

Metabolic Nutrition: Fix any diet by meeting basic needs

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Nutrient needs are determined by the Institute of Medicine (IOM) and for **sports** the International Olympic Committee (IOC) and the American College of Sports Medicine (ACSM). Macronutrient food group needs are < 1/2 of daily Calorie needs even when restricting Cal by 25% (beyond which dieting benefits steeply decline as metabolism drops). Metabolism is highest in lean tissue so **protect lean tissue (PLT) with protein and slow carbs in each meal and nourish lean tissue (NLT) with vegetables and Ω-fats at least 1-2 x /day.**

	PLT: Protein	PLT: Carb fuel	Nourish: Veggies	Nourish: Omega fat
Daily targets using IOM & IOC/ACSM	0.6 g / kg / day + for exercise up to an additional 1.2 g/kg/d	0-60 g/day for brain + non-exercise activity + match exercise protein	≥ 1 cup / 800 Cal; x2 if density low = raw leafy greens	1.35 g Ω-3 14.5 g Ω-6 Fats 20-35+% of Cal
Hourly need X hours until next meal = meal portion	Daily needs divided by waking hours = hourly needs used to estimate meal portion	Hourly need x hours till next meal = portion; slow digestion to last that many hours w/veg	Veg not needed to PLT so are not needed every meal; ideally ≥ 1-2 x / day	Fats not needed to PLT so are not needed every meal; ideally ≥ 1-2 x / day
Per 100 kg body weight gram / meal	60 g protein / day 3 g protein / hour 3 x 6 hr = 18 g /meal	60 g carb/day for brain <u>same all body weights</u> 3 g carb/hr ~18 g/meal	2-4 cups vegetables or 4-8 cups salad split up into meals	Same daily fat AI (IOM's "adequate intake") for everyone
Athletic	1-3 x protein to heal	0.5-1 x healing protein	Same ≥1cup/800Cal	1-3 x minimum (AI)
Overtraining, health/weight	Minimally processed; steady protein supply	Minimally processed; steady blood sugar	1-3 times minimum; dark colorful variety	1-3 x minimum (AI) not from supplements
Choose what foods you like: happy is sustainable	Vegan: legume & soy Vegetarian: dairy egg Omnivore: muscle (poultry fish beef etc.)	Starch: tuber, grains Legume: lentil, beans Whole fruits Higher-Cal Veg: HCV*	Veggie parachute: Raw veggies/snack Light cook veggies Leafy salad	Ω-3: chia / flax, walnut, fatty fish Ω-6: nuts & seeds Ω-9: avocado, olive
Macro levels in foods: Vegan & vegetarian proteins are color coded Most veggies are too low in Cal to PLT*	<u>grams protein /unit</u> 7 g /egg or oz cheese 7 g /oz muscle (beef, poultry, seafood) 4 g /egg white 3 g /oz CC = cott chs firm tofu, Grk yog 2 g /oz soft tofu, yog 2 g /oz bean or lentil 1 g /oz milk dairy/soy	<u>grams carb fuel /CUP</u> 40 white starch: pasta potato, rice, noodle 30 coarse starch: oat, quinoa, wild rice, yam, potato w/skin 30 sweeter fruit: grape mango, banana 15 fruit Also protein: 30 beans, 25 lentils	<u>Carb fuel not fiber</u> 1 g/cup low-Cal veg: leafy greens, celery 3 g/cup med-Cal veg broccoli, cauliflower, grn bean, cucumber High-Cal Veg: HCV* 5 tomatoes* ~7 g 7 bell pepper* /cup 9 carrots, beets*	<u>Ω-3 daily options</u> 1 Tbsp chia / flax 4 Tbsp walnuts 3 oz salmon sardine <u>Ω-6 daily options</u> 1 Tbsp nut butter 2 Tbsp any nut/seed <u>Ω-9 portion in Tbsp</u> 1 olive oil, 3 olive, 4 avocado or hummus
Macro range	1 – 8 oz to get ~ 8 g	1 cup to get 15 – 30 g	1 cup to get 1 – 9 g	Daily vol by density
6-hr MEAL portions for 50-100 kg body weight linear adjust w/weight/hrs	<u>9-18 grams protein</u> 1 – 2 eggs or oz tissue, cheese 3 – 6 oz yogurt, CC, tofu, bean, lentil 1+ cup milk dairy/soy	<u>18 g for every brain</u> 3/4 cup fruit 1/2 cup sweeter fruit beans, lentils coarse starch 1/4 cup white starch	2-6 cups veg / day depends on goals (health, weight loss) & Cal; double if leafy Only provides fuel to PLT if ≥1 cup HCV*	1, 2, 3, or 4 Tbsp <u>Ω-3 chia / flax</u> walnut salmon/srdine <u>Ω-6 seed nut, nut btr</u> <u>Ω-9 olive oil, olive,</u> avocado, hummus
2-4-6 options PLT / meal NLT / day	2 oz meats or 2 eggs 4 firm tofu, Greek yog 6 soft tofu, bean, yog	2 oz processed starch 4 coarse starch, fruit 6 oz berries, legumes	2 cups dense veg 4 = 1 c veg+3 c leafy 6 cups leafy greens	2 T chia, flax, olive oil 4 T nuts or nut butter 6 avoc olive hummus
Minimums “BY HAND”	1/2 ± ¼ PALM (cup) vol or 1 palm of milk	1/2 ± ¼ PALM (cup) vol or 1 palm HCVs*	1 ± ½ FIST (pint) or 2 ± ½ fists salad vol	1-4 THUMB volumes same as 1-4 Tbsp
Athletic	1+ PALMS = 1+ cups	1+ PALMS = 1+ cups	1+ FISTS = 1+ pints	8 thumbs = 1/2 palm

*HCVs: Higher-Cal Veg (tomato, carrot, beet, bell pepper & some squash) only PLT if ≥ 1 cup (palm) in a meal

Example meal portions by the VOLUME of parts of your HAND: match your plate to the hand holding it
 1/2 – 1 **PALM** (cup) protein & carb portions, 1/2 – 1 **FIST** (pint) veggies & **THUMBS** (Tbsp) of healthy fats

MEALS	PLT: Protein	PLT: Carb fuel	Nourish: Veggies	Nourish: Omega fat
Eggs or milk	1-2 eggs or 1plm milk	½ palm beans/toast*	1/2-1 fist veggies*	4 thumbs avocado
Yogurt w/fruit	½ palm yog / cott chs	½ palm berries / fruit	Later in lunch/dinner	1-2 thumb chia seed
Pizza	½ palm tofu / cheese	...on the pizza crust*	VEG PARACHUTE*	No Ωs this meal
Salad	½ palm tofu / beans	½ beans or 1 HCV...	...on the salad*	Olive oil vinaigrette
Roasted veg	½ lentil or ¼ seafood	¼-½ quinoa*/wild rice*	Lightly* roasted veg	Olive oil or avocado
Raw veggies	½ soy ¼ poultry/meat	¼-½ yam* or ½ p fruit	Raw* veggies to dip	...into hummus/pesto
PORTIONS	~1/2 (¼ - 1) palm vol	~1/2 (¼ - 1) palm vol	~1 fist; x2 vol leafy	less dense higher vol
Athletic	Double portion	Double includes refuel	Parachute if starch*	Double Ω-3 / 6 / 9
Break-a-fast w/faster food	Yogurt, soft tofu, milk (soy or dairy)	Whole fruit Whole grains, tuber	Soft veggies: soup, cooked, or smoothie	All dietary fats digest slow so optional here
Enter-a-fast w/slow food	Firm tofu, poultry, meats, eggs, cott chs	Legumes, berries, high-Cal veggies	Raw or light-cook (still crunchy) veg	Fats digest slow so this meal high Ω fat

***VEGGIE PARACHUTE:** veg coarse enough (raw or lightly cooked) to slow the digestion of starches in a meal

PLT & NLT account for LESS THAN HALF of your needed Cal: accommodate ANY DIET with the rest.

Basic needs (P/NLT) are easily integrated to fix any diet in this ladder comparison: **Athletic keto** has refuel carb & recovery protein, **SB** = South Beach Diet, **SAD** = standard American diet, **Carnival diet / food** = “cheat” meals

% Cal & Vol	% Protein Palms	% Carb Palms	Ladder of easiest carbs	Nourish: Fats
Lowest P/NLT	10 ±5 % 1/2	20 ±15 % 1/2	Carb fuel includes veg	15 ±5 % 1-4 thumbs
Diet ranges	10-30 % 1/3-1	5-60 % 1/6-2	Carb fuel includes veg	20-80 % 1/4-1 palm
Keto	10-15 1/3-1/2	5-10 2 palms of:	Low-Cal veg only	80 1+ palm fats
Mild Keto	15-20 1/2-2/3	10-15 2 palms of:	Any vegetable	70 1+ palm
Athletic keto	20-25 2/3+	15-20 for ex refuel	Exercise refuel critical	60 1+ palm
High prot Atkins	30 1	15 1/2 palm of:	Low-Cal fruit & legume	55 1 palm=16 thm
Paleo & Zone	30 1	30 Paleo:	No grain legume potato	40 2/3 palm=12 thm
2g/kg*40/40/20	40* 1.3*	40 1/2 palm of:	Any fruit & legume	20 1/3 palm=6 thm
Stepladder SB	25 5/6	35 1/2 palm of:	Small portions starch	40 12 thumbs
Mediterranean	20 2/3	40 1/2 palm of:	Moderate starch	40 12 thumbs
Balanced IOM	20 2/3	45-60 1/2-1 palm	Starch only w/ veggies	20-35 6+ thumbs
High veggie**	15 1/2	65 1+ palm	Starch only w/high veg	20 6 thumbs
“SAD” Carnival	15 1/2	50 1+ palm	Processed carb w/veg	30 9 thumbs

*40/40/20 = 400 Cal (100 g) protein /1000 Cal must avoid >2 g/kg protein long term so exclude refuel from ratio

**Pritikin & Ornish = plant based; traditionally targeted 10-20% protein, 70-80% carb w/high veg & only 10% fat

Protect lean tissue (PLT) to STAY FASTED instead of allowing your body to transition to starved:

Fasting is good for the body and should be maintained to some extent continuously, whereas starving is not and should not. The body switches from fed to fasted to starved (increased muscle loss) regardless of hunger perception every 6 hours after a healthy meal. Hunger is usually lowest due to stress hormones after waking and exercise, reducing our eating at the very times when we are in our deepest deficit, leading to lean tissue loss at that time and both hunger and cravings later: stay in the fasted **state** instead of fasting into starvation.

FASTING Snacks = Sports Recovery Snacks = PLT Snacks. PLT reduces lean tissue loss during fasting and boosts lean tissue growth during sports recovery, which includes pre-exercise & the refuel right after exercise.

PLT snacks	PLT: Protein	PLT: Carb fuel	Veg are low in fuel	Omega fat
Sports Recovery & FASTING snacks	Consider protein if last meal > 3 hours	Energy: legume or fruit or whole grain	Veg too low to PLT unless in ketosis	Fats do not impact blood sugar/protein
Before exercise	As needed to PLT	Slow carb	Not likely tolerated	Optional if tolerated
Refuel within 10 min post exercise	≤ 0.3 g/kg protein to initiate recovery	Up to 1 g/kg fast digesting starch	Starch post ex is critical even in keto	Optional if tolerated Enjoy!