



## **Physiological responses to dieting: The Famine Reaction Vs the Fat Break**

Most diet books talk about losing weight according to the “Energy Balance Equation”- ie ingest less energy than you expend and you are bound to lose weight. The problem with this is that, as many people have discovered, this equation only works to a point: various physiological phenomenon such as weight plateaus, urges to binge etc inevitably occur. This starts a vicious cycle of reduced body trust and confidence, increased body shame and moving further and further from an intuitive relationship with the body.

Of course these changes can be explained away by personal weakness (e.g. the dieter “not trying hard enough”, “not sticking to the plan”) or simply that they have psychological problems (such as binge eating). However the reality is our bodies are complex and a simple understanding of biomedical science can explain how people can actually restrict food and literally diet themselves fat.

The number one thing to remember here is that the body aims for homeostasis. Our body is designed to be perfectly capable of regulating our body weight. We should be able to eat intuitively and be confident that this will occur. Two functions occur in the body to ensure this: The Famine Reaction and the Fat Brake.

### **The Famine Reaction:**

The Famine Reaction is a physiological phenomenon that takes place when we eat insufficient energy and nutrients that our body needs to maintain its fat stores. Indeed, restricting food triggers a cascade of physiological changes that make it progressively more difficult for anyone to keep losing weight- and even more difficult to keep it off.

This response has been helping the human race to survive famines and food shortages for millions of years- and needless to say, the body can't differentiate between a famine and a diet: that is now the 21<sup>st</sup> Century and “thin is in”. Accordingly, when a weight loss diet and the Famine Reaction go into battle, the diet has no chance of outmaneuvering the Famine Reaction, which is extraordinarily robust and reliable. Further, restricting food (when weight plateaus) only increases the strength of the Famine Reaction.

Ultimately, when we restrict food, the body believes that there might be a famine and complex physiological changes in the body occur. This includes increases



the amount hormones and brain chemicals such as neuropeptide Y produced in the hypothalamus (a small area at the base of the brain), and increased secretion of glucocorticoids (a stress hormone), promoting fat accumulation in the midriff region (this is one reason why some people put on weight when they are stressed, it also explains the typical “starved” look that we sometimes see exhibited by people in poor nations).

The Famine Reaction is sometimes mistaken for psychological problems- for example the increased cravings of food can trigger binges, increase feelings of guilt etc.

#### **Signs of the Famine Reaction**

Nagging hunger and cravings for substantial food

Lethargy

Feeling cold

Decreased libido

Weight plateau

Rapid rebound weight gain

The famine reaction can be switched off by ad libitum feeding- sufficient to satisfy physical hunger (intuitive eating). Food sends the hypothalamus a clear message: the famine is over.

#### **The Fat Break:**

The body also has another system to prevent weight gain after occasional overindulgences: the Fat Break. When a person occasionally eats past satiety (A person will eventually put on weight if they consistently overeat day after day, week after week, month after month) a different neurochemical called leptin is produced.

Leptin blunts the appetite and instigates a physiological response that opposes that of the Famine Reaction: it reduces cravings for rich, fatty foods, it increases energy and the tendency to be active and increases the metabolic rate. People will experience feeling hot, which may lead to things such as restless sleeps and nightmares, all of these things use up energy that is ingested and prevent it from becoming stored. Leptin also increases when relaxed and stress free (which again explains why people are more likely to put on weight when they are feeling stressed).



### **Signs of the Fat Brake**

Reduced appetite and diminished propensity to eat rich foods

Desire to move about (eg fidget)

Feeling warm

Rapid, relatively effortless weight loss

A tendency for weight to remain capped at a certain level, no matter how much is eaten

### **For more information we recommend you read the following books**

Sainsbury-Salis, A. (2007). **The Don't Go Hungry Diet**. Bantam.

Kausman, R. (2004). **If Not Dieting Then What?** Allen & Unwin