

Engineered Meals

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In “Key Concepts” I systematically describe the food groups from different vantage points, the most important of which is pragmatic, meaning helpful for our increasing health and vitality. Metabolic rate is central to achieving this since it is a measure of the activity of your lean tissues, meaning your brain, muscle, and other organs that do work, as opposed to body fat.

The critical elements of a meal that drive metabolic rate where “Key Concepts” left off

Unsaturated Fats	Protein low in sat fat	Main carb calories	Vegetables
Ω-3: Salmon, sardine, flax, chia, walnuts Ω-6: all nuts & seeds Ω-9: olives, olive oil, avocado Saturated fat: from tropical plants healthier than from animals	Animals <ul style="list-style-type: none">• Beef, poultry, fish etc Animal products <ul style="list-style-type: none">• Eggs & dairy Plants <ul style="list-style-type: none">• Soy• Legumes: lentils & starchy beans	Needed slow carbs: <ul style="list-style-type: none">• Fruits• High-cal veg (tomato, carrot, beets)• Legumes: lentil beans Fast-digesting starch <ul style="list-style-type: none">• Tubers: yam, potato• Cereals: rice, corn, oats, wheat e.g. bread	Of course eat them for nutrients. But also eat them to slow digestion of faster starch: <ul style="list-style-type: none">• 1-3 x starch volume to maintain health• Two to three times this for weight loss

Each dietary fat type should be included in your day (or at least most days) i.e. timing is not critical. Protein, carbohydrate calories, and vegetables, on the other hand, should be coordinated together in meals. Vegetables are less important when the body’s absorption rate of carbohydrates is higher (right after waking and right after exercise) if the carbohydrate calories are kept low (see “Key Concepts”).

Nutrient portion starting point: choose one or two from each food group for your meal

The below food volumes correlate to roughly “thumb” volumes of fats, palm volumes of carb calories and of protein foods, and double fist volumes of vegetables. Other than right after waking and right after exercise, use a higher vegetable volume than starch volume any time you eat a starch unless you have a high metabolic rate with no body-fat or disease-reduction goals.

Estimate of food portions where “Key Concepts” left off

Unsaturated Fats	Protein low in sat fat	Main carb calories	Vegetables
<p>Tbsp volumes since fats are dense:</p> <ul style="list-style-type: none"> • 1 Tbsp veg oil or nut butter • 2 Tbsp olives or nuts • 3 Tbsp seeds • 4 Tbsp avocado • Fatty fish: see protein 	<p>Animals or Soy</p> <ul style="list-style-type: none"> • 1/2-1 cup (1 palm) <p>Animal products</p> <ul style="list-style-type: none"> • 2-3 eggs • 1/2 cott cheese, 3/4-1 cup yogurt or milk <p>Plants</p> <ul style="list-style-type: none"> • 1 cup lentils or beans 	<p>Needed slow carbs:</p> <ul style="list-style-type: none"> • 1/2-1 cup fruit or legumes (lentil bean) • 1-2 cups high-cal veg (tomato, carrot, beets) <p>Fast-digesting starch</p> <ul style="list-style-type: none"> • To replace losses from physical activity 	<p>Of course eat them for nutrients. But portion to slow digestion of faster starch:</p> <ul style="list-style-type: none"> • 1-3 x starch volume to maintain health • Two to three times this for weight loss

Engineering Meals: Start with how WE THINK about meals

1. **START** with the MAIN / CENTRAL ELEMENT of the dish, which is ONE of the below foods:

Common breakfast central elements are in italics

Protein: minimum 10 g	Vegetable: Variety & Color	Starch
<p>4 oz (3-6 oz) MUSCLE tissue:</p> <ul style="list-style-type: none"> • Seafood (fish, shrimp etc) • Beef, pork, poultry, lamb etc 	1 quart salad	1/2-1 cup pasta, grains (cous cous, <i>cereal/oats/grains</i>) depending on calorie density
<p>6 oz (4-8 oz) SOY:</p> <ul style="list-style-type: none"> • Tofu, tempeh, etc • Soy milk 10 oz (8-12 oz) 	1/2 quart lightly cooked veggies with the peel and stalk included	2-slice bread equivalent of pizza, burrito/wrap/sandwich, <i>pancake waffle bagel muffin</i> etc
<p>8 oz (6-12 oz) LEGUME:</p> <ul style="list-style-type: none"> • Dense measurement lentil • Dense starchy bean (black, kidney, Navy beans etc) 		FOR SLOW WEIGHT LOSS: Cut the above amounts in 1/2 OR REPLACE 1/2 of the above with legumes
2-3 <i>egg whites (yolks optional)</i>		
<p>DAIRY: full or non-fat</p> <ul style="list-style-type: none"> • 4-6 oz <i>Greek yogurt or cottage cheese</i> • 6-8 oz <i>regular yogurt</i> 	<p>EVERY MEAL must contain ~4+ oz legumes, corn kernels (see column to the right) OR fruit or HCV (high calorie vegetables: tomato carrot beets)</p>	<p>FOR FASTER WEIGHT LOSS: 1/2 the amount starch at <u>breakfast</u> & the <u>ONLY</u> starch in lunch & dinner is 4+ oz legumes or fruit or 8+ oz High Cal Veg</p>

EVERY MEAL must contain ~100 Cal digestible carbohydrate (not just fiber, which is carbohydrate that cannot be digested) i.e. MUST contain ~4 oz legume, corn kernels, fruit (with the peel included in the meal) or a high-calorie vegetable (tomato, carrot, beets).

2. THEN add the other two components i.e. “food groups” in the above chart to balance the meal. Exception: starch-based breakfasts are difficult to add vegetables to (pancakes, waffles, bagel, oats) so use a thick viscous protein (e.g. yogurt or cottage cheese, not milk), double or triple the protein (egg whites) in the batter recipe, use relatively high amounts of unsaturated fat (2 Tbsp chia seeds or ground flax, and also 2 Tbsp of any nut or seed), and half of any whole grain flour called for in the recipe replaced by a combination of almond flour, soy flour, and/or rolled or steel-cut oats.

3. NEXT ensure the meal has the daily omega-3 needs, and some omega-6 and monounsaturated fat

Omega-3 (n-3) fats	Omega-6 (n-6) fats	Mono Unsat (MUFA)
<ul style="list-style-type: none"> • 3+ oz salmon • 3+ oz sardine • 0.75 oz walnut halves • 1 oz chia seeds • 0.75 oz flax seeds • 0.1 oz flax oil 	<p>0.75 oz nuts:</p> <ul style="list-style-type: none"> • Walnuts (also n-3), peanut, Brazil, pistachio, pecan, almond, cashew, pine • 0.75 oz seeds: Sunflower, pumpkin, sesame 	<ul style="list-style-type: none"> • 0.33 oz i.e. ¼-1 Tbsp extra virgin olive oil • 3 oz olives • 3 oz avocado • Macadamia nut

4. FINALLY: include the following cooking concepts

- a. Cook using a watery vegetable like tomato or a bit of water to minimize or avoid completely the use of fats (butter, oil, etc) for cooking unless it is physically required for the cooking process
- b. Use fresh herbs and spices when possible
- c. Use an allium (strong anti-fungal/viral/bacterial) when possible in meals: onion, garlic, leak etc
- d. On salad add at least one cruciferous, one vitamin C (peppers, tomato, parsley, citrus) and strive for color variety for phytonutrient variety for significantly increased health impact.
- e. Only cook veggies lightly so still crisp to retain nutrients and slow digestion. The main vegetables used should be coarse like cruciferous, celery, fennel etc. Also include a vit C & allium if possible.
- f. Zero salt added to meal (use citrus peel, cayenne etc); let the person eating the food add salt they want
- g. It is as important what does NOT go into a meal as what goes into it: use low-mercury seafood, grass-fed and free-range animal products, and local-sustainably grown produce when possible.

Carbohydrate portions: “Activity weight loss”

If you are physically active, your muscles will lose more glucose (sugar) than if you are not. The glucose loss in muscle will cause muscle to absorb more blood sugar, which drops blood sugar, depriving the brain of its favorite fuel source. The brain triggers cortisol release to break down muscle tissue to obtain ketones as a back-up fuel source, destroying the very tissue (muscle) that initiated this cascade of events to begin with. The loss of muscle lowers metabolic rate. While it is good to under-eat calories by ~10% as the traditional Okinawans (who have the longest lifespans in the world), and to under-eat carbohydrate calories by 20-25% to keep blood sugar slightly low to stimulate fat burning, under-eating carbs by more than twice that amount will drop your blood sugar beyond just fat burning, and into a loss of muscle. The loss in metabolic rate will eventually make it very hard (perhaps seemingly impossible) to lose any weight (body fat) at all. For this reason, mild calorie restriction and more aggressive carb restriction is fine as long as you are not eating less than half of your daily needs. Your daily needs are in the range of ~300 Cal of digestible carbohydrate (fiber does not count), meaning ~100 Cal of digestible carb per meal; see “Key Concepts.” But if you are physically active you might burn 600 additional Cal during exercise or daily activity, most of which is sugar losses. Replacing half of those losses with carbohydrate in your diet to avoid a loss in metabolic rate would mean you are adding as much carb for your activity (which might only last one hour) as you are for staying alive and healthy for 24 hrs. Healthy eating without much physical activity would focus on legumes, fruits and vegetables as the main carb calories. Faster-digesting starches (tubers and cereals, including rice, bread, pasta) would only be added for the exercise, without vegetables immediately after exercise, and with vegetables an hour or more later. If you have workouts that are roughly 200, 400 and 600 Calories, you would eat 100, 200 and 300 Cal (half the losses) after the respective workouts. In other words, your carbohydrate consumption would coordinate and track your exercise. Vegetable volume in the meal(s) containing the faster carbs would be higher, so they are also tracking with the exercise or activity levels in order for the body to make fully beneficial use of the carb. Avoiding carbs when you are highly active will drop hormone production, bone density, muscle mass, mood, sleep quality, and many other aspects of health. But the loss in metabolic rate will inhibit fat losses, so body fat might not go down while everything else does. So weight loss during high levels of activity, what I call “activity weight loss” (or for athletes, “athletic weight loss”), INCLUDE at least half your activity carb losses in your meals, but maintain a higher vegetable volume at all times. If you have no idea how many calories you burn in your workouts, then just add ~100 Cal of starch (1 slice of bread or 1/3-1/2 cup rice, pasta, bulgur, etc.) in each of your next couple meals. For other food groups, portions should not go less than half or more than double than those recommended.

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Putting it all together

- Portions of all foods and food groups are flexible, so feel free to use half or up to twice the amounts recommended. Make your meals work for you, both in terms of how your body best responds and how you personally like to eat.
- Since the timing of fats in your day is not critical, a meal can be relatively low or high in fat, or a focused on one type of fat (such as mono-unsaturated fats in the form of olives or avocado) without having the other types as long as all the dietary fat types are consumed at some point in the day. How much and what types of fats should be included in a meal is based not on that meal but your entire day and your body's needs.
- Your main carb calories should be from legumes (lentils and starchy beans), fruits, and high-calories vegetables (tomato, carrots, beets). Other vegetables should make up roughly half the volume of your meals. If you are eating faster-digesting starches (even if they are whole grain), eat a high volume of vegetables than the starch volume to slow the digestion rate.

	Unsaturated fat	Protein	Main carb calories	Main vegetables
Balanced meal for raising metabolism:	<p>Ω-3: salmon, chia, flax, walnut</p> <p>Ω-6: nuts / seeds</p> <p>Ω-9: olives, EVOO, avocado</p> <p>AF: animal fat listed just for awareness</p>	<p>Animal products</p> <p>VEG: Vegetarian options should always be listed under any non-vegetarian items</p>	Legumes, fruit or high-Cal veggies	All meals (except right after waking or right after exercise) should have vegetables play a central role: they take on the taste of the rest of the meal so they <i>very</i> easy to make taste good
Extra metabolism:				Vegetables at least 1/2 meal's volume
Activity weight loss:			1 slice bread OR 1/3-1/2 cup any starch (rice potato corn pasta etc.)	Higher vegetable volume to slow the starch digestion rate
Making the meal as a salad:	Fats may be put onto a salad differently than they would be put into a meal	Salads tend to have less protein on them than a meal would have in them	Carb calories go well on salad e.g. legumes, fruits, tomato, or faster starches (yam, corn, bulgur, slice bread)	Specific lettuce suggestion and possible changes to 1 or more of the veggies in dish

Example gourmet meal by Patricia McCausland broken down into its components

Patricia is a cookbook author (see www.creativeculinary.net) who flew up to Stanford every week from Panama where she lives to take my “Nutrition for Healthy Weight Loss” Continuing Studies Course. Below is one of her recipes broken down into the “metabolic food groups” I have been describing and taught in this course. Because I believe strongly in convenience, I recommend cooking a legume and a mix of coarse vegetables weekly to add to meals to cut down on cooking time and meal complexity. This is why you see “cruciferous mix” (broccoli, cauliflower, red cabbage, etc) added to the basic meal for those wanting extra metabolism, or wanting to slow down the faster starch added for “activity weight loss.”

	Unsaturated fat	Protein	Main carb calories	Main vegetables
Balanced meal for raising metabolism:	<p>Ω-3: n/a</p> <p>Ω-6: n/a</p> <p>Ω-9: 2 t EVOO</p> <p>AF: n/a</p>	<p>5 oz Chicken</p> <p>VEG: Tofu</p> <p>1/2 c greek yogurt</p>	<p>3 T prunes 66cals</p> <p>1 T wine</p>	<p>1 c green tomato</p> <p>1/4 red pepper</p> <p>1/4 cup onion</p> <p>garlic</p> <p>cilantro</p> <p>parsley</p> <p>lime</p> <p>jalapeño</p>
Extra metabolism:				<p>1 cup crucif mix</p> <p>OR</p> <p>2 cups salad</p>
Activity weight loss:			<p>Add 1/3 c br rice</p> <p>OR</p> <p>1 slice wh gr bread</p>	<p>1 cup crucif mix</p> <p>OR</p> <p>2 cups salad</p>
This meal as a salad:	EVOO	<p>5 oz Chicken</p> <p>VEG: Tofu</p> <p>1/2 c greek yogurt</p>	<p>3 T prunes 66cals</p> <p>1 T wine</p>	<p>1 c green tomato</p> <p>1/4 red pepper</p> <p>1/4 cup onion</p> <p>garlic</p> <p>cilantro</p> <p>parsley</p> <p>lime</p> <p>jalapeño</p> <p>2 T L chimichurr</p>