Healthy Back Challenge

"The Straw That Broke The Camel's Back"

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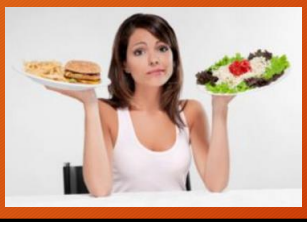
Let's start with a riddle!

A 150 lb. women lost 15 pounds on a fad diet which boasts "rapid weight loss with no exercise."

She felt so much better at 135 lbs.

Let's start with a riddle!

Over time she reverted to her old habits and she gained all the weight back.



Let's start with a riddle!

She is now 150 lbs. again.

But she is 5 lbs fatter then before she lost the weight.

How can this happen?

Stay tuned for the answer to our riddle…

Riddle #2

Supposed I put you in a room with two boxes and a scale.

Riddle #2

Each box weighs **exactly 5 lbs.**

One box has 5 lbs. of **gold** the other 5 lbs. of **lead.**

Riddle #2

Gold is worth $21,120.00/lb.

Lead is worth $1.08/lb.

Riddle #2

Which 5 lb. box do you want?

Gold =$105,600.00

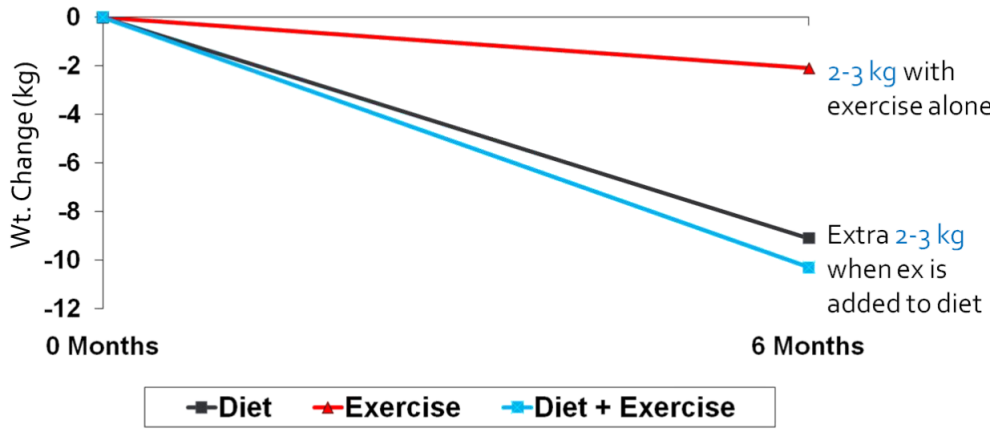
Lead =$5.40

The answer: 50%/50% chance to be right

Since you can't tell which box is which, AND since there are many constituents of your body weight more transient than body fat, Why do we assume that all weight gained/lost is body fat?

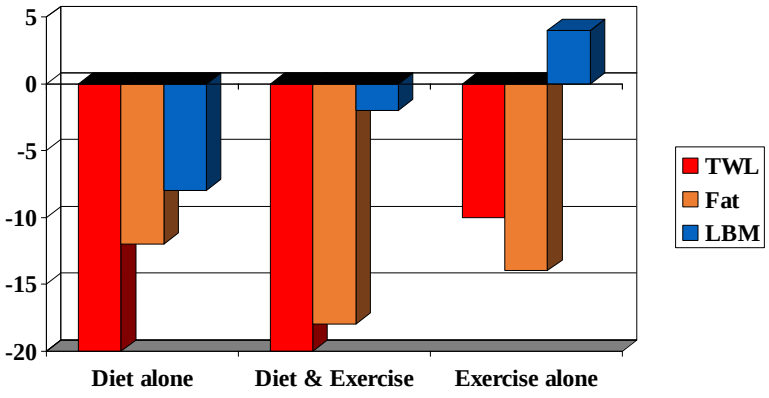
Fluids: blood volume, body water, lymphatic fluid, undigested food in your bowels, glycogen, are only a few components of body weight more transient than body fat.

Does diet or exercise contribute more to weight loss?



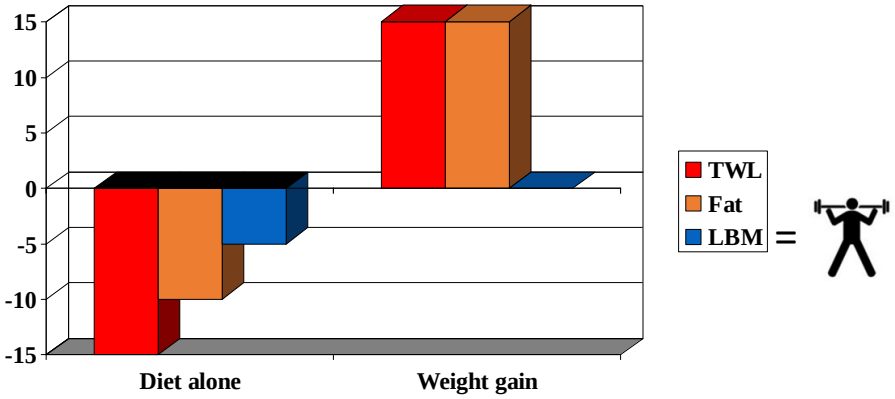
National Institute of Diabetes and Digestive and Kidney Diseases

Comparison of Three Methods for Weight Loss



Caloric deficit was equal in all three groups.

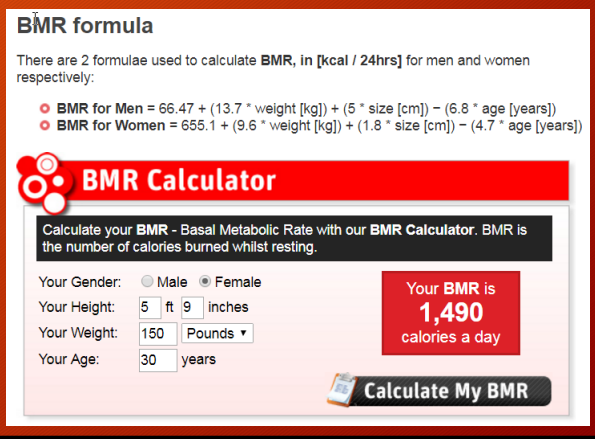
Riddle#1: 15 lb. weight loss and gain (diet alone)



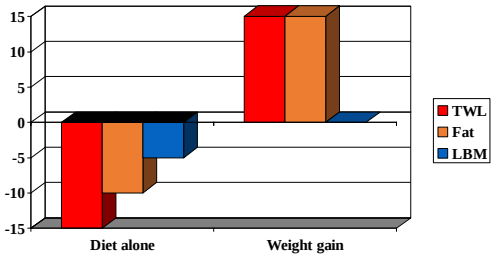
15 lb. weight loss was 66% fat and 33% lean body mass. You can't gain LBM without exercise. So the dieter didn't exercise to lose weight and didn't exercise after she went off her diet. Therefore all the weight she gained back is fat.

This 150 lb. women has a resting metabolic rate of ~1,788 kcal/day

- Physical activity in a sedentary person may add an additional 20% to the energy expenditure (1,788).
- Stress, illness, age, gender body mass are major influences of her energy needs.
  - LBM is an important contributor: estimates range from 6 kcal/lb. – 30 kcal/lb.



Using 6 kcal/lb. of LBM:
the loss of 5 lb. of LBM results in a reduction of daily energy expenditure of 30 kcals/day. (every day for the rest of her life)



No Lean Body Mass

30 kcals/day, equals ~ a 3 lb weight gain/year. So at the end of the year our subject now weighs **153** lbs. (so she is actually 8 lbs. fatter)

Small Changes Make a "big" difference

- The *common experience* is to lose between 3-5% of LBM each decade as we age starting in our 30s (3rd decade).
  - That's 4.5 lbs. – 7.5 lbs./decade in our hypothetical riddle #1
  - One low-quality weight loss followed by weight gain can cause the changes in body composition commonly seen in 10-years of "normal" aging.
  - This common experience in aging causes sedentary living and accelerates the loss of LBM in each subsequent decade of life.
  - Remember our hypothetical example (Riddle #1). The loss & regain of 5 lbs. of LBM caused an increase of 3 lbs. in total body weight.
- This loss of energy expenditure is every day and makes it harder to create a calorie deficit for subsequent attempts to lose weight and makes weight regain more likely and quicker.

How much can a can of soda change your body weight?

12 fl oz can = 150 kcal = 4% of lb. = ~3/4 oz. BW

150 kcal above what you need a day, every day of the year, = ~**15 lbs**. weight gain/year.

WellPath's Healthy Back Challenge

Back pain and conditions are preventable & treatable

- Lifestyle
- Exercise, including therapy
- Avoiding risky behaviors – **lifting technique** (up to 80% of work-related back injures happen during lifting)
- Know your risk – mitigate your risk
- Posture
- Ergonomics
- **Body Composition**

WELLPATH'S HEALTHY BACK CHALLENGE

Risk factors

- **Age**: 1st attack 3rd – 5th decade of life and more common as we age
  - Loss of bone strength & osteoporosis
  - Decreased muscle elasticity
  - Atrophy of intervertebral discs – loss of fluid & flexibility
  - Loss of flexibility
  - Loss of strength
  - **Unfavorable changes in body composition**
  - Abnormalities to the spine (stenosis, bone spurs, etc.)
  - Increased sedentary time.

WELLPATH'S HEALTHY BACK CHALLENGE

Risk factors

- **Body Composition** :
  - Creeping obesity: losing muscle mass and gaining body fat: weight stability
  - Inactive body mass increases the weight of every lift
  - Inactive body mass increases stress on spine with every lift
  - Increased abdominal adiposity can decrease flexibility of the spine
  - Increased body weight inversely related to aerobic fitness
  - Increased body weight inversely related to balance

WellPath's Healthy Back Challenge

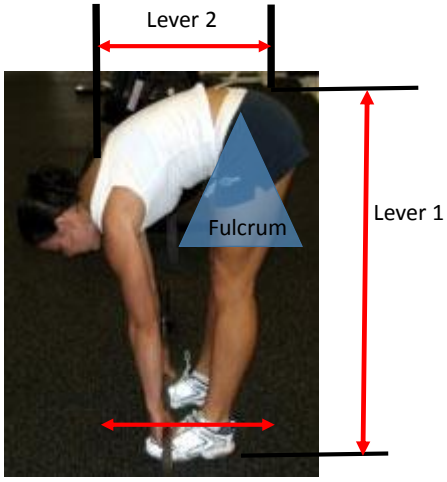
"Give me a lever long enough, and a fulcrum on which to place it, and I shall move the world"

- Archimedes

WellPath's Healthy Back Challenge

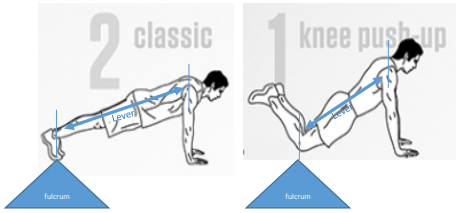
Levers can be used to magnify force applied.
In our bodies, bones act as lever arms, joints as pivots and fulcrums, and muscles and objects provide force.

- Bones act as lever arms
- Joints act as pivots and fulcrums
- Load forces include bodyweight + object
- Levers give us a strength advantage or movement advantage
  - Not both simultaneously



Shorten lever 1: Bend knees.

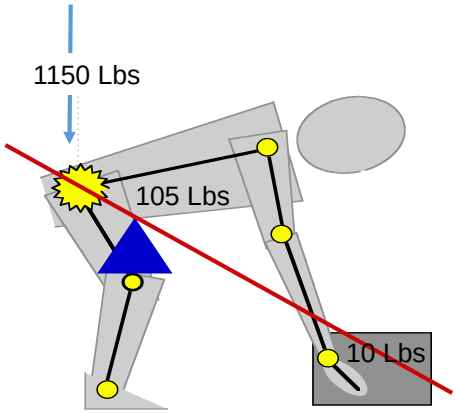
Shorten lever 2: Lower hips, head up and weight close to the body.



Physical Stress on Skeletal System

The Forces Involved:

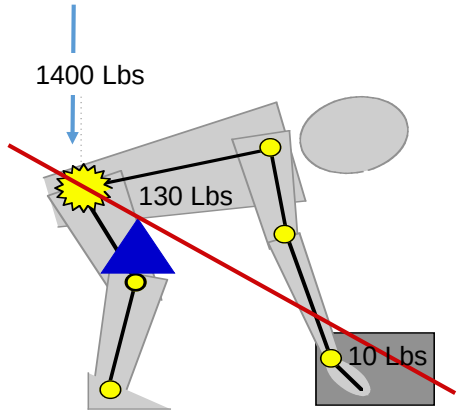
When you add in the 105 pounds of the average human upper torso, lifting a 10 pound object puts 1,150 pounds of pressure on the human back.



Physical Stress on Skeletal System

The Forces Involved:

If you were 25 pounds overweight, it would put an additional 250 pounds of pressure on your back every time you bend over.



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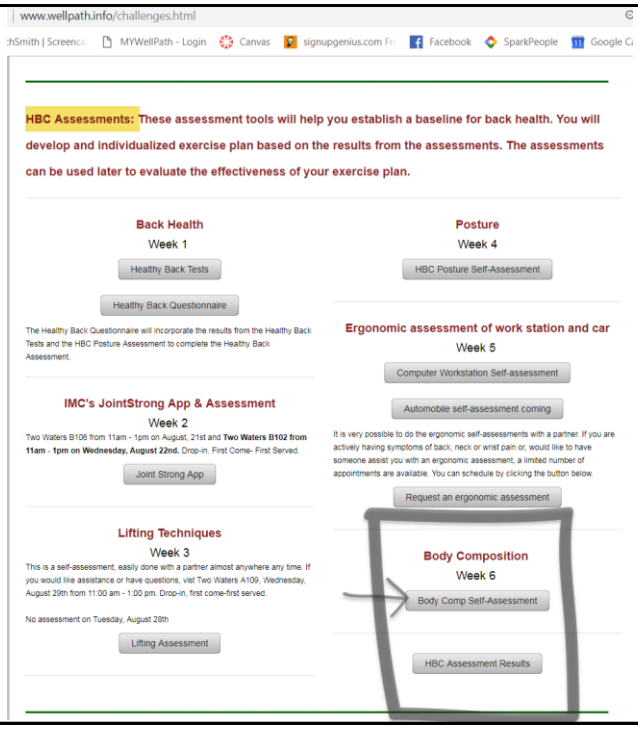
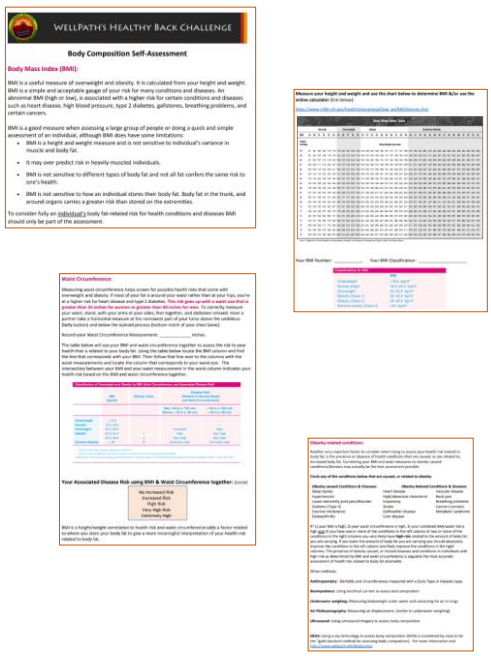




WellPath's Healthy Back Challenge

Body Composition Self-Assessment

Body Mass Index (BMI):

BMI is a useful measure of overweight and obesity. It is calculated from your height and weight. BMI is a simple and acceptable gauge of your risk for many conditions and diseases. An abnormal BMI (high or low), is associated with a higher risk for certain conditions and diseases such as heart disease, high blood pressure, type 2 diabetes, gallstones, breathing problems, and certain cancers.

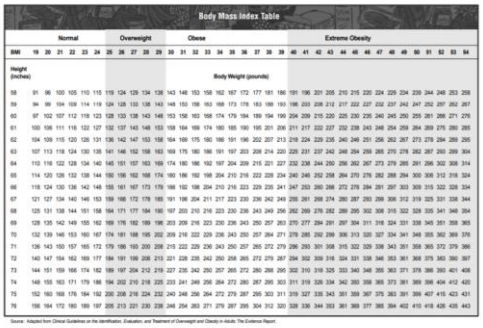
BMI is a good measure when assessing a large group of people or doing a quick and simple assessment of an individual, although BMI does have some limitations:

- BMI is a height and weight measure and is not sensitive to individual's variance in muscle and body fat.
- It may over predict risk in heavily-muscled individuals.
- BMI is not sensitive to different types of body fat and not all fat confers the same risk to one's health.
- BMI is not sensitive to how an individual stores their body fat. Body fat in the trunk, and around organs carries a greater risk than stored on the extremities.

To consider fully an individual's body fat-related risk for health conditions and diseases BMI should only be part of the assessment.

Measure your height and weight and use the chart below to determine BMI &/or use the online calculator (link below):

https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm



Your BMI Number: _____, Your BMI Classification: _____

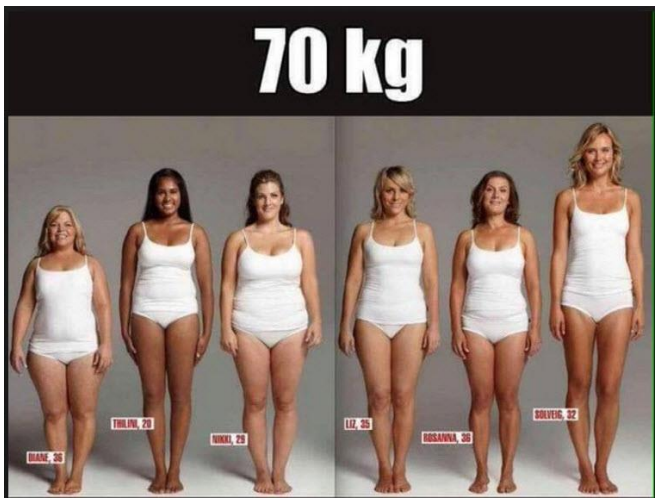
Classifications for BMI	BMI
Underweight	<18.5 kg/m²
Normal weight	18.5–24.9 kg/m²
Overweight	25–29.9 kg/m²
Obesity (Class 1)	30–34.9 kg/m²
Obesity (Class 2)	35–39.9 kg/m²
Extreme obesity (Class 3)	≥40 kg/m²

Obesity – body composition (Primary)

- Arthritis (Osteoarthritis – lower extremity)
- Sleep Apnea
- Diabetes
- Exercise intolerance
- Hypertension

Obesity – Body Composition (secondary)

- Cardiovascular disease
- Cancer
- Hyperlipidemia
- Dementia
- Metabolic syndrome
- Liver disease



Waist Circumference:

Measuring waist circumference helps screen for possible health risks that come with overweight and obesity. If most of your fat is around your waist rather than at your hips, you're at a higher risk for heart disease and type 2 diabetes. **This risk goes up with a waist size that is greater than 35 inches for women or greater than 40 inches for men**. To correctly measure your waist, stand, with your arms at your sides, feet together, and abdomen relaxed. Have a partner take a horizontal measure at the narrowest part of your torso above the umbilicus (belly button) and below the xiphoid process (bottom notch of your chest bone).

Record your Waist Circumference Measurement: _____ inches.

The table below will use your BMI and waist circumference together to assess the risk to your health that is related to your body fat. Using the table below locate the BMI column and find the line that corresponds with your BMI. Then follow that line over to the columns with the waist measurements and locate the column that corresponds to your waist size. The intersection between your BMI and your waist measurement in the waist column indicates your health risk based on the BMI and waist circumference together.

Classification of Overweight and Obesity by BMI, Waist Circumference, and Associated Disease Risk*

	BMI (kg/m2)	Obesity Class	Disease Risk* (Relative to Normal Weight and Waist Circumference)	
			Men ≤40 in (≤ 102 cm) Women ≤ 35 in (≤ 88 cm)	> 40 in (> 102 cm) > 35 in (> 88 cm)
Underweight	< 18.5		-	-
Normal†	18.5–24.9		-	-
Overweight	25.0–29.9		Increased	High
Obesity	30.0–34.9	I	High	Very High
	35.0–39.9	II	Very High	Very High
Extreme Obesity	≥ 40	III	Extremely High	Extremely High

* Disease risk for type 2 diabetes, hypertension, and CVD.
† Increased waist circumference can also be a marker for increased risk even in persons of normal weight.
Adapted from "Preventing and Managing the Global Epidemic of Obesity. Report of the World Health Organization Consultation of Obesity." WHO, Geneva, June 1997.*

Your Associated Disease Risk using BMI & Waist Circumference together: (circle)

No Increased Risk
Increased Risk
High Risk
Very High Risk
Extremely High

BMI is a height/weight correlation to health risk and waist circumference adds a factor related to where you store your body fat to give a more meaningful interpretation of your health risk related to body fat.

Obesity-related conditions:

Another very important factor to consider when trying to assess your health risk related to body fat, is the presence or absence of health conditions that are caused, or are related to, increased body fat. Correlating your BMI and waist measures to obesity-caused conditions/diseases may actually be the best assessment possible.

Circle any of the conditions below that are caused, or related to obesity.

Obesity caused Conditions & Diseases:	Obesity Related Conditions & Diseases	
Sleep Apnea	Heart disease	Vascular disease
Hypertension	High/abnormal cholesterol	Back pain
Lower-extremity joint pain/disorder	Impotency	Breathing problems
Diabetes (Type II)	Stroke	Cancers (certain)
Exercise intolerance	Gallbladder disease	Metabolic syndrome
Osteoarthritis	Liver disease	

If: 1) your BMI is high, 2) your waist circumference is high, 3) your combined BMI/waist risk is high and 4) you have one or more of the conditions in the left column or two or more of the conditions in the right columns you very likely have **high-risk** related to the amount of body fat you are carrying. If you lower the amount of body fat you are carrying you should absolutely improve the conditions in the left column and likely improve the conditions in the right columns. The presence of obesity caused, or related diseases and conditions in individuals with high-risk as determined by BMI and waist circumference is arguably the most accurate assessment of health risk related to body fat attainable.

Other methods:

Anthropometry: Skinfolds and circumferences measured with a Gulic Tape or inelastic tape.

Bioimpedance: Using electrical current to assess bod composition

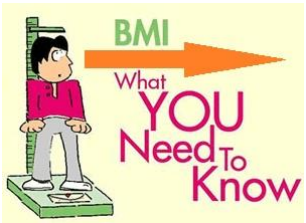
Underwater weighing: Measuring bodyweight under water and correcting for air in lungs

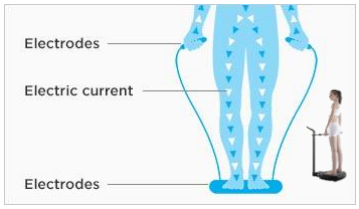
Air Plethysmography: Measuring air displacement, (similar to underwater weighing)

Ultrasound: Using ultrasound imagery to assess body composition

DEXA: Using x-ray technology to assess body composition (DEXA is considered by most to be the "gold-standard method for assessing body composition). For more information visit http://www.wellpath.info/bodycomp.

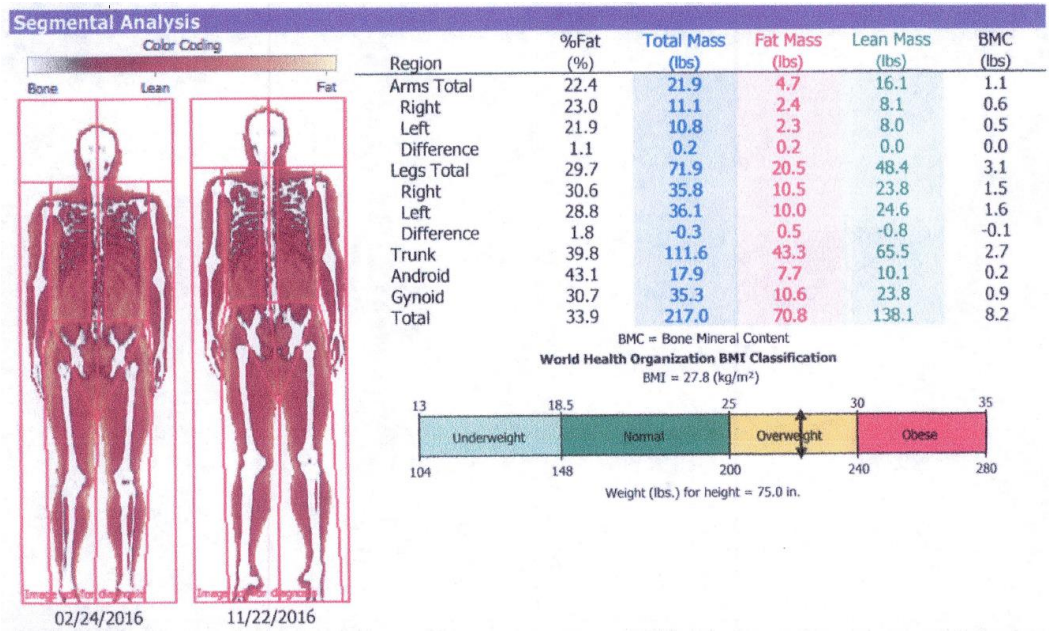
Body Composition Assessment Methods



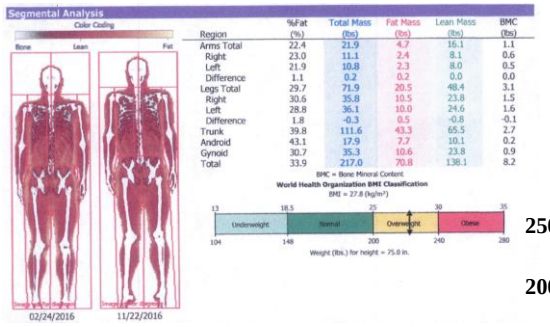


The DEXA Scan for Body Composition Assessment

DEXA



DEXA



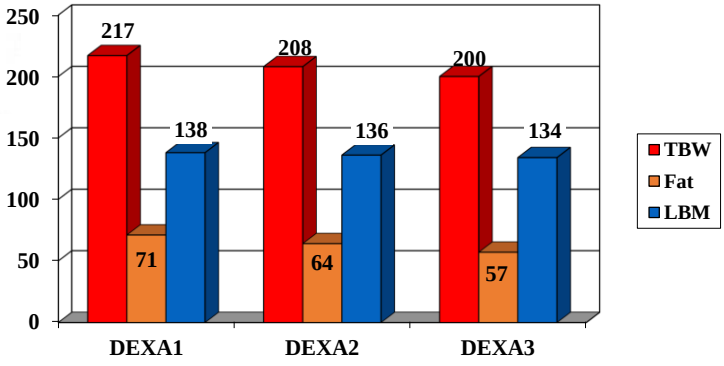
Region	%Fat (%)	Total Mass (lbs)	Fat Mass (lbs)	Lean Mass (lbs)	BMC (lbs)
Arms Total	22.4	21.9	4.7	16.1	1.1
Right	23.0	11.1	2.4	8.1	0.6
Left	21.9	10.8	2.3	8.0	0.5
Difference	1.1	0.2	0.2	0.0	0.0
Legs Total	29.7	71.9	20.5	48.4	3.1
Right	30.6	35.8	10.5	23.8	1.5
Left	28.8	36.1	10.0	24.6	1.6
Difference	1.8	-0.3	0.5	-0.8	-0.1
Trunk	39.8	111.6	43.3	65.5	2.7
Android	43.1	17.9	7.7	10.1	0.2
Gynoid	30.7	35.3	10.6	23.8	0.9
Total	33.9	217.0	70.8	138.1	8.2

BMC = Bone Mineral Content

World Health Organization BMI Classification

BMI = 27.8 (kg/m²)

17 LB. WEIGHT LOSS
13.6 LBS. OF FAT
3.4 LBS. OF LBM



Category One Prevention Benefits

The Plan pays for two separate categories of wellness services:

- **Category One**: Certain designated **Non-Health Reform** related wellness services are payable at 100%, no deductible from in-network providers, **up to a benefit limit of $800/person per year**: including EKG, screening lab work, pulmonary testing, and screening x-rays. Dexa scan and Indirect Calorimetry is covered when performed by a qualified allied healthcare professional with indirect supervision of a physician. Exercise tolerance testing and medical nutrition therapy by a Registered Dietitian is payable. **Once the $800/year amount is reached, the Plan pays 10% of remaining eligible Category One wellness expenses thereafter, without the deductible applied.**

- Culture change for understanding obesity and determining appropriate interventions to reduce body fat.
  - Not all weight loss is equal. There is high-quality and low-quality weight loss.
  - Not all body fat is equal. Visceral Adipose Tissue (VAT) is much better correlated with disease risk.
  - DEXA scans help to best identify the health risk related to excess body fat and to provide surveillance of changes in body composition to evaluate lifestyle change

DEXA Criteria

DEXA Scanning may be approved for reimbursement using the Category One Wellness Benefit when an individual is determined to be *"at-risk"* by a **physician** using the following criteria:
Individual is at-risk, as determined by a physician, based on two or more of the following criteria:

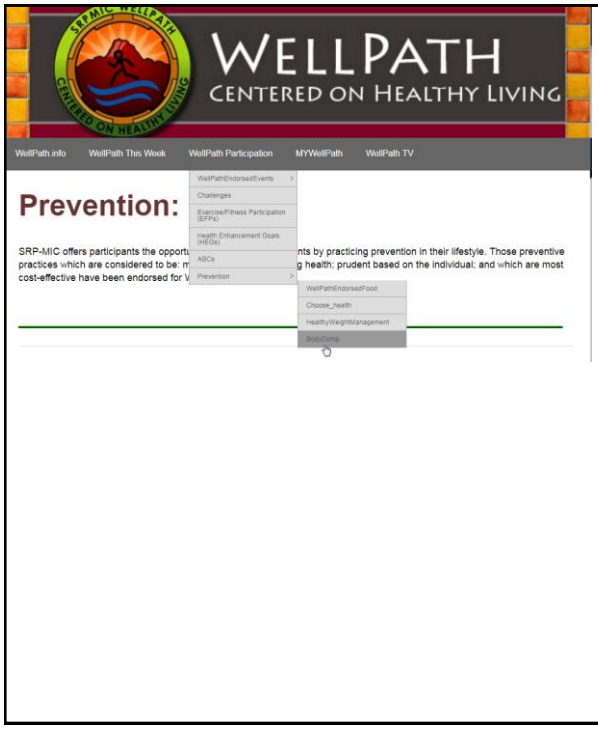
- Body Mass Index > 25 kg/m^2
- Waist circumference >102cm (men) or > 88cm (women)
- Waist to hip ratio >0.95 (men), >0.86 (women) < 60 years old and for those aged 60-69: >1.03 (men), > and >0.90 (women)
- Presence of sleep apnea or obesity-related sleep disorders
- Presence of lower-extremity osteoarthritis, history of lower extremity joint replacement
- Diabetes (> 126 mg/dl, HbA1C ≥7.0%) or impaired fasting glucose (≥ 114 mg/dl), on two or more measurements on separate days, or, an abnormal glucose tolerance test.
- Hyperlipidemia: Total cholesterol over 240 mg/dl
- Dyslipidemia: LDL cholesterol ≥ 130 mg/dl, HDL cholesterol ≤ 40 mg/dl, total cholesterol: HDL:Cholesterol ≥3.6 mg/dl, or those taking antilipidemic medications.
- Hypertension/prehypertension: ≥140/90 mmHg (≥130/80 mmHg in those with CKD, DM)/≥120/80 mmHg (measured on two separate occasions). Or, taking one or more antihypertension medications

DEXA Criteria (Continued)

- Hypertriglyceridemia: Fasting triglyceride levels > 200 mg/dl
- Elevated liver enzymes (non-alcoholic fatty liver disease) ALT:>46 U/L AST: >46 U/L men and AST: >35, ALT: > 34 U/L in women
- Metabolic Syndrome: Increased waist circumference, insulin resistance/diabetes, dyslipidemia, elevated blood pressure, &/or elevated liver enzymes (by measurement standards listed above) and/or abnormal kidney function &/or increased thrombolytic tendency and/or proinflammatory state.
- Signs/symptoms of cardiovascular, pulmonary or metabolic disease
- Known cardiovascular, pulmonary or metabolic disease
- Sedentary lifestyle/Exercise intolerance/low fitness
- History of multiple failed weight loss attempts and preparing to embark on a lifestyle change to lose weight.
- Current cigarette smoker
- Positive family history of early and significant cardiovascular disease

And:

- Body composition is measured by Dual Energy X-Ray Absorptiometry;
- Exercise or resting metabolism (energy expenditure) is measured by indirect calorimetry, and;
- Testing is performed by qualified allied healthcare professionals with indirect supervision of a physician.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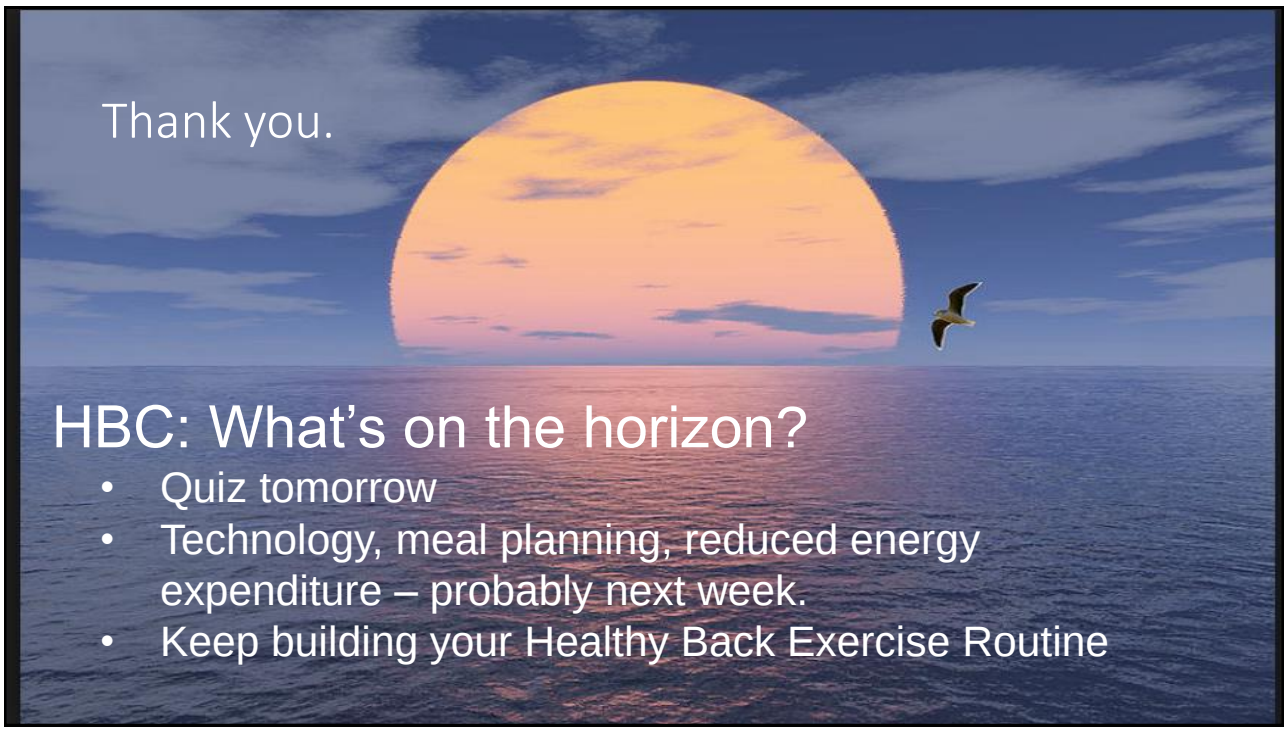
WellPath.info
WellPath This Week
WellPath Participation
MYWellPath
WellPath TV
Prevention:
WellPathEndorsedEvents
Challenges
Exercise/Fitness Participation (EFPs)
Health Enhancement Goals (HEGs)
ABCs
Prevention
WellPathEndorsedFood
Choose_health
HealthyWeightManagement
BodyComp


WELLPATH
CENTERED ON HEALTHY LIVING
WellPath.info
WellPath This Week
WellPath Participation
MYWellPath
WellPath TV
What are you made of?
Body composition assessment can help you to determine how much of your body weight is made up of body fat, muscle mass, and bone.
The health risk of obesity is much better related to the amount of body fat one carries rather than the person's body weight or body mass index. Also, body fat around organs and deep in the trunk of the body (called Visceral Body Fat or VAT) poses a much greater health risk that fat deposited on the extremities such as your hips, thighs and arms.
New! WellPath participants may have their body composition measured by two methods:
Skinfold measurement made by a WellPath Coach can help estimate your percent body fat. Then the portion of your body weight comprised of fat, and lean body mass (muscle, bone and organs) may be made along with an estimate of weight loss required to reach a body fat percentage may be made. Serial measurements may help you to determine if changes in body weight are due to changes in fat &/or muscle mass.
an experienced tester using an age- and gender-matched equation can be fairly accurate and provide meaningful information to


Thank you.
HBC: What's on the horizon?
• Quiz tomorrow
• Technology, meal planning, reduced energy expenditure – probably next week.
• Keep building your Healthy Back Exercise Routine