Tipping The Scales For Healthy Weight

Supporting Metabolism and Energy Balance with Capsicum Extract
Years of research examining the mechanisms underlying weight wellness continue to affirm the basic principle that maintaining energy balance—calories consumed versus calories expended—is key to maintaining a healthy weight. The elements of the energy balance equation remain an active area of research to understand how the math of diet, physical activity and metabolism impact the waistline and how influencing these key areas can support healthy weight.

**A BALANCING ACT**

On one side of the equation is total caloric intake from foods and beverages. On the other side, is total energy expenditure (TEE) from physical activity, resting energy expenditure (REE) and diet-induced thermogenesis (DIT). The terms resting energy expenditure and basal metabolic rate (BMR) are often used interchangeably and collectively referred to as metabolism. They are similar in that they both measure the minimum energy requirements needed to keep the body functioning. But there are slight differences in how each is measured. Basal metabolic rate is typically taken upon waking after 8-hours of sleep and 12-hours of fasting and in a reclined position to ensure that activities, like digestion and muscular activity do not contribute to caloric expenditure. This is, quite obviously, a more restrictive measurement and not one that is easily obtained. Therefore, REE is commonly used to assess energy balance.

Resting energy expenditure is similar to BMR in that it measures the energy needed to maintain basic body functions, such as breathing, cellular repair and growth, blood circulation and brain activity. It differs slightly from BMR in that it also takes into account other energy-expending systems like temperature regulation and digestion. In other words, REE represents a more "real world" estimate of how much energy is expended by the body while at rest. Of all the factors influencing energy metabolism, REE makes up the largest—about 60-75% in sedentary people. As such, it is a major factor in weight management [3].

“Of all the factors influencing energy metabolism, REE makes up the largest—about 60-75% in sedentary people. As such, it is a major factor in energy balance and changes in weight.”
The other components of energy expenditure are physical activity and DIT. Physical activity is a cornerstone of any weight wellness protocol and its impact on energy metabolism varies on the type, duration and intensity of exercises. Even the same exercise regimen impacts energy expenditure in people differently. However, despite its importance in weight wellness and overall health, the amount of exercise often prescribed may be ineffective and actually lead to weight gain, as one study suggests [4]. The small magnitude of weight loss observed may be due to doses of prescribed exercises that may not sufficiently impact energy expenditure and compounded by an increase in caloric intake. Diet induced thermogenesis (DIT) can be defined as the increase in energy expenditure above basal fasting level. It is the energy needed to digest and metabolize the nutrients in food and although it varies among individuals, it contributes little to energy expenditure [5].

**UNBALANCING THE EQUATION**

Many factors can tip the energy balance one way or the other—to weight gain or weight loss. One obvious input is the type and number of calories consumed and is often where most people start to affect a change. The simple rule is that if caloric intake is less than the total energy expenditure, energy balance is tipped towards weight loss. However, weight wellness isn’t that simple given the fact that despite a deficit in caloric intake, weight loss can still be hampered. The culprit lies in the body’s ability to shift its metabolism—effectively reducing REE in an effort to conserve energy reserves.

The body’s ability to “fight” against caloric restriction often leads to frustration and people abandoning their weight wellness goals. Resting energy expenditure is often describe as a person’s metabolism and there are many factors influencing it including age, sex, body size and composition [6]. Males are generally regarded to have a higher fat-free mass than females and, therefore, a higher REE. Other factors, like age, lead to a loss of fat-free mass and further contribute to a slowing metabolic rate. Caloric restriction can also slow REE. Both of these examples—caloric restriction and a change in body composition—have a major impact on metabolism and help to explain why caloric restriction is known to produce a short-term reduction in weight but can often lead to a plateau or reversal in weight loss. In simple terms, with a reduction in weight, there is related loss of muscle resulting in a re-setting of REE to a lower level. As REE decreases, the calorie requirements needed to remain in negative energy balance is too high, resulting in a plateau—at best—and a regain of lost weight at worst.
**Tipping the Scales with Capsicum Extract**

Diet and physical activity are the first steps to tipping the scale in favor of negative energy balance. In addition to caloric restriction, there has been some discussion about foods that cost more in calories to digest than they contain—effectively increasing diet-induced thermogenesis (such as medium chain triglycerides). As muscle is more metabolically active than fat, increasing fat-free mass maintains metabolism during weight wellness and keeps the body in negative energy balance.

The final component of energy expenditure is REE and this area is a focus of much research. Increasing or maintaining REE during caloric restriction can effectively support long-term weight wellness. OmniActive’s Consumer Insights program found that a majority of consumers are looking for a product to boost their metabolism to support weight wellness. Dietary supplements known as “thermogenics” can effect a positive change in REE [7]. These agents can be classified as stimulatory or non-stimulatory depending on their effect on heart rate and blood pressure [8]. The most widely known and commonly used stimulatory thermogenic is caffeine but others such as ephedrine and synephrine have also found their way into dietary supplements [8].

Among the non-stimulatory thermogenic agents are a group of compounds called capsaicinoids [5]. The genus Capsicum is native to the Americas. The hot variety was called “chili” pepper by the Aztecs and “red pepper” in the Old World. The active ingredient responsible for their spicy kick is called capsaicin and was first isolated in 1846. Its chemical structure was elucidated later in 1919 [9, 10]. More recent research found that a whole group of compounds contributes to the hot sensation and are collectively known as capsaicinoids. They fall into a class called alkaloids and include capsaicin, dihydrocapsaicin, nordihydrocapsaicin, homocapsaicin and homodihydrocapsaicin.

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**Energy Homeostasis**

Initially, reducing the caloric input (dieting) tips the balance towards a negative energy state—energy demands outweigh the energy input. However, as body composition changes, the REE changes, effectively rebalancing the equation. This often results in a slowing or reversal of weight loss.

**Negative Energy Balance**

Addressing the energy side of the equation can keep the balance tipped toward negative energy balance, thereby promoting continued weight loss or maintenance.
The first three of these account for 90% or more of the capsaicinoid concentration in the chili and cayenne pepper varieties [11].

Capsimax is a dietary supplement that contains naturally-derived Capsicum extract. It offers the potency of the actives from the chili pepper without stomach discomfort. This is achieved through a patented “beadlet” technology that encapsulates the capsaicinoids, allowing them to pass through the stomach and avoid irritating the gastrointestinal lining. An intake level of 2 mg of capsaicinoids, supplied by 100 mg of Capsimax, provides an efficacious amount of active ingredient.

Capsimax can help balance the equation in two ways—through appetite control and through REE. In a recent study looking at the effects of capsaicinoids on REE in healthy men and women, 2 mg of capsaicinoids from 100 mg Capsimax was found to significantly increase REE by greater than 6% [12]. This increase of REE was equivalent to an increased caloric expenditure equivalent to about 100 calories each day over the placebo group (p<0.05).

In a study in 152 healthy men and women, 2 mg of capsaicinoids from 100 mg of Capsimax has been shown to decrease appetite by more than 7% over the placebo group (p<0.05) and a second study with 77 people resulted in over a 140 calorie decrease in caloric intake in those persons taking Capsimax [13, 14].

Consumers are looking for more comprehensive benefits to help support their long-term goals without taking multiple pills. Capsimax fills that need without the oral and gastric upset associated with unprotected capsaicinoids to effectively target key areas for weight wellness by boosting metabolism, and controlling hunger—all in a small, convenient dose.
Award-winning, Capsimax capsicum Extract provides the benefits of red hot peppers without the burn. Proprietary Capsimax Capsicum Extract employs OmniBead Beadlet Technology – a patented “smart” coating system that encapsulates the beneficial heat of concentrated, highly active, natural capsicum to deliver effective levels of capsaicinoids without the oral and gastric burning sensation of unprotected red hot peppers.

- Naturally derived from food
- Safe, efficacious and tolerable
- Well researched with proven market success
- Adaptable to a wide range of weight management, sports nutrition and healthy lifestyle formulas using tablets, capsules and beverage applications

For more information on how Capsimax can help support weight wellness goals, visit omnactives.com/capsimax or contact us at info@omninactives.com.

OmniActive Health Technologies offers a wide range of premium, scientifically-validated ingredients to address complex challenges for customers in the dietary supplement and functional food and beverage space. OmniActive brings added value, with a focus on healthy living as well as healthy aging through IP-protected, science-backed branded ingredients from natural sources. Whether looking for a new ingredient to add to a finished product, or technology to enhance an existing ingredient, OmniActive delivers unmatched innovation.
REFERENCES