



# Dairy and sport/exercise

Good nutrition is vital for sport performance and making the right nutrition choices can help active people achieve their fitness and performance goals.

Dairy foods provide many benefits to active individuals as a source of carbohydrates and electrolytes, as well as a high-quality protein source, containing all nine essential amino acids. Dairy foods are also an ideal pre- and post-workout snack or meal to help fuel active bodies, recover from exercise and build muscle.

## Facts

Milk has been shown to be as effective, if not more effective for rehydration than water or sports drinks, up to four hours post-exercise<sup>1</sup>.

Flavoured milk and yoghurts contain the right mix of carbohydrates and protein to restore muscle glycogen quickly after a workout, helping with recovery<sup>2</sup>.

## The benefits of dairy protein

Dairy foods contain two types of protein: casein (80 per cent) and whey (20 per cent). Casein is a slow-to-digest and slow-release protein which has been shown to reduce muscle breakdown. Whey is a fast-acting and quick-absorbing protein with a high concentration of leucine. Leucine specifically stimulates the building of new muscle tissue.

Dairy foods are considered a high-quality protein source as they contain all the nine essential amino acids and are superior to other protein sources in optimising muscle protein synthesis following resistance training<sup>3</sup>.

## Timing and amount of protein

Protein needs are highly individual, depending on a person's weight, as well as the type and amount of exercise they do. Most athletes need 1.2 to 2 grams of protein per kilogram of body weight. For a person weighing 70 kg, this equates to 84 – 140 grams of protein per day.

The timing of intake also affects how the body can utilise protein – since the body can only use and store limited amounts of protein at a time, it's best to consume 20 – 30 g of protein at a time, and regularly throughout the day – making sure one of these occasions is shortly after exercise. Dairy foods such as milk, cheese and yoghurt are a convenient way to consume protein after exercise.

### PRACTICAL RECOVERY CHOICES 20G PROTEIN =

600ml flavoured milk; or

200g tub fruit yoghurt and 30g nuts; or

Half a cup of low fat cottage cheese with crackers

## Protein supplements

While adequate amounts of protein can be acquired through a well-balanced and nutritious diet, protein supplements such as whey protein isolate offer an effective method for increasing protein consumption without significantly increasing energy intake. Twenty grams of whey protein isolate (WPI) with 250mL milk, provides approximately 30g of protein and 3g of leucine, making it an ideal way to meet post-exercise targets.

## Dairy as a source of carbohydrates

The body prefers to use carbohydrate as its main energy source during moderate-to-high intensity exercise as it's able to break the carbohydrate down quickly and efficiently for energy. Research recommends consuming a carbohydrate-rich snack 1-2 hours before exercise or a carbohydrate-rich meal 2-4 hours beforehand. Sweetened dairy foods like flavoured milk, yoghurt and dairy desserts provide extra carbohydrates and are low in fibre, helping to maximise gut comfort.

Following an exercise session, eating high carbohydrate foods will replenish the stores depleted during exercise, preventing fatigue and ensuring the body and brain continue to have enough energy to perform their functions. Research has shown people who drink milk straight after training are able to exercise longer in their next session than those who drink sports drinks or plain water<sup>4</sup>.

## Milk for hydration

Milk assists with rehydration after exercise by replacing fluid and electrolytes (sodium and potassium) in the right balance. Other nutrients in milk, like protein, help the body to retain fluid more effectively.

While sports drinks are a popular choice for rehydration following exercise, milk contains more sodium than a standard sports drink. By also containing protein and carbohydrate, milk has the additional benefit of providing all nutrients of importance for recovery following exercise.

Research has found that low-fat milk helped dehydrated cyclists replace sweat loss better than water or a sports drink. Four hours after exercise, cyclists who drank milk were better hydrated by an average 600ml compared with those who drank water or a sports drink<sup>1</sup>.

## Body composition

Protein from milk has been shown to have beneficial body composition effects in men and women. Male weightlifters who drank skim milk after a workout built approximately twice as much muscle as those who drank soy beverages<sup>5</sup>, while women who drank 500ml of skim milk an hour after resistance exercise gained more muscle and lost more fat than those who had a sugar-based energy drink.

## Gut discomfort and physical activity

Research has also shown there is no need to avoid dairy foods before exercise unless there are diagnosed underlying medical conditions. Dairy can be included in meals consumed before strenuous physical activity without impacting either gut comfort or performance<sup>7</sup>. Individuals who unnecessarily avoid dairy before exercise may be missing out on high quality protein and calcium, which has possible implications for sports performance, body composition changes and health overall.

## What about soy?

A research study comparing muscle synthesis between men participating in resistance training found that while milk and soy-based proteins both promote muscle synthesis when consumed after resistance training, milk-based proteins have a greater benefit<sup>6</sup>.

- 1 Shirreffs SM, Watson P, Maughan RJ. Milk as an effective post-exercise rehydration drink. *Br J Nutr.* 2007;98:173-80.
- 2 Karp JR, Johnston JD, Tecklenburg S, Mickleborough TD, Fly AD, Stager JM. Chocolate milk as a post-exercise recovery aid. *Int J Sport Nutr Exerc Metab.* 2006;16(1):78-91.
- 3 Tang J, Moore D, Kujbida G, Tarnopolsky M, Phillips S. Ingestion of whey hydrolysate, casein, or soy protein isolate: effects on mixed muscle protein synthesis at rest and following resistance exercise in young men. *J Appl Physiol.* 2009;107(3):987-92.
- 4 Thomas K, Morris P, Stevenson E. Improved endurance capacity following chocolate milk consumption compared with 2 commercially available sport drinks. *Appl Physiol Nutr Metab.* 2009;34(1):78-82.
- 5 Thomas K, Morris P, Stevenson E. Improved endurance capacity following chocolate milk consumption compared with 2 commercially available sport drinks. *Appl Physiol Nutr Metab.* 2009;34(1):78-82.
- 6 Wilkinson SB, Tarnopolsky MA, Macdonald MJ, Macdonald JR, Armstrong D, Phillips SM. Consumption of fluid skim milk promotes greater muscle protein accretion after resistance exercise than does consumption of an isonitrogenous and isoenergetic soy-protein beverage. *Am J Clin Nutr.* 2007;85(4):1031-40.
- 7 Josse AR, Tang JE, Tarnopolsky MA, Phillips SM. Body composition and strength changes in women with milk and resistance exercise. *Med Sci Sports Exerc.* 2010;42(6):1122-1130

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