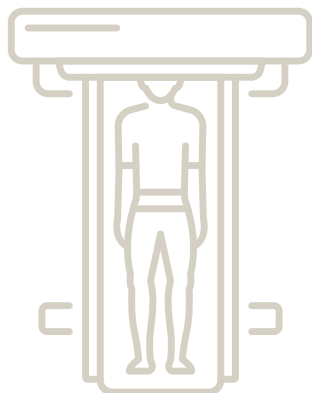




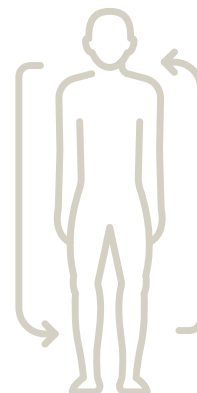
Body Composition Guide

DEXA Scan For Measuring Body Composition

Lindgren Functional Medicine uses the DEXA Scan for body composition to provide the most accurate breakdown of your body's composition including:



- Total body fat mass
- Total body muscle mass
- Total body bone mass
- Total body fat percentage
- Total body bone mineral density
- Muscle & fat mass in the trunk
- Central abdominal fat measurement
- Muscle & fat mass in your right & left arm
- Muscle & fat mass in your right & left leg



Whether you are dieting, a fitness enthusiast/athlete, or interested in achieving/maintaining the best health and wellness as you age, the DEXA Scan for body composition will provide you and your provider with a baseline of where you are at now. This helps to objectively and accurately measure your progress. The DEXA Scan is considered the *'gold standard'* in body composition testing.

DEXA For Weight Loss

An initial baseline scan can help you and your provider see exactly where you are when you start your weight loss journey. We will be able to track how much body fat you are actually losing and if you are gaining/losing muscle or bone mass. DEXA is the best way to track your progress and monitor body composition changes over time.

Fitness Enthusiasts/Athletes

Many fitness enthusiasts and athletes use DEXA Scan to monitor body fat measurement and to look for muscle asymmetries between their left and right sides. Muscle imbalances are often caused when we favor our dominant side or use improper form causing it to do more work.

Health & Wellness

Having a baseline measurement of your body composition to see where you are today will help us to track changes over time. As you age, you often lose muscle and bone mass putting you at greater risk for injury. By monitoring your body composition, we can help keep your muscles and bones strong.

Body Composition Guide

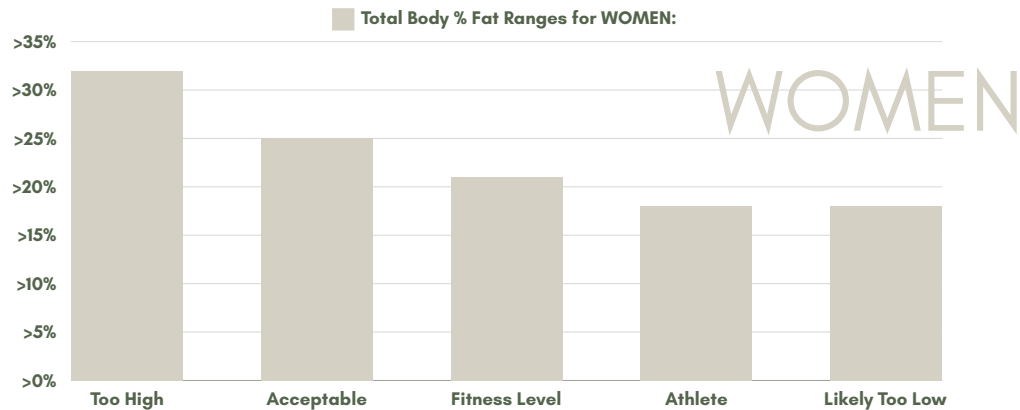
Total Body% Fat Ranges For Women & Men

Adipose Indices

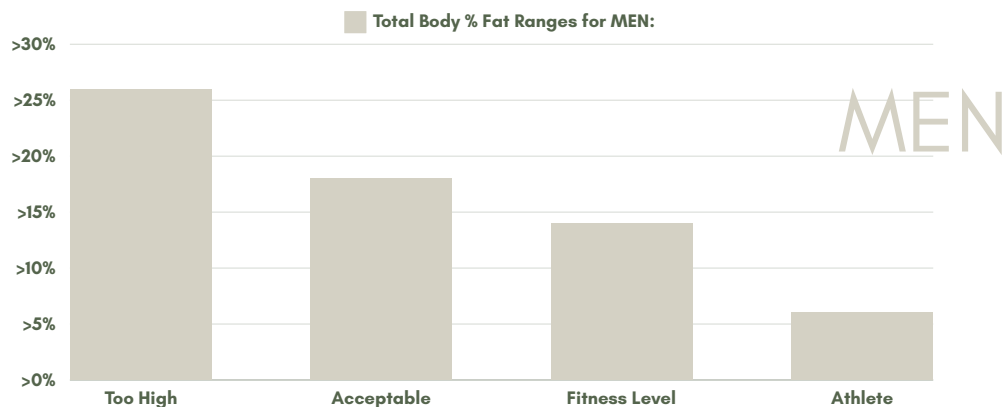
Total Body % Fat

Total body fat percentage is exactly what it sounds like.

This is the percentage of tissue in the body made up of fat – both good fat & bad fat.



- > 32% Too high
- 25-31% Acceptable
- 21-24% Fitness Level
- 18-20% Athlete
- < 18% Likely too Low/associated with fertility & hormone issues



- > 26% Too high
- 18-25% Acceptable
- 14-17% Fitness Level
- 6-13% Athlete

These ranges are often adjusted upwards when age is over 40, but it is best to use 'young matched' controls as a target for optimizing body composition.

Body Composition Guide

Fat Mass Index

Fat Mass Index (FMI) is another gender specific measure of excess body fat.



Ideal levels

5-9 kg/m² WOMEN

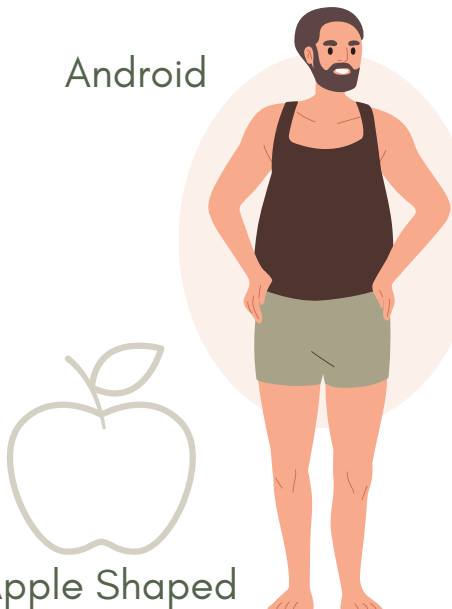
3-6 kg/m² MEN

Android/Gynoid Ratio

This adipose index determines where you carry excess fat stores ie, 'apple' vs 'pear' shape. Android (*apple shape*) refers to people whose fat is stored mostly around the stomach or mid-section. Gynoid (*pear shape*) refers to those whose fat is stored mostly around the hips. Ideally, android fat will always be lower than gynoid fat making the target A/G ratio less than 1.

The A/G ratio is significantly associated with metabolic syndrome and non-alcoholic fatty liver disease. Fatty liver disease can manifest as mild elevations in liver function tests (*ie AST and ALT*), but can progress to hepatitis, fibrosis, and even hepatocellular carcinoma. Women typically have a lower A/G ratio than men. There is no percentage associated with this number.

Android



Apple Shaped

Gynoid



Pear Shaped

Body Composition Guide

Visceral Adipose Tissue (VAT)

Visceral adipose tissue is the so-called '*bad fat*' and it is included within total body fat. This is the fat stored in and around our organs and within muscle tissue itself. It is highly inflammatory and even small amounts are associated with significant increases in risk for cardiometabolic disease.

Est VAT Area (cm^2) values greater than 100 are associated with an increased risk for diabetes, heart disease, cancer, and dementia. Values greater than 160 are associated with high risk for development of these chronic illnesses.

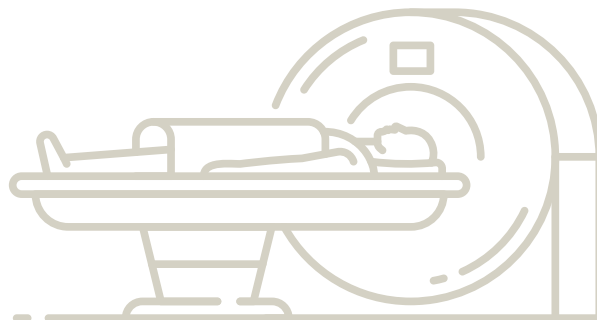
Lean Indices

The lean/height² (kg/m^2) ratio is a general measure of total lean body mass. The appendicular lean muscle index (ALMI) or appendicular lean/height² (kg/m^2) is a similar metric comparing the amount of muscle mass in the arms and legs. Although these two numbers are often very similar, the ALMI is cleaner because in the limbs, you really only have muscle, fat, and bone.

Ideal ALMI in WOMEN: at least 5.5 kg/m^2

Ideal ALMI in MEN: at least 7.0 kg/m^2

In general, the more lean muscle mass a person has, the better. Shoot for the moon here – 75% or better as you head into aging. No one regrets having too much muscle.





Bone Mineral Density (BMD) Interpretative Recommendation Guide

T-Score Greater Than 0 Healthy Bone Density

This indicates healthy bone density compared to young, matched controls. Recommend the following to further improve/maintain healthy BMD:

OsteoBasics I

- 3 Capsules Daily (*Provides optimization including calcium, magnesium, and phosphorus supplementation.*)

Optimize Vitamin D levels to 80-100

- *This typically requires supplementation of vitamin D3/K2 of at least 5,000 units daily. It's best to have your level checked first and then after 3 months of supplementation.*

Hormone Optimization

- Hormone testing and replacement if needed. Estrogen, progesterone, testosterone, and growth hormone all play a crucial role in maintaining healthy bone integrity.

Dietary Optimization

- Evaluation for Celiac Disease (*a gluten free diet may improve BMD in this population*), adequate dietary protein (*approximately 0.8g per kg of body weight per day*), green leafy vegetables (*e.g., spinach, kale*), broccoli, and fermented foods are rich in vitamin K.

Exercise Optimization

- Weight bearing exercise for at least 30 minutes per day more days out of the week than not.
- Muscle strengthening exercise 2-3 days per week.
- Exercises that increase core strength and balance.

Lifestyle Changes

- Smoking Cessation
- Limit Alcohol Use
- Avoidance of Drugs That Increase Bone Loss (*glucocorticoids like prednisone and other steroids*)

Stress Management

Chronic stress activates abnormal levels of cortisol which behaves similarly to medications like prednisone on bone tissue and also drives changes in the inflammatory response which can be detrimental to bone health. Abnormal activation of the HPA axis can also cause nutrient imbalances and dysregulate other hormone systems like estrogen and testosterone leading to break down of bone.



Bone Mineral Density (BMD) Interpretative Recommendation Guide

T-Score Between -0.9 & 0
Measurable Bone Loss

This indicates measurable bone loss compared to young, matched controls. Recommend the following to improve bone mineral density:

OsteoCore II

- 2 capsules daily (*Provides optimization including calcium, magnesium, and phosphorus supplementation.*)

Optimize Vitamin D Levels to 80-100

- This typically requires supplementation of vitamin D3/K2 of at least 10,000 units daily. It's best to have your level checked first and then after 3 months of supplementation.

Hormone Optimization

- Hormone testing and replacement if needed. Estrogen, progesterone, testosterone, and growth hormone all play a crucial role in maintaining healthy bone integrity.

Dietary Optimization

- Evaluation for Celiac Disease (*a gluten free diet may improve BMD in this population*), adequate dietary protein (*approximately 0.8g per kg of body weight per day*), green leafy vegetables (e.g., *spinach, kale*), broccoli, and fermented foods are rich in vitamin K.

Exercise Optimization

- Weight bearing exercise for at least 30 minutes per day more days out of the week than not.
- Muscle strengthening exercise 2-3 days per week.
- Exercises that increase core strength and balance.

Lifestyle Changes

- Smoking Cessation
- Limit Alcohol Use
- Avoidance of Drugs That Increase Bone Loss (*glucocorticoids like prednisone and other steroids*)

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Bone Mineral Density (BMD) Interpretative Recommendation Guide

T-Score Between -2.5 & -1.0 Significant Bone Loss - Osteopenia

This indicates clinically significant bone loss called osteopenia. Patients with osteopenia are at a measurably increased risk for fracture. Recommend the following to improve bone mineral density:

OsteoCore II

- 2 capsules twice daily (*If 10-Year Fracture Risk is Less Than 3%*) **OR**

OsteoAdvanced III

- 1 Packet Twice Daily (*If 10-Year Fracture Risk is Greater Than or Equal to 3%*)

Optimize Vitamin D Levels to 80-100

- This typically requires supplementation of Vitamin D3/K2 of at least 10,000 units daily. It's best to have your level checked first and then after 3 months of supplementation.

Hormone Optimization

- Hormone testing and replacement if needed. Estrogen, progesterone, testosterone, and growth hormone all play a crucial role in maintaining healthy bone integrity.

Dietary Optimization

- Evaluation for Celiac Disease (*a gluten free diet may improve BMD in this population*), adequate dietary protein (*approximately 0.8g per kg of body weight per day*), green leafy vegetables (*e.g., spinach, kale*), broccoli, and fermented foods are rich in Vitamin K.

Exercise Optimization

- Weight bearing exercise for at least 30 minutes per day more days out of the week than not.
- Muscle strengthening exercise 2-3 days per week.
- Exercises that increase core strength and balance.

Lifestyle Changes

- Smoking Cessation
- Limit Alcohol Use
- Avoidance of Drugs That Increase Bone Loss (*glucocorticoids like prednisone and other steroids*).

Stress Management

- Chronic stress activates abnormal levels of cortisol which behaves similarly to medications like prednisone on bone tissue and also drives changes in the inflammatory response which can be detrimental to bone health. Abnormal activation of the HPA axis can also cause nutrient imbalances and dysregulate other hormone systems like estrogen and testosterone leading to break down of bone.



Bone Mineral Density (BMD) Interpretative Recommendation Guide

T-Score Lower Than -2.5 Severe Bone Loss - Osteoporosis

This indicates severe bone loss called osteoporosis. Patients with osteoporosis have a high risk of fracture. Recommend the following to improve bone mineral density:

OsteoAdvanced III

- 1 Packet Twice Daily

Optimize Vitamin D Levels to 80-100

- This typically requires supplementation of vitamin D3/K2 of at least 5,000 to 10,000 units daily. It's best to have your level checked first and then after 3 months of supplementation.

Hormone Optimization

- Hormone testing and replacement if needed. Estrogen, progesterone, testosterone, and growth hormone all play a crucial role in maintaining healthy bone integrity.

Dietary Optimization

- Evaluation for Celiac Disease (*a gluten free diet may improve BMD in this population*), adequate dietary protein (*approximately 0.8g per kg of body weight per day*), green leafy vegetables (*e.g., spinach, kale*), broccoli, and fermented foods are rich in Vitamin K.

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Stress Management

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Recheck BMD in one year.