

# Crew Fitness and Well-Being

## Contents

Proper Nutrition .....	2
Weight Problems .....	3
Changing Habits.....	3
Measuring Fitness .....	3
General Exercise Regime.....	4
Exercise Tips .....	5
Exercise to Strengthen Back Muscles .....	5
Benefits of Core Strength .....	5
Core Muscle Exercises .....	5
Working in Extreme Heat – Salt and Fluid Supplements .....	6
Eye Care .....	7

### Disclaimer

The purpose of this publication is to provide a source of information which is additional to that available to the maritime industry from regulatory, advisory, and consultative organisations. Whilst care is taken to ensure the accuracy of any information made available no warranty of accuracy is given and users of that information are to be responsible for satisfying themselves that the information is relevant and suitable for the purposes to which it is applied. In no circumstances whatsoever shall North be liable to any person whatsoever for any loss or damage whensoever or howsoever arising out of or in connection with the supply (including negligent supply) or use of information.

Unless the contrary is indicated, all articles are written with reference to English Law. However it should be noted that the content of this publication does not constitute legal advice and should not be construed as such. Members should contact North for specific advice on particular matters

# Crew Fitness and Well-Being

## Proper Nutrition

A life at sea is not always conducive to healthy eating, with changing shift patterns and long hours often encouraging seafarers to plump for a high-calorie, high-fat diet. Over a period of time, an excessive intake of such foods can lead to serious health problems.

It is widely accepted today that a well-nourished person is a healthy person. It is thus vital for the health and happiness of ship's crews that individual crew members look after their bodies, both at sea and ashore.

Proper nutrition, along with adequate rest and sleep, regular exercise and good hygiene all help to strengthen the immune system and a strong immune system in turn helps prevent diseases and improves health overall.

When referring to proper nutrition, this means a balanced diet. There should be sufficient protein for the 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 to keep the brain, nerves and other vital organs functioning.

Proper nutrition also includes the intake of safe drinking water; the recommended amount is normally quoted as 2 litres or approximately eight glasses of water every day.



Figure 1: Source - North

# Crew Fitness and Well-Being

## Weight Problems

One of the most immediate effects of over indulging in the wrong foods is weight gain. While this change in appearance may (or may not) be of personal concern, the underlying damage is potentially far more serious.

The health risks from being overweight include type 2 diabetes, coronary heart disease and stroke, metabolic syndrome, certain types of cancer, sleep apnoea, osteoarthritis, gall bladder disease and fatty liver disease.

There have been several recent instances where seafarers have tried slimming pills in a bid to lose weight but suffered serious consequences, including long periods of hospitalisation and permanent health issues.

## Changing Habits

A desire to be an optimum weight should not simply be for the sake of appearance, but arise from a wish to be healthy and happy. It is best achieved by making long-term changes to eating and activity habits, as follows:

- Choose healthy foods such as vegetables, fruits, whole grains and low-fat meat and dairy products.
- Eat just enough to be satisfied.
- Aim for at least 30 minutes of moderate intensity physical activity on most or all days of the week.

## Measuring Fitness

Most seafarers are aware of the dangers of obesity, heart disease and diabetes and that they can reduce the risks by eating healthily and exercising frequently. However, this can be hard to put into practice at sea.

Long hours, poor weather, no gym equipment or place to exercise, no control over the vessel's menus and easy access to food and drink at most times of the day and night are all obstacles that seafarers need to overcome to eat healthily and exercise frequently.

Good indicators of fitness level are resting heart rate combined with a step test. To measure resting heart rate, sit down for five minutes, take your pulse and then compare this against the table in Figure 2. If you do not know how to take a pulse, seek assistance from someone on-board who has completed a medical course.

Age	Heart rate at rest (heartbeats per minute)							
	Male				Female			
	Weak	Medium	Good	Excellent	Weak	Medium	Good	Excellent
20-29	86+	70-85	60-69	61 or less	96+	78-95	72-77	71 or less
30-39	86+	72-85	64-71	61 or less	98+	80-97	72-79	71 or less
40-49	90+	74-89	66-73	61 or less	100+	80-99	75-79	71 or less
50+	90+	76-89	68-75	61 or less	104+	81-103	76-83	71 or less

Figure 2: Source - International Committee on Seafarers' Welfare

# Crew Fitness and Well-Being

Once the resting heart rate test is completed, do a step test. Do not attempt the step test if the resting heart rate is in the weak category.

- Use a step 20–30 cm high.
- Stand about 30 cm away from the step.
- Place your hands on your hips.
- Keep your head and back straight.

- Step up and down repeating the following sequence: left foot up, right foot up, left foot down, right foot down.

Maintain normal breathing and continue the test as fast as possible for three minutes. After the test sit down for 30 seconds and measure your heart rate again by taking the pulse, and compare this against the table in Figure 3.

Age	Heart rate after step test – after 30 seconds rest (heartbeats per minute)							
	Male				Female			
	Weak	Medium	Good	Excellent	Weak	Medium	Good	Excellent
20-29	102+	85-101	75-84	74 or less	112+	93-111	87-92	86 or less
30-39	102+	87-101	79-86	78 or less	114+	95-113	87-94	86 or less
40-49	106+	89-101	81-88	81 or less	116+	95-115	89-94	88 or less
50+	106+	91-105	83-90	82 or less	118+	99-117	91-98	90 or less

Figure 3: Source - International Committee on Seafarers' Welfare

Once complete the two tests should give you some idea of your general level of fitness. They can also be used periodically during fitness programmes to check improvement. If either test result is in the weak category, consult a doctor before undertaking any further strenuous exercise or training.

## General Exercise Regime

After the fitness indicator has been completed it is time to start exercising. To get the most benefit from a training regime the aim should be to train above 60% of maximum heart rate, which is 220 minus age in years.

For example, a man aged 30 would have a maximum heart rate of  $220 - 30 = 190$  beats per minute, and he should aim to train with a heart rate of  $190 \times 60\% = 114$  beats per minute.

A gym is not necessary to train – there are lots of exercises that can be completed in small spaces without equipment. These include walking or running on the spot, lying on your

back and cycling in the air, using a step, press-ups, standing leg thrusts, small vertical jumps, 'swimming' on the spot, leg lifts, skipping and many more.

Every session should include a warm-up to get your heart rate up to 60% of maximum heart rate and to help prevent injuries. A typical on-the-spot session might include the following:

- 5 minutes warm up – walk or jog on the spot for around 5 minutes, exaggerating arm motions.
- 20 minutes training above 60% of your maximum heart rate.
- 5 minute warm down including controlled stretches – cool down with an easy walk or jog on the spot followed by some stretching.

During the training session, repeat a series of exercises until the time goal is reached. Each exercise should take about 20–25 seconds with a time between exercises of about 15 seconds. The following are examples of exercises that can be undertaken.

- Breast stroke – as in swimming, use large movements right round the body, keeping your elbows up. Move in reverse after first set.

# Crew Fitness and Well-Being

- Baby jumps – small jumps on the spot. Keep legs soft and springy and do not have straight legs as this may damage the knees.
- Front crawl – another swimming move, lean forward from the hips keeping your lower and upper back stable and straight throughout the movement. After 25 seconds do the same but in reverse.
- Step ups – step up and then down again. Increase the height of the step to increase intensity.
- Skipping – land on both feet as softly as possible. Try to establish rhythm and increase speed to increase intensity.

## Exercise Tips

Remember not to overdo exercise to start with, and enjoy the sense of well-being afterwards. A specific goal can be a good motivator, for example setting modest targets for improvement. These could be improvements in resting heart rate or the step test. Specific weight-loss goals can also be of benefit.

Make exercise part of your routine and fit it around the working day or watch-keeping pattern. Get others involved – having a group or even just one other training partner makes motivation much easier.

*Information for this article was provided by and used with the kind permission of the International Committee on Seafarers' Welfare.*

*International Committee on Seafarers' Welfare,  
Gresham House,  
53 Clarendon Road,  
Watford,  
Hertfordshire,  
WD171LA,  
UK*

*Tel: +44 1923 222 653,  
email: [icsw@icsw.org.uk](mailto:icsw@icsw.org.uk)  
website: [www.seafarershealth.org](http://www.seafarershealth.org)*

## Exercise to Strengthen Back Muscles

North receives many claims in relation to bad backs being suffered by seafarers – usually through injury caused during manual work. Spending some time strengthening this area may help avoid injury in the future. Some on-board exercises specifically aimed at avoiding back pain are suggested.

The so-called 'trunk' or 'core' muscles include those of the lower back and abdomen. When these muscles are in poor condition, additional stress is applied to the spine as it supports the body, and back injury or back pain is more likely.

## Benefits of Core Strength

The core muscles can benefit from being exercised together in a single session. Developing combined strength in the stomach and back can

- Reduce the likelihood of back-pain episodes
- Reduce the severity of back pain
- Protect against injury by responding efficiently to stresses.

A series of core muscle exercises are shown here. Remember to concentrate on technique, keep the pace slow and controlled at all times. A word of warning – do not start back exercises for the first time during an acute back-pain episode without first consulting a physician.

If the short routine is repeated twice a day, three to four times a week, benefit should be noticed within 2 to 3 months. The routine is based on increasing core strength and is not aimed at cardiovascular fitness or fat-burning

## Core Muscle Exercises

### Pelvic Tilt

- Lie on the floor with knees bent, feet parallel and arms to the side.
- Tighten lower abdominal muscles, pulling the navel and lower back toward the floor, without using buttocks or leg muscles.
- Hold for 5 seconds.
- Repeat 5 to 10 times.

# Crew Fitness and Well-Being

## Trunk Curl

- Lie on the floor with knees bent and arms crossed on the chest.
- Using upper abdominal muscles raise trunk of body off the floor slightly, to about 15 degrees.
- Hold for 5 seconds.
- Lower trunk slowly to the floor.
- Repeat 5 to 10 times.

To be effective, the motion should raise the chest rather than the head or neck, and only be a slight lift. Rising too far, to a sitting position, works leg muscles not the abdominal muscles.

## Legs Up

- Lie flat on your back and bring your knees up as close to your chest as you can manage.
- Keep your back flat and extend your legs down until you can feel your stomach working, then bring your legs back up.
- Keep the pace slow throughout.
- Repeat 5 to 10 times.

## Back Extension

Many of us work our abdominal muscles, but neglect to work the lower back, which can lead to muscle weakness and imbalance.

- Lie face down on a mat and place the hands on the floor or behind the head (more advanced).
- Contract the abdominal muscles and keep them contracted throughout the exercise.
- Squeeze the back to lift the chest a few inches off the floor.
- Lower the chest to the floor.
- Repeat 5 to 10 times.

## Tips

- Imagine that you are lengthening the torso as you lift the chest up.
- To add intensity, you can also lift the legs off the floor at the same time.

## Cat Stretches

- Get on your hands and knees. Your hands should be directly below your shoulders and your knees under your hips. Do not lock your elbows.
- Exhale and rock your hips under (imagine you are a dog putting its tail between its legs).
- Inhale as you release your tailbone out. Lift your chest and extend your spine long keeping your muscles tight.
- Repeat 5 to 10 times.

## Tips

Think of this as a good cat and angry cat. A good cat stretches its back and becomes long, the angry cat lifts its spine with its head down.

## Working in Extreme Heat – Salt and Fluid Supplements

Adjustment to heat, under normal circumstances, usually takes about 5 to 7 days, during which time the body will undergo a series of changes that will make continued exposure to heat more endurable.

Seafarers used to working in the heat, sweat more “efficiently”. In other words they sweat sooner and sweat more, but lose less salt in the process. Whereas seafarers not used to working in the heat, lose more salt in their sweat.

A little extra salt in food may help but salt tablets are not a good idea because the salt does not enter the body system as fast as water or other fluids.

Seafarers exposed to very hot conditions in his working environment should drink 150 to 200 g of fluids every 15 or 20 minutes.

Water must be palatable and readily available to the seafarer. Individual drinking cups should be provided.

# Crew Fitness and Well-Being

## Eye Care

The Club is often called upon to assist with crew members who have unfortunately sustained extensive injuries or are suffering from serious illness. However, the majority of crew matters are far less severe and may be easily preventable, although they can still cause a great deal of discomfort for the crew member involved.

One such example is when crew members suffer from “dry eyes”. The symptoms usually resolve themselves but sometimes a little assistance is needed. The eye depends on the flow of tears to provide constant moisture and lubrication to maintain vision and comfort. Tears are a combination of water, for moisture; oils, for lubrication; mucus, for even spreading; and antibodies and special proteins, for resistance to infection. These components are secreted by special glands located around the eye and where there is an imbalance in this tear system, a person may experience dry eyes.

Commonly the symptoms include pain, light sensitivity, a gritty sensation, the feeling of a foreign body in the eye, itching, redness and/or blurring of vision. However, sometimes a person with dry eyes will have excess tears running down their cheeks. This can happen when the eye is not getting enough lubrication and it sends a distressed signal to the nervous system which responds by flooding the eye with tears to try and compensate for the underlying dryness. Although this will succeed in washing any debris away, these tears are mostly water and do not have lubricating qualities or the rich composition of normal tears.

In our experience, the occasional sensation of dry eyes is quite common for crew members who are exposed to dry sea salt air and cargo dust, but if the sensation persists and is not treated, surgery may eventually be required.

In the majority of cases this is entirely preventable as dry eyes can be effectively treated by eye drops or ointments, but if left untreated, may contribute to pterygium.

A pterygium is a triangular thickening of the outer coating of the eye that grows onto the cornea. It can grow large enough to interfere with the vision and frequently causes redness, irritation, and tearing. This can be treated with drops or ointments, but otherwise the pterygium can grow large enough to threaten sight whereupon it may need to be removed surgically. Such treatment is usually straightforward and without side effects.

Using eye drops or similar will not only allow provide immediate comfort from dry eyes, but will also prevent the onset of a more serious condition. Eye drops are usually cheap, available easily, and very transportable. Ship operators are recommended to include suitable eye drops in ships' medical chests.