



# The Science Behind 5:2

## *Backgrounder for Using a 5:2 Diet for Weight Management*

The 5:2 diet is an alternative to overall calorie restriction of typical calorie-restricted diets. It has the potential to improve body composition in overweight individuals and is purported to confer numerous other health benefits as well.

### **What is 5:2?**

The 5:2 diet is a form of intermittent fasting, or IF. According to Healthline, the 5:2 Diet is the most popular intermittent fasting diet.<sup>1</sup> Other common forms of IF include alternate day fasting (ADF) and time restricted feeding (TRF). But although the term “fasting” is used, 5:2 does not involve a total fast for an extended period of time.

Rather, on a 5:2 diet, two days per week are considered “modified fasting” days with total calorie intake around 500-800 calories per day. The rest of the week is normal eating, without calorie restriction or a specific diet prescription.

Although modified fast days reduce calories more aggressively than the typical low calorie, across-the-board diet, many people find this method easier to follow than a program that requires 24/7 vigilance, which is why this diet has become so popular.

#### **5:2 in a Nutshell**

Five days each week = normal eating days & Two days each week = 500–800 cal per day

### **5:2 Health Benefits**

Human evidence is modest but strongly supportive of IF approaches with evidence for improvements in weight, cardiovascular risk factors, markers of inflammation and glucose regulation.<sup>2-5</sup> In addition, preclinical trials have shown extensive potential of IF to improve cognition, offer protection from Alzheimer's and Parkinson's diseases and even thwart some forms of cancer.<sup>6,7</sup>

With respect to weight management, IF approaches are thought to be comparably effective to more conventional weight loss methods that use continuous, 7-days-per-week calorie restriction.<sup>2,8,9</sup> As such, weight loss totals seen in clinical trials frequently have met or exceeded the 5% minimum necessary believed to lower chronic disease risk. IF approaches may even have an added benefit over standard low-calorie diets of improving body composition in the form of decreased fat mass without a significant loss of muscle mass.<sup>10</sup> Here are a few human studies that looked specifically at 5:2 protocols:

- Weight loss, cardiovascular and metabolic health.** A randomized trial of 107 overweight and obese women compared a 25% calorie reduction delivered in a 5:2 approach to a continuous diet for 6 months. Weight lost by both groups was comparable. The study also demonstrated improvements in risk factors for cancer, diabetes and cardiovascular disease. Specifically, reductions in fasting insulin, insulin resistance, C-reactive protein, total and LDL cholesterol, triglycerides, and blood pressure were all observed and comparable in both approaches.<sup>11</sup>
- Weight loss and preservation of lean muscle.** A review of IF trials including both 5:2 and ADF approaches found that 3 to 12 weeks of IF resulted in weight loss of 4-8% and 11-16% fat loss. The 5:2 diet was equally effective for weight loss as conventional calorie restriction. In addition the review found better preservation of lean mass in IF vs. the continuous calorie restriction.<sup>12</sup>
- Body fat and Insulin resistance.** A randomized controlled trial among 115 overweight women looked at the effects of a 600 calorie diet two days per week compared with a 25% overall calorie reduction. The women who followed the 5:2 regimen experienced greater reductions in body fat (average 3.7 kg) and insulin resistance compared with those following a conventional diet.<sup>13</sup>

### Parameter Effect of Intermittent Fasting

Parameter	Effect of Intermittent Fasting
Body weight	Decrease
Fat Mass	Decrease
total cholesterol	Decrease
triglycerides	Decrease
LDL cholesterol	Decrease
Interleukine-6	Decrease
Homocysteine	Decrease
C-reactive protein	Decrease
Resting heart rate	Decrease
Insulin sensitivity	Increase
HbA1c	Decrease

## Tips for Implementing a 5:2 Diet

### Modified fasting days – 2 days per week

- Total consumption should be about 500 to 800 calories.
- To preserve muscle mass, consume moderate to high amounts of protein. Minimum is the Recommended Dietary Allowance (RDA) for protein – 0.8 g protein per kg of body weight (or multiply weight in pounds by 0.36); ideally twice this amount.
- To help with satiety, choose:
  - Higher fiber foods
  - Higher water foods (soups, fruits, vegetables)
- Example meal patterns:
  - Three small meals
  - Two slightly bigger meals - usually breakfast and dinner, or lunch and dinner
  - Two slightly bigger meals with a small snack in between
- For added benefit, consume all calories within a single 8 to 12 hours period.
- The two modified fasting days can be consecutive or non consecutive. Existing evidence suggests that both approaches can be beneficial. Select based on patient needs.

### Off days – 5 days per week

- Eat normally, without following a specific diet plan.
- Choose healthy foods as much as possible.
- For weight management, do not make up for the fasting days by eating well in excess of calorie needs on non-fasting days. Calorie intake should be around a maintenance level, sufficient to maintain the current body weight. Note that, calorie counting on these days is not necessarily advocated, as the idea is to have a break from the intense focus of dieting. Encourage patients to eat to the point of satisfaction without being stuffed.

## Who is 5:2 appropriate for?

**Contraindications** IF may not be appropriate in the following circumstances:

- History of eating disorders
- Propensity for hypoglycemia
- Pregnancy, lactation, or trying to conceive
- Teenagers, children
- Individuals with type 1 diabetes
- Known nutrient deficiency

In addition, it is important to consider non-medical factors when recommending a 5:2 or other IF approach. For some people, the idea of restricting calories to the levels recommended for modified fasting will simply be unsavory. Others may be okay with the idea in theory, but in practice find the pattern does not work with their lifestyle.

## FAQ

**Should men consume more calories than women on modified fasting days? What about larger vs. smaller bodied people?** As an emerging approach, similar to other forms of intermittent fasting, there is not a single agreed upon protocol. Individualize a 5:2 plan to the patient, and adjust as necessary.

**What kind of hunger is expected on a 5:2 diet?** People who have adopted the 5:2 approach report adaptation to the approach. Hunger on fasting days may go away from after several fasts to up to a month of 5:2 dieting.

**Do people overeat on non-restricted days?** Energy intake was assessed in a trial of 16 people doing a modified ADF in which a 75% calorie restriction was prescribed on modified fasting days. The non fasting days allowed for unrestricted eating every other day. Using food records the study estimated that participants consumed 20-30% of their energy requirements on the modified fast days and 100-110% of energy needs on the off days. Results of the trial showed 5.8% body weight reduction on average over the 8 week period of intermittent fasting.(Varady 2009)

## References

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