

The Truth About Muscle Growth: Why Your Body Needs Calories to Build Those Gains

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November 12, 2024

STORY AT-A-GLANCE

- › Optimal muscle growth depends on adequate calories and a balanced intake of proteins, carbs, and fats. Without consuming enough calories, your body can't build or maintain muscle mass, no matter how hard you train
- › Cutting calories by even 20% can reduce muscle protein synthesis by 16%, making it harder to build and maintain muscle
- › Building muscle boosts your metabolism, improves body composition, enhances insulin sensitivity, and reduces the risk of chronic diseases
- › After age 30, muscle mass declines rapidly, increasing health risks, making muscle maintenance crucial for longevity
- › Consuming more than 1.8g of protein per kg body weight offers no additional muscle benefits and may lead to unnecessary protein oxidation

Ever wonder why your muscles aren't growing despite spending countless hours doing bicep curls in front of the gym mirror? (Don't worry, we've all been there, admiring our "gains" from every possible angle.) While your dedication to the perfect pump face is admirable, there might be a crucial piece of the puzzle you are missing: calories.

Been there, done that! For years I was undereating and was never able to build adequate muscle despite working hard in the gym!

Your Muscles: The High-Maintenance Luxury Condos of Your Body

Think of your muscles as luxury real estate. Just like maintaining a penthouse suite in downtown Manhattan, muscles are expensive to maintain and even more costly to build! They're not some modest studio apartment that's content with minimal utilities – they're demanding tenants that require significant resources (calories!) to stick around.

And let me tell you, these muscular tenants are worth it! The benefits of having good muscle mass read like a health enthusiast's dream wish list:

Improved metabolic rate ¹	Better body composition ²	Enhanced glucose utilization ³
Better insulin sensitivity ⁴	More efficient LDL cholesterol clearing ⁵	Lower risk of cardiovascular disease ⁶
Reduced blood pressure ⁷	Better mental health ⁸	Increased bone mineral density ⁹
Enhanced physical function ¹⁰	Reduced cognitive decline ¹¹	

With all these perks, it's no surprise that people who resistance train have a 15% lower risk of premature death from all causes.¹² Building muscle is one of the best longevity hacks!

The Age-Old Problem

Here's the not-so-fun part: after age 30, we start losing muscle mass at a rate of 3% to 8% per decade, and this loss accelerates after 60.¹³ It's like your body has decided to slowly downgrade from that luxury condo to a tiny house, without even consulting you first.

Research shows that lower lean mass is strongly associated with increased mortality, regardless of other health conditions.¹⁴ In other words, keeping your muscular real estate portfolio robust isn't just about looking good in tank tops – it's about staying alive and healthy.

One of the best things you can do for your health is to build, and hold on to, as much muscle as you naturally can. Your muscle is an endocrine organ that helps increase your metabolic rate and improves how your body works on a systemic level!

But here is the good news – while humans are very good at losing muscle as we age, the positive is that we are also very good at building muscle! When we give our bodies the right tools and provide our muscles with the right stimulus to elicit a positive change.

Working hard in the gym and providing an adequate muscle stimulus through smart strength training is of course important! You need to give your muscles a reason to change! But the body also needs recovery resources (calories). The body requires energy to build!

The Energy Economics of Muscle Building

Now, here's where things get interesting. Your body is constantly doing complex calculations behind the scenes. Normal protein turnover alone accounts for about 20% of your basal metabolic rate.¹⁵ That's right – just maintaining your existing muscles is like running a small power plant.

But building new muscle? That's like constructing a whole new wing on your house while the existing building is still in use. It requires:

- Energy for the actual workouts
- Fuel to replenish glycogen (your muscles can use up to 30% to 40% of their stores during training)¹⁶

- Increase in BMR, since any muscle you build will increase energy expenditure, both at rest and during exercise due to the addition of metabolically active tissue, meaning muscle tissue requires more calories and energy to maintain
- Resources for muscle protein synthesis (MPS), which is the process by which the body builds new muscle proteins

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"Given skeletal MPS is elevated for upwards of 24 to 48 h after resistance exercise, the high metabolic cost of protein synthesis needs to also be accounted for. The process of translation elongation is likely to account for a large portion of the synthetic cost with 4 high energy phosphate bonds per peptide bond formed required or 3.6 kJ·g⁻¹ of protein synthesized.

Although significant, translation is one of many energy requiring steps in protein synthesis, with processes such as transcription, folding and movement of proteins within cells all being energy dependent. The high energy cost of protein synthesis and the duration over which protein synthetic machinery can be upregulated clearly highlights an underestimated cost of protein synthesis and thus, muscle mass accretion."¹⁷

It's like having contractors working around the clock, and they all need to be paid – in calories.

The Calorie Deficit Dilemma: Why Your Body Goes on Strike

Imagine trying to build a house while simultaneously cutting the construction budget by 20%. That's essentially what happens when you try to build muscle in a significant calorie deficit. Studies show that a 20% calorie deficit can lead to a 16% reduction in muscle protein synthesis.¹⁸

Your body basically tells the construction workers to slow down because resources are scarce. There are a few exceptions for who can get away with building muscle while eating in a deficit:

- Complete beginners (the legendary "newbie gains")
- Obese individuals – Research shows that for severely overweight individuals, the energy cost of hypertrophy and building muscle can be obtained endogenously from body fat.^{19,20,21} Meaning, these individuals can build muscle when eating in a calorie deficit with an adequate training stimulus

For everyone else? You need to bring more resources to the table.

The Protein Paradox: More Isn't Always Better

Here's a truth bomb that might ruffle some gym bros' feathers: more protein won't necessarily lead to more gains. Research shows that about 1.6g to 1.8g per kg of body weight per day is the sweet spot.²² High protein intakes do not further facilitate skeletal muscle hypertrophy or strength gains^{23,24,25} and instead just can increase amino acid catabolism and protein oxidation.²⁶

Protein is of course important, as it provides the body the building blocks to repair and build more muscle.

But just eating protein is like delivering logs to build a log cabin, without any employees to assemble the cabin.



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If you prefer eating more protein and do fine digestion wise and are happy with your metabolic rate, then have at it! But a super high protein diet isn't going to necessarily lead to more gains.

Your body needs a balanced approach with ENERGY MACROS – adequate carbs (4 to 7g per kg bodyweight day) and fats (18% to 30% of daily intake).²⁷ Protein can be used for energy, but it is an inefficient process and not ideal for optimal metabolic health.

Those low-carb diets might be trendy, but they could be sabotaging your gains. Studies show that keto diets can impair muscle growth in resistance-trained individuals compared to moderate fat intakes.^{28,29,30}

Finding Your Sweet Spot

The good news? You don't need to stuff yourself like it's Thanksgiving dinner every day. Research indicates that eating at maintenance calories or very slightly above is optimal for muscle growth. While being in a surplus can increase anabolic hormones,^{31,32} most people can build plenty of muscle at maintenance level calories. Think of it like your body's construction budget:

- **Too little money (calories)** – Construction stops
- **Just right** – Steady progress
- **Too much** – Some gets wasted on unnecessary expenses (fat gain)

It is important to note that you should not overconsume calories based on your current metabolic state. Don't just go 'all in' and eat a bunch of food! Think of your metabolism like a thermostat – it can be adjusted, but it needs to be done carefully. If you've been running on low calories for a while, your metabolic "temperature" has likely adjusted to that setting. The good news? You can gradually turn up the dial through a process called "reverse dieting."

Here's the really exciting part: as your metabolism improves, you get to enjoy one of life's greatest pleasures – eating more food while maintaining your weight. (Yes, you read that right!) That's the magic of a well-tuned metabolism.

But here's the key thing to understand: your maintenance calories aren't a fixed number – they're more like a comfort zone. Think of it as a caloric range, say 2200 to 2600 calories, where your body is happy to maintain its weight. It's like your body's "Goldilocks zone" – not too little, not too much, but just right.

When you consistently eat below this range, your body adapts by lowering its metabolic rate, essentially creating a new, lower maintenance level. It's like your body's version of energy conservation mode – clever for survival, but not ideal for long-term health and fitness goals. You will not be able to build muscle well when in this state.

In fact, you may be in a 'muscle wasting' state where your body is using your muscle for energy! Because remember, the body is smart and knows that muscle is expensive to

have around!

The trick is to gradually increase your calories over time, allowing your metabolism to adjust and adapt to higher energy intake. Think of it as slowly turning up the volume instead of blasting the speakers – your body (and your neighbors) will thank you for the gradual approach.

The Bottom Line: Feed Your Gains

Your body is smart – perhaps too smart sometimes. It won't waste resources building muscle if it thinks there's a famine coming. That's why chronic dieting and always living in a calorie deficit is like telling your body to prepare for the apocalypse – it's going to hold onto fat and think twice about building metabolically expensive muscle. Remember:

1. Muscle is premium real estate that improves everything from your metabolism to your mind
2. Your body needs adequate resources to build and maintain it
3. Chronic under-eating is the enemy of gains
4. You don't need to go crazy with protein or completely avoid carbs
5. Finding your maintenance calories is key

So, the next time you're tempted to start another crash diet while trying to build muscle, remember: you can't build a mansion on a tiny house budget. Give your body the resources it needs, and it will reward you with the gains you're after.

Transform Your Health – One Step at a Time



[Learn More](#)

Ashley and her sister Sarah have put together a truly groundbreaking step-by-step course called "Rooted in Resilience." They have compiled what clearly is the best application of Dr. Ray Peat's work on Bioenergetic Medicine that I have ever seen.

It is so good that I am using the core of their program to teach the many Health Coaches that I am in the process of training for the new Mercola Health Clinics I am opening this fall. It took these women working nearly full-time on this project for a year to create it.

This has to be one of the absolute best values for health education I have ever seen. If you want to understand why you struggle with health problems and then have a clear program on how to reverse those challenges, then this is the course for you.

It is precisely the type of program I wish I would have had access to when I got out of medical school. I fumbled around for decades before I reached the conclusion they discuss in the course and share with you so you can restore your cellular energy production and recover your health.

Select and eat the right foods to heal your metabolism and improve glucose utilization

Balance your hormones to help reduce anxiety, weight gain and sleep disturbances

Use reverse dieting to increase your calories without gaining weight and tanking your metabolism, all while improving your energy levels

Heal your gut for proper immune function, mood and weight management

Tweak your diet and lifestyle habits to improve your mindset and mental health

Crush your fitness goals with ease and get your life back on track

Master the most essential habits for health with bonus guides, including over 100 meal plans to take the stress out of meal time planning and shopping, and so much more!

Learn more about Rooted in Resilience here.



[Learn More](#)

About the Author

Ashley Armstrong is the co-founder of Angel Acres Egg Co., which specializes in low-PUFA (polyunsaturated fat) eggs that are shipped to all 50 states ([join waitlist here](#)), and [Nourish Cooperative](#), which ships low-PUFA pork, beef, cheese, A2 dairy and traditional sourdough to all 50 states. Waitlists will reopen shortly.

Sources and References

- ¹ J Sports Sci. 2020 Jul;38(14):1635-1649
- ² Am J Clin Nutr. 1988 Jan;47(1):19-25
- ³ Prog Mol Biol Transl Sci. 2014;121:133-63
- ⁴ Diabetes Care. 1998 Aug;21(8):1353-5
- ⁵ J Gerontol A Biol Sci Med Sci. 2002 Feb;57(2):B54-60
- ⁶ J Physiol. 2009 Dec 1;587(Pt 23):5551-8
- ⁷ Sports Med. 2000 Oct;30(4):249-68
- ⁸ Front Psychol. 2014 Jul 10;5:753
- ⁹ Endocrinol Metab (Seoul). 2018 Dec;33(4):435-444
- ¹⁰ Eur Rev Aging Phys Act. 2020 Aug 7;17:11
- ¹¹ Journal of the American Geriatrics Society, Volume 65, Issue 3, March 2017, Pages 550-559
- ¹² British Journal of Sports Medicine 2022;56:755-763
- ¹³ Curr Opin Clin Nutr Metab Care. 2004 Jul;7(4):405-410
- ¹⁴ Osteoporos Sarcopenia. 2021 Mar;7(Suppl 1):S19-S27
- ¹⁵ Institute of Medicine (US) Committee on Military Nutrition Research. Washington (DC): National Academies Press (US); 1999
- ¹⁶ Eur J Appl Physiol. 2006 Mar;96(5):525-34. doi: 10.1007/s00421-005-0118-0
- ¹⁷ Front Nutr. 2019 Aug 20;6:131. doi: 10.3389/fnut.2019.00131
- ¹⁸ J Nutr. 2010 Apr;140(4):745-51
- ¹⁹ J Appl Physiol (1985). 2000 Jun;88(6):2251-9
- ²⁰ Am J Clin Nutr. 2016 Mar;103(3):738-46
- ²¹ Am J Clin Nutr. 1993 Oct;58(4):561-5. doi: 10.1093/ajcn/58.4.561
- ²² Br J Sports Med. 2018 Mar;52(6):376-384
- ²³ J Int Soc Sports Nutr. 2014 May 12;11:19
- ²⁴ J Int Soc Sports Nutr. 2015 Oct 20;12:39
- ²⁵ J Int Soc Sports Nutr. 2016 Jan 16;13:3
- ²⁶ Am J Clin Nutr. 2014 Jan;99(1):86-95
- ²⁷ J Sports Sci. 2011;29 Suppl 1:S67-77
- ²⁸ J Strength Cond Res. 2018 Dec;32(12):3373-3382
- ²⁹ Sports (Basel). 2018 Jan 9;6(1):1. doi: 10.3390/sports6010001

- ³⁰ J Int Soc Sports Nutr. 2018 Jul 9;15(1):31
- ³¹ J Clin Endocrinol Metab. 1998 Sep;83(9):3277-84. doi: 10.1210/jcem.83.9.5136
- ³² Diabetes Metab. 2014 Dec;40(6):439-44