Repetitive movements a threat to health

Too many repetitive movements tire out muscles and may even cause chronic injuries in the long term. However, most repetitive strain injuries can be cured and by using simple methods many problems can be prevented, according to Ingrid Dahl, ergonomist and physiotherapist at the corporate healthcare company Feelgood in Göteborg.

The human body is made for moving. With regular training and all-round, physical work we strengthen our muscles and can manage large strains without risk of injuries. But for many people everyday life is very different from this. Some spend most of the day sitting, while others repeat the same movements over and over again. These passive and static tasks tire out our bodies. We have less energy and gradually things get painful.

– Aches are the body’s response to strains that we cannot really manage. Static positions make blood circulation worse and prevent waste products from being transported away. This increases the muscles’ sensitivity and makes us more susceptible to pain, says Ingrid Dahl.

– Muscles are most vulnerable when they are strained at their fullest extensions, such as when we carry something heavy and twist at the same time. Lifting correctly with bent knees and arms and the object close to the body is very important to avoid injuries. Necks, shoulders, backs and knees are the areas most often affected by strain problems.

Among seafarers the most common occupational risk is strain injuries.
– Ships are built as they are and we humans are the way we are, and the two do not always work well together. If you ignore the body’s signals, take painkillers and continue to work as usual, injuries can deteriorate and in the worst cases become chronic. But it is often possible to reduce the problem and the earlier you seek help, the greater are the chances of recovery.

Stress increases vulnerability

The level of strain on our muscles is also influenced by the pace of work. Stress creates a raised level of tension in the body. Shoulders are pulled higher and we become even tenser. If we then add heavy lifts or repetitive movements, the risk of injury is greater than if we had done the same thing in a relaxed state of mind.

– Sometimes the amount of work in a department is quite simply too much and then it is necessary to do something to reduce the pressure on personnel. But how we perceive stress is very individual, and situations that one person accepts with a shrug of the shoulders can make another person double up with tension, says Ingrid Dahl.

On the bridge, for example, there are other sorts of strains. Long, sedentary watches are a big strain on the back.
– These days we have real director's chairs on the bridge which are very comfortable to sit in. No matter how exclusive, expensive and ergonomic a chair is, though, it is impossible to sit through the whole of your watch without increasing the risk of strain injuries, says Ingrid Dahl.

Linda Sundgren
Reducing the risk of strain injuries

Ingrid Dahl gives the following advice to employees and employers to reduce the risk of strain injuries:

Stand up and walk: Too much sitting is not good for your body. If possible, vary your working position by standing up now and then, and preferably take a few steps.

Movement breaks: One-minute long breaks preferably, but even micro-breaks of 5–10 seconds can significantly reduce strains on your body. Breaks are especially important if you work statically or in strained positions. Move during the break to restore the balance in your body. If you normally stand leaning forwards, stretch your back slightly backwards; if you have held at tool for a long time, stretch out your fingers, and so on.

Training: Exercise and muscle training strengthens your body and means that you can cope with larger strains at work and in your spare time. The most important muscle groups to train are the stomach muscles (for an upright and stable posture) and legs (for the strength to carry and work correctly).

Equipment: Before new machines and equipment are purchased, listen to the crew’s knowledge and experience. People who use such machines often know what advantages and disadvantages there are.

Technical aids: There is a large selection of ergonomic aids and appliances which can reduce strain. Desks that can be raised and lowered, devices which help heavy lifting, and brushes and pans with adjustable shafts are just a few examples.

Reduce stress: As employer and manager it is important to try to find procedures which create a sustainable pace of work. Stress increases the strain on the body and the risk of injuries becomes greater.

Training: Make sure that all new employees practise good working techniques from the start. Bad habits can be difficult to re-learn.

Report faults: If something is not working as it should onboard, the employer must be informed about it. Always report malfunctions as and when they arise.

Linda Sundgren

Technology and ergonomics at the SAN conference

Smart technical solutions that are kind to the body and which have simple logic. A large part of this autumn’s SAN conference in Göteborg was about this subject.

The day started off with the doyen of personnel and technology at sea, Margareta Lützhöft from Chalmers. She explained that the ergonomics is so much more than adjustable desks and comfortable chairs; there is also a mental aspect of ergonomics which affects everything from general well-being to safety.

– There are hardly any mistakes that are only caused by people. You can almost always find things in the environment that have influenced the situation, she says.

Technology designers are not typical
The fact that technology is not always as user friendly as it should be, according to Margareta Lützhöft, is partly because technology designers sometimes sees themselves as typical users. They start from their own physique, references, knowledge and needs instead of adapting the equipment to the conditions of personnel working onboard.

Although there are examples of well considered technical solutions. One of these was presented by the day’s second speaker, Erik Styhr Petersen from the Danish company Lyngsø Marine.

A working group made up of technicans from his own company and researchers at Chalmers built a radar together, based on research results on people’s ability to perceive and interpret information.

– We are very satisfied with the result. But you have to work hard for these ideas to be put into practice. Nothing changes by itself, says Erik Styhr Petersen.

During the afternoon there was a thought-provoking lecture on how work environment activities pay for themselves, and the fact that it is possible to value work environment measures down to the last penny. The speaker was the economist Paula Liukkonen from Stockholm University, who has studied the effects of ill health and work environment on companies’ revenues for many years.

Poor quality costs money
– When you can prove to the management that the costs of poor quality are near the level of the year’s profits, most of them become a little worried, she says.

Kersti Lorén from Previa was at a conference and talked about ergonomics to prevent strain injuries. She explained how our bodies are influenced by our way of sitting, walking, standing and working, and what we can do to avoid injuries.

The last speaker of the day was Fredrik Sundberg from BRP shipping company who is studying the programme Nordic Master’s at Chalmers. He illustrated how a loading surveillance station had been rebuilt on one of the company’s ships and was made into a much simpler and easier place to work in.

Energy levels in the audience were maintained during the day with frequent breaks for coffee, fruit and mingling with exhibitors invited to the conference. In the same way as last year, the day was concluded with a shared buffet.

Linda Sundgren
Easier to make beds using Eesibed

Thanks to a specially designed quilt cover, personnel will not need to make awkward lifts when they make the beds in cabins. Behind this innovation is Mats Nordström at Stena Line, who has also produced a more easily maneuverable linen container.

Every time a quilt is shaken down into its cover you have to raise your arms above your head, and calculations show that every person who makes the beds in cabins lifts more than 15 tons of bedclothes every year in that awkward position. This made Mats Nordström, cabin manager on Stena Carisma, reconsider the situation. Two years ago he started looking for an alternative to traditional bedclothes. The result is a bed set with a combined sheet and quilt cover, a concept that he developed with the Eesibed company. High lifts have disappeared with the new cover. The whole set is laid on the bed, and the job is done.

– When personnel tried it out it felt so quick and easy that they thought they had forgotten something! I am convinced that this will improve health figures onboard, he says.

Making the beds is as quick as it is easy. A calculation made on Stena Saga with 600 beds shows that the new method would save 47 man-hours per week.

– We have also developed new contingents that are lower and narrower than the old ones and have hinged shelves and a foot support so that they are easier to push over thresholds, says Mats Nordström.

The linen containers were first used on Stena Line’s ships in the spring. Eesibed sets are used continuously on some of the company’s ships during the winter.

– There are fairly large investment costs when the new sets of bedclothes are purchased, but they are cheaper to handle than traditional bedclothes and on top of that there are savings in terms of fewer hours lost due to ill health, says Mats Nordström.

Linda Sundgren

Christer Sjökvist awarded this year’s SAN prize

This year’s SAN prizewinner was chief safety officer Christer Sjökvist, bartender on Silja Galaxy. He was awarded the Work Environment Authority’s flag and a cheque of SEK 10,000 at the SAN conference.

How does it feel to receive the SAN work environment prize?

– Incredibly flattering. I see it as an encouragement to keep on working with these issues.

What is your most important task as chief safety officer?

– To act as a link between all the other safety officers onboard and coordinate their work. I also vote for the crewmembers at the shipping company.

Which work environment questions are you working with at the moment?

– The shipping company wants to introduce video surveillance in personnel areas and we are trying to stop that, since we feel it goes against our personal integrity. Noise and vibrations in cabins is another problem we are working with.

We are also compiling information for a template to report any deviations in the work environment.

And lastly, what do you plan to do with the prize money?

– At first I thought that I would have a winter holiday instead. We have more or less decided on Thailand.

Linda Sundgren

Does the financial crisis affect your work environment activities?

Mats-Erik Eriksson, Stena Line Scandinavia

– You consider the costs a lot. We are only investing in the essentials at the moment, and I am afraid that the “softer issues” will be left behind. Unfortunately, in times of crisis I think that there is a tendency to invest less in the psychosocial work environment.

Christina Törnqvist, Prevent

– The demand for our training courses has decreased. We started to notice the recession in the summer and since then it has got worse. It is mainly the basic training courses which don’t get enough applicants.

Iréne Vallin, Wallenius Marine

– We have cut down on all training which is not safety related. But we also have less cargo, which means that the pace of work onboard has slowed down and there is more time for maintenance and preventive work.

Christer Björkman, Viking Rosella

– We haven’t noticed the recession at all – we have even increased the number of passengers this year. We can still get spare parts onboard as usual and nobody has been given notice. Last autumn our employees were worried, but now it feels as if things are starting to brighten up a little.
~ EDITOR HAS THE FLOOR ~

Work environment in times of crisis

A pleasant work environment is good, of course. Work is more enjoyable and personnel are more satisfied and happier. But is it really profitable? Do investments in the work environment pay back and how it is possible to calculate the costs of ill health with the use of simple methods.

At this year’s SAN conference Paula Liukkonen, economist and researcher at Stockholm University, talked about how investments in the well-being of employees affects a company’s financial situation. In clear and concrete terms she showed how personnel investments pay back and how it is possible to calculate the costs of ill health with the use of simple methods.

One of Paula’s doctoral students was in the audience: Chalmers researcher and marine engineer Cecilia Österman, also co-opted member of SAN. Cecilia is working on a dissertation in which she is examining the financial effects of work environment measures at sea – a research project which we are really looking forward to seeing the results of!

It is important to make a link between the work environment and economics, not least in these days of layoffs and ships being laid up. When times get tough and investment is slow, there is a real risk of all the “soft” issues being put on the back burner.

This was seen in the answers to the question of how the financial crisis affects the work environment at sea, which we put to some of the participants at the autumn SAN conference (see page 2). A good work environment needs strong arguments, and fortunately there are more and more of these.

Here’s hoping for a brighter 2010!

"Repetitive strain injuries are not just something that happens, they are caused."

Said by Kersti Lorén from Previa during her talk on ergonomics to prevent strain injuries at the SAN conference in October.

~ OUTLOOK ~

EU creates a better work environment onboard

The EU commission has started work on drawing up a new social agenda for seafarers. A concrete proposal will be presented in two years’ time, explains Dimitrios Theologitís, section manager at the EU Commission’s marine department. He thinks that the Union has succeeded well in its marine safety work.

The three action packets which have been approved since the capsizing of the tanker Erika in 1999 now make up an entirely satisfactory set of regulations. However, the representative of the Commission considers that there is much more to do in the improvement of conditions for personnel working on ships. He welcomes the maritime super-convention of the ILO (International Labour Organisation), which is aimed at improving conditions at sea, but says at the same time that it is not sufficient.

– There are many things that can be better onboard, such as communication with families at home. We need to install broadband on ships so that seafarers can stay in contact with their families and friends more easily. We must also raise salaries and improve food and facilities for physical training onboard.

The commission is also discussing how maritime training can be developed, says Dimitrios Theologitis. He talks about a general rise in quality and closer cooperation between seats of learning in different countries.

– I think that more exchanges between schools, such as in the Erasmus programme, would be very much appreciated by students. It would give them a taste of the international industry that they will be working in during the future.

According to Dimitrios Theologitís, better conditions onboard are a prerequisite for the successful future of European shipping.

– If we don’t do this it will be difficult to find crews for our ships. When the financial crisis is over and the market picks up once again, the shortage of marine officers will hit us with full force.

Linda Sundgren

~ TIPS FROM SAN ~

Work and technology on human terms

How to make technical equipment work with people instead of against them is the theme that runs through the book, “Work and technology on human terms”, published last year. The 700-page book is printed in Swedish and English, and is aimed at everyone who works with technical aids in one form or another.

– Everybody who has the opportunity to influence technology and the work environment will find a use for this book. It describes what to consider when developing new products and what can be done to make existing technology more user-friendly, says Anna-Lisa Osvalder, docent at Chalmers and co-author of the book.

“Work and technology on human terms” can be ordered from prevent.se. It is also available from internet bookshops such as adlibris.com and bokus.com.

Linda Sundgren
Lifebuoy sank – report from Insjö

At the moment there are 2,416 reports in the marine accident and near accident reporting system, Insjö. One of these describes a remarkable event which took place on a Swedish ferry.

When a seaman was carrying out maintenance work, he removed a lifebuoy from its position hanging on the railing. The seamen reacted to the fact that the lifebuoy seemed very heavy. It also made a clucking sound and water was dripping from one of the reflector strips. A small crack could be seen in the reflector strip and when it was pressed a hole about 15 mm in diameter appeared. It seemed to be hollow inside the plastic shell and when the seamen turned the lifebuoy upside down, several litres of water ran out of it.

One of the crew climbed up the ladder to try to repair the damage. The door then loosened from its frame and fell over the crewman and the ladder. Fortunately the lower part of the door did not come loose and a triangular space was formed underneath the door, which saved the crewman from being crushed to death. However, one of his legs was trapped and seriously injured when the ladder broke into several parts.

There were two other crewmembers close by who just managed to escape injury.

San news 3/09
Tove Jangland: “The psychosocial work environment issues are the most difficult”

Tove Jangland at the Transport Agency sees one of her primary tasks as raising the status of work environment issues.
– There is sometimes a certain resistance against taking on work environment issues, and certainly they can cost a little - but if we don’t do anything things will be even more expensive in the end.

As a work environment official at the Transport Agency, Tove Jangland has a number of duties in her post. She accompanies inspections, participates in flagging meetings, approves applications for exemption and draws up directions on the work environment.
– I enjoy this job. Helping people to feel at home with their work and ensuring that they can carry out their duties safely way feels very important.

Tove Jangland had only worked at sea for one and a half years when she started with the Maritime Administration Authority. The step to working with the authority was not a difficult choice for her. When she was taking her education, she knew that they can cost a little - but if we don’t do anything things will be even more expensive in the end.

– It is definitely an advantage to have experience from work at sea, and sometimes I’m not taken seriously until I explain that I am a qualified ship’s captain. The work environment at sea is so different from onshore jobs that you need to have worked there yourself before you can really understand how it operates.

The level of work environment activities onboard depends to a large extent on attitudes at the shore-based organisation, Tove Jangland has discovered. If the management of the shipping company is involved then things start to happen onboard, not least when it concerns systematic work environment activities.
– Birka Paradise, for example, has a DP [designated person] who is really engaged, and things work very well on the ship for them. The DP promotes work environment issues and calls us to ask for help. If, on the other hand, there is no real support from the onshore organisation, it is difficult for the crew to get good work environment activities going.

Sometimes she feels it is an uphill struggle. It is clear that work environment issues are still low on many company’s agendas, and she says it is noticeable at flagging meetings, to give one example, that her questions are the most controversial ones.
– Sometimes you hear people say, “These rules are not written for small ships”. No, I usually answer, they are written for people. Just because they happen to work on a small ship doesn’t mean that they don’t have the right to a good work environment.

Interest in the work environment among shipping employees also varies.
– Some call us and want us to come onboard to help them. Others think that the work environment is not particularly exciting, even though they should be interested. It concerns their everyday life and being satisfied at work.

The Superconvention will help
The most difficult issues to get recognized and to sort out are psychosocial questions, says Tove Jangland. Things that concern general well-being, relationships and feelings are a lot more difficult to handle than technical and practical problems.
– Sometimes shipowners feel that personnel onboard complain about all sorts of small things, despite the fact that there is nothing really faulty. It is often a sign of general dissatisfaction, though, and that people do not really feel good. So no matter what the complaints are about, the employer does actually have a problem to deal with.

The psychosocial issues can also be difficult to follow up.
– We can easily come back and measure a staircase after it has been widened. But checking how people feel and assessing the atmosphere onboard is a lot more difficult.

Tove Jangland looks forward to the day when the ILO maritime superconvention, the Maritime Labour Convention, comes into force. She believes that it will push work environment issues further up the agenda and give her and other officials more weight to their arguments.
– It will put forward clear demands, which I believe will be an advantage for us. It is also a good thing that work environment demands are raised internationally. Then we will be able to say that this is not a special Swedish requirement, but applies to everybody.

Linda Sundgren

~ PROFILE ~

Tove Jangland
Age: 29
Lives in: Norrköping
Family: Mother, father, brothers and sisters, dog
Interests: Sailing and her dog
Current job: Work environment official at the Maritime Department of the Transport Agency.
A good work environment is important because: people should feel good at work, and should not suffer injuries there.
Final report on dangerous atmospheres around wood cargoes

Too little oxygen and high levels of carbon dioxide. The research project shows that potentially lethal atmospheres are created around wood cargoes, which have caused a number of deaths.

During the last four years, five people have died and others have been injured on Swedish ships with cargoes of wood products or on foreign ships in Swedish waters. The deaths occurred in staircases and stores next to cargo holds, and it is in these spaces that researchers made their measurements. Last spring the first of two reports on dangerous atmospheres around wood cargoes of wood products was published (see San News no. 2 2008). It showed that wood pellets can generate high levels of carbon monoxide short time period.

– A few breaths can be enough to make you unconscious and within a few minutes you can be dead. It is like internal suffocation, says Urban Svedberg at the Occupational and Environment Medicine Clinic at Sundsvall hospital.

Warmth increases the risks

The second part of the research project was finished in June this year and looked at timber and wood chips. The results show that these products can also create lethal atmospheres with low oxygen levels and large quantities of carbon dioxide. Out of 76 staircases and stores checked, 71 had a lower oxygen content than the normal 20.9%. One third had potentially lethal levels of 6% or less, and every fifth sample contained no oxygen at all.

– If you go down into a room with low oxygen levels, you may not realise the danger for a while. By then it is not certain that you have the time to get out before it is too late, says Urban Svedberg.

The dangerous atmosphere is generated by micro-organisms that thrive on wood. They consume oxygen and produce carbon dioxide, and are most active on newly felled timber. The biological process is influenced by the temperature and during the warmer summer months these dangerous atmospheres are generated more quickly than during the winter.

– But there are no safe seasons and accidents have occurred during the winter, too. The process is just a little slower when it is cold, explains Urban Svedberg.

Reduce the risk of accidents

The following measures can reduce the risk of such accidents, according to Urban Svedberg:

• Hang a chain or rope over open manholes next to holds, and put up a clear warning sign.
• Put up warning signs on the inside and outside of doors and manholes so that they are visible whether the door is open or closed.
• Avoid storing materials in spaces next to holds so that people do not have to go in there.
• Keep spaces next to holds locked during sea passages and have one person responsible for the key.
• Installs pipes in shafts leading to the holds so that measurements of oxygen levels and other gases can take place safely from the deck.
• Ventilate staircases properly. It can take up to 24 hours before the air is fully restored.
• Ensure that measuring equipment onboard is adapted to the cargo and that it is working properly. Everybody onboard must have the knowledge required to use it.

Linda Sundgren