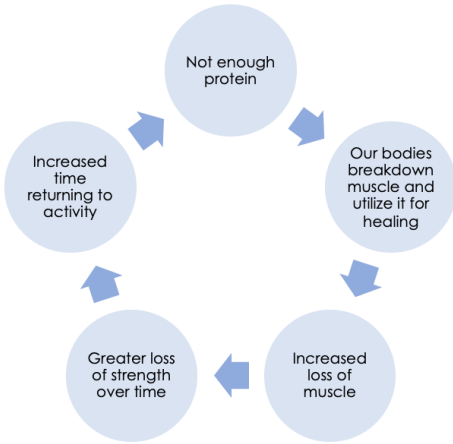
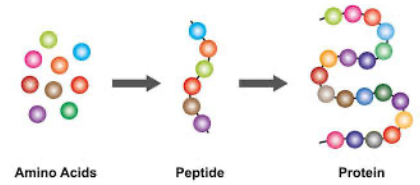


Protein and Recovery

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Proteins are made up of amino acids which help facilitate healing after injuries.



The amount of muscle broken down in your body depends on the severity of your injury, length of time in a brace, and length of time between injury and surgery.

Baseline protein needs are determined by age, body weight, activity level, and recovery needs from an injury.

Table 7: DAILY PROTEIN RECOMMENDATIONS

Type of Training	Grams (g) of Protein Recommended
Endurance	1.2-1.4 g of protein per kilogram of body weight
Strength (to gain muscle mass)	1.6-2.0 g of protein per kilogram of body weight
Strength (maintenance)	1.6-1.7 g of protein per kilogram of body weight
Weight Restricted	1.8-2.0 g of protein per kilogram of body weight

Stress factor

- Minor injury (eg, ankle sprain, dislocation) = 1.2
- Minor surgery = 1.2
- Clean wound = 1.2
- Bone fracture = 1.2
- Infected wound = 1.5
- Major trauma (eg, anterior cruciate ligament surgery) = 1.5
- Severe burn = 1.5

Protein intake can be changed by injury-induced stress. Injury-induced stress increases protein demands by 80% above baseline. This is also known as stress factor.

The best source of protein is called **complete proteins** which have all 9 essential amino acids. **Leucine** is an amino acid important for **healing** and **increasing lean muscle mass**. This is mainly found in **animal protein**.

Foods that have all complete amino acids include milk, yogurt, cheese, fish, poultry, beef, eggs, quinoa, and tofu.

It is important to spread out protein intake during the day. Our bodies can only use 20-40 g of protein at a time.



Protein Forward Diet

General Tips

Structure your meals around protein

- ◇ 20-40 g of protein every 3-4 hours
- ◇ Timing of protein intake in relation to exercise is not as important as the total amount of protein consumed during the day
- ◇ However, after exercise your body is primed to absorb protein

Protein Source Matters

Proteins contain amino acids, which are the building blocks we need to gain lean muscle

- ◇ Animal sources contain better building blocks due to higher leucine content
- ◇ Meat, eggs, beans, and dairy are absorbed slower so we can consume 25-40 g at a time

Breakfast

Start your day with protein – *avoid high carbohydrate option such as cereal*

- ◇ **Greek Yogurt:** 6 oz – 18 g – 100 cal
- ◇ Regular Yogurt: 1 cup – 11 g – 100 cal

Replace regular yogurt with Greek yogurt

- ◇ **Egg Whites:** ½ cup – 12 g – 60 cal
- ◇ Eggs: 2 – 12 g – 150 cal

Mix 1 egg with a serving of egg whites

Lunch

Change your bread for sandwiches!

- ◇ **Ezekiel Bread:** 1 slice – 5 g – 80 cal
- ◇ Regular Bread: 1 slice – 3 g – 110 cal

2 slices of Ezekiel bread is an extra 10 g of protein

Substitute Greek yogurt for high protein chicken, tuna, or egg salads!

- ◇ **Greek Yogurt:** 6 oz – 18 g – 100 cal
- ◇ Mayo: 1 Tbsp – 0 g – 100 cal

High calorie salads can be made high protein!

Dinner

Protein is the main character – choose it first!

- ◇ Chicken: 3 oz – 28 g – 141 cal
- ◇ Tuna: 3 oz – 22 g – 99 cal
- ◇ Shrimp: 3 oz – 20 g – 101 cal
- ◇ Pork: 3 oz – 22 g – 122 cal
- ◇ Turkey: 3 oz – 25 g – 135 cal

Shrimp is easy to eat larger quantities of and it is low cal!

Snacks

Avoid high carbohydrate snacks and replace it with high protein options instead

- ◇ Deli Turkey Roll Ups: 2 oz – 12 g – 60 cal
- ◇ Cottage Cheese: 1 cup – 28 g – 160 cal
- ◇ Edamame: 1 cup – 18 g – 188 cal
- ◇ Protein Shake: 1 scoop – 25 g – 150 cal

Evaluate Your Protein Powder

Protein Powder

Natural food sources are superior to supplements due to micronutrients (vitamins, minerals)

- ◇ Animal protein (whey) is better than plant-based protein due to higher leucine

Whey: 2.65 g leucine

Pea: 2 g leucine

- ◇ Whey protein is absorbed quickly so we can only consume 25 g at a time

Ingredient List

Check for additives

- ◇ Some brands have added sugars and extra ingredients

3rd Party Certification

FDA does not regulate most supplements

- ◇ Ensure for certification through 3rd party

Third-Party Supplement Testing Resources
 <p>NSF International</p>
 <p>Informed Choice and Informed Sport</p>
 <p>Banned Substances Control Group</p>
 <p>US Pharmacopeia</p>
 <p>ConsumerLab.com</p>

Clean Protein Powder Options



Protein Sources

Meat, Poultry, Eggs

Food	Serving	Cal	Protein (g)
Egg Substitute	½ cup	60	12 (1 g LEU)
Egg, whole	2 eggs	150	12 (1 g LEU)
Chicken (skinless)	3 oz	141	28 g (2-3 g LEU)
Steak (lean)	3 oz	158	26 g (2-3 g LEU)
Turkey	3 oz	135	25 g (2-3 g LEU)
Pork	3 oz	122	22 g (2 g LEU)
Ham	3 oz	139	14 g (0.5-1 g LEU)

Seafood

Food	Serving	Cal	Protein (g)
Salmon	3 oz	155	22 g (2 g LEU)
Tuna	3 oz	99	22 g (2 g LEU)
Shrimp	3 oz	101	20 g (1g LEU)
Lobster	3 oz	76	16 g (1 g LEU)
Scallops	3 oz	75	14 (1 g LEU)

Dairy

Food	Serving	Cal	Protein (g)
Greek Yogurt	8 oz	170	22 g (2 g LEU)
Regular Yogurt	8 oz	155	13 g (1 g LEU)
Cottage Cheese (1% fat)	1 cup	160	28 g (3 LEU)
Milk (skim-whole)	1 cup	100-150	8 g (0.6 g LEU)
Cheese	¼ cup or 1 oz	115	8 g (1 g LEU)

Legumes, Grains, Vegetables

Food	Serving	Cal	Protein (g)
Pinto Beans	½ cup	197	11 g (0.11 g LEU)
Edamame	½	95	9 g (0.745 g LEU)
Lentils	½	101	9 g (0.69 g LEU)
Chickpeas	½	134	7 g (0.43 g LEU)
Quinoa	½	111	4 g (0.26 g LEU)
Tofu	4 oz	62	9 g (0.6 g LEU)

Determining Protein Need

Type of Activity	Recreational Athlete <50 years old	Endurance Athlete >50 years old	Tactical Athlete	Experience Strength Athlete	New Strength Athlete	MAX Protein Needs
	Healthy Adult		Cancer	Rehab	Weight Loss	Burn, Trauma
Grams per pound body weight	.5 g/lb	.55 - .65 g/lb	.7 g/lb	.73 - .77 g/lb	.8 g/lb	1.0 g/lb
Body Weight	Estimated Amount of Protein a Day					
120 lbs	60 g/day	72 g/day	85 g/day	90 g/day	96 g/day	120 g/day
125 lbs	63	75	88	95	100	125
130 lbs	65	78	90	98	104	130
135 lbs	68	81	95	101	108	135
140 lbs	70	84	98	105	112	140
145 lbs	73	87	102	109	116	145
150 lbs	75	90	105	113	120	150
155 lbs	78	93	110	116	124	155
160 lbs	80	96	112	120	128	160
165 lbs	83	99	116	124	132	165
170 lbs	85	102	120	128	136	170
175 lbs	88	105	123	131	140	175
180 lbs	90	108	125	135	144	180
185 lbs	93	111	130	139	148	185
190 lbs	95	114	133	143	152	190
195 lbs	98	117	137	146	156	195
200 lbs	100	120	140	150	160	200
205 lbs	103	123	144	154	164	205
210 lbs	105	126	147	158	168	210