

# THE ATHLETE'S FUEL: CARBO-LOADING FOR RUNNERS

Here's what to eat before and after your 10km  
and 21km runs

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**A** runner's goal during a race is to perform at their best during competition.

The aim of pre-event nutrition is to delay fatigue by providing adequate amounts of carbohydrate to fuel glycogen stores.

The depletion of body carbohydrate stores is a major cause of fatigue during exercise. Optimising carbohydrate status in the muscle and liver is a primary goal of competition preparation.

The pre-event meal which is one to four hours before the run must include carbohydrate rich food and drinks. It is usually low in fat and moderate in fibre to prevent gastrointestinal upset. The goals of this meal are to continue to fuel muscle glycogen stores if they have not been fully restored since the last exercise session, restore liver glycogen stores, prevent hunger and to include foods that are important to the athlete's psychology or superstitions.

Liver glycogen stores are labile and can be depleted in an overnight fast (when you sleep), therefore eating carbohydrate rich foods in the hours before the race is crucial.

Carbohydrate loading is only necessary for events that last for 90 minutes or longer. This is usually the case for a 21km race. The duration of a carbo-loading regime would last for three to five days prior to the event. To be technical, the runner would require 7-10g/kg body weight of carbohydrate per day. This means 490 to 700 grams of carbs a day for a 70kg athlete. That is a significant amount of food. (see next page)

## High Carbohydrate Diet For A 70kg Man

Meal	Description of food	Portion Size
Breakfast	Low-fibre breakfast cereal (cornflakes) Low fat milk Banana Orange juice	3 cups 1 ½ cups 1 medium 250ml
Snack	Toasted bread Honey	1 slice Thick spread
Lunch	Bread (Filling as desired) Yoghurt Soft drink	4 slices 200g 1 can (330ml)
Snack	Banana smoothie: Low fat milk Banana Honey Cereal bar	1 cup 1 medium 1 tbsp 1
Dinner	Rice Chicken/fish Bread Cordial	2 cups 90g 3 slices 2 glasses
Snack	Toasted bread Jam Sports drink	2 slices Thick spread 500ml

3400kcal, 590g carbohydrate, 125g protein and 60g fat

Carbohydrate loading for a 10km run is not necessary as the timing is usually less than 90 minutes and in most cases under 60 minutes. For a 10km run, the pre-event meal four hours and the hour before the race is more crucial.

### For both runs: Boost the carbohydrate and not the fat.

- Eat at least 2 servings of fruit a day.
- Bread and pasta are carbohydrate foods.
- Go easy on the cheese and butter.
- Starchy vegetables such as potato, sweet potato, yams, peas and corn are considered carbohydrate foods. Have them steamed and omit the butter and sour cream.
- Choose low fat milk and yoghurt.
- Steamed rice is better than fried rice.
- Breakfast cereals make great carbo loading meals. Just avoid the toasted versions, e.g. toasted muesli or granola
- Banana sandwiches are great energy snacks.

### Meal 3-4 hours before run:

- 2 slices of bread with jam or honey and milk
- Baked potato, low fat cheese and a glass of milk

- Baked beans on 2 slices of toast
- Breakfast cereal with low fat milk
- 2 slices of bread with cheese/meat filling and 1 medium banana
- 1 and half cups of pasta with a tomato-based sauce
- 1 and a half cup of rice with lean meat and vegetables

### Meal less than 1 hour before a run:

- Sports drink
- Liquid meal supplement
- Carbohydrate gel
- Cordial
- Sports bars
- Hard candy

### Recovery Meal

The recovery meal is to restore muscle and glycogen stores and to replace fluid and electrolytes in sweat. Effective refuelling begins after a substantial amount of carbohydrate has been consumed. The maximum effective recovery time is 30 minutes after the run. This meal must be carbohydrate-rich with some protein and fluids must be consumed too. The athlete should aim to consume 50-100grams of carbohydrate immediately after exercise and repeat after two hours for the 21km run.

## RICE VS PASTA

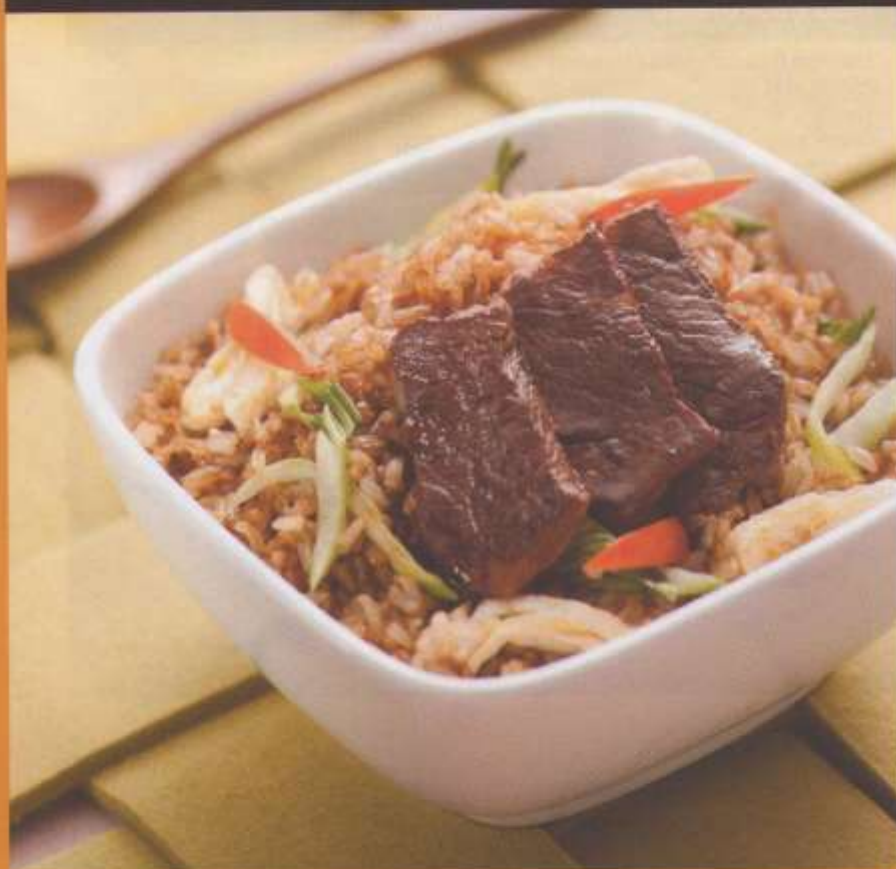
The glycemic index of pasta and long grain rice are 41 and 56 respectively. This difference is mild therefore they can be used interchangeably for pre-event meals. The best ways to eat them are with low fat ingredients such as tomato based sauces and lean meat with vegetables.

## DID YOU KNOW?

- That carbohydrate loading can result in a body mass gain of 2kg? This is positive as it reinforces that their glycogen stores are getting well prepared for the race;
- In the Guinness Book of Records in 1973, Dr Ronald Alkana ate 17 bananas in 2 minutes;
- Realistically, runners are only able to replace 50% of fluid losses during the run.



## RECIPES FOR PRE 10KM RUN



## BEEF TERIYAKI WITH BOK CHOY RICE

## Ingredients

400g lean beef rump steak, cut into 3cm pieces  
 ½ cup teriyaki marinade  
 400g cooked rice  
 Olive oil cooking spray  
 2 eggs, lightly beaten  
 200g baby bok choy, leaves separated, thinly sliced

## Directions

1. Add 2 tablespoons marinade to the beef. Refrigerate for 30 minutes, if time permits.
2. Heat a non-stick frying pan or chargrill pan over medium-high heat. Cook beef for 6 minutes for medium doneness. Put aside.
3. Heat a wok over medium heat. Spray with oil. Add eggs. Stir-fry for 1 minute or until scrambled. Transfer to a plate.
4. Spray wok with oil. Add bok choy stems. Stir-fry for 1 minute.
5. Add rice, eggs, bok choy leaves and remaining 2 tablespoons marinade.
6. Stir-fry for 1 to 2 minutes or until rice is warmed through. Serve rice with beef.

## Nutrition Information Per Serving

Serving Size: 476g

Nutrient	Per Serving
Energy (kcal)	419
Protein (g)	39.7
Fat (g)	134
Saturated Fat (g)	4.3
Cholesterol (mg)	173
Carbohydrates (g)	34.6
Fibre (g)	2.2
Sodium (mg)	677

## BEEF PASTA STIR-FRY

## Ingredients

2 cups wholemeal pasta (cooked)  
 225g lean beef, cut into strips  
 ½ tbsp olive oil  
 ½ cup broccoli flowerets  
 ½ cup cauliflowerets  
 ½ cup sliced celery  
 ½ cup coarsely chopped cabbage  
 1 medium carrot, thinly sliced  
 1 small onion, thinly sliced  
 ¼ cup fresh bean sprouts  
 2 tbsp teriyaki or sodium-reduced soy sauce

## Directions

1. In a large non-stick skillet or wok, stir-fry beef in oil for 5-6 minutes or until no longer pink. Add vegetables; stir-fry for 3-4 minutes or until crisp-tender.
2. Add in pasta and teriyaki sauce. Stir well.
3. Serve immediately.

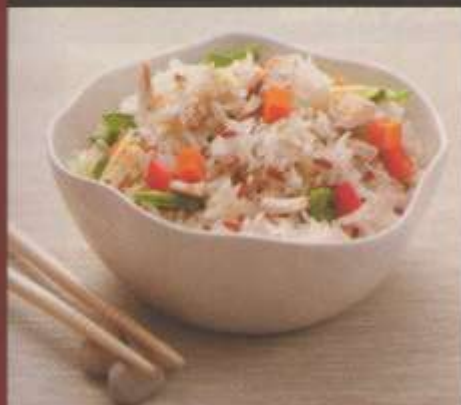
## Nutrition Information Per Serving

Serving Size: 330g

Nutrient	Per Serving
Energy (kcal)	456
Protein (g)	376
Fat (g)	101
Saturated Fat (g)	2.9
Cholesterol (mg)	66
Carbohydrates (g)	52.9
Fibre (g)	14.7
Sodium (mg)	843



## RECIPES FOR PRE 21KM RUN



### ASIAN CHICKEN FRIED RICE

#### Ingredients

½ tsp olive oil  
¼ onion  
200g cooked chicken meat, cubed  
1 tbsp soy sauce  
½ small carrot, diced  
½ stalk celery, chopped  
½ medium red bell pepper, diced  
½ cup of snow peas, halved  
¼ medium green bell pepper, diced  
3 cups cooked brown rice  
2 eggs

#### Directions

1. Heat oil in a large skillet over medium heat. Add onion and sauté until soft, then add chicken and 1/2 tbsp soy sauce and stir-fry for 5 to 6 minutes.
2. Stir in carrots, celery, red bell pepper, snowpeas and green bell pepper and stir-fry another 5 minutes. Then add rice and stir thoroughly.
3. Finally, stir in eggs and 1/2 tbsp soy sauce, heat through and serve hot.

#### Nutrition Information Per Serving Serving Size: 399g

Nutrient	Per Serving
Energy (kcal)	511
Protein (g)	35.5
Fat (g)	13.9
Saturated Fat (g)	4.2
Cholesterol (mg)	222
Carbohydrates (g)	641
Fibre (g)	3.9
Sodium (mg)	860

### HEALTHY CHICKEN ALFREDO PASTA

#### Ingredients

2 cup wholemeal pasta (dry weight)  
400g chicken breasts, remove skin and cut in chunks  
½ cup tomato, chopped  
1 cup mushrooms, sliced  
2 garlic, minced  
2 tbsp dried basil  
3 tbsp cooked bacon, chopped  
220g no added salt tomato sauce  
2 tbsp parmesan cheese  
2 tsp olive oil

#### Directions

1. Cook pasta according to package directions.
2. Sauté the chicken in olive oil until browned.
3. Turn chicken and add tomato, mushrooms, and garlic and cook on medium heat until the mushrooms start to darken. Add basil, bacon, tomato sauce, and Parmesan cheese.
4. Heat on low for 15 minutes.
5. Remove from heat, mix well and serve over cooked pasta.

#### Nutrition Information Per Serving

Serving Size: 477g

Nutrient	Per Serving
Energy (kcal)	586
Protein (g)	51.6
Fat (g)	14.9
Saturated Fat (g)	4.3
Cholesterol (mg)	121
Carbohydrates (g)	60.6
Fibre (g)	12.8
Sodium (mg)	1022





## ENERGISE

### Examples of meals containing 50-100grams of carbohydrate:

- 250-300ml liquid meal supplement
- 250-300ml low fat milk shake or fruit smoothie
- 600ml low fat flavoured milk
- 1-2 sports bars
- 2 cups of breakfast cereal with milk
- 1 large cereal bar with 200grams fruit-flavoured yoghurt
- 220grams baked beans on 2 slices of toast
- 2 slices of bread with cheese/tuna with 1 large banana
- 2 slices of bread with a thick spread of peanut butter and a glass of milk
- 300grams baked potato with cottage cheese filling and a glass of milk

### Fluid Replacement Strategies

#### Before the 10km run:

- Beverages that are suitable would be plain water or sports drinks. Sports drinks are formulated to contain 5-8% carbohydrate with electrolytes.
- It should be cool, 15-20 degrees Celsius for enhanced palatability and absorption.
- 30 minutes prior to the run, drink 300ml of fluid.

#### Before the 21km run:

- Sports drinks would be the best suited as it contains the much needed carbohydrate as well as electrolytes. Water is nutritionally inadequate to replace the impending losses.
- Drink 600 to 1000ml of sports drink 30 minutes before the race as tolerated to begin the race in a well hydrated state.

#### After both runs:

- During training sessions, the runner should monitor his/her own body weight and observe weight changes before and after each run. It is safe to assume that 1kg weight loss is equivalent to 1 litre of fluid loss. This volume must be replaced with fluids.
- For the 10km run: water is adequate to replace fluid losses.
- For the 21km run: sports drinks, cordials, milk shakes, liquid meal supplements and fruit juices (as tolerated) can be used. **R**

Jaclyn Reutens is a certified sports dietitian with a degree in Nutrition and Dietetics.

## RECOVERY SMOOTHIE FOR BOTH 10KM AND 21KM RUNS



### TRIPLE BERRY SMOOTHIE RECIPE

#### Ingredients

¼ cup strawberries  
¼ cup blueberries  
¼ cup raspberries  
1 medium banana  
½ cup low fat yoghurt  
1 cup low fat milk  
½ cup ice cubes

#### Directions

Blend the banana, ice, yoghurt, milk, and other berries together until a smooth drink is formed. Pour into a cup and enjoy a very fruity, healthy smoothie.

#### Nutrition Information Per Serving Serving Size: 601g

Nutrient	Per Serving
Energy (kcal)	312
Protein (g)	22.6
Fat (g)	11
Saturated Fat (g)	04
Cholesterol (mg)	17
Carbohydrates (g)	52
Fibre (g)	5.5
Sodium (mg)	246