



Guidelines for Fitness Onboard Merchant Ships

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1. Introduction

Aware of the social benefits of sport, the International Committee on Seafarers' Welfare has launched the project: FIT ONBOARD, as one of the topics in the Seafarers' Health Information Programme (S.H.I.P.), sponsored by the Shipowners' Club.

Onboard ship, the modern way of life is a sedentary one and opportunities for sport and fitness are limited. Even modern ships cannot always meet the needs of today's seafarers: to do sport and fitness activities.

Sports activities on ships have to take into account the general safety measures onboard. Ships do not always have sufficient or suitable accommodation or facilities for sport. The strict organisation of work and tasks onboard does not leave a lot of time for physical activity.

SHIP encourages the individual seafarer to take responsibility for his health within his living and working environment.

Sport contributes to a general sense of physical, psychological and social well-being. Sport not only improves health but, through social interaction, it also encourages team-building.

These guidelines are designed to help the management of the vessel to facilitate and promote fitness activities.

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2. Tips for Successful Implementation of Fitness onboard

Promoting fitness activities requires proper management.

The target group is relatively homogenous in terms of age, work, health and physical condition but attention should be paid to ensuring the participation of as many seafarers as possible.

The health benefits, pleasure, social contact and looking better should be used as arguments to encourage participation.

Take a multi-route approach to informing and motivating the seafarers onboard. Offer a variety of activities. Provide incentives or prizes for participation that are appropriate to the activity. Use the SHIP posters, leaflets, Fitness Packs and other means to promote the programme.

The whole vessel must support the programme: captain and officers should show their commitment.

Organise activities that can be carried out on several vessels, compare the results, report on them in newsletters and award a prize for the best vessel in the company e.g. a SHIP Fitness pack.

Allow sufficient time to implement a fitness programme onboard. Behavioural changes take several months and benefits may take even longer to become measurable.

Draw up a systematic plan of what you want to achieve in respect to fitness activities onboard and over what period of time. Link that to a company policy on health and sport.

Activities should be planned and organised in a flexible way and must fit in with the work schedules onboard. Activities should not be very demanding to prepare and run.

An easy and recognisable form of physical activity is better in order to avoid drop-outs and injuries.

Activities should be organised and linked with leisure time, breaks and meals.

To motivate seafarers to participate in fitness activities onboard and to encourage them to take more physical activity on a daily basis, 3 posters are available: "A fit seafarer = a safer ship", "Healthy mind, healthy body" and "Your body, your capital. Keep it fit!" Display them onboard in places where seafarers often pass or spend time together.

The Fitness Packs contain a pedometer, a stress ball and a Dyna band; these are lightweight materials with manuals, giving the seafarers the opportunity to exercise at any time and anywhere onboard.

In these guidelines, help is provided with assessing the fitness of seafarers by simple methods. Organise this type of assessment and discuss the results with the seafarers. The same can be done for blood pressure, Body Mass Index and other health issues.

Hand out pedometers to the seafarers onboard and keep the scores of every individual for discussion and comparison or even organise a competition: "Who walks most onboard, "Does anybody onboard reach 10 000 steps a day, the recommended minimum for health benefits from walking?"

Organise walks onboard after meals with a fixed route so that people can join in at any time. These walks should take 20 minutes at most and can also be used as meeting time.

No special equipment is needed for the training suggested in these guidelines. This is to allow as many seafarers as possible to participate in the programme.

Additional equipment for fitness onboard is welcome.

A number of such items that may be interesting in order to facilitate fitness and sports activities onboard are:

- Weight scale(s) (with body fat calculation?)
- Heart rate monitor(s)
- Music
- Measuring tape(s)
- Stopwatch(es)
- Bicycle(s)
- Ball(s)
- Tumbling mat(s)
- Cardio-training equipment e.g. treadmill(s), stepper(s), rowing machine(s) or cycle(s)
- Weight bench(es)

One possible activity could involve putting a treadmill or cycle somewhere onboard and keeping it going for a whole day. Announce the activity and find participants. Draw up a schedule for who trains when and check that the participants are there at the right time. Give feedback on the number of hours trained and kilometres covered. Eventually this can be organised as a competition between departments onboard.

Fitness consultants can help the company to implement a fitness programme. They can come onboard to assess the fitness level of every seafarer, give instruction on safe exercising and the kind of activities that can be carried out onboard regularly.

Participation in sports activities in ports, e.g. organised by the ISS in the “Sports of the Seven Seas” (www.seafarerssport.org), should be encouraged. If the company or captains encourage participation, more seafarers will take the step towards practising more sport. The level of these activities allows everybody to participate; the aim is fun rather than competition.

3. Basis of Fitness

Fitness activities are intended to improve or maintain good physical condition. Fitness and health are closely related. Many elements are important to maintaining good health: healthy food, sufficient movement, adequate rest and avoiding stress.

Many seafarers will say that they are physically active the whole day, climbing stairs, lifting, pulling etc. The important thing is to exercise specific skills and maintain them at an appropriate level: stamina (aerobic endurance), strength and flexibility.

Fitness is not power training. Keeping fit gets our bodies in optimum condition. We move around more easily, recover faster and are less tired. During training, we force our bodies to perform at a high level. During the rest period that follows, the body will compensate for the effort made and become stronger for the next training session until a balance has been achieved between effort and compensation. The level of training must be sufficient to reach this “supercompensation”; overtraining can make us weaker.

Fitness allows each individual to determine his own goals and decide on the number of training sessions per week, the weights he trains with, how long a training session takes, etc.

4. Testing your condition

Before starting fitness training, it is important to determine the level of training required.

Four categories have been determined:

1. Untrained: never trained and/or above 50 years of age
2. Beginner: periodic training during the last year
3. Advanced: trains 1 - 2 times per week
4. Sportsman: trains 3 - 4 times per week

Measure your heartbeat

The heart rate at rest is a general indicator of a person's physical condition. But also during training, measuring the heartbeat is important in order to maintain the appropriate level of exercise.

Table 1: heart rate at rest (men/women)

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	63 or less	98+	80-97	72-79	71 or less
40-49	90+	74-89	66-73	65 or less	100+	80-99	74-79	73 or less
50+	90+	76-89	68-75	67 or less	104+	81-103	76-83	75 or less

How to measure your heart rate ?

The Maximum Heart Rate (MHR) determines the level of training you should aim for. It is easy to calculate:

220 minus your age in years

e.g. for somebody aged 45:

$MHR = 220 - \text{age} = 220 - 45 \text{ years} = 175 \text{ heartbeats per minute}$

For a useful training session, the heartbeat has to be above the "training threshold" of 60% of MHR.

In our example, the "training threshold" for a 45 year old is $175 \times 60\% = 105 \text{ beats per minute}$.

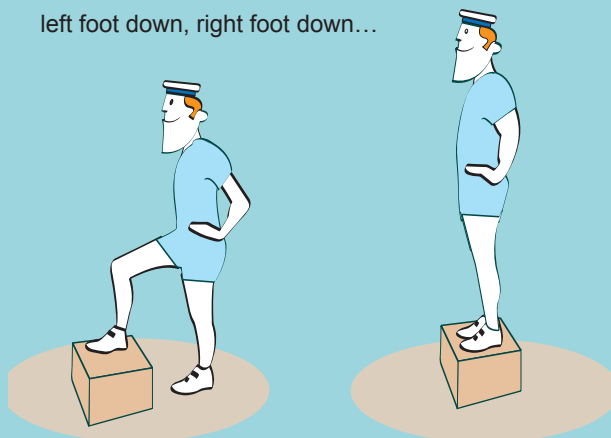
The Step test

To measure aerobic endurance (stamina), we can use the Step test.

Before starting this test, measure your heartbeat at rest, sit down for five minutes and measure the heart rate per minute. Compare the result to Table 1; if your heartbeat is in the "weak" category, don't do the test.

Maintain normal breathing during the test.

- Stand about 30 cm away from the step
- The step should be between 20 and 30 cm high
- Place your hands on your hips
- Keep your head and back straight
- Step up and down: left foot up, right foot up, left foot down, right foot down...



Continue this exercise as fast as you can for three minutes. After the test, sit down for 30 seconds and measure the heartbeat again. Read the results in Table 2.

Table 2: heart rate after 30 seconds' rest (men/women)

AGE	Heart rate after 30 seconds' rest							
	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+	89-105	81-88	80 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

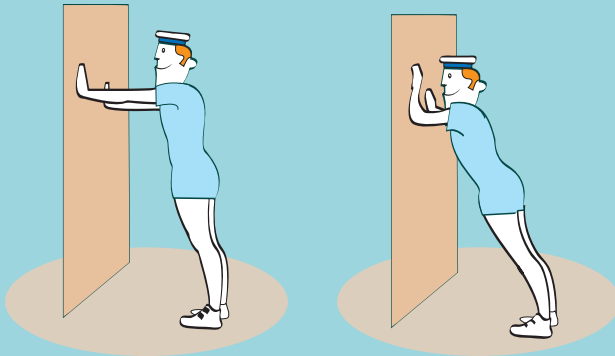
Strength

To measure strength, several tests can be used. Estimate your level of training and do the test according to that category (see Table 3).

Push-ups (upper body strength)

Untrained

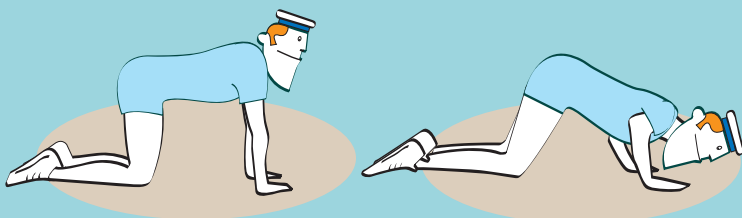
Stand 60 cm away from a wall and face the wall. Stand with your feet slightly apart. Keep your back straight, chest out and stomach pulled in. Place your hands flat on the wall at shoulder level with fingers pointing upwards.



Bend your elbows and breathe in. Keep back and legs straight while bending. Touch the wall with your nose and hold this position for a short while. Breathe out as you push your arms away from the wall. Read the results in table 3.

Beginner

Kneel down and place your hands on the floor with your fingers pointing forwards and head in a straight line with your back. Keep your knees directly under your hips and your hands under your shoulders.



Bend your elbows while breathing in. Touch the floor with your nose and hold this position for a short while. Breathe out as you push up again. Read the results in Table 3.

Advanced

Lay down on your stomach with your elbows bent. Place your hands flat on the floor directly under your shoulders with your knees slightly apart. Bend your knees and hook your feet together. Breathe out while pushing up with your arms. Hold this position for a short while and breathe out as soon as you bend your arms again. Touch the floor with your chest. Keep your head and back in a straight line during the exercise! Read the results in Table 3.



Sportsmen

Lay down on your stomach. Place your feet slightly apart and your hands directly under your shoulders. Your hands should be flat on the floor. Push up on hands and toes. Breathe in as you lower your chest to the floor again. Hold this position a short while and breathe out as you push up again. Read the results in Table 3.

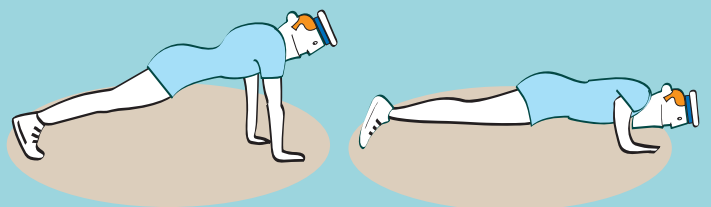


Table 3: Upper body strength

		Power upper body			
LEVEL		Weak	Medium	Good	Excellent
Untrained	Push up against the wall	1-5	6-10	11-19	20+
Beginners	1/2 push ups	1-5	6-10	11-19	20+
Advanced	3/4 push ups	1-5	6-10	11-19	20+
Sporters	full push up	1-5	6-10	11-19	20+

Abdominals

Sit on the floor with your back straight. Place your feet flat on the floor and slightly apart. Bend your knees. Lean back until your outstretched hands are on top of your knees. Hold this position for as long as possible with a straight back. Check the time in seconds in Table 4.



Table 4: strength of abdominals and back

Power abdomen					
LEVEL		Weak	Medium	Good	Excellent
Untrained	Seconds	0-10	11-20	21-30	31+
Beginners	Seconds	20-30	31-40	41-50	51+
Advanced	Seconds	40-50	51-60	61-80	81+
Sporters	Seconds	60-80	81-100	101-120	121+

Lower body strength

Stand about 60 cm away from a wall, facing away from the wall, with your feet slightly apart and toes pointing forwards. Bend your knees and hips at an angle of about 90°. Push the lower part of your back against the wall. Hold this position for as long as you can. Check the time in seconds in Table 5.



Table 5 : Lower body strength

Power lower body					
LEVEL		Weak	Medium	Good	Excellent
Untrained	Seconds	20-30	31-40	41-50	51+
Beginners	Seconds	40-50	51-60	61-80	81+
Advanced	Seconds	60-80	81-100	101-120	121+
Sporters	Seconds	100-120	121-140	141-160	161+

Flexibility

To assess your flexibility, do these tests after warming up. Repeat the tests three times and note the best result. Do the test with an assistant if possible as this will achieve better results.

Sit and reach

Sit on the floor with your legs straight. Toes pointing upwards. Keep your back straight and look ahead with your head in a straight line with your back. Stretch as far as you can and bend forwards reaching for your toes. Measure the distance between fingertips and toes. Check the result of the best of three attempts in Table 6.

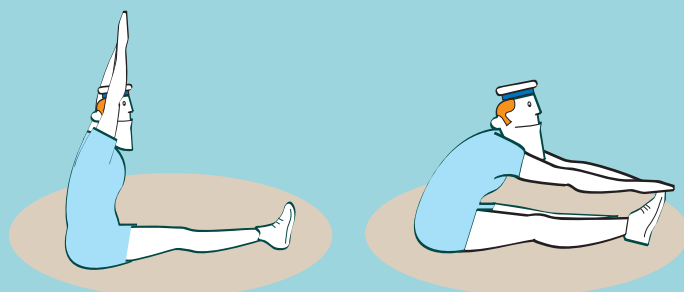


Table 6: results of sit and reach

Result sit and reach	
Weak	Fingers are more than 12,5 cm from toes
Good	Fingers almost reach toes
Excellent	Fingers reach toes more than 2,5 cm

Shoulder stretching

Lift your arm over your shoulder and place your hand on your back by bending your elbow. Bring your other arm up behind your back, bend your elbow.

Move the hands together and try to make your fingers meet. Measure the distance between fingertips.

Check the results in Table 7.



Table 7: results of shoulder stretching

Result shoulder stretching	
Weak	Fingers are more than 7,5 cm from each other
Good	Fingers almost reach each other
Excellent	Fingers cross each other

Forward Bend

Sit on the floor with your back straight. Spread your legs in a V-shape and breathe in. Bend your hips and the lower part of your back forwards while breathing out. Place one fist on the floor and the other on top. Try to bring your chest as close to your fists as possible. Stop when you feel a slight tension. Measure the distance between your chest and the top fist. Check the result in Table 8.

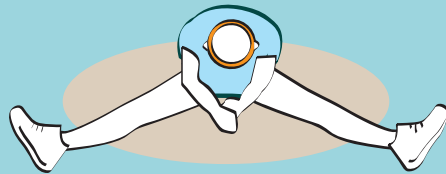


Table 8: results of forward bend

Result forward bend	
Weak	Chest is more than 30 cm from your fist
Good	Chest is less than 5 cm from your fist
Excellent	Chest is at least 2,5 cm lower than your fist

Put the results in a condition test table (see example below) and compare the results; if they differ widely, you will know which aspect of your fitness you have to work on first. If the results are very poor, you should check with a doctor before starting exercise.

Test your condition

Test your condition			Week	Medium	Good	Excel.
Step test		Counts per minute	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Test your strength

Test your strength			Week	Medium	Good	Excel.
Sit ups		Counts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Abdominals		Counts in sec.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power lower body		Counts in sec.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Test your flexibility

Test your flexibility					Week	Medium	Good	Excel.
	1st attempt	2nd attempt	3rd attempt					
Sit and reach				Result in cm	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>
Shoulder stretching				Result in cm	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>
Forward bend				Result in cm	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>

5. Setting goals

It is important to set realistic goals. "Why do you want to exercise?" is the first question to ask yourself. Is it because you want to become fitter or lose weight? Maybe you want to improve the state of both your body and mind. You might want to increase your endurance levels or are just concerned about staying healthy. Select the kind of training you want: stamina, strength or flexibility and the level of intensity: light, moderate or hard.

What do you want to achieve and over what period of time? Be realistic and aim for that: set measurable targets in terms of e.g. heart rate and weight; progress is the best motivator!

Goals should be

- specific rather than general
- challenging but achievable
- divided into short-term sub-goals

The contents of your exercise programme depend on your current fitness level and on your fitness goals. You know what level you are at now and what level you want to reach in the future.

Also, select a location onboard where you want to train: generally you can use the fitness room or gym, if available, or you can do exercises in your cabin or in the mess rooms with friends.

Outside, opportunities may seem limited but you can walk, jog and do exercises (e.g. on staircases).



6. Warming up and cooling down

A good training session starts with 10-15 minutes of warming up to stimulate the blood circulation in the whole body and all muscles. The heart rate should rise to 60% of MHR (see above). A good warming-up session prevents injuries especially in the untrained and beginners.

After exercising for at least twenty minutes in your target zone for heart rate, gradually reduce the intensity of the exercises and do the same 'warm-up' exercises to cool down. Stretch the muscles used during warm up:

- Warm up in a rhythmic way
- Don't bounce
- Stretch slowly and steadily, making sure you stretch at the end of the movement.
- Hold the stretch for a slow count of ten
- Don't push yourself into a painful stretch

Arm swing

Stand with a straight back, chest out, stomach in. Place your feet, slightly more than shoulder width apart. Toes angled 45° outwards. Cross your hands over in front of your hips. Breathe in while you swing your hands sideways above your head. Breathe out while your arms swing back to the starting position. Repeat the exercise for one minute.



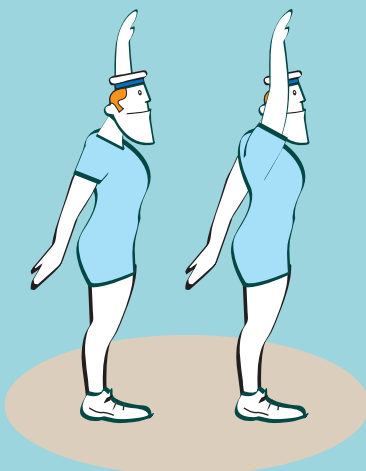
Side swing

Stand with a straight back, chest out, stomach in. Place your feet slightly more than shoulder width apart. Bend your knees slightly. Bend your body to the left from the middle and put your left hand on your knee and your right hand above your head. Hold this position for a short while and do the same to the right-hand side.



Up and Down Swing

Stand with a straight back, chest out, stomach in. Place your feet slightly apart. Bend your knees slightly. Bring the left arm slowly straight up and simultaneously bring the right arm straight down and slightly behind you until you feel a slight tension. Hold this position for a short while and then swing the left arm down and the right arm up. Repeat this exercise for one minute without stopping.



Cycling

Lie on your back. Raise both legs at an angle of 90°. Put your arms down alongside your body. Do cycling movements with both legs alternately. Repeat this exercise for one minute without stopping.



Skipping

Stand with a straight back, chest out, stomach in.
Place your feet slightly apart.

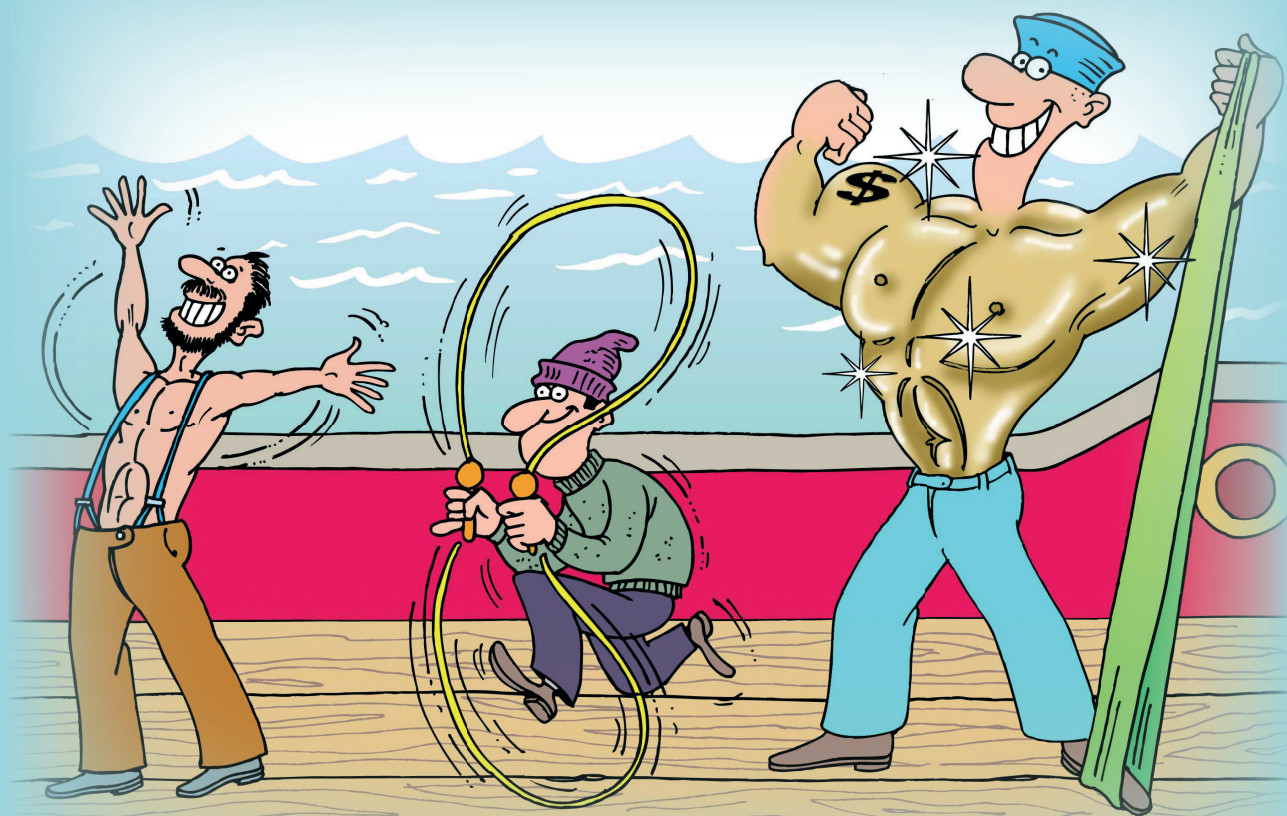
Bring the left leg up to an angle of 90° . At the same time, bring your right arm up to an angle of 90° . Bring the arm and leg down and repeat the same exercise with the other arm and leg. Repeat this exercise for one minute without stopping.



Heel lift

Stand with a straight back, chest out, stomach in.
Place your feet slightly apart.

Bring your heel backwards and touch your bottom.
Bring your foot back down to the floor.
Touch your bottom with the other foot and bring that foot down again.



7. Improving fitness

The Seafarers' Health Information Programme offers you two tools to start improving your condition. Other instruments are available and numerous programmes can be followed according to your condition. SHIP offers simple tools that can be used in cramped spaces and that are easy to take with you when travelling.

Walking with a Step Counter (pedometer)

The name is self-explanatory: a step counter or pedometer counts the number of steps that you take; whether big or small steps, the counter always adds one. The Fit Onboard Step Counter is not a precision instrument but it helps you to walk more.



The Fit Onboard Step Counter gives you an idea of the distance you walk every day and your daily physical activity. Wear your Step Counter every day. Write down the number of steps taken in a day, more or less at the same time every day. Press the reset button on the Step Counter to start from zero again.

Your health improves if you move more every day.

How to increase the amount of walking you do ?

Step 1

Write down the number of steps per day for one week. Do not walk any more than usual during that week.

Step 2

Calculate the average number of steps taken per day. Divide the total number of steps over one week by the number of days. You now know how much or little you move.

Step 3

Determine your goal. Make sure your goal is realistic. If you want to increase the number of steps you take by 1000 a day, take your time to adapt to more walking, e.g. over a period of four weeks.

Step 4

Every day build in some extra steps until you reach your goal. Take four weeks to change your lifestyle towards more physical activity.

Step 5

After six weeks, test yourself again. Write down the number of steps a day and calculate the average over one week. If you are 1000 steps above your starting level, you have reached your goal!

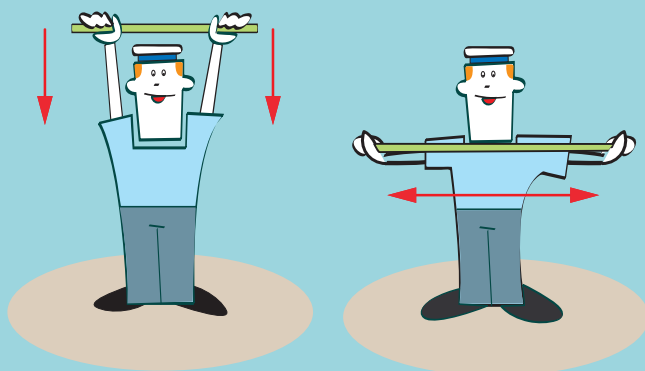


Training with a DYNA BAND

Any form of resistance can be used to train muscle power (weights, bands, bodyweight or any other object).

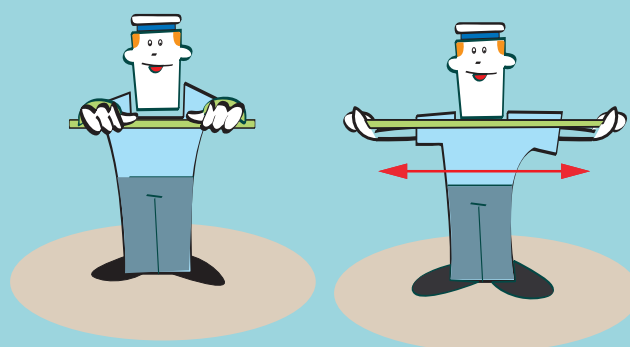
Used correctly, the DYNA BAND can improve stamina, strength and flexibility.

Exercise 1 : Arm pull down



- Wrap the exerciser around your hands (shoulder-width apart)
- Extend your arms above your head
- Pull your arms down and out to side (to shoulder level)
- Slowly raise your arms above your head again
- Drop your shoulders between reps

Exercise 2 : Horizontal arm pull



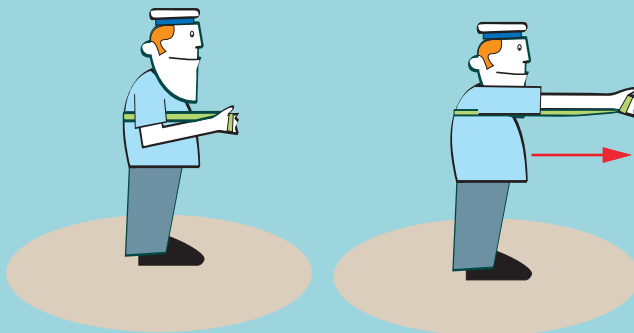
- Grip or wrap the exerciser around your hands (shoulder-width apart)
- Be sure that your palms remain facing up
- Extend your arms in front of your body – approximately 4 inches below shoulder level
- Pull your arms to the side, level with your body – DO NOT OVEREXTEND YOUR BACK
- Pinch your shoulder blades together
- Slowly return your arms to the starting position
- Drop your shoulders between reps

The thickness of the DYNA BAND relates to the level of resistance.

Four types are used:

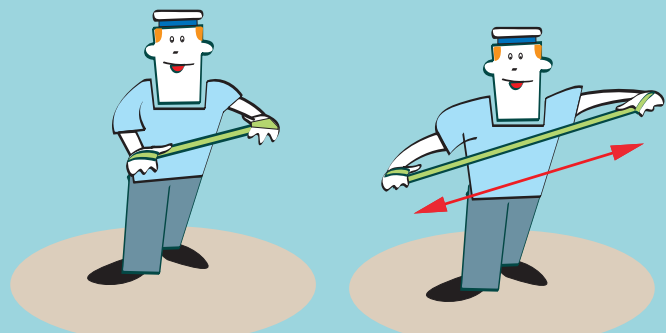
- Pink/red for starters
- Green/blue for medium resistance
- Purple/yellow for the experienced user
- Grey for super athletes

Exercise 3 : Horizontal chest press



- Place the exerciser against your back across your shoulder blades
- Grip the exerciser's ends with both hands beneath each armpit
- Lay the end of the exerciser across your palms
- Take up the slack in the exerciser until it rests snugly against your back
- Push your arms forward
- Slowly return to starting position

Exercise 4 : Shoulder Extension/Flexion

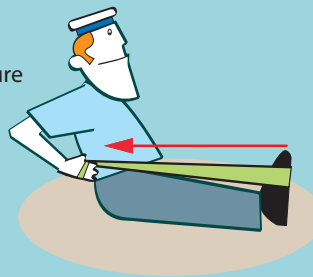


- Grip the exerciser in front of your body
- Space your hands approximately 12 inches apart
- Place one arm slightly higher than the other
- Align the top arm with the same shoulder at approximately 45 degrees shoulder flexion
- Flex the top to shoulder
- Simultaneously, extend the bottom shoulder and arm
- Hold
- Slowly return to starting position
- Repeat

Exercise 5 : Seated row



- Sit on the ground with your legs straight out in front of you – maintain good posture
- Grip each end of the exerciser
- Loop the exerciser under the balls of both feet



- Pull both ends of the exerciser toward your torso
- Lead with the elbows – keep elbows close to your torso
- Hold
- Slowly return

Exercise 6 : Vertical tricep press



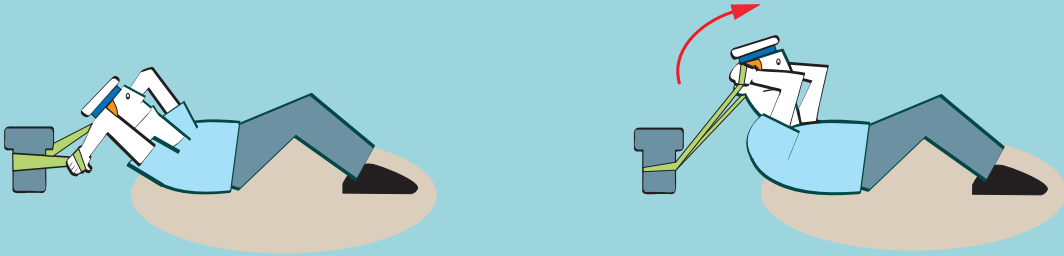
- This exercise uses only half of the exerciser
- Grip the exerciser in the middle and at one end
- Place one hand in front of the opposite shoulder joint
- Place your other hand directly below
- Extend the bottom arm down – keeping the top arm still
- Hold
- Slowly return

Exercise 7 : Bicep curl - standing



- Place one end of the exerciser on the floor, with your foot on top of it
- Grip the other end of the exerciser with your hand on the same side
- Take up any slack with your arm extended
- Place your elbow on your hip or close to your body
- Turn your palm upwards or facing midline of the body (thumb on top)
- Keep your wrist straight
- Curl your arm up
- Slowly return to starting position

Exercise 8 : Abdominal curl



- Loop the exerciser around the leg of a stationary object (sofa, heavy table, etc.) or use a partner
- Grab both ends of the exerciser behind or on top of your head (keep your hands in contact with your head)
- First tilt your pelvis
- With elbows apart, slowly raise your shoulders off the floor
- Hold for five seconds
- Maintain your pelvic tilt
- Slowly return to starting position
- Perform curls to the right, left and centre

REMEMBER:
Lift your shoulders and head
together as one single unit

To improve muscle strength, maximum intensity is not necessary; 60 to 80 % is enough. 8 to 10 reps at 80% of maximum level for athletic training or 10-16 reps at 60-70% for beginners.

Make sure you train every large muscle group equally.

Exercise needs to be regular in order to reap the benefits. Train on three non-consecutive days a week. Train about 60 to 90 seconds per muscle group.

Train slowly and in a controlled way. 2 seconds upwards, 2 seconds hold and 2 seconds back for example.

Go from complete extension to complete contraction but never “block” an exercise movement halfway through.

Increase systematically and gradually the number of reps and the resistance.

Take only short breaks between the different exercises: no more than one minute.

Breathe in during exertion and breathe out when relaxing.

S.A.F.E

1. **Selection** : choose the appropriate resistance for your training level
2. **Alignment** : adopt the correct body posture
3. **Form** : exercise carefully
4. **Effort** : respect your limits (training effect)

Be careful !

1. People with hypertension (above 140/90 mm Hg) should NOT work with high resistance; light training under medical guidance is the message for them.
2. People with new or old joint lesions, especially to hands, wrists, arms, shoulders, knees and ankles, should NOT work with high resistance and should pay attention to where they attach the DYNA BAND.

Practical

1. If you knot the DYNA BAND, use a bow with one end longer than the other, to make it easier to undo.
2. Protect the DYNA BAND from damage by removing rings and jewellery; be careful with long nails.
3. When you exercise, keep the DYNA BAND wide to protect legs and hands and prevent slipping
4. Wearing knee socks or legwarmers is recommended during the exercises.
5. Store the DYNA BAND in a box or dark place ; avoid exposing it to sunlight for too long ; put talc powder on it every now and then and roll it up after use.

8. Avoiding Injuries

Exercising pushes the body out of its comfort zone. In reaction, the body prepares itself for future challenges. Fitness therefore improves during rest and not during exercise. It is very important to adhere to the rest periods and not to overtrain and injure yourself.

It is equally important, especially in the management of daily stress and fatigue at work, for relaxation to be part of the daily exercises. Exercises that involve body and mind and require deep concentration improve body alignment, posture and balance. Typical examples are yoga, Pilates and Tai chi.



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