Losing Weight

By
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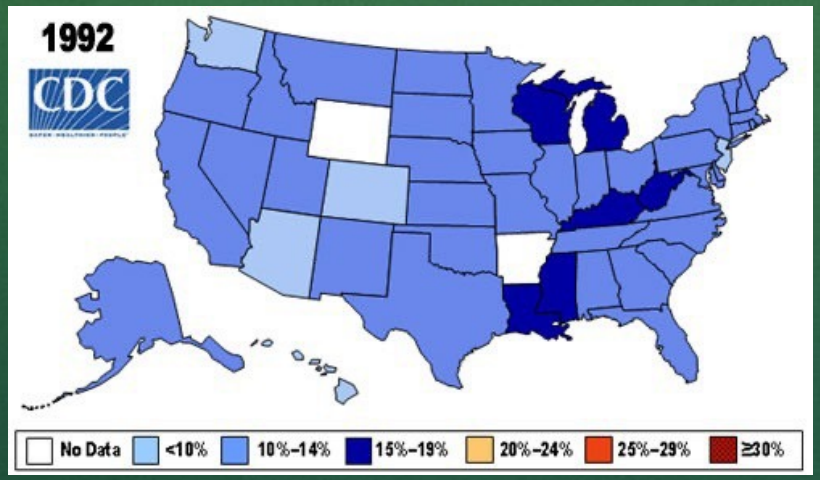
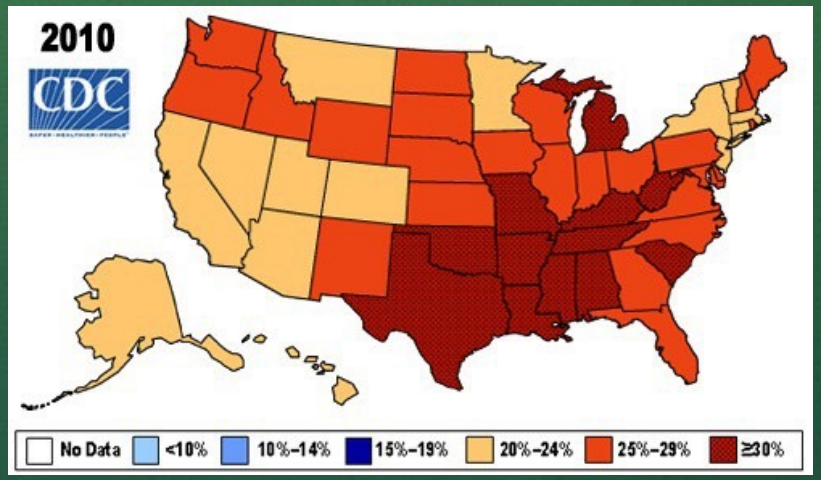
Disclaimer

- Dr. Pearson is a health coach for Optavia (formerly called Take Shape for Life (TSFL) with Medifast program)
- *This talk represents his own personal medical opinions and does not necessarily reflect the views of TSFL/Medifast.*

The obesity epidemic

Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People. Saving Money through Prevention.



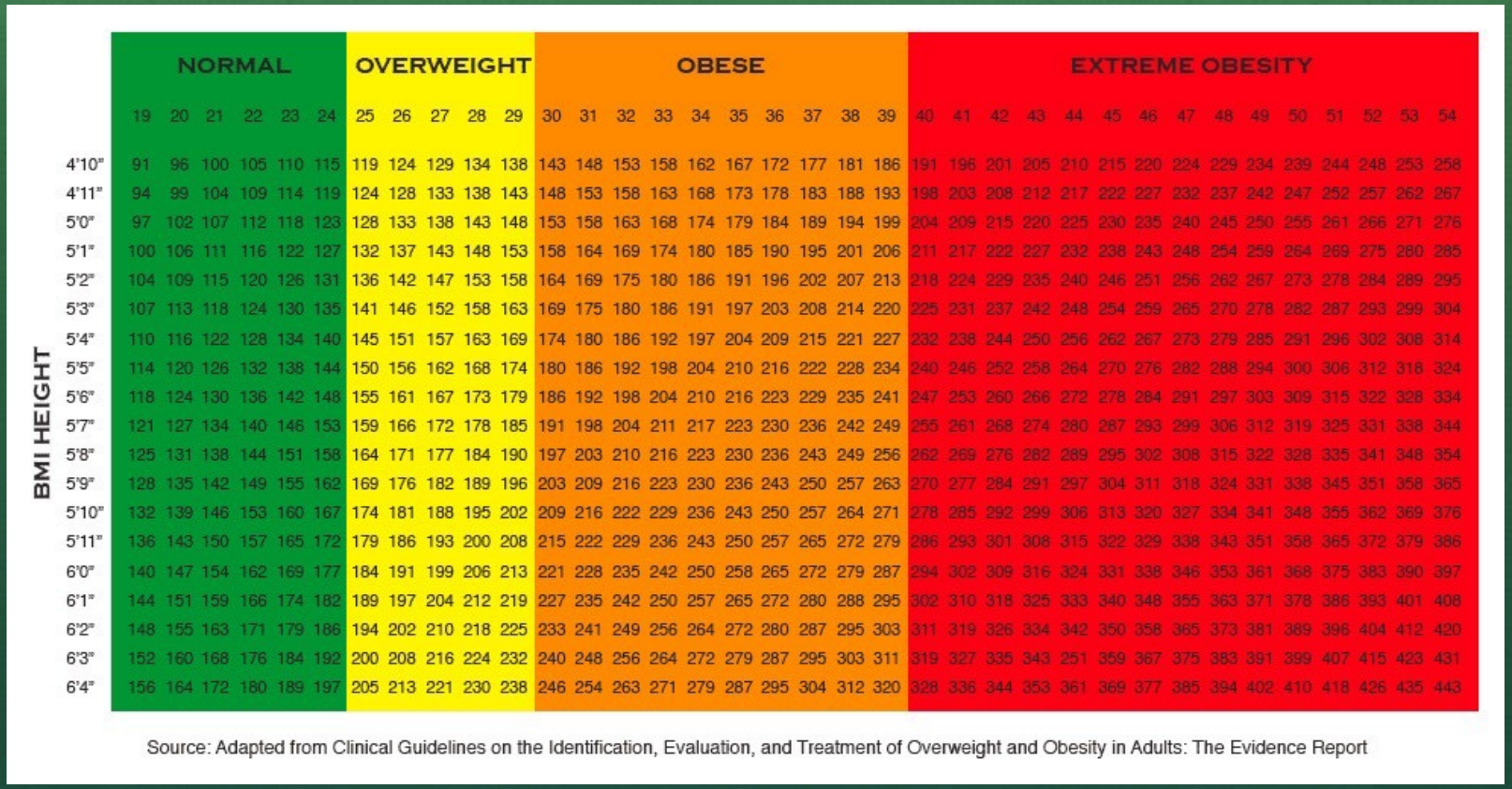


- More than one-third of U.S. adults (35.7%) are obese. Approximately 17% (or 12.5 million) of children and adolescents aged 2—19 years are obese.

Overweight vs. Obese

- Body Mass Index (BMI)
  - a relative indicator relating to body fat based on height and weight that applies to adult men and women.
  - Used to determine relative risk for cardiovascular diseases
    - Desired BMI <25
      - >25 BMI indicates an increased risk for cardiovascular events such as heart attack and stroke
  - To calculate:
    - BMI = [Weight (lb) / (Height (in)^2] x 703
    - BMI = Mass (kg) / Height (m) ^{2}
- Overweight
  - BMI between 25 and 30
- Obese
  - BMI >30
- Morbidly obese
  - BMI >40

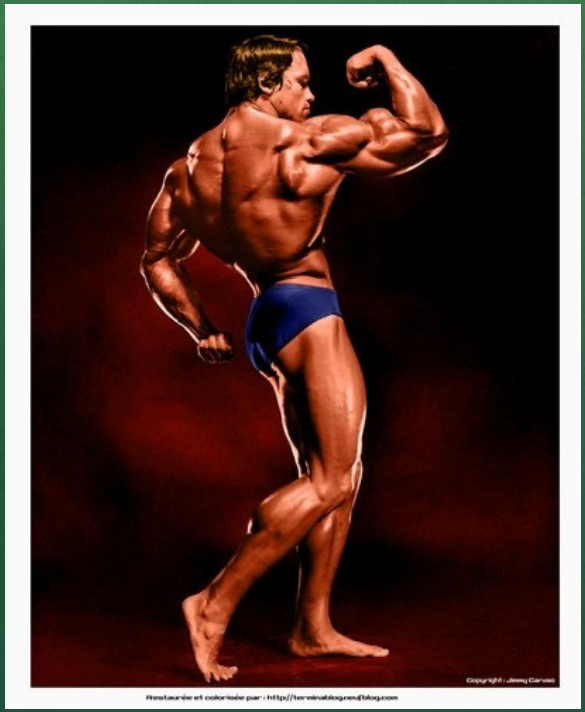
BMI Chart



BMI HEIGHT	NORMAL						OVERWEIGHT					OBESE										EXTREME OBESITY																			
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
4'10"	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258
4'11"	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267
5'0"	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276
5'1"	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285
5'2"	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295
5'3"	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304
5'4"	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314
5'5"	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324
5'6"	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334
5'7"	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344
5'8"	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354
5'9"	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365
5'10"	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376
5'11"	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386
6'0"	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397
6'1"	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408
6'2"	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389	396	404	412	420
6'3"	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335	343	251	359	367	375	383	391	399	407	415	423	431
6'4"	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443

Source: Adapted from Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report

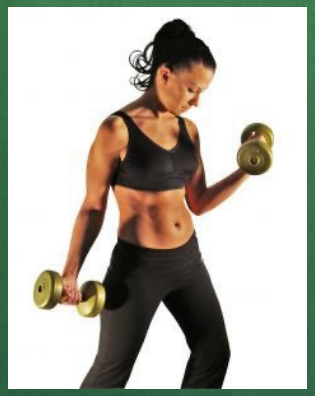
BMI's can be deceiving.



Some problems associated with obesity

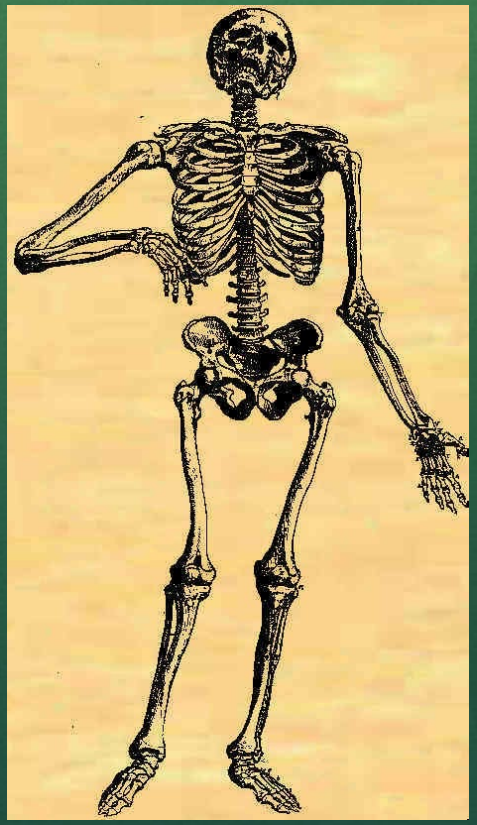
System	Condition
Metabolic	Diabetes, metabolic syndrome, low Testosterone, Polycystic ovary syndrome
Cardiovascular	High blood pressure, coronary artery disease (angina, heart attacks), strokes
Respiratory	Sleep apnea, Pickwickian Syndrome
Gastrointestinal	Acid reflux issues (GERD/hiatal hernia)
Mechanical	Spine and joint pains

Carrying weight: good ways

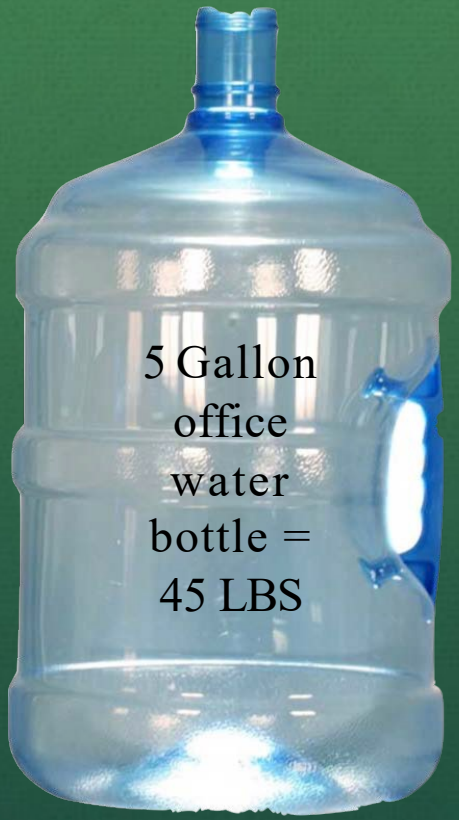


Mechanical Stresses

Mechanical stresses



Mechanical Stresses



Why treat obesity?

- Quality of life
  - To avoid the problems listed in previous slides
- Quantity of life
  - A person who weighs at least 40 percent more than their ideal weight is approximately twice as apt to die earlier than a person whose weight is normal.
  - Since the 1930s, it was thought that calorie restricted (CR) diets improved health and extend life spans of nearly every species tested, including worms, spiders, rodents, dogs, cows and monkeys. Alas, as of August 2012 – this was disproven.

What the science says

- Obesity is a disorder of excess fat accumulation.
  - *The # of fat cells in our bellies and upper bodies are fixed. Weight gain in those areas is not the result of an increase in the # of fat cells; rather, (unlike legs) it's the result of our fat cells getting larger.*
- Consuming excess calories results in storage of energy, in the form of fat.
  - *Reducing caloric intake permits shrinkage in the size of fat cells. It does not reduce the number of fat cells in the body.*
- Exercise does not make us lose excess fat
  - it burns sugar, not fat.
  - It makes us hungry and want to take in more calories.

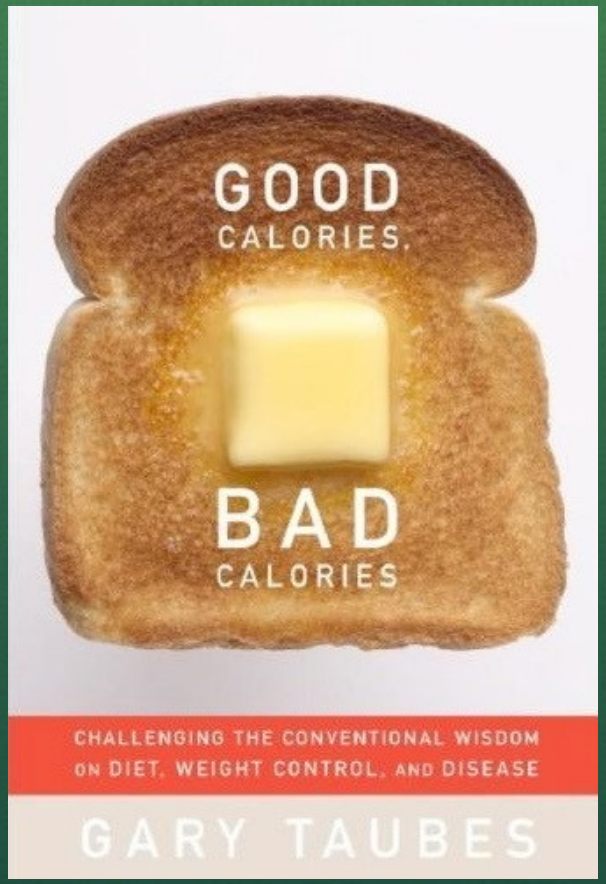
What the science says

- Insulin is the primary regulator of fat storage.
  - *Secreted by the pancreas.*
  - *When insulin is elevated, we stockpile fat for future energy needs. When insulin levels fall, we release fat from fat tissue and burn it for fuel.*
  - *Hence, by stimulating insulin secretion, sugars and starches (forms of carbohydrates) make us fat.*
- Leptin
  - *Hormone, secreted by fat cells, that stimulates the oxidation of fatty acids, the uptake of glucose by muscle, and prevents the accumulation of lipids in non-adipose tissues (which can lead to functional impairments known as ``lipotoxicity'')*
  - *Activates AMPK which is the principle mediator of the effects of leptin on fatty acid metabolism in muscle.*

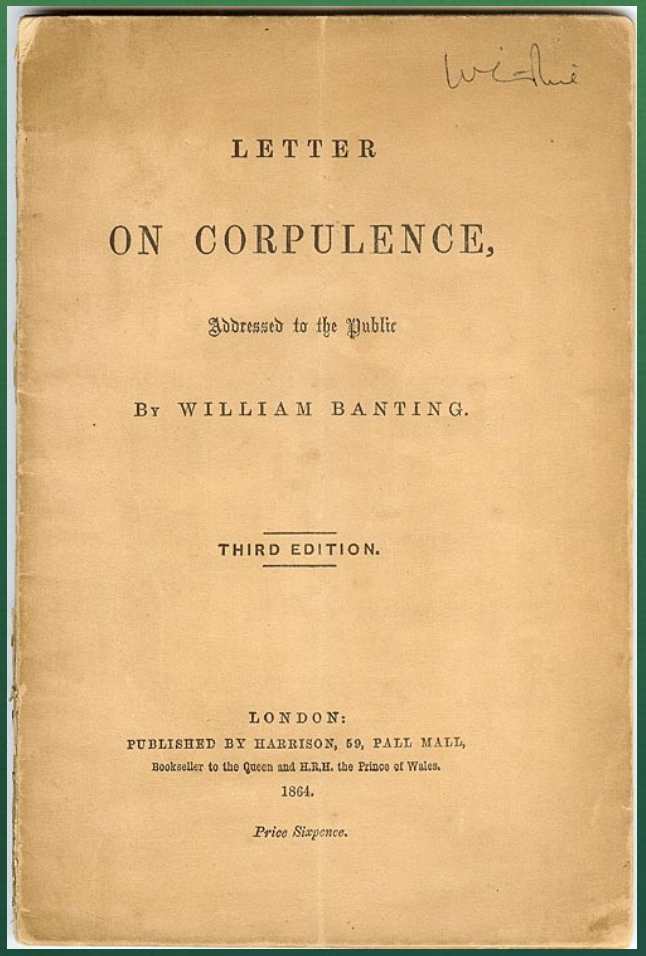
What the science says

- AMPK (5' AMP-activated protein kinase) system.
  - *Works on a cellular level*
    - *Stimulates fatty acid oxidation and ketosis to yield energy*
    - *Stimulates uptake of sugar by muscle cells*
    - *Inhibits the production of lipids (cholesterol, triglycerides)*
- Intermittent fasting
  - *Eating only between certain hours of the day, followed by a longer period of not eating until the next meal is consumed.*
  - *Both fasting and exercise activate the AMPK pathway.*

What the science says



This is NOT new information!



LETTER

ON CORPULENCE,

Addressed to the Public

By WILLIAM BANTING.

THIRD EDITION.

LONDON:
PUBLISHED BY HARRISON, 59, PALL MALL,
Bookseller to the Queen and H.R.H. the Prince of Wales.
1864.

Price Sixpence.

- "I am thoroughly convinced, that it is QUALITY alone which requires notice, and not *quantity.*

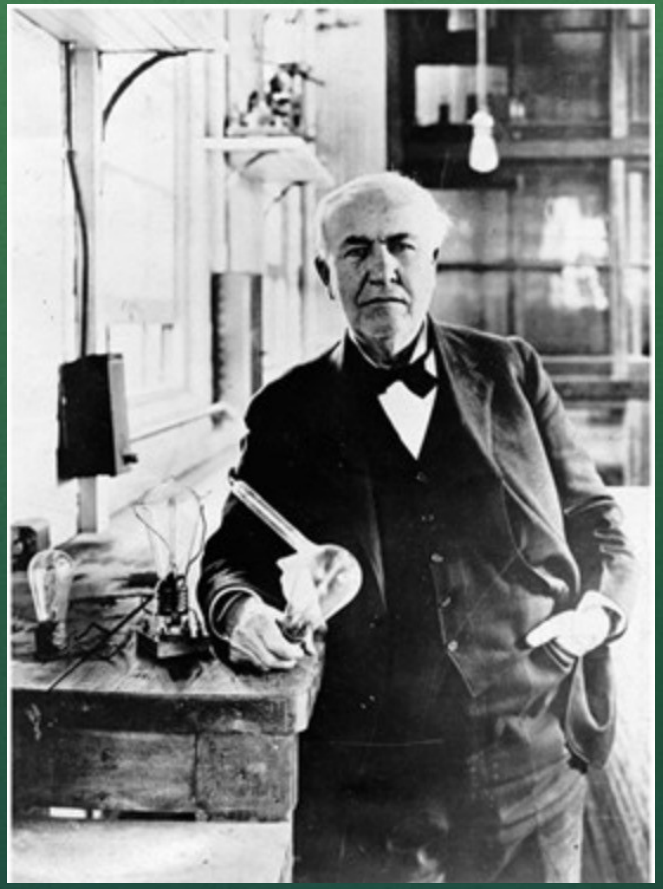
William Banting 1863

Recipe for faster weight loss

- Eat when hungry, but limit eating hours to an 8-hour period, if possible (Intermittent fasting).
- Low carbohydrate intake, preferably low glycemic index types of food.
- Lower total daily caloric intake to reasonable amount.
- Hold off on vigorous exercise.
- Try to increase AMPK in body.
  - *Prescription vs supplements*

Intermittent Fasting

- Studies have shown benefits regarding weight loss, restoration of circadian rhythms and improved sleep patterns.
- Why are we so screwed up in the first place?
  - *Blame Thomas Edison and his development of the practical, long-lasting light bulb.*
    - *Before this time, farmers lived and worked according to the sun. They woke up with the morning light and retired when it got dark.*



And, then there were screens…

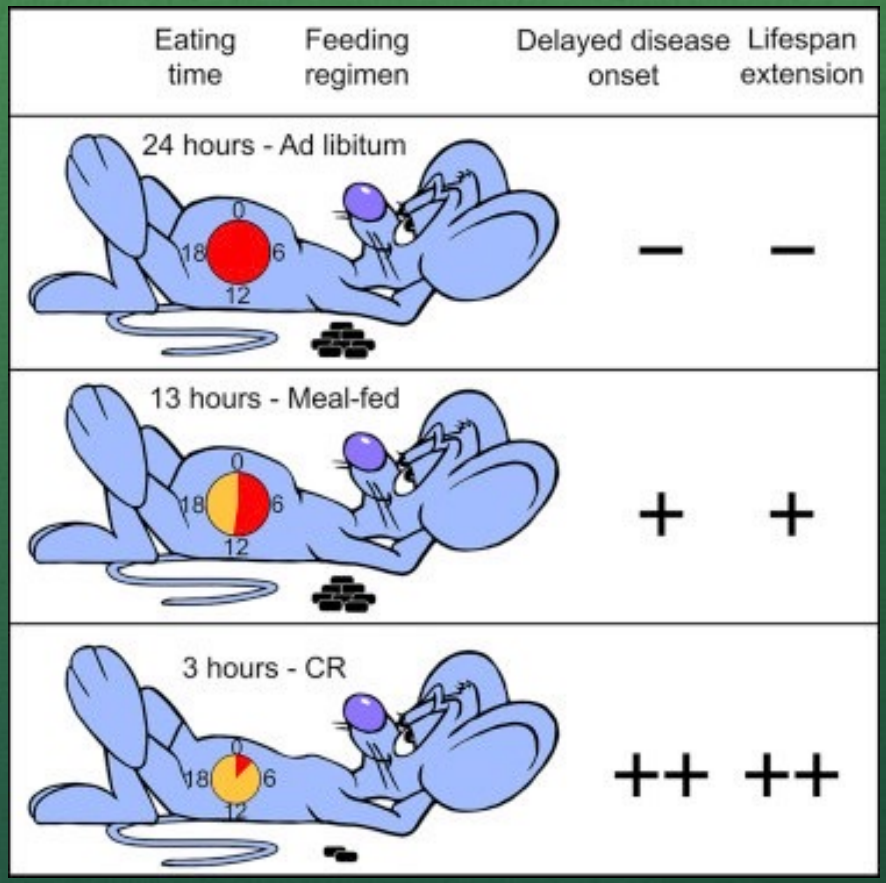
Intermittent Fasting

NIH Mice study (published in *Cell Metabolism*, Sept 6, 2018)

3 groups of mice: all genetically identical with identical living environments

- Ad lib/unrestricted eating
- Caloric restricted
- Meal fed with limited hours

Mice with restricted eating periods lived longer and weighed less than those that consumed the same daily number of calories (but could eat whenever they wanted).



Intermittent Fasting

- Improves sleep via a rise in circulating melatonin levels
  - Important for shift workers
- Decreases risk of certain diseases
  - Hypertension
  - Rheumatoid arthritis
- Reduces markers of inflammation
  - C-Reactive Protein

Intermittent Fasting: how to do it

- Eat when hungry, but limit the hours of eating
  - How long?
    - *Intermittent fasting ideal is to eat during defined 8-hour periods, followed by a 16- hour fast. Women seem to get by with slightly shorter fasts of 14-15 hours*
  - How frequent?
    - *Intermittent fasting twice a week is considered a lifestyle intervention. If possible, try to do this more often – some do every other day, whereas others do it daily with occasional cheat days.*
  - How to deal with hunger?
    - *Water, coffee, sugar free drinks (e.g. unsweetened tea) are permissible/encouraged to quell hunger pangs if present while fasting.*

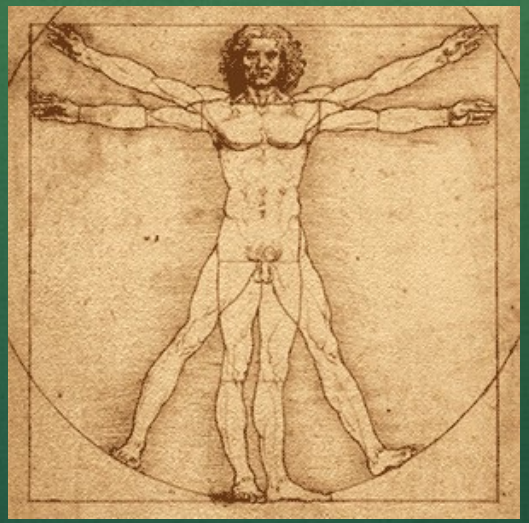
Intermittent Fasting: how to do it

- Consume low carbohydrate foodstuffs, preferably low glycemic index types
  - Goal is to induce ketosis (burning fat for fuel).
    - Mild ketosis is perfectly safe.
    - Do not confuse with ketoacidosis which is dangerous.

What is ketosis?

- Hybrid energy plants

Gasoline, gasohol, electric



Sugar, fats, protein

Ketosis

- Body's fuel choices
  - First choice: glucose (immediate use e.g. sprints) and glycogen (stored form e.g. endurance)
  - Other fuel options: fats and protein
- If you take away the preferred fuel, the body must switch over to it's next choice: fats
  - Most people can tolerate between 50-100 net grams of carbohydrates to reach ketosis and achieve rapid weight loss without suffering from cravings or fatigue. Some people, however, might not make it into ketosis until they drop below 50 net grams.
    - The presence of ketones can be checked by a urine dipstick, if necessary.
    - Average weight loss in ketosis is 2-5 lbs per week.

Calculating Net Carbs

- NET carbs (grams) = TOTAL carbs (grams) – FIBER (grams) – SUGAR ALCOHOL (grams)
- Sugar alcohols: far fewer calories than sugar and do not significantly contribute to insulin secretion
  - erythritol, sorbitol, xylitol, mannitol, others

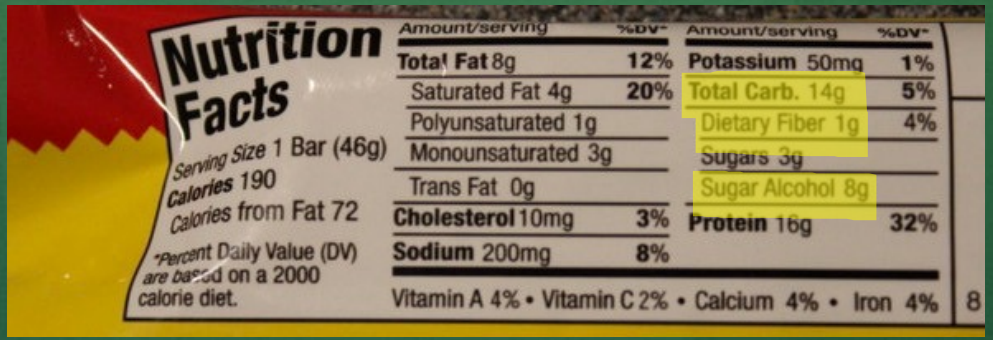
Calculating Net Carbs

Total carbs	25 g
- Dietary Fiber	3 g
- Sugar alcohols	0g
NET	22 g per cup

Calculating Net Carbs

Total carbs 14 g
- Dietary Fiber 1g
- Sugar Alcohols 8 g

NET 5 g



Calculating Net Carbs

Regular Coca Cola

Total Carbs	39 g
- Dietary Fiber	0g
- Sugar alcohol	0g

NET carbs	39 g

Calculating Net Carbs

Coke Zero (Cherry)

TOTAL carbs 0g
- Dietary Fiber 0g
- Sugar Alcohols 0 g

NET carbs 0 g

Calculating Net Carbs

Banana Nutrition Facts

Nutrition Facts	
Serving Size 1 Banana 118 g	
Amount Per Serving	
Calories 105	Calories from fat 3
	% Daily Value*
Total Fat 0g	1%
Saturated Fat 0g	1%
Trans Fat 0g	
Cholesterol 0g	0%
Sodium 2mg	0%
Total Carbohydrate 27g	9%
Dietary Fiber 3g	12%
Sugars 14g	
Protein 1g	
Vitamin A	2%
Vitamin C	17%
Calcium	1%
Iron	2%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Fun Fact!

We share at least 50 genes with a banana. *Get over yourself!*

Sugar Content of Common Fruits

Getting down to numbers…

- Normal daily calorie intake
  - Women: 2000 calories/day
  - Men: 2500 calories/day
- Caloric intake for weight loss (suggested)
  - Women: 1500 calories/day
  - Men: 2000 calories/day

Getting down to numbers…

- Low calorie diets:
  - Seen in popular weight loss plans (Weight Watchers, Jenny Craig, Optavia, etc)
  - Women: 1000-1200 calories/day
  - Men: 1200-1600 calories/day

- Very low calorie diets: <800 calories/day
  - NOT RECOMMENDED!
  - Must be medically supervised
  - Loss of valuable nutrients
  - Risk of gall bladder attacks

Buddies work best

- Studies, including a well-known one from Brown University Medical School and the University of Minnesota, have shown that individuals who partner with another successful dieter are more likely to stick with their regimens — and lose more weight — than those who go it alone.

What about exercise?

Benefits of Exercise

- Improves strength
  - muscular and skeletal
- Improves coordination
- Improves endurance
- Improves mood

Exercise (continued)

- However, for most non-competitive exercisers, it sucks for weight loss.
  - Exercise requires sugar for fuel (glucose and glycogen) – EXERCISE DOES NOT BURN FAT!!!
  - Increases hunger/appetite
  - Increases body's demand for calories
- "Bonking"
  - What happens when body "crashes" due to depletion of fuel (usually glycogen in endurance events)
  - In marathoners, usually around mile 20.
  - Bottom line: heavy exercise in face of low caloric intake can make you feel lousy.

Boost AMPK

- Prescription medications
  - *metformin*
- Dietary fiber intake
- Exercise
  - *Short high intensity interval training*
    - *A typical HIIT session might include a three-minute warmup, four to six repetitions of a 30-second sprint followed by a 60-second active recovery, and a three-minute cool-down.*
- Supplements:
  - *Berberine*
  - *Gynostemma pentaphyllum*
  - *Hesperidin*
  - *Omega-3 Fish oils*
  - *Quercitin dihydrate*

About Supplements

- Literally tons of them out there
  - Green coffee bean extract
  - Caffeine
  - Glucomannan
  - Meritrim
  - Green tea extract
  - Conjugated linoleic acid (CLA)
  - Many, many more…
- Proposed mechanisms of action:
  - Reduce appetite
  - Reduce absorption of nutrients.
  - Increase fat burning

About supplements

- Do your research
  - How many independent scientific studies?
  - Adverse effects?
  - Price
  - What's the bottom line?

Beware Scams!

- HCG
- Sensa
- Caffeine-infused underwear
- Lobster-inspired slimming cream
- L'Occitane "Almond Beautiful Shape" cream
- ‘Double shot” pills
- The Ab Glider

Selecting a weight loss program

- Considerations
  - Understand the basis for a particular plan
  - Is it easy to follow? What does it require?
  - What will you eat?
  - Alcohol or caffeine permitted?
  - Dining out?
  - Family friendly?
  - Amount of cooking?
  - Anything to watch out for?
  - What does it cost?

  http://www.goodhousekeeping.com/health/diet-comparison

Tips for maintaining weight loss

- Be prepared to make permanent lifestyle changes
- Understand that your metabolism has changed
  - "Energy gap" between "before" and "after" weight loss needs.
  - Body needs about 8 calories less per day for each pound lost.
  - New daily total energy expenditure (TEE)
    - Based upon BMR, daily physical activity level (PAL) and "thermal effect of food" (TEF)
- Physical activity
  - influences some of the biological systems that promote weight regain, encouraging the body to become more sensitive to leptin and insulin, for example.
  - Invest at least a half hour or more each day to keep moving and strictly limit time spent watching television.
    - Try to balance aerobic activities with some weight training for overall health.

Tips for maintaining weight loss

- Changing the way you look at food and eat
  - Think of yourself as a high performance machine. In turn, think of every meal as an opportunity to improve your machine's performance/health.
  - Differences between couch potato, obsessive dieter, and a healthy eater
- Snack on healthy foods at least twice a day
  - nutrient-dense foods that are no more than 200 calories per serving
  - best snacks for a weight maintenance program are proteins such as a small handful of nuts; non-starchy vegetables; occasional fresh fruits (in limited quantity); and non-calorie beverages

Tips for maintaining weight loss

- Remind yourself why you need to control weight
  - Of the consequences of straying off track before ordering the most unhealthy thing on the menu or skipping that run in favor of the couch.
- Reward yourself for sticking to diet and exercise plan
  - Create a way to reward yourself for continuing to do things right on a regular basis
    - e.g. schedule a fun weekend activity to celebrate completing scheduled work-outs or walks during the week.
    - Nothing wrong with buying material items for yourself, either, such as new clothes or other fun things!

Why feel lousy? Just do it!