



NWCA Wrestling Validation Study

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	Criteria	InBody	Tanita
<u>Accuracy</u>	Body Fat Percent Accuracy to BodPod	<u>1%</u> Most Accurate	3%
	Segmental Measurement	<u>5 segments – Right Arm, Left Arm, Trunk, Right Leg, and Left Leg</u> Direct measurement of each segment – No guesswork or estimation of body proportions	Leg-to-leg: Only measures lower body; composition of upper body based on generalized assumptions
<u>Precision</u>	Precision of Water Values	<u>Multiple Frequencies</u> Accurately measure intracellular and extracellular water compartments	1 Frequency
	Reproducibility	<u>99%</u>	N/A
<u>Individual Assessment</u>	Basal Metabolic Rate	<u>Cunningham Equation = Muscle-Based</u> BMR affected by changes in muscle <i>only</i> , not age or gender	Results skewed by age and gender
	Empirical Data	<u>None – Increased Accuracy and Sensitivity</u> By excluding empirical assumptions, results are specific to the individual, resulting in increased accuracy and sensitivity to body composition changes for male and female athletes compared to any other device	Results skewed based on age and gender

NWCA Wrestling Validation- InBody

What Makes InBody the Top Choice for Wrestling Assessment?

Direct Segmental Measurement

Separation of arms, legs, and trunk provide a highly **accurate** measurement.

Multi-Frequency Analysis

More **precise** water measurements for **accurate** tracking of fluid and body composition.

8 Tactile Electrodes

Each test will have the **same starting points**, which means changes observed reflect body composition changes in the individual, not error from holding electrodes differently.

No Empirical Estimations

InBody does not rely on empirical data such as **age** or **gender** to *predict* results, so athletes can obtain **accurate** lean and fat mass values for a better overall health assessment

California State University Study

In a study performed at CSU-Fullerton in a sample of male and female wrestlers, InBody body fat percentage was on average 0.8% greater than the reference method (Bod Pod). This error was significantly smaller than other devices included in the study ($\geq 3\%$), and shows that InBody devices are the most accurate for body composition measurement.

Based on the study's results, the InBody 120 is now the top choice for wrestling assessment and is the recommended body composition device for high school wrestling weight certification purposes.

Examples in Wrestlers

Example 1 - Misclassification

A wrestler's body fat percentage is overestimated. The range for weight loss is incorrectly set, meaning **athletes may end up wrestling in the incorrect weight class.**

InBody's direct segmental measurement provides an accurate measurement of body composition, resulting in accurate setting of weight classes for wrestlers, regardless of body size. Accurate measurement of body composition ensures that body fat percentage is not overestimated and prevents wrestlers from cutting more weight than should be allowed, which may lead to the wrestler competing in the incorrect weight class. Devices that do not provide full body measurement may overestimate body fat percentage and lead to incorrect weight classification.

Example 2 - Dehydration

If body fat percentage is overestimated at 13% instead of 10%, a wrestler may **cut too much weight.** This may lead to an **improper loss of both fat and lean mass**, potentially impacting **performance** and **hydration.**

With its multi-frequency technology, only InBody is able to accurately reflect changes in lean mass, helping to prevent muscle loss and/or dehydration, enabling athletes to perform under optimal conditions. Overestimation of body fat percentage may cause wrestlers to cut too much weight, which may impact performance (excess muscle loss) and cause dehydration (fatigue). In extreme cases, excessive weight/water cutting can jeopardize the health of wrestlers. Thus, multi-frequency technology is crucial, not only for accuracy, but for the health and safety of wrestlers.

Example 3 - Tracking Changes

Using empirical data such as age or gender to make **assumptions about an individual's body composition decreases sensitivity to minor changes.**

Devices that use empirical data (age, gender, or athlete settings) make generalized assumptions about wrestlers. This decreases sensitivity, especially to minor changes, which limits accurate tracking of changes in body composition. Athletes who are leaner than the average wrestler may not show improvements in muscle mass because their **results have been skewed** by empirical data. This can lead to improper training to build muscle and can hinder performance, potentially leading to overtraining or injuries. By excluding empirical estimations, body composition results are individualized and specific to each athlete, enabling accurate body composition tracking over time.