


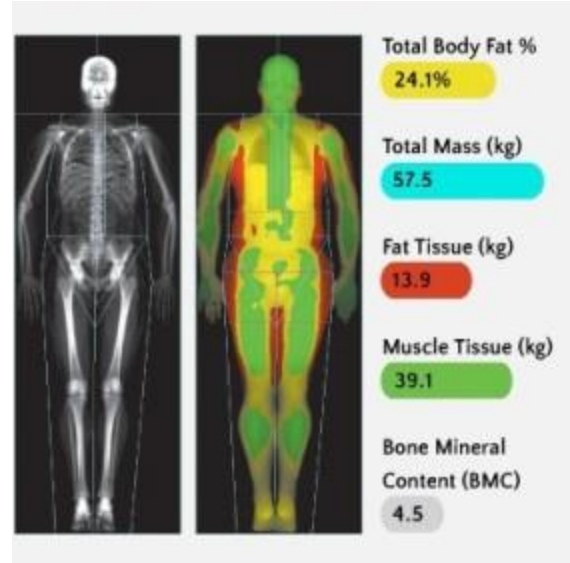
image referred from @UNIVERSITY OF NEBRASKA OMAHA



SHAPESCALE 3D Photonic Scanning



DXA



CT

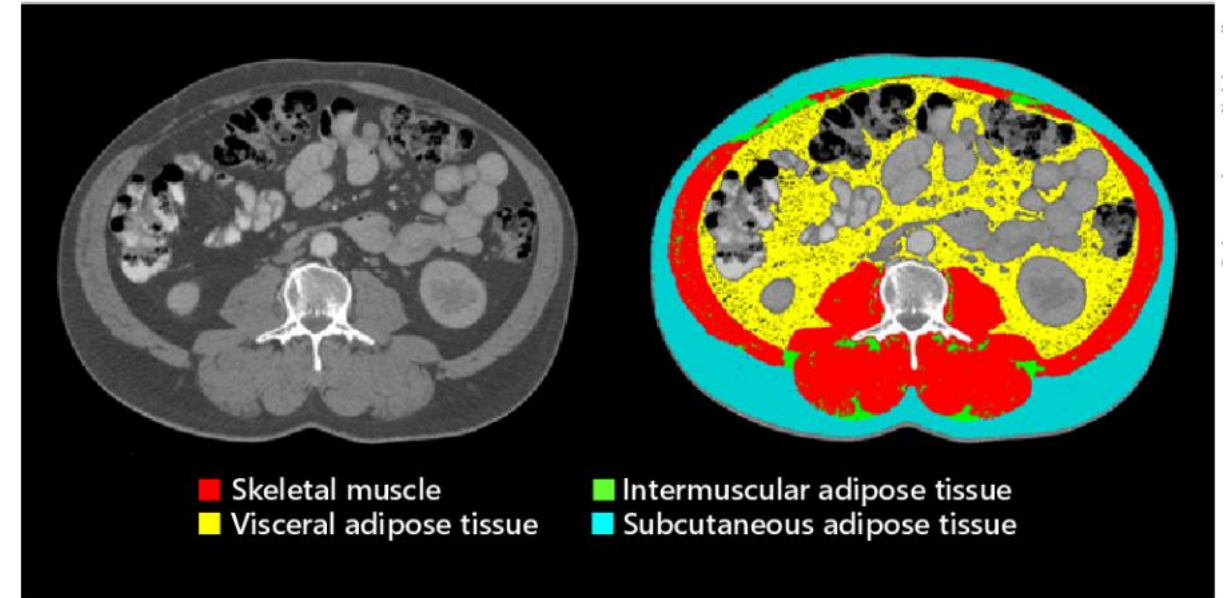
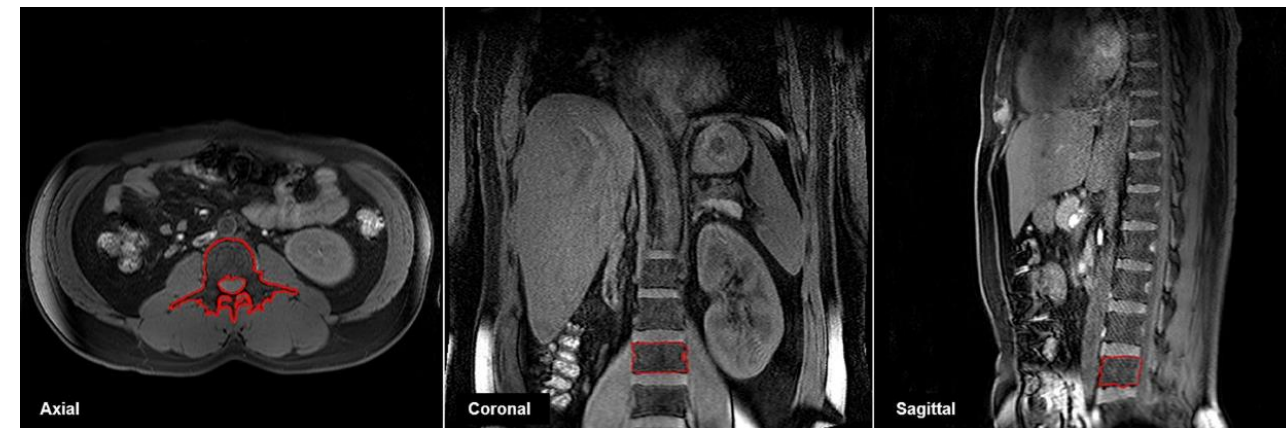


Fig. 1. Computed tomography body composition analysis of the third lumbar vertebrae.

MRI



Ultrasound



Which
Contains the
Most Pesticide
Residue?



Muscle Matters

For Everyone

Weight loss = improved functioning

Inform, don't scare

What are we truly measuring?

Resistance training as part of lifelong fitness

Let's learn from the mistakes of the bathroom scale

Thank you!

