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Energy Balance

Energy balance plays a vital role in good health, weight management, energy levels, recovery, and sports performance. Maintaining the correct energy balance for your sport can make the difference between success and not reaching your potential. It is important to make sports performers aware of how significant energy balance can be.

Energy intake is the total number of calories ingested daily, where as Energy expenditure is the total number of calories used daily. There are four different aspects of expenditure these include, basal metabolic rate this is the amount of daily energy expended while at rest in a neutrally temperate environment, dietary thermogenesis this is how many calories your body burns through digesting absorbing and using food, adaptive thermogenesis this is production of heat in response to environmental changes in temperature and finally physical activity which consists of any physical movement.

Energy Imbalance between intake and expenditure consists of gaining and losing imbalance. Gaining imbalance is a result of energy intake being higher than what is consumed in external work and other means of energy expenditure. The main causes of this are over eating, resulting in increased energy intake and leading a sedentary lifestyle resulting in decreased energy expenditure.

➢ gaining imbalance results in energy being stored as fat, causing weight gain. Ultimately this can cause obesity, later leading to health problems. Losing imbalance is a result of energy intake being less than what is consumed in external work and other means of energy expenditure. The main cause of this is under-eating or starvation.

Energy imbalance, has a huge negative affect upon sporting performance. Meeting the energy needs is a prority for athletes as these must maintain a balanced diet with the right proportions of each nutrient. Carbohydrates and

fats are the main sources of energy although energy can also be obtained from protein. Our energy intake should match our energy expenditure, this is to make sure we neither gain nor lose weight this is known as energy balance. If there is a greater energy intake to energy expenditure then the body will use fat and muscle to provide energy. Loss of muscle results in loss of stregth and endurance capacity.

Energy expenditure is also affected by age which lowers as you get older, size which increases bmr with greater height, pregnancy which increases muscle tissue and lowers fat, fever and finally stress increase.

Our BMR demands around two-thirds of or daily energy intake required for every day activities and is the largest part of our daily energy expenditure. By using body mass, height and age it allows us to get an accurate estimate of our BMR. This helps us to monitor body weight and is a practical way of assessing energy balance. Weight stablility is very important for athletes during sports performance as it allows them to see whether their energy requirements are being met, also by monitoring body weight before and after exercise training sessions allows athletes to assess their performance. Deliberate weight loss of gain is used to enhance athletic performance, and is usually done off-season as not to affect their performance in competition. Weight loss during peak season can give athletes an inadequate amount of energy, carbohydrate and fluid intake where as weight gain in the form of body fat can compromise endurance, speed and power.

Energy balance is a state where energy intake is equivalent to energy expenditure, resullting in no weight gain or loss. There are three types of energy balance, these being positive, equal and negative.

An equal energy balance is when the calories consumed is equal to the calories expended this means that weight is maintained. Postive energy balance is when the calorie intake is greater than the amount of calories expended ultimately meaning that weight is gained and fat is increased. Negative energy balance is when the calories consumed is less than the

amount of calories expended, glycogen and muscle can be used as energy to make up for the deficiency how ever usually weight is lost and fat stores are reduced.

There are different sporting examples to show how energy balance can be used with in different sports.

For an equal energy balance sports such as running, gymnastics, swimming and football allow a performer to not have any weight gain and to maintain health and energy levels. However it can also mean not having enough energy to play these sports at a good level. Advantages for equal energy balance are, good health and it is easier to maintain energy levels for performance. One disadvantage for it is for some sports, an individual would not have enough energy.

For a negative energy balance sports such as wrestling, boxing and weight lifting allow a performer to assess whether they are within the right weight category. Disadvantages include major health risks because not enough nutrients, minerals and vitamins are provided to the body therefore quickening the process of fatigue and lowering energy levels. Also, losing weight can be mentally draining for the performer causing a shorter attention span and lowering alertness. Although advantages are an individual will look aesthetically pleasing, therefore this can improve over all confidence. Also as I stated before it makes it easier for the person to make their weight category.

Finally, for a positive energy balance sports such as boxing and horse riding allow a performer to improve performance, muscle size and strength which are the main advantages. However it can raise BMI, cause obesity, cause disease as well as putting pressure on organs which are all disadvantages.

Overall, Energy balance is very important for a sports performer, as it enables them to maintain the correct weight and proportions to keep a good level of endurance, speed and power that is needed for a good performance.