

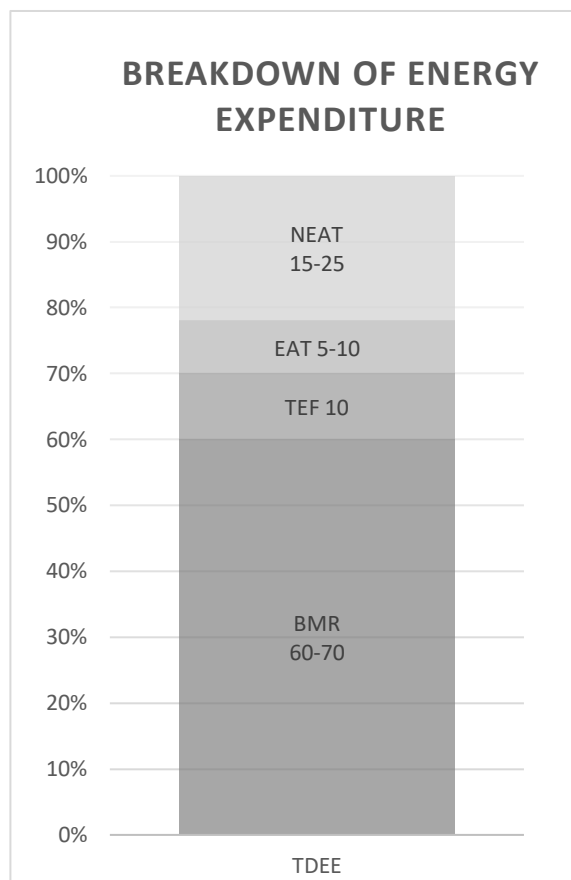
Blueprints: Lesson 7

Physical Activity: NEAT vs EAT

Remember from previous lessons the only way to achieve weight loss is to generate an energy deficit. But there is major flaw with the popular phrase, “eat less, exercise more.” It comes down to what exactly is exercise and how much this actually contributes to our total energy expenditure.

Recap of energy expenditure

From Lesson 3 – Metabolism: recall that total daily energy expenditure or TDEE is the total



amount of energy (Calories) that the body uses up in a day. The breakdown of TDEE is as follows:

1. **Basal metabolic rate (BMR)** is our resting metabolism and accounts for over 60% of TDEE. It is not within our direct control.
2. **Thermic effect of food (TEF)** is the calories we burn from eating. It is a small (about 10%) contribution to TDEE and is not within our direct control.
3. **Physical Activity** (also known as activity thermogenesis) is the energy we use to produce movement. This is further broken down into non-exercise (NEAT) and exercise (EAT) activity thermogenesis. All together physical activity accounts for about 30% of total energy expenditure. While EAT is completely based on

conscious control, NEAT is only partially within our control.

Exercise activity thermogenesis

EAT is the energy burned during purposeful exercise. This includes playing sports, lifting weights, swimming, biking, walking, jogging, running, etc. all for the purpose of getting exercise. This is about 5-10% of total daily expenditure.

Non-exercise activity thermogenesis

NEAT on the other hand is the energy that is burned from any activity that is not sleeping, eating, or exercising. It includes things like getting dressed, walking to work, cleaning the house, running from danger, fidgeting, blinking, or working (for example a mailman likely has significantly higher NEAT than a bank teller). NEAT accounts for 15-25% of total daily expenditure and is the most variable.

How do I increase NEAT?

As mentioned above, NEAT is the most variable, so purposely increasing this form of energy expenditure could potentially have a significant impact on our fat loss efforts. However, NEAT is only partially within our control. We do not exactly control our fidgeting, nervous habits, or reactions. There are chemical and hormonal signals within the body that control energy output through NEAT as well. For example, if you purposely decrease food intake or increase physical exercise, your body may see this as a sign of energy scarcity and therefore cause you to subconsciously move less to save energy and protect from starvation. The body does not care about the amount of fat stores it already has; it will always protect against fat loss as an evolutionary mechanism of survival. We can however do certain things to try to increase our daily NEAT. One might consider the question, “how can I increase *inefficiency*?” Technology gives us incredible advances and has significantly changed our lives for the better, but so much so that we have not evolved fast enough to cope with these improvements. So, we can actively try to reinsert some inefficiencies. For example, rather than taking the elevator to your office, walk up the stairs. If you need to walk to your boss’ office, take the longer route. When at the mall, take some extra time to window shop at all the stores. Park at the back of the lot when doing your grocery shopping. All these things of course require adjusting for the added time, so

there will be activities that just can't be done inefficiently, like walking instead of driving to the office that's 20 miles away. For that reason, make a conscious effort to take advantage of all opportunities that either do not require more time or in which the time tradeoff is acceptable.

Is there a certain number of steps I need to get in a day?

Another way to increase NEAT is to set a goal of steps that you aim to achieve every day. You may have heard the popular cutoff of 10,000 steps a day. This is completely arbitrary and can be traced back to a Japanese marketing campaign from the 1960s! This is not a realistic goal and not necessary for most. Let's take a more scientific approach. There have been several recent meta-analyses that show mortality benefits with *any* increase in steps from baseline. There appears to be a progressive benefit (more benefit with increasing number of steps) up to a cutoff of about 6,000-8,000 steps. With this knowledge, we generally recommend setting a goal of 7,000 steps per day. However, if you previously were only taking 1,000 steps, you may want to start at lower, at 2,000 and progress from there. Remember, *any* increase from baseline has benefit and you do not want to set up a goal that is too high to achieve.

How does “eat less, exercise more” get it wrong?

We discussed that physical activity involves NEAT and EAT. The problem with “eat less, exercise more” is that, while non-exercise activity accounts for a solid 15-25% of energy expenditure, exercise itself only accounts for 5-10%. It is extremely hard to generate an energy deficit from exercise alone based on its minimal contribution to your total daily energy expenditure. This is not to say that exercise is not important. But the benefits go far beyond simply burning more calories.

You may be thinking, “How can exercise possibly count for such a small portion of total daily expenditure, my apple watch just told me I burned 500 calories playing basketball? If exercise is only 10%, does that mean my daily expenditure is 5,000 Calories?” No, and there are several reasons for this. First, the algorithms for calculating exercise are only estimates and tend to be overestimates at that. Second, the calculations used by fitness trackers generally include the

calories you would have burned regardless of exercise (meaning it includes BMR as well). Third, and most significant, is simply that there is an incomplete understanding of the concept. To fully understand this, requires you to take a step back to look at the bigger picture over an entire week. Let's use the same example and say you play basketball for 1 hour on 3 days this week. Being generous, let's assume you burned a true 500 extra calories during each session for a total of 1,500 calories this week. Compare this now to the other over 110 hours you spent awake but not exercising this same week. You were likely walking, talking, fidgeting, cooking, cleaning, etc. There is a lot of unrecognized activity that can go on in 110 hours! You most likely burned in excess of 2,500 calories from all these NEAT activities (without even trying), so when you compare the 1,500 calories from EAT vs 2,500 calories from NEAT and then add the approximate 8,500 and 1,500 calories from BMR and TEF respectively, you can see how minimal the exercise component really is. So, it is imperative to look at energy balance in terms of weeks or months rather than hours or days.

Does this mean exercise is worthless?

Absolutely not! While there may not be a huge impact of exercise on energy expenditure, that does not make it worthless. Exercise is in fact crucial to optimizing health. But the benefits go beyond simply burning calories. There are numerable high-quality studies in both the medical and fitness literature showing the enormous health benefits of exercise. This includes improving mood, building lean body tissue, improving sleep, improving focus, preventing injury, increasing flexibility, prolonging life, preventing falls, improving memory, preventing weight regain, improving quality of life, increasing self-confidence and much more. Even small amounts of exercise can have enormous impacts on health.

Conclusion: Exercise with purpose and move with less efficiency

"Eat less, exercise more" gives us the wrong idea. Exercise is not about losing weight; it is about improving life. You should always exercise with a positive purpose and goal in mind. Whether you are trying to build muscle, gain strength, prolong life or decrease stress. Exercise should always be a positive thing. Never punish yourself with exercise (i.e., running off that dessert

from last night), it will not work and will leave you spinning your wheels. Additionally, do not underestimate the impact of NEAT. By regularly decreasing efficiency of movement, you can potentially make a large impact on energy expenditure. This does require daily conscious effort but does get easier the more you try. So, get moving!

*There is another crucial impact that exercise has on weight loss and maintenance that was not discussed in this lesson. We will discuss this in Lesson 8 on cardio and strength training. For now, just understand that exercise remains a crucial component of a healthy life.

Practice

Choose two of the strategies listed below. Use these in the next month to increase your number of steps per day. Put a check mark next to the two strategies you will try.

- Take several 5-10-minute walks during the day. Plan a 5-minute break from your desk every hour.
- Choose the farthest entrance to a building that you are entering.
- Host “walking meetings” at work.
- Walk to a restroom, water cooler, or copy machine on a different floor at work.
- Walk during your lunch break.
- Park farther away in parking lots.
- Get off the bus or train earlier and walk farther to your destination.
- Take the stairs rather than the elevator or the escalator.
- Start a walking club with co-workers or neighbors.
- Walk - don’t drive - for trips less than one mile.
- Take an after-dinner walk with family.
- Go for a walk while talking on your wireless phone.
- Walk the dog more often.
- If you prefer to stay indoors because of the weather, try walking in a shopping mall or doing laps around a large store.
- Purchase a treadmill to use at home.
- Schedule time for walking every week and stick to it like any other appointment.
- Or think of your own strategy: _____