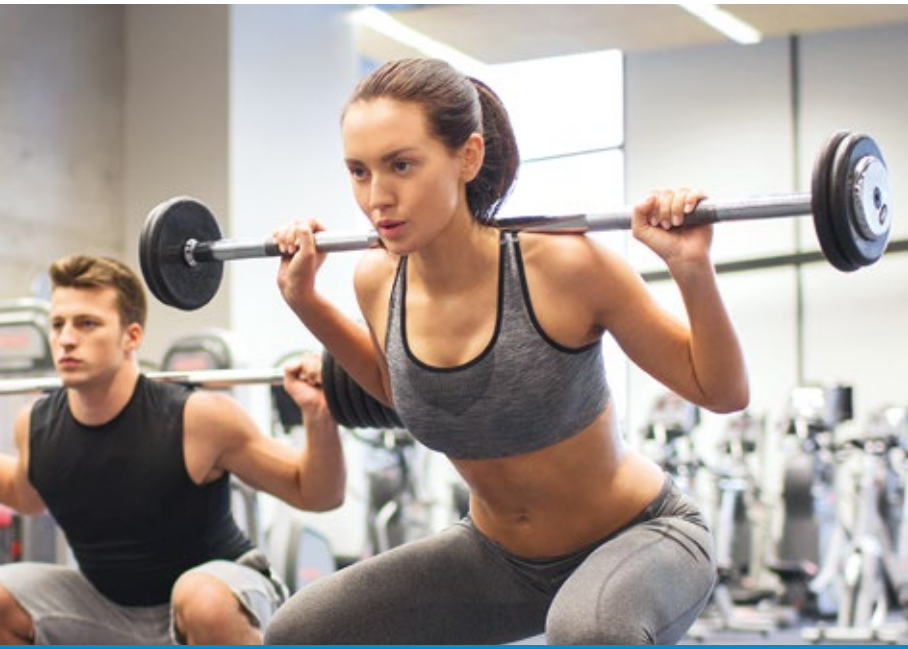
FrieslandCampina

Institute

for dairy nutrition and health



nutrition & **strength sports**

Sports and nutrition are very closely linked with each other. Nutrition plays an important role in strength, endurance, recovery and maintenance of good health which in turn supports sports performance. A diet in line with the demands and intensity of exercise is not only important for top athletes, but also for people who regularly participate in sport and exercise.

By training regularly, a strength athlete increases muscle mass and power. So what are the nutritional requirements for strength athletes and the recommendations in terms of the amount and timing of food intake?

This booklet composed by FrieslandCampina Institute provides the latest advice based on scientific agreement and official dietary guidelines.

Our nutritional recommendations are based on the needs of an athlete who actively participates in strength sports. For personal nutritional advice, please contact a registered (sports) dietitian/nutritionist.

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“For a top athlete, good nutrition and a healthy balanced diet are essential. The importance of a varied diet based on consuming sufficient foods from each food group, such as vegetables, fruit and dairy, can provide all the nutrients an athlete needs and is often underestimated.”

nutrition **and sports**

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What should a person who is regularly involved in strength sports ideally eat and drink? The sports nutrition pyramid provides a basis for sports nutrition advice.

Basic nutrition

For all sportspeople, including strength athletes, a balanced diet in line with the national dietary guidelines is the starting point for healthy nutrition. Aim to eat sufficient amounts of foods from each food group including vegetables and fruit, grains, oil, dairy, meat, fish, eggs, legumes and (unsalted) nuts. Remember to include plenty of variety. These foods will provide the required amount of energy and important nutrients such as proteins, carbohydrates, fats, fibre, vitamins and minerals. In addition it is important to take in sufficient fluids.

Sports-specific nutrition

A person who is training intensively may sometimes require some extra support in the form of specialist sports nutrition products. A strength athlete will particularly benefit from extra protein. A balanced diet including foods such as dairy, meat, egg and legumes is the basis for providing these nutrients. Extra protein can also be obtained from sports nutrition products, such as sports drinks and sports bars.

Supplements

When the daily diet does not provide sufficient amounts of particular nutrients such as vitamin C, or a nutritional ergogenic aid such as creatine, a supplement can be used. However, it is important first to check whether there is any scientific evidence for the efficacy of the chosen supplement.

pay attention to **protein**

> Proteins contribute to the development and maintenance of muscle and so it is important to eat and drink sufficient protein after exercise. Choose foods that are naturally a good source of protein, such as yoghurt, meat, fish and legumes.

Our body has over 600 muscles which are continuously renewed. In order to achieve growth and development it is necessary for more muscle tissue to be synthesised than is broken down. Exercise training is an important stimulus for muscle protein synthesis and developing strength and power.

Why protein?

Proteins are an important constituent of muscle and they contribute to the development and maintenance of muscle mass. Therefore it is important for strength athletes to have a good dietary intake of protein-rich foods in the right amounts. Depending on the level and intensity of the exercise, a strength athlete will need about 1.2 to 2.0 grams protein per kilogram body weight each day.

Type of protein?

Foods which are high-quality proteins provide more essential amino acids. These are the building blocks for proteins that the body cannot produce itself and so must be obtained from food. Therefore, the advice is to eat on a day to day basis a combination of different protein sources, such as dairy, meat, fish, legumes and nuts in order to obtain sufficient essential amino acids.

what about **timing** of meals?

> “Start with a proper warm-up, but also take enough time to cool down to ensure more effective removal of waste products from the muscles. This prevents sport injuries and lowers the risk of tensed, fatigued and stiff muscles.”

For athletes it is sometimes difficult to decide what to eat and when. Eating regular meals, breakfast, lunch and dinner are a good basis to start from. In addition, a strength athlete can follow the guidance below.

Before exercise

Try to avoid skipping meals or snacks before exercise. Without sufficient energy or fuel the muscles will fatigue sooner. Also avoid eating a heavy meal within two hours before exercise as this may lead to gastro-intestinal discomfort. Something easily digestible that provides readily available energy, such as a currant bun or a banana, would be ideal.

During the day

Strength athletes are advised to divide their total daily requirement for protein over four to six meals or snacks. As a guide protein portions of around 0.3 grams of protein per kilogram body weight are advised, as spreading the intake of protein over the day has been shown to be more effective for gaining muscle mass. In practice this means about 20 grams protein per meal or snack divided between breakfast, lunch, dinner, just before going to sleep and after exercise.

After exercise

Research has shown that the best time for strength athletes to consume a protein-rich food or drink is within 30 minutes to 2 hours after exercise. This is when the muscles are most receptive to recovery nutrition and the body can make optimum use of the proteins for muscle repair and regeneration and gaining muscle mass.

daily diet for a **strength athlete**

> Start the day with a good breakfast providing sufficient protein. This gives a powerful start to a training day.

Almost everything we eat and drink provides energy. The amount of energy a person requires depends on a number of factors including age, body mass and level of exercise intensity. On average, an adult man uses 2500 kcal per day and an adult woman 2000 kcal. A person participating in intense training for strength sports would need a higher energy intake. The example daily menus given on the next pages are designed to meet the nutritional requirements for males and females who actively participate in strength sports. Would you like to find out more about your personal requirements? A registered (sports) dietitian/nutritionist can help you.

what does **a man** need to eat?

This is an example daily meal plan for an active 35 year old male strength athlete, weighing 85 kilos and height 1.80 m. The menu provides 2983 kcal, 21 percent of energy as fat, 430 grams carbohydrate and 158 grams protein.

breakfast

- Sandwich of 2 slices of wholemeal bread with cheese spread and sliced cucumber
- 1 bowl of low fat thick strained yoghurt (150 ml) with 2 tbsp of muesli and 2 tbsp of raisins
- 1 mandarin
- Water or coffee/tea with milk (no sugar)

energy	534 kcal
carbohydrate	89 g
protein	39 g

between meals

- 1 pear
- 1 wholemeal fruit bun
- 1 slice of wholemeal bread with margarine and jam
- Water or coffee/tea with milk (no sugar)

energy	404 kcal
carbohydrate	74 g
protein	10 g

lunch

- 1 toasted sandwich made with 2 slices of wholemeal bread and a slice of 30% fat cheddar cheese
- 1 small wrap with cottage cheese and slices of tomato
- 1 wholemeal cracker with fruit spread
- 1 bowl of raw vegetables
- 1 glass of semi-skimmed milk (150 ml)

energy	585 kcal
carbohydrate	81 g
protein	32 g

between meals

- 1 slice of ginger cake
- 1 wholemeal cracker with goat's cheese
- 1 small handful of assorted nuts and raisins
- 1 small bunch of white grapes
- Water or coffee/tea with milk (no sugar)

energy	349 kcal
carbohydrate	47 g
protein	10 g

training 45 – 75 min

- Water

dinner

- 5 serving spoons of wholemeal pasta
- 1 chicken breast, grilled (100 g)
- Stir-fry vegetables with oriental style sauce (200 g)
- Water

energy	590 kcal
carbohydrate	78 g
protein	47 g

before going to sleep

- High-Protein: Powershake with banana and peanut butter

energy	478 kcal
carbohydrate	61 g
protein	21 g

powershake with banana and peanut butter

Ingredients

for 1 person

1 chopped banana

250 ml yoghurt

2 tablespoons of peanut butter or almond paste

1 tablespoon of honey

a generous pinch of cinnamon

if desired, some shredded almonds

Also required

blender

Nutritional value

energy	478 kcal
fat	19 g
carbohydrate	61 g
proteine	21 g

Preparation

Mix all ingredients, except the almonds, in a blender and pour the shake in a tall glass. If desired, top with shredded almonds.

Tip: For an extra cold shake use frozen bananas straight out of the freezer. Simply peel a banana, chop into pieces, store in a bag in the freezer. A quick and easy way to 'chill' your fruit smoothies and shakes.

what does **a woman** need to eat?

This is an example daily meal plan for an active 35 year old female strength athlete, weighing 70 kilos and height 1.70 m. The menu provides 2674 kcal, 23 percent of energy as fat, 367 grams carbohydrate and 146 grams protein.

breakfast

- Sandwich of 2 slices of wholemeal bread with cheese spread and slices of cucumber
- 1 bowl of low fat strained yoghurt (150 ml) with 1 tbsp of muesli and 2 tbsp of raisins
- 1 apple
- Water or coffee/tea without sugar and milk

energy	533 kcal
carbohydrate	87 g
protein	37 g

between meals

- 1 small bunch of white grapes
- 1 slice of gingerbread
- 1 small handful of assorted nuts and raisins
- Water or coffee/tea without sugar and milk

energy	313 kcal
carbohydrate	40 g
protein	9 g

lunch

- 1 toasted sandwich made of 2 slices of wholemeal bread and a slice of 30% fat cheddar cheese
- 1 small wrap with cottage cheese and slices of tomato
- 1 bowl of raw vegetables
- 1 glass of semi-skimmed milk (150 ml)
- Water or coffee/tea without sugar and milk

energy	493 kcal
carbohydrate	61 g
protein	30 g

between meals

- 1 kiwi
- 1 currant bun
- Water or coffee/tea without sugar and milk

energy	211 kcal
carbohydrate	39 g
protein	7 g

training 45 – 75 min

- Water

dinner

- 1 onion, fried
- 2 teaspoons of curry powder
- 3 serving spoons of rice
- 1 piece of grilled chicken (100 g)
- 2 serving spoons of boiled peas (frozen)
- 1 serving spoon of boiled carrots
- Water or coffee/tea without sugar and milk

energy	603 kcal
carbohydrate	79 g
protein	43 g

Recipe on the previous page!

before going to sleep

- High-Protein: Powershake with banana and peanut butter

energy	478 kcal
carbohydrate	61 g
protein	21 g

what is **your** daily intake?

	Portion size	Energy (kcal)	Carbohydrate (g)	Protein (g)
Fish, legumes, meat, nuts, dairy and egg				
Milk (semi-skimmed)	1 glass, 150 ml	69	7	5.2
Buttermilk	1 glass, 150 ml	56	7.5	5.1
Yoghurt (semi-skimmed)	1 glass, 150 ml	77	6.4	6.8
Quark (semi-skimmed)	1 portion, 150 ml	111	6.0	21.9
Cheese spread (reduced fat)	For 1 slice of bread, 15 g	23	1.2	2.2
Cheddar cheese (half fat) 20%	For 1 slice of bread, 20 g	55	0	6.5
Cheddar cheese (reduced fat) 30%	For 1 slice of bread, 20 g	63	0	5.6
Gouda cheese	For 1 slice of bread, 20 g	75	0	5.1
Cottage cheese	For 1 slice of bread, 20 g	21	0.6	1.9
Egg	1, 50 g	66	0	6.3
Tofu	1 slice, 75 g	55	0.5	6.1
Hummus, salt-free	For 1 slice of bread, 20 g	66	2.0	1.5
Lentils	1 serving spoon, 60 g	60	10.5	4.6
Salmon	1 piece, 105 g	228	0	21.4
Chicken breast	1 piece, 100 g	148	0	32.0
Unsalted nuts	1 small handful, 25 g	145	2.9	6.0
Peanut butter	For 1 slice of bread, 20 g	121	1.5	5.0
Spreading and cooking fats				
Margarine	For 1 slice of bread, 6 g	43	0	0
Olive oil	1 table spoon, 10 g	90	0	0
Drinks				
Water/tea	1 glass, 150 ml	0	0	0
Coffee (without sugar and milk)	1 cup, 125 ml	1	0.1	0.2
Vegetables and fruit				
Kale	1 serving spoon, 85 g	28	1.2	2.9
Broccoli	1 serving spoon, 50 g	14	1.4	1.6
Tomato	1 piece, 70 g	10	2.1	0.3
Avocado	½, 90 g	172	1.7	1.4

	Portion size	Energy (kcal)	Carbohydrate (g)	Protein (g)
Raw vegetables	1 bowl, 70 g	13	1.5	0.6
Blueberries	1 bowl, 100 g	40	9.1	0.9
Banana	1, 130 g	105	26.4	1.6
Apple	1, 135 g	69	15.7	0.8
Grain products and potatoes				
Bread (wholemeal)	1 slice, 35 g	76	14.7	3.3
Oatmeal	1 table spoon, 15 g	57	10.6	1.6
Muesli	1 table spoon, 15 g	54	10.6	1.5
Potatoes, mashed	1 serving spoon, 55 g	56	8.7	1.0
Pasta	1 serving spoon, 45 g	72	14.3	3.0
Brown rice	1 serving spoon, 60 g	94	21.2	1.9
Other foods				
Vegetarian burger, coated with breadcrumbs	90 g	169	11.7	11.1
Energy bar with muesli	1 piece, 25 g	100	18.1	1.2
Candy bar	1 piece, 20 g	95	12.9	1
Cheesecake	1 slice, 115 g	251	24.6	6.3
Gingerbread	1 slice, 25 g	92	20.8	0.9
Currant bun	1 bun, 60 g	168	31.6	4.8
Chocolate, dark	1 small bar, 25 g	133	11.7	1.6
Crisps, regular	1 bag, 25 g	125	14.5	1.8
Jam	For 1 slice of bread, 15 g	39	10.3	0.1
Brie	For 1 slice of bread, 30 g	91	0	5.0
Orange juice	1 glass, 200 ml	72	17.2	1.8
Drinking chocolate (semi-skimmed)	1 glass, 150 ml	111	16.4	5.5
Custard (semi-skimmed)	1 pot, 150 ml	142	24.8	6.0
Butter	For 1 slice of bread, 6 g	45	0	0
Sports-specific nutrition and supplements				
Sports drink, high-energy	1 bottle, 330 ml	218	54.4	0
Sports gel	1 sachet, 90 g	184	44.8	0.5
Protein drink	1 bottle, 330 ml	186	20	20

Source: Dietplan7 Forestfield software Ltd and data from the manufacturer.
NB: The composition may vary per brand. This table of food composition data gives you a general idea of your intake. For personal advice please contact a registered (sports) dietitian/nutritionist.

your **personal** advice

Our recommendations in this booklet are based on a person who is actively engaged in strength sports. For personal advice, please contact a registered (sports) dietitian/nutritionist. He or she can add in your personal requirements, so you have all the information required in one small, handy booklet.

Energy requirements kcal

Fat g

Carbohydrate g

Protein g

Fluids ml

Comments

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