



# Guidelines for Healthy Food Onboard Merchant Ships

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## 1. Introduction

The International Seafarers' Welfare and Assistance Network, of seafarers, has launched "HEALTHY FOOD" as one of the topics in the Seafarers' Health Information Programme, sponsored by the Shipowners' Club.

The ship, where seafarers not only work but spend all their time during a voyage, is seen as the best place for health intervention.

The availability of healthy food choices gives seafarers the opportunity to change to a more healthy diet and make a big difference to their health and well-being.

Access to healthy food in a healthy environment where high standards of food safety and hygiene are firmly enforced is essential to this regime.

Mealtimes should be viewed as an enjoyable social experience with good healthy food options to maintain a healthy lifestyle.

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## 2. Tips for Adopting a Healthy Eating Regime

Encourage and stimulate the crew members to eat healthily. Pay attention to healthy food in meetings, at medical check-ups etc.

Use a broad approach to inform and motivate the seafarers onboard. Offer variation in food. A healthy menu is not necessarily more expensive than an unhealthy one.

The whole vessel has to be behind the programme: captain and officers have to show their commitment.

It takes time to implement a healthy food programme onboard. Behavioural changes take several months and benefits may take even longer to become measurable.

Make a systematic plan of what you want to achieve in respect to healthy food and eating onboard and over what period of time. Involve key persons like the cook and ship chandler and establish a company policy on health.

Budget for the programme, make sure the activities adopted are evaluated and be prepared to adapt the plan if some initiatives are not as successful as others.

Announce the plan and the changes, organise an event to celebrate the start of the plan such as a special menu or distribute apples or other fruit.

Ensure the menu of the coming week is on display and remember to stress the healthy alternatives.

Provide healthy drinks and snacks. Also provide information (posters or leaflets) on healthy food in every place where food is available onboard.

Ask crew members to fill out questionnaires to assess the success and strengths of the plan. Give crew members the possibility to suggest and try new recipes.

Keep track of the quantities of each food category consumed onboard and inform the crew about any imbalances found.

Link HEALTHY FOOD with FOOD SAFETY and hygiene in the galley. Provide FIT ONBOARD and other SHIP health initiatives.

Ensure water is available free of charge.

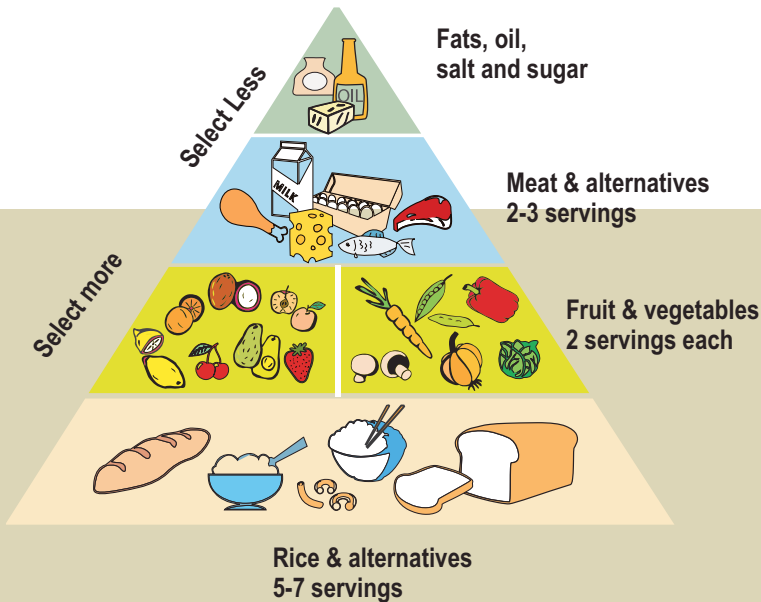
## 3. Basis of Healthy Food

Meals have to supply enough proteins for formation and repair of body tissues, adequate supply of minerals to reinforce body tissues and sufficient carbohydrates and the right amount of fats for energy. There must also be vitamins and anti-oxidants to keep the body's functions in good order. Crucially good quality drinking water needs to be drunk in large quantities, at least 1,5 litres per day.

Five Tips for Healthy Food habits :

1. **Balance is the key message**
2. **Eat plenty of fruit (3 servings) and vegetables (300 g), potatoes and whole grain products**
3. **Reduce the amount of meat (+/- 100 g), fat (< 35%), sugar and salt you eat**
4. **Drink plenty of water and milk products**
5. **Eat breakfast**

A good tool in ensuring a balanced diet is a food pyramid. As food habits vary a lot throughout the world, it is difficult to give a universal practical guide to healthy eating and the preservation of good health but the essential elements are explained below.



### Rice, whole grain products and potatoes

At the base of the pyramid are rice, noodles, bread, pasta, cereals, potatoes, porridge, lontong, chapati, naan, idli, thosai and biscuits. These foods are excellent sources of complex carbohydrates, vitamins, minerals and dietary fibre. It is recommended that 5 servings a day be consumed, preferably including 1 serving of wholegrain products. An average person eats 175-420 g of bread (5-12 slices), 210-350 g potatoes (3-5 pieces) or 180-300 g of rice per day. When working in shifts this group is better taken towards the end of the shift, instead of at the beginning.

1 serving =

- \* 1 slice of bread
- \* ½ Cup (C.) cooked grains, pasta, rice, etc.
- \* 1 C. of most cold cereals
- \* ¼ C. low fat granola, Grape Nuts, Muesli
- \* ½ C. hot cereals
- \* 3-4 C. low fat microwave popcorn
- \* ½ large flour tortilla
- \* 6 saltine crackers
- \* ½ hamburger roll or small bagel
- \* ¼ of a large muffin or bagel
- \* ½ pita

### Fruit

This group consists preferably of fresh fruit but also of dried, frozen, canned fruit and fruit juices. They are rich sources of vitamins A, C, potassium, fibre (excluding fruit juices) and flavonoids. Eat 2 to 3 servings a day, especially the deeply or brightly (yellow, orange) coloured ones.

1 serving =

- \* 1 piece of medium fruit (e.g., apple, orange, peach)
- \* ½ piece of large fruit (e.g., banana, grapefruit)
- \* ½ C. of cooked or dried pieces of fruit
- \* ½ C. of fruit juice (unsweetened)

### Vegetables

This group consists of leafy, non-leafy, cruciferous and root vegetables. They are rich sources of vitamins A, C, folic acid, minerals such as calcium, iron, potassium, fibre and phyto-chemicals. Eat 2 servings a day and include 1 serving daily of dark green or yellow-orange vegetables.

1 serving =

- \* ½ C. cooked vegetables
- \* 1 C. vegetable juice
- \* 1 C. raw vegetables

### Fibre

Fibre is the indigestible carbohydrate found in plant cell walls and is either soluble or insoluble. Soluble fibre acts like a gel and insoluble fibre adds bulk to or softens stools. A healthy fibre content of the diet can be achieved by eating fruits, vegetables, beans and whole grains. Also, when eating whole grains, increase your fluid intake as insoluble fibre absorbs fluid from your intestines.

#### BENEFITS OF FIBRE

- Fibre is filling without being fattening
- Fibre slows fat absorption
- Fibre reduces cholesterol
- Fibre helps prevent constipation
- Fibre protects against colon cancer
- Fibre makes blood sugars more stable

To get the full health benefits of dietary fibre, adults should eat 25 to 35 grams of fibre each day.

Consume more whole grains, whole fruits and vegetables. Much of the fibre is in the peel. Nearly all varieties of beans are a rich source of fibre. Spinach and romaine lettuce are healthy choices. White bread and white rice have had the fibre processed out of them.

### Meat, fish, and alternatives

This group includes meat, poultry, fish and seafood. Alternatives are soya, pulses, nuts and seeds. These foods are excellent sources of protein, iron and zinc. 100 g per day is sufficient.

1 serving =

- \* 100 g meat, poultry, or fish. 100 g is about the size of a deck of cards or the palm of your hand.
- \* ½ C. cooked beans, legumes or nuts
- \* 2 eggs or 4 egg whites

### Milk, dairy-products and alternatives

These foods are excellent sources of protein, calcium and B vitamins. Drink 2 to 3 glasses of skimmed or half-fat milk or yoghurt per day. And try to eat 2 servings of cheese. Remember to bear in mind the fat quantity in these foods and to try and use low fat products where possible.

1 serving =

- \* 250 g or 1 C. of skimmed or half-fat milk or yoghurt.
- \* 50 g hard cheese; lower-fat versions are recommended (you will need to read the labels)
- \* ½ C. low fat cottage cheese

### Fats, oil, salt & sugar

Although fat gives energy and contains essential vitamins A,D,E and K, too much of it can lead to increased weight and increased cholesterol levels. Therefore it is important to keep an eye on the amount of fat you eat, so that you don't eat too much. This group contains chips, mayonnaise, fat sauces, cream, etc. and should be taken in limited quantities.

High salt consumption can raise blood pressure which creates a greater risk of developing heart disease.

Sugary food and drinks are loaded with calories and provide little by way of nutrition. Such foods are also a major source of tooth decay.

1 serving =

- \* 1 teaspoon oil, butter or margarine
- \* 2 teaspoons Tahini paste
- \* 1 tablespoon regular salad dressing

### Water

Although water does not give us energy and is not part of this food pyramid, it is indispensable for our body.

In normal circumstances 1.5 litres should be consumed per day. In warm climates, when undertaking strong physical activity and playing sport it is necessary to drink more fluids. It is best to drink water from unopened bottles if the quality of drinking water is uncertain. Not everybody can drink all types of mineral water as some contain a high level of minerals. Variation is the key !

Products containing caffeine, such as tea, coffee and soft drinks should not be drunk more than 3 times per shift and should be avoided five hours before sleeping.

## 4. Healthy Food and Safety

Although it remains difficult to estimate the impact of poor nutrition on occupational accidents, the connection between fatigue and nutritional deficiency (iron and vitamin) is well known.

Iron deficiency accounts for loss in productivity and results in fatigue and loss of dexterity.

Lack of food can induce drowsiness and is a risk onboard ship.

Hypoglycaemia (low blood sugar) can shorten attention spans and slow down the processing of information.

Snacking on sugary foods and drinks, gives a short surge in energy but can leave the body more tired afterwards.

## 5. Healthy Food and Shift work

Shift work means that meals cannot be taken at "normal" regular times. Shift work can interfere with the standard eating routine.

Poor habits can lead to broken sleep, tiredness, and digestive problems.

Light meals are the best solution : soups, salads and lean meat. At the beginning of the shift, eat protein rich food

like yoghurt, milk and lean meat. Later on in the shift eat carbohydrates like bread, potato salad, pasta salad, fruit and whole grains.

- Try and eat less spicy food, fried and fatty food, and sweets. Try and cut back on caffeine intake, try fruit juice for a change.
- Eat light snacks like fruit, yoghurt or a glass of milk. Eat a meal that provides enough energy before the shift starts.

We all know smoking is bad for your health. Try and cut down and consider others when you light up. Never smoke when others are eating.

Take regular exercise, if possible at least 30 minutes per day. (See SHIP topic "FIT ONBOARD" at [www.seafarers-health.org](http://www.seafarers-health.org)).

If you are working in the afternoon or evening shifts : eat a warm meal at noon instead of in the middle of the shift.

If you are working at night try and eat "breakfast" in the late afternoon or early evening. After work eat a light snack to avoid going to bed feeling hungry.



## 6. Caffeine

Caffeine is a natural component of coffee (75 mg per cup) and tea (30 mg per cup), today also energy drinks and even some sports drinks contain varied levels of caffeine up to 80 mg per unit, compared to the 23 mg in a Coca-Cola which is a lot. Some herbal stimulants can contain naturally occurring caffeine, especially guarana and mate.

Caffeine stimulates the short term memory, e.g. to memorize a telephone number before writing it down. It also keeps one awake, but this does not lead to better physical performance.

Duty and watch keeping can raise the consumption of coffee or tea drastically and beside the presumed stimulating effect of caffeine, this also has negative effects.

Too much caffeine can cause side effects such as tension (stress), restlessness, trembling, insomnia, headaches and heart palpitations.

The maximum dose of caffeine is 400 mg per day. Try to drink a maximum of 3 cups of coffee or tea per shift !



## Vitamins

Food loses a lot of vitamins during the time left between storage and preparation. The time between harvest and consumption is a determining factor, but the temperature at which food is stored is also important. Vegetables that are frozen shortly after harvesting do not lose more vitamins than so called fresh vegetables. Furthermore, vegetables will retain more vitamins if they are only cooked for a short period. The shorter the cooking time, the more vitamins they will retain!

### > Vitamin A

#### *Function :*

- > Necessary for the eyes to function correctly and for adapting to darkness
- > Necessary for the formation of skin cells, hair and gums
- > Supports the immune system
- > Plays a role in growth, fertility and reproduction

#### *Sources :*

- > Liver, meat, butter, margarine, fat fish, milk and milk products, cheese and eggs.
- > Vegetables such as carrots, cabbage, endive and yellow or orange fruit

### > Vitamin D

#### *Function :*

- > Necessary for the uptake of calcium and formation of bone tissue
- > For strong bones and healthy teeth
- > Limits osteoporosis

**Sources :**

- > Butter, margarine, meat, fat fish, milk and milk products, cheese and eggs.
- > Vegetables such as cabbage and yellow or orange fruit

**Good to know**

- > Vitamin D3 is produced in the skin by sunlight, it is recommended that people spend at least 15 minutes per day in the open air, to ensure that their bodies get the necessary amount of vitamin D3

**> Vitamin E**

**Function :**

- > A role in many enzymatic reactions
- > Anti-oxidant activity, especially on Poly Unsaturated Fatty Acids (PUFA)
- > Protection of cells and cell membranes

**Sources :**

- > Plant oils rich in PUFA: nuts, seeds, vegetables, fruit, bread and whole grain products

**> Vitamin K**

**Function :**

- > Necessary for blood coagulation
- > Active in bone formation

**Sources :**

- > Vitamin K1: Vegetables, fruit, milk and milk products, meat, eggs and grain products
- > Vitamin K2: produced by bacteria in the intestines

**> Vitamin C**

**Function :**

- > Formation of collagen, necessary for the efficient healing of wounds
- > Metabolism of carbohydrates, proteins and fat
- > Muscle- and brain metabolism
- > Control of bone formation
- > Synthesis of hormones
- > Improves the absorption of iron from food
- > Supports the immune system
- > Anti-oxidant activity

**Sources :**

- > Fruit (citrus, kiwi, guave, berries: strawberries, raspberries)
- > Vegetables: especially cabbage and (whole) potatoes

**> Vitamin B1**

**Function :**

- > Essential for energy production, mainly by carbohydrate metabolism
- > Supports the correct functioning of the nervous system

**Sources :**

- > Bread and whole grain products, potatoes, vegetables, meat, milk and milk products

**> Vitamin B2**

**Function :**

- > Essential in metabolism of carbohydrates, proteins and fat
- > Mobilizes iron
- > For healthy skin

**Sources :**

- > Milk and milk products, meat, vegetables, fruit, bread and whole grain products

**Good to know**

- > Light sensitive: e.g. it is advisable that milk be stored in a dark place

**> Vitamin B3**

**Function :**

- > Important role in energy metabolism
- > Involved in enzymatic processes in the cells

**Sources:**

- > Meat, fish, whole grain products, vegetables and potatoes

**> Vitamin B5**

**Function :**

- > Important role in energy metabolism, especially carbohydrate and fatty acid metabolism
- > Important for the synthesis of fatty acids and cholesterol

**Sources :**

- > Meat, eggs, whole grain products, pulses, milk and milk products, vegetables and fruit



### > Vitamin B6

**Function :**

- > Important role in energy metabolism, especially amino acid metabolism
- > Helps to reduce magnesium shortages
- > Control of hormone activities
- > Production of red blood cells
- > Necessary if the nervous system is to function well
- > Metabolism of fatty acids and phospholipids

**Sources :**

- > Meat, eggs, fish, bread, whole grain products, potatoes, pulses, vegetables, milk and milk products, cheese

### > Vitamin B8

**Function :**

- > Important role in energy metabolism
- > Necessary for formation of fatty acids
- > Healthy skin and healthy hair

**Sources :**

- > Eggs, liver, milk and milk products, nuts and peanuts

**Good to know :**

- > Sometimes called vitamin H

### > Vitamin B11

**Function :**

- > Important for production of red blood cells
- > Involved in the production of histidine, glycine, methionine, protein synthesis, DNA and RNA synthesis
- > Important for growth and preservation of body cells

**Sources :**

- > Whole grain products, bread, green vegetables, fruit, milk and milk products

### > Vitamin B12

**Function :**

- > Important for the production of red blood cells
- > Important for the normal function of the nervous system

**Sources :**

- > Can only be found in animal products, vegetarian products do not contain Vitamin B12
- > Meat, fish, milk and milk products, cheese and eggs

## 7. Anti-oxidants

- When the body is metabolising normally, free radicals are formed which have a negative impact on the body's functions. Smoking stimulates the production of free radicals. High levels of free radicals can damage the body's cells, cause heart and vascular diseases and cancer. There is evidence to suggest that they also speed up the ageing process and can lead to cataracts and other eye diseases.
- Anti-oxidants neutralise the harmful actions of free radicals, and as such, have a positive effect on health. In addition to vitamins, there are other bio-active products such as flavonoids and minerals for example, selenium, which act as anti-oxidants.
- The amount of anti-oxidants we need on a daily basis to prevent disease is not yet clear to medical professionals. Research is still underway on the use and safety of anti-oxidant preparations. Therefore healthy food habits are considered sufficient.

## 8. Breakfast

Breakfast is the most important meal of the day :

- It provides a good start of the day and a healthy breakfast delivers 20 - 25 % of the total energy for a day.
- Breakfast helps to improve concentration and dexterity throughout the morning.
- People, who skip breakfast tend to eat more snacks and often overcompensate for the loss of energy by eating a large lunch, rich in fats and sugar.
- Carbohydrates found a lot in bread, grain products, rice and pasta are an excellent source of energy.
- Milk and milk products are good sources of protein at breakfast.
- It is recommended that you eat several pieces of fruit per day. It is a good idea to start the day with fruit or fruit juice and also stewed fruit or compote, as it is not always possible to get the full quota of nutrients from fresh fruit.

## 9. Fats

- Some fats are essential for your health.
- Fats in foods are made up of 4 different types of fatty acids

- Polyunsaturated fats
- Monounsaturated fats
- Saturated fats
- Trans fats
- Trans fats are found naturally in some animal-based foods, but are also formed when liquid oils are made into semi-solid fats like soft and hard margarine. Scientific evidence has shown that dietary trans fats can increase your risk of developing heart disease.
- Polyunsaturated fats are healthier than monounsaturated but today a distinction is made: omega 3-, omega 6- and omega 9 fatty acids, which are types of polyunsaturated fats.
- Omega 3 is an essential fat and plays a crucial part in the development of the brain and nervous system ; it prevents cardiovascular disease, and supports the immune system.
- In general, the types of food eaten in the West do not contain enough omega 3 fatty acids. The balance between omega 6 and omega 3 is particularly important as both use the same enzymes in metabolism.
- Omega 3 is found in algae, plankton, rapeseed, linseed, walnut or soya oil. Fat fish and fish oil contain a lot of omega 3 fatty acids.

## 10. Snacks

- If snacks are available during the day, always ensure that a healthy alternative such as fruit or yoghurt is available and try to encourage the crew to go for one of these options as opposed to a less healthy snack.
- Do not offer snacks rich in fats and sugar.

## 11. Working in Extreme Heat - Salt and Fluid Supplements

- A person working at an intensive pace or in a very hot environment, such as the engine room, loses water and salt through sweat. This loss should be made up by consuming more water and salt.
- Fluid intake should equal fluid loss; what goes out must come in. On average, about 1 litre of water each hour may be required to replace the fluid loss. Plenty of cool (10°-15°C) drinking water should be readily available and workers should be encouraged to drink water every 15 to 20 minutes even if they do not feel thirsty. Sports drinks specifically designed to replace

body fluids and electrolytes can also help workers remain properly hydrated.

- A worker used to, or acclimatized to, lifting heavy loads or working in high temperatures, sweats more “efficiently” - they sweat sooner and sweat to a greater degree, but they lose less salt in their sweat than labourers who are not used to such work. For this reason, the salt in a normal diet is usually enough to maintain the electrolyte balance and keep the body working well.
- For workers who are not used to manual labour or working in high temperatures, and who will therefore lose more salt in their sweat, it may be a good idea to use extra salt in your food. Salt tablets are not a suitable alternative, however, as the salt does not enter the body system as fast as water or other fluids. Too much salt can cause body temperature to rise and can also make someone feel thirsty or sick. Workers on salt-restricted diets should talk to their doctor about how much salt they need for their job.
- Some drinks can cause more urine output than the amount of fluid consumed: essentially, more comes out than what goes in. If you want to stay healthy, comfortable, and hydrated in a hot environment, avoid or limit caffeinated drinks such as coffee and some sodas.
- Soft drinks and energy drinks deliver relatively high levels of energy (extra sugar) but do not have nutrient value (vitamins and minerals). They are simply “empty” sources of calories.
- Moreover the use of soft drinks is bad for the teeth and may enhance intestinal problems (IBS).
- Light or dietary drinks contain less sugar but are high in artificial sweeteners which do not contain that many calories. The use of these drinks should be limited to a maximum of 2 to 3 glasses a day.

*Water is the best source of liquid !*



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If you want to do more and get more information and material to improve the condition of seafarers onboard, go to [www.seafarerswelfare.org](http://www.seafarerswelfare.org) where you can download guidelines, posters and leaflets on other health topics for seafarers : Food Safety, Fit onboard, Safe Travel, Healthy Food, Malaria, Overweight and HIV/AIDS.