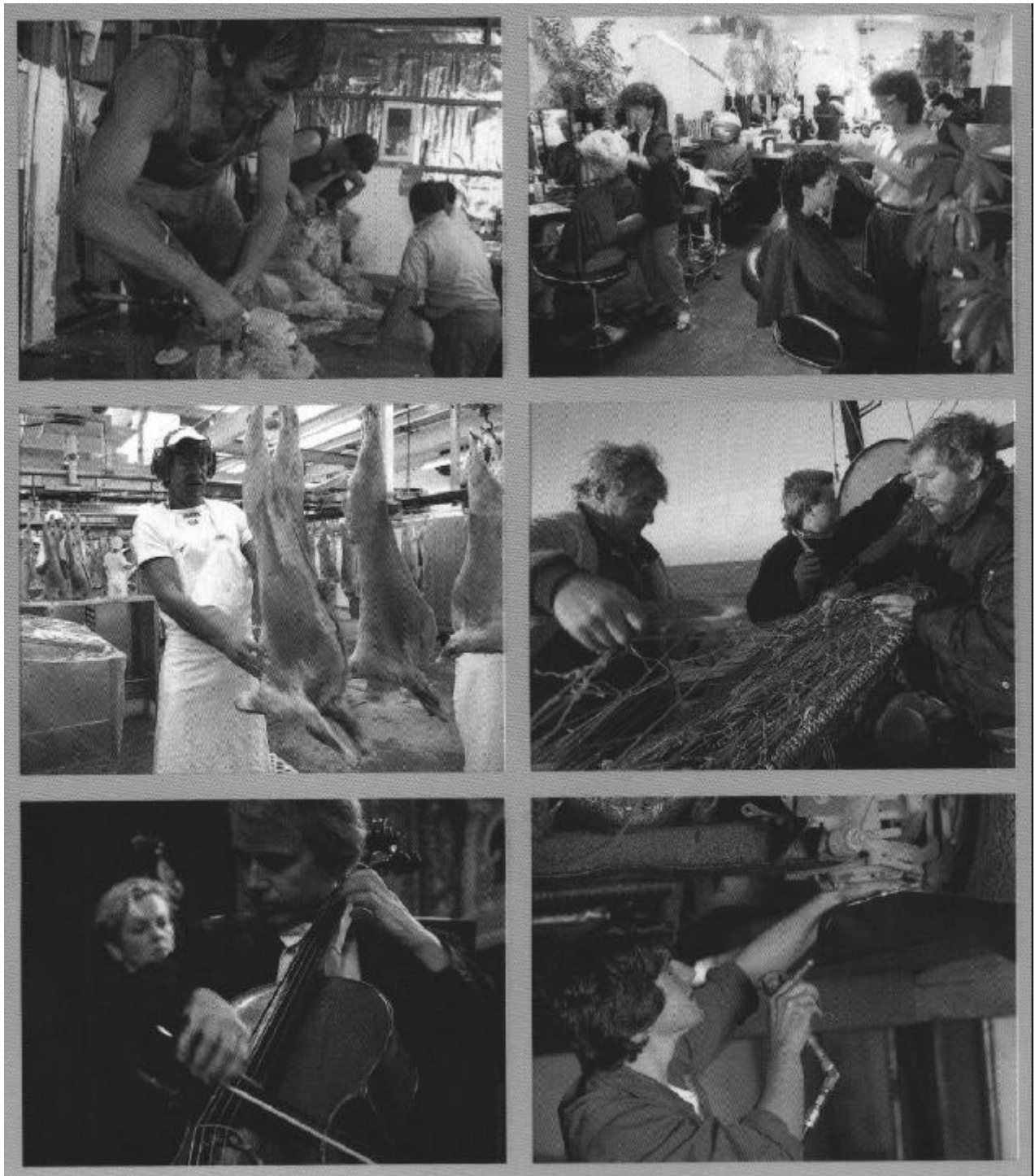


# •Occupational Overuse Syndrome

## •CHECKLISTS FOR THE EVALUATION OF WORK



# OSH

OCCUPATIONAL SAFETY & HEALTH

DEPARTMENT OF  
|L|A|B|O|U|R|  
TE TARI MAHI

Published by Occupational Safety and Health,  
A Service of the Department of Labour,  
Wellington, New Zealand.

First Edition: August 1991 **ISBN** 0-477-03485-3

P202/10,000/1991

# •CONTENTS AND INTRODUCTION

<b>RISK FACTOR CHECKLISTS</b>	<b>PAGE</b>
1: Policy Development	5
2: Organisational Preparedness	7
3: Work Organisation	8
4: Workplace/Workstation Design	10
5: Keyboard Workstations Design	16
6: Hand Tool Design	18
7: Operator Technique	21

These checklists supplement the information in the *Guideline for the Prevention and Management of Occupational Overuse Syndrome (OOS)*. They apply mostly to conditions in the upper limb, and may be used as an *aide-memoire* when investigating problems of OOS. They should not be used as a standard.

A "Yes" answer to a question may indicate an increased risk of OOS, but all factors must be considered together. In most instances the factor needs to be seen in relation to the whole of the job.

## **ACKNOWLEDGEMENTS**

David Brown, occupational health consultant, Sydney.

Health and Safety Executive. *Guide to the Prevention of Work-Related Upper Limb Disorders*. London, 1990.

Health and Safety Commission. *Draft Code of Practice on Manual Handling (Occupational Overuse Syndrome)*. Melbourne, 1990.

Lindqvist B. (Ed). *Ergonomic Tools in Our Time*. Atlas-Copco, Stockholm, 1986.

Putz-Anderson V. *Cumulative Trauma Disorders: A Manual for Musculo-skeletal Disorders of the Upper Limb*. Taylor and Francis, London, 1988.

ICL Ltd. (with Nottingham University). *Ergonomics and the Electronic Retail Environment*. London, 1987.

Grandjean E. *Fitting the Task to the Man*. Taylor and Francis, London, 1986.

Pheasant S. *Bodyspace: Anthropometry, Ergonomics and Design*. Taylor and Francis, London, 1987.

# •CHECKLIST 1: POLICY DEVELOPMENT

## NOTES

### **A INCLUSION OF ERGONOMIC CRITERIA IN THE DESIGN OF EQUIPMENT AND WORK**

- \* Are ergonomic criteria included in planning new jobs?
- \* Are ergonomic criteria included in equipment specifications?
- \* Are staff accountable for the above?
- \* Is finance available for actions and changes required?
- \* Is there a mechanism for implementing the recommendations stemming from checklist 2A?

### **B STAFF TRAINING**

- \* Is there a mechanism to deliver training:  
about OOS  
for task skills? (1)

### **C PROVISION FOR CHANGES IN WORK-LOAD**

- \* Is there provision for sudden changes in workload? (2)
- \* Is there a mechanism for dealing with seasonal volumes of work?

### **D EARLY REPORTING OF SYMPTOMS**

- \* Is there a reporting system for people with early symptoms of OOS? (3)
- \* Is there a mechanism for dealing with such individuals?
  - \* Is liaison arranged with a qualified medical practitioner in advance? (4)

1 TRAINING IN OOS prevention and management is required by all operators and by supervisors, as set out in the Guideline.

2 SUDDEN CHANGES in workload have often been enough to precipitate a condition. Sources of changes are a production speed-up, other staff off sick, catching up after a breakdown, and so on.

3 EARLY REPORTING is one of the keys to preventing OOS. Reporting systems should include a method for dealing with a person who does report.

4 LIAISON with a medical practitioner is an excellent idea, but only if he or she is experienced in dealing with OOS. If people with symptoms can be sent for assessment early on, it is probable that problems can be prevented from getting more serious.

5 REHABILITATION is a process to restore a person with OOS to full function. Its success depends on the active co-operation of all concerned. A rehabilitation programme should be drawn up in advance, and should indicate who is responsible for the programme. Elements of the programme are:

- (a) Where medical assistance can be obtained;
- (b) Where needed, training for supervisors as well as the affected employee may be obtained;
- (c) Provision for the assessment and alteration (where necessary) of workstations;
- (d) Provision for a gradual return to work (see below);
- (e) The arrangement of alternative duties, where applicable (and possible);
- (f) The arrangement of a partial return to work where appropriate. Liaison with external agencies should be listed.

6 AFTER an absence, people will require time to work up to full speed. This is especially true of the person who has had OOS. After an injury, an

## **E REHABILITATION PROGRAMME DEFINED?**

- \* Has a rehabilitation programme been drawn up? (5)
- \* Is there a policy for the gradual re-introduction (acclimatisation) of new staff or those who have been absent? (6)

## **F ALTERNATIVE DUTIES**

- \* Have alternate duties for those with OOS been identified in advance?

## **G ORGANISATIONAL PRACTICES**

- \* Is work monitoring for discipline purposes avoided? (7)
- \* Is the variability of people in their performance recognised? (8)
- \* Are staff consulted when changes are made? (9)

## **NOTES**

operator's muscles may feel completely recovered, but they have also lost fitness. As with fitness for any activity, a gradual build-up to full activity is required. An example of a suitable programme is:

Day 1: Four sessions of 15 minutes. Operating style should be monitored during these periods, and relaxation made a necessary condition. Every day for 2 weeks, the operator should be checked by the supervisor to see how he/she is faring.

Day 2: Six sessions of 15 minutes. Operating style should be monitored for at least half of these sessions, and relaxation again emphasised. The periods when the operator is not at the workstation should be filled with a non-stressful task which does not involve heavy hand loads. Prolonged writing should be avoided, and the use of heavy directories or full filing cabinets.

Day 3: Five sessions of 30 minutes.

Day 4: Review progress in the morning. If there are signs of discomfort overnight, return to Day 1 and check for other contributing factors. Otherwise proceed with 6 sessions of 45 minutes.

Day 5: Seven sessions of 45 minutes.

7 WORK MONITORING is a necessary part of industrial management. When it is used for discipline purposes it is often perceived as unfair and may be a source of constant operator stress--especially for the people who are by nature slower than others.

8 PERSONAL VARIABILITY is what makes the world interesting. Apart from the normal obvious variables such as eye colour, height and so on, natural skill and ability to do a task vary tremendously from one person to another. Is this recognised?

9 STAFF usually have a great deal of knowledge about a process. This can be utilised to make the work more efficient. Techniques are available to aid this process. The psychological advantages of getting the staff involved in design of equipment and work are too obvious to require mention.

# •CHECKLIST 2: ORGANISATIONAL PREPAREDNESS

## NOTES

10 APPLICATION of these checklists is a start in this process.

11 THE SKILL needed to fillet fish, operate a keyboard and so on is just as great as that needed by expert sportspeople. Is the value of this skill recognised? If not in money terms, then other ways can be just as appreciated.

12 SOME PEOPLE react much more strongly to their environment than others. This is neither good nor bad in itself, but depending on the job, it may have implications for health at work. We all need to react to stress otherwise very little would get done, but for people who work in uncomfortable or potentially stressful jobs, being highly reactive could lead to a greater risk of musculo-skeletal pain.

13 SELF-PUSHERS are people who like to perform well. They are eager to get a job done well and on time. They tend to respond with increased effort when more is asked of them, to work through tea breaks and to be willing for overtime. They show a strong desire to return to work if absence is required by OOS. Note that these characteristics are contrary to the common depiction of the person with OOS. These are valuable employees.

### A RISK ASSESSMENT

- \* Have jobs been assessed for risk of excessive muscle tension and other risk factors? (10)
- \* Have modifications been made to equipment to reduce muscle load?

### B TRAINING

- \* Have operators been trained in all aspects of OOS?
- \* Have supervisors been trained in all aspects of OOS?
- \* Does the company realise the extent of skill needed for its operations? (11)
- \* Have operators been trained in the correct skills? Do they know *how* to do it as well as *what* to do?

### C STAFF ASSESSMENT

- \* Have staff been assessed for stress reactivity? (12)
- \* Have "self-pushers" been identified? (13)

### D WORK OVERLOAD

- \* Is there an acclimatisation period for workers returning from illness? (6)
- \* When machines break down, is pressure on operators avoided?

# •CHECKLIST: 3 WORK ORGANISATION

## A TASK SPECIFICATION

- \* Are there clear job descriptions?
- \* Are there clear performance specifications? (14)
- \* Do operators get feedback from supervisors about their performance? (15)
- \* Do supervisors get feedback from operators about their performance? (15)

## B TASK NATURE

- \* Does the operator understand what is required in the job?
- \* Do operators have some control over their work flows?
- \* Does the job have a variety of tasks to avoid monotony?
- \* If the job lacks a variety of tasks, is there job rotation?
- \* Is the job interesting to the person? (16)
- \* Does the job structure prevent pressures on the individual from becoming too great?
- \* Is there only one supervisor for the operator? (18)

## C TASK ORGANISATION

- \* Can operators take regular breaks?
- \* Can operators use the micropause technique? (19)
- \* If any recent changes have been made to work/tasks, was the risk of OOS taken into consideration? (20)

## NOTES

14 A PERFORMANCE specification removes uncertainty, and gives everyone concrete goals to aim for. For example:

A 1-3 page document will be done by 4.30 pm if presented by noon, otherwise, it will be ready by noon the next day.

15 POSITIVE feedback on good performance always improves morale, regardless of the person's position. Sometimes upward feedback needs to be formalised.

16 WHERE a job allows for and/or requires decision-making, creativity, initiative and leads to further learning, workers are likely to be more involved.

17 STRESS is an important feature in the development of OOS.

18 A PERSON with two supervisors can end up having to meet conflicting deadlines.

19 THE MICROPAUSE technique consists of using a 5o to 10-second complete relaxation for every three minutes of work. In line with ergonomic theory, productivity increases may be expected when the micropause technique is carried out properly. Micropauses are ineffective unless the person relaxes fully during them.

20 CHANGES which are often associated with the development of OOS are speeding up the work, the introduction of heavier workloads, overtime or a bonus system of payment, the arrival of a new supervisor or being assigned to new duties.



## **D AMOUNT/RATE OF WORK**

\* Does the method of payment avoid systems which may increase the risk of OOS? (21)

\* If overtime is worked, is it organised to minimise the risk of OOS? (22)

\* Are deadlines organised so that workloads remain reasonable?

\* Does the job avoid boredom?

## **E ORGANISATIONAL PRACTICES**

\* Is work monitoring for discipline purposes avoided? (23)

\* Is there a mechanism for dealing with seasonal volumes of work?

## **NOTES**

21 BONUS systems and the job and the finish payment method are both likely to increase the risk of OOS because they may encourage people to work beyond their natural capacity.

22 OVERTIME increases the amount of work and decreases the time for recovery.

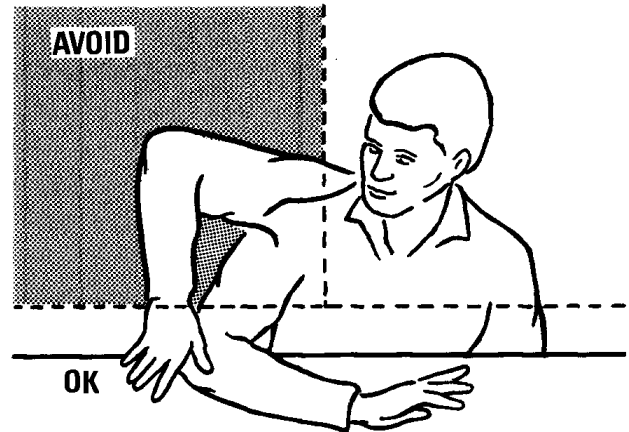
23 WORK MONITORING is necessary for proper management. When it is used for discipline purposes, or when work monitoring leads to conflicts between the company's requirements and the way workers do their jobs and deal with clients, it can result in increased stress on workers.

# ●CHECKLIST 4: WORKPLACE/ WORKSTATION DESIGN

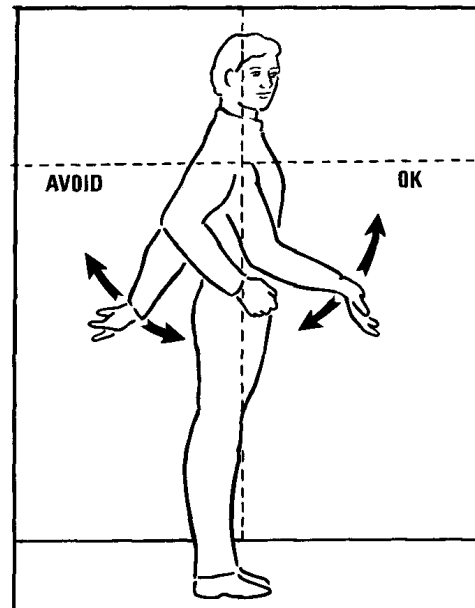
## A PHYSICAL STRESS

- \* Is work above shoulder level avoided? (24)
- \* Is work behind the body avoided? (25)
- \* Is reaching below the body avoided? (26)
- \* Is twisting and turning avoided? (27)
- \* Do the elbows remain below the level of the chest?
- \* Are forward reaches of over 400 mm avoided by the work design? (28)
- \* Do the hands move in natural arcs? (29)
- \* Are the operator's joints at about the mid-point of their range? (30)
- \* Is there a good size fit between the operator and the workstation? (31)
- \* Can the orientation of the work surface be adjusted? (32)
- \* Can the height of the work surface be adjusted to suit the worker and the work? (33)
- \* Can the tilt of the work surface be adjusted to suit the worker and the work? (34)
- \* Can the job be done without contact with sharp edges?
- \* Are the hands exposed to a temperature above 21 degrees? (35)
- \* Can the job be done without using gloves? (36)
- \* Is cold air blowing over the hands avoided?

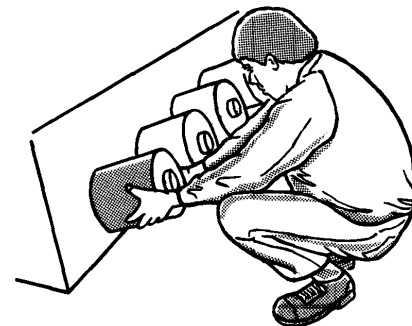
24 AVOID reaching above shoulder.



25 AVOID reaching behind body.



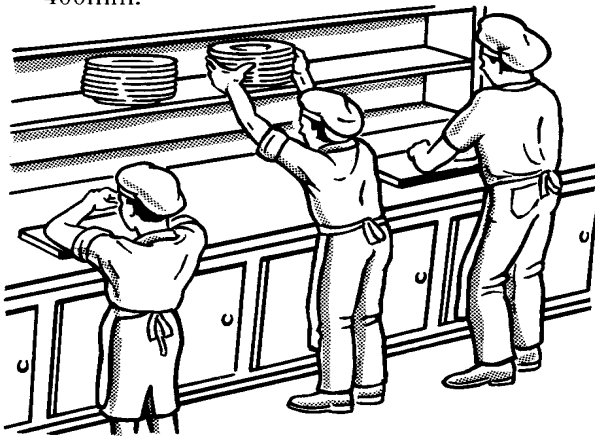
26 AVOID reaching below the body.



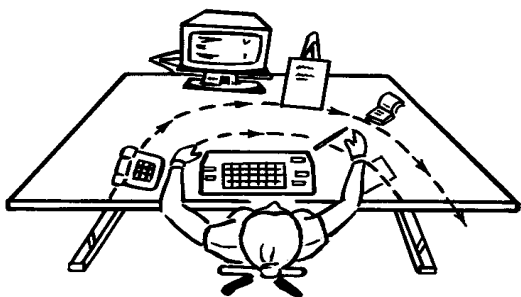
27 AVOID twisting and turning.



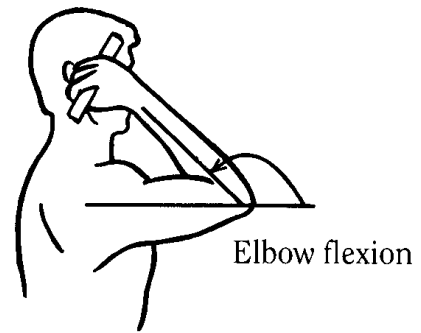
28 AVOID forward reaches of more than 400mm.



29 LET the hands move in arcs rather than straight lines.

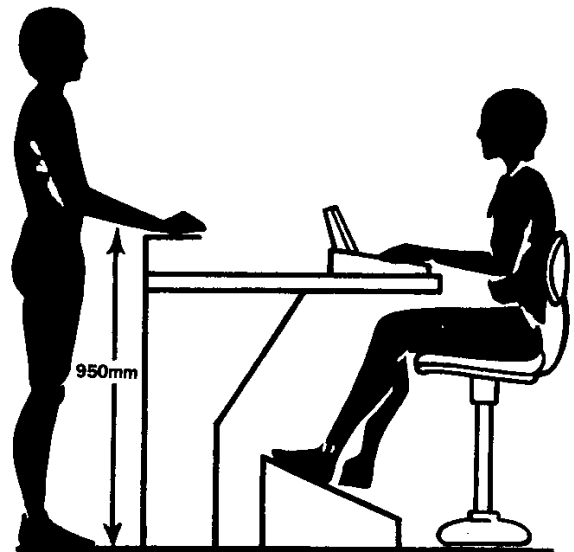


30 LET joints be at the mid-points of their range of motion.



31 MAKE a good fit between the person and their work. This is illustrated by:

- The head inclines only slightly forward.
- The arms fall naturally on to the work surface.
- The back is properly supported.
- There is good knee and leg room.
- The feet are supported.



32 BY CHANGING the orientation of parts arriving on conveyors, the shape of the workstation or the placement of side benches, access to parts, tools and equipment can be made easier for the person.

- \* Does the lighting avoid the need for an abnormal posture?
- \* Is provision made for left-handers? (37)

### B FORCE

- \* Does the job require the exertion of forces less than 4.5 kg?
- \* Can the job be done without using a finger (pinch) grip? (38)
- \* Does the job avoid shock loading to the hands? (39)

### C BODY POSTURE

- \* Can the operator be upright and face forward in the job? (40)
- \* Can the operator avoid bending the head forward to see the job? (41)
- \* Can the operator choose between sitting and standing? (42)
- \* Can the operator adopt a variety of postures in the job?
- \* Can the job be done without prolonged abnormal postures? (43)
- \* Can the body weight be born equally by both feet? (44)
- \* Is there allowance for variation of foot positions?
- \* Are the controls easy to reach? (45)

### D HAND/ARM POSTURE AND MOVEMENTS

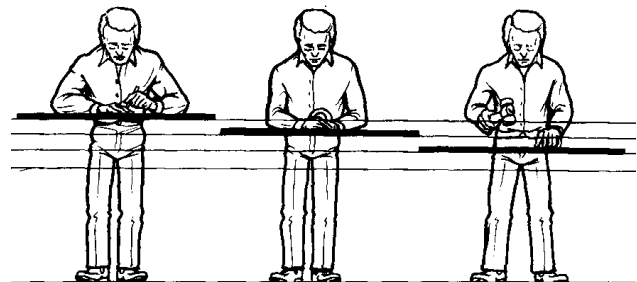
- \* Can the job be done without flexion/ extension of the wrist? (46)
- \* Can the job be done without deviating the wrist? (46)
- \* Can the job be done without overspanning? (47)
- \* Can the job be done without a clothes wringing motion? (48)
- \* Can the job be done without repeated turning of the forearm?

### E REPETITIVENESS

- \* In a machine-paced operation, is the cycle time longer than 30 seconds?

## NOTES

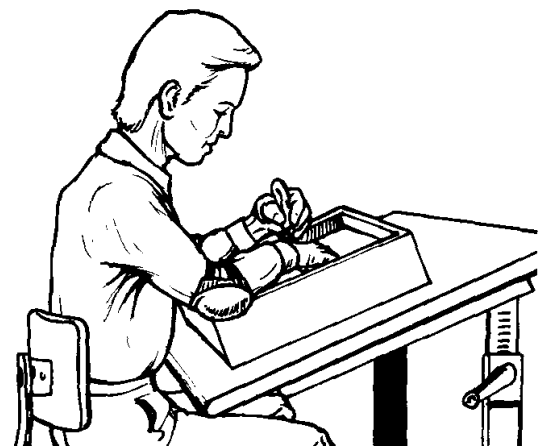
33 THE HEIGHT of the work needs adjusting to the height of the worker (first diagram) and to the work to be done on it (second diagram).



Fine work

Heavy work

34 TILTING the work surface has frequent advantages for view of the task and reach.



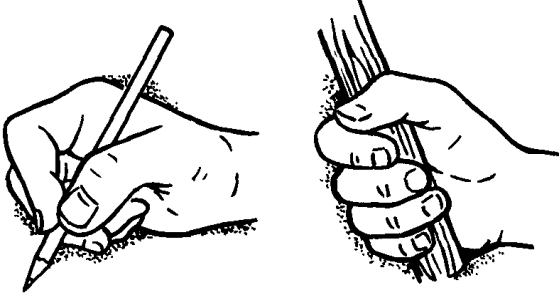
35 COLD CONDITIONS may precipitate symptoms of OOS. Where manual work is heavy, the outside temperature may help a person work more efficiently since the body generates its own heat. Where there is only static work, heat production is not great. Blood flow to the cells of the muscles is reduced in cooler temperatures. Keeping warm and relaxing are, in a sense, equivalent advice.

## NOTES

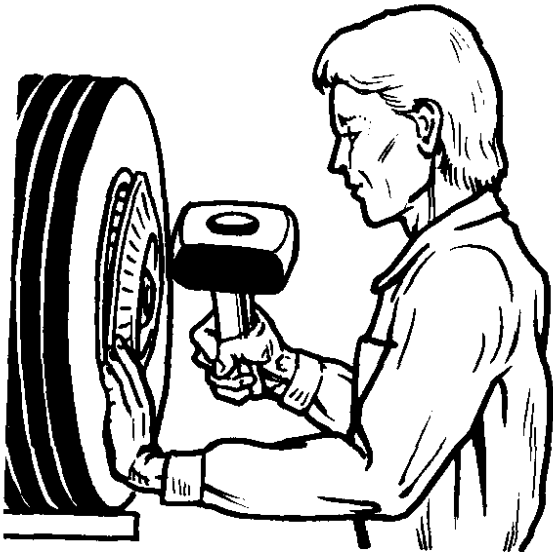
36 GLOVES REDUCE THE GRIP strength and sensitivity of the hands. Where fine work is involved, they can be a particular problem.

37 LEFT-HANDERS are often disadvantaged by tools, equipment and workplace design.

38 PINCH GRIP (left), power grip (right).



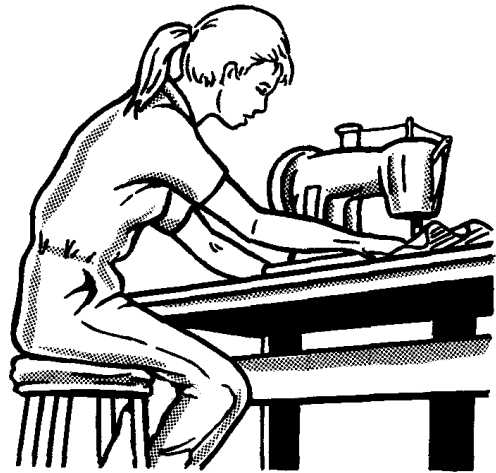
39 USING a rubber mallet is better than using the hands.



40 LET the operator be upright and face forward.



41 BENDING FORWARD places a strain on the neck muscles.

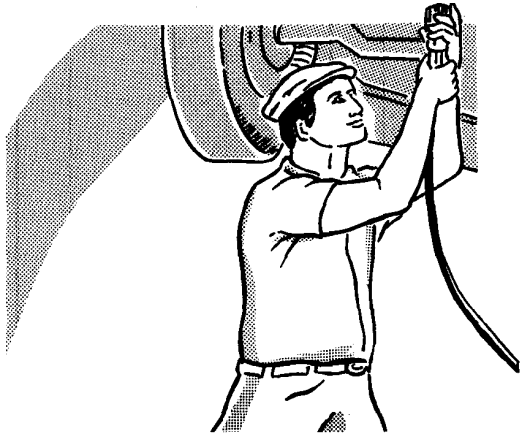


42 THE OPERATOR should be able to choose between sitting and standing. This allows a variety of postures.

## NOTES



43 THIS EXAMPLE of a typical awkward posture is by no means uncommon.



\* For machine-paced operations, is there sufficient time in the cycle for recovery? (49)

\* Does the job avoid repetitive picking up with the hands? (50)

\* Does the job require repetition?

\* Are movements rapid?

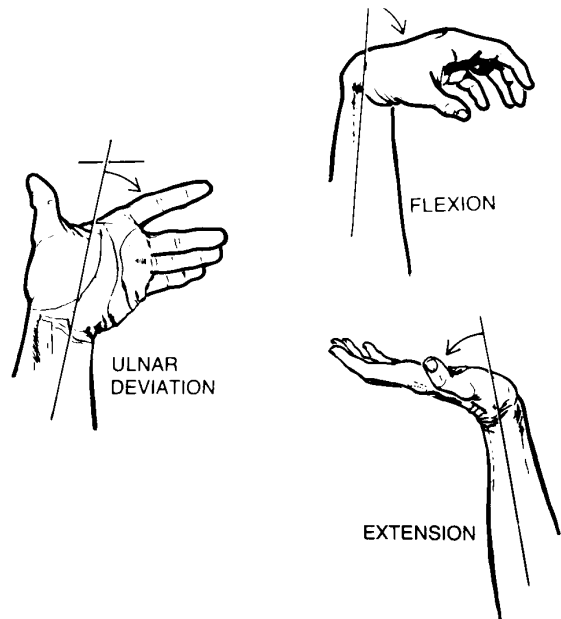
44 WHEN THE FEET cannot bear the weight equally, problems do not take long to arise. Operating foot pedals is a common cause of musculo-skeletal problems.

Paradoxically, the availability of a footrest (see diagram 42), on which the feet can rest periodically in a varied posture, gives excellent relief from static postures.

45 CONTROLS should be easy to reach.

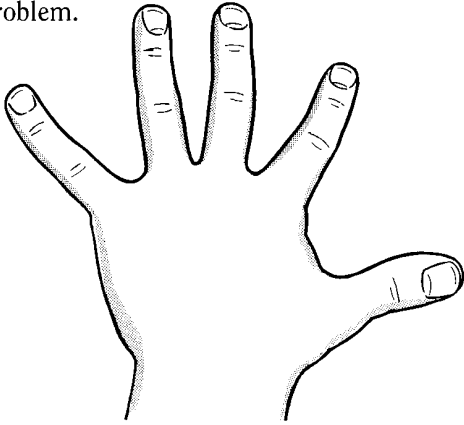


46 WORK should be done without deviating the wrist (middle picture) or flexing (upper right) or extending (lower right). Common examples of these problems are shown below.

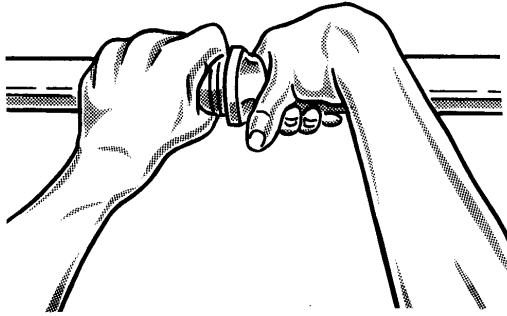


## NOTES

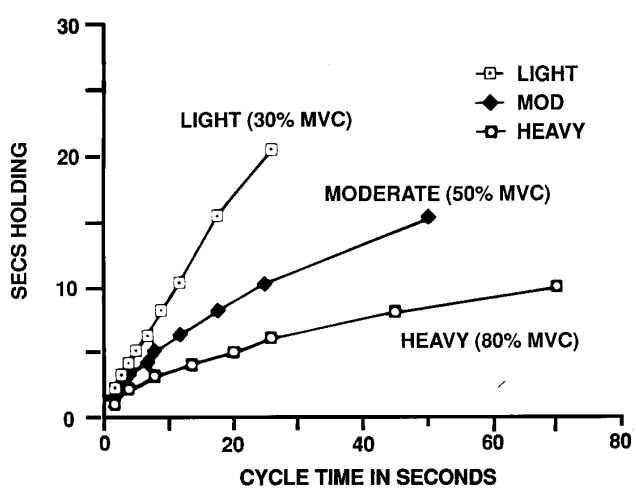
47 OVERSPANNING is another common problem.



48 A CLOTHES WRINGING motion is a risk factor for OOS.



49 THIS GRAPH gives an idea of the recovery time needed when jobs are repetitive. Find the recovery time by subtracting the holding time from the cycle time. Find the degree of force by asking the operator.



50 REPETITIVE picking up with the hands is a disguised form of overspanning (47) and turning of the forearm. Moving bricks or blocks off a pallet to the back garden is a common cause of symptoms when working at home.

# •CHECKLIST 5: KEYBOARD WORKSTATION DESIGN

## A PHYSICAL STRESS

- \* Is there a good size fit between the operator and the workstation? (31)
- \* Can the job be done without contact with sharp edges?
- \* Are the hands exposed to a temperature above 21 degrees?
- \* Does the lighting avoid the need for an abnormal posture?
- \* Is provision made for left-handers?

## B RESTRAINTS ON BODY POSTURE

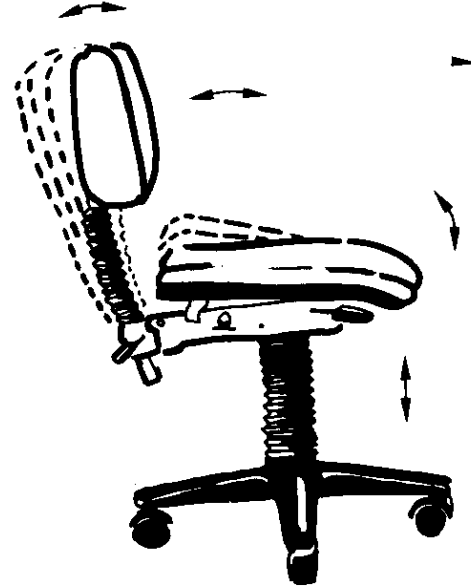
- \* Can the operator be upright and face forward in the job? (40)
- \* Can the operator avoid bending the head forward to see the job? (41)
- \* Can the operator adopt a variety of postures in the job?
- \* Can the job be done without prolonged abnormal postures?

## C RESTRAINTS ON HAND/ARM POSTURE

- \* Can the job be done without flexion/extension of the wrist? (46)
- \* Can the job be done without deviating the wrist? (46)
- \* Can the job be done without overspanning? (47)
- \* Can the job be done without repeated turning of the forearm?

## NOTES

51 A CHAIR should be adjustable for seat height, backrest angle and backrest height, all from the seated position.



52 IN THIS picture, the keyboard is adjustable for height by the button controls which raise or lower the desk. The method of control does not need to be so sophisticated. The screen is shown as having a fixed height, but the eye to screen distance here may be altered.

A copyholder is shown, directly in front of the person, which is correct for copy typists. For non-touch typists, it is better to have the copyholder between the screen and the keyboard.





## NOTES

- \* Can the job be done without prolonged abnormal postures? (43)

### D WORKSTATION COMPONENTS

- \* Is the chair adjustable for height? (51)
- \* Is the chair backrest adjustable for height and angle? (51)
- \* Is the keyboard adjustable for height? (51)
- \* Is the screen adjustable for height and viewing distance? (52)
- \* Is a copyholder provided, and is it appropriate for the task? (52)
- \* Is the written copy used clear and legible?

### E OTHER HARDWARE

- \* Are dictation (foot) controls stable to knocks and conveniently located? (53)
- \* Is the legibility of the paper copy of high quality?

### F MISCELLANEOUS

- \* Is the operator isolated from friends/ colleagues?
- \* When breakdowns occur, is pressure on the operator provided for?

53 DICTATION CONTROLS are often awkward. The foot has to be kept raised above the switch, which is tiring to the muscles on the front of the leg. When dictation controls are placed on a footrest, they should be set in to the surface so that the foot can relax and so that the control does not slide about.

# •CHECKLIST 6: HAND TOOL DESIGN AND USAGE

## A DESIGN OF THE HANDLE

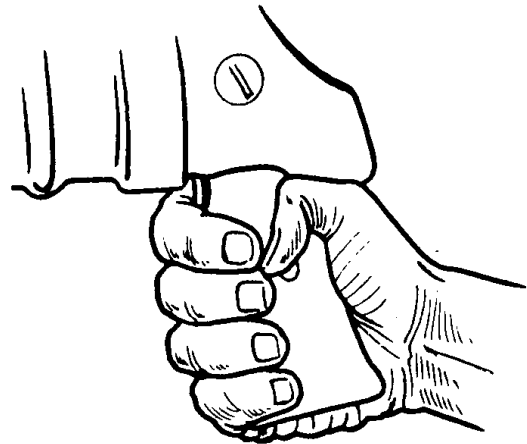
- \* Are thumb and finger slightly overlapped in a closed grip? (54)
- \* Is the handle diameter between 25 and 40 mm?
- \* Is the handle length about 110 mm? (64)
- \* Is the span of the tool's handle between 50 and 70 mm? (For two-handed pliers, etc).
- \* For plier-type tools, is spring opening provided?
- \* Is the handle opening less than 100 mm?
- \* Is the handle made from non-metallic material? (55)
- \* Does the tool handle avoid being slippery? (55)
- \* Does the handle avoid having grooves? (55)

## B FORCES

- \* Is the weight of the tool below 4.5 kg?
- \* Do squeezing motions require a force less than 20 - 30 kg (men) and 15 - 20 kg (women)?
  - \* Where tools exert a torque on the hands, is there some way of resisting the torque apart from muscle force? (56)
  - \* Do tools jerk in their action?

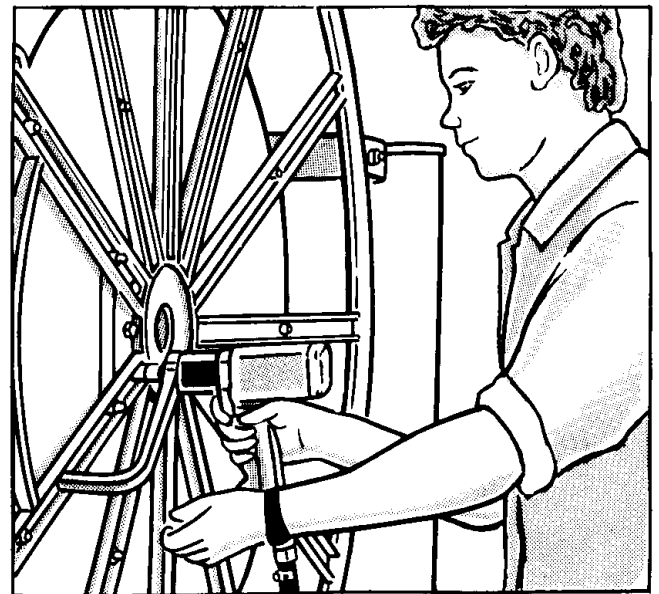
## NOTES

54 HANDLES are often too small. Here the diameter is about right.

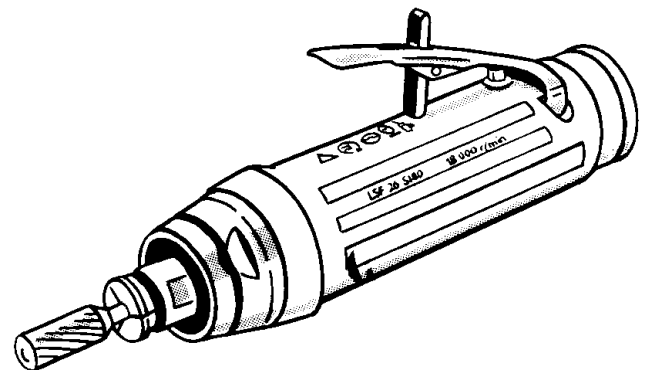


55 HAND TOOL handles made from metal are cold and often slippery. Wood or resin are the materials of choice. Grooves usually fit only the hand of the designer!

56 TORQUE reactions can require a large muscle force to resist them.



57 THIS TRIGGER is designed for prolonged use and places a small force on the muscles compared to certain other types.



## C TRIGGERS

- \* Where a trigger is to be pressed, can the middle section of the finger be used? (66)
- \* Does the design of the trigger avoid prolonged muscle tension? (57, 67)
- \* Is more than just one finger or thumb used to actuate the trigger? (57)
- \* Can the trigger be locked on?
- \* Do triggers require an awkward posture?

## D USAGE

- \* Is the line of action of the tool in line with the index finger? (68)
- \* Is the tool suspended? (58)
- \* Is the force required to keep suspended tools on the screw within a reasonable limit?
- \* Can the location of the tools be adjusted? (65)
- \* Can the tool be used without deviating the wrist? (46, 63, 65)
- \* Can the tool be used without flexion/extension of the wrist? (46)

## E GENERAL

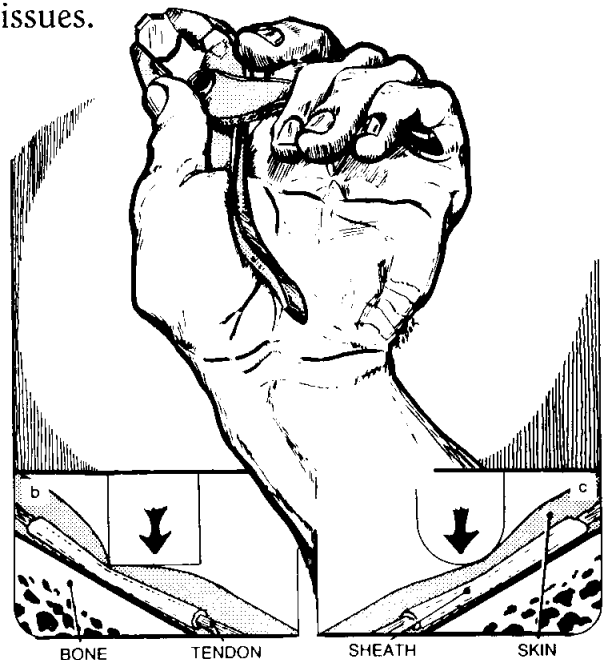
- \* Does the tool design avoid placing point pressure on tissues?
- \* Are pinch points avoided? (59)
- \* Does the tool operate without vibration? (60)
- \* Does the air discharge from pneumatic tools avoid exhausting over the flesh? (60)
- \* Have the tools in use been modified? (61)
- \* Are women using tools designed for men?
- \* Is the use of gloves with tools avoided? (36)
- \* Are knives kept sharp?

## NOTES

58 SUSPENDING a tool reduces the muscle force required to use it. Notice the collar--it is there to reduce the downward force the arm must apply when screws require pressure to drive them home.



59 SHARP edges can compress underlying tissues.

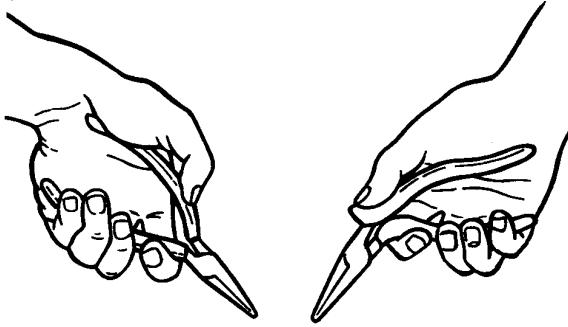


60 VIBRATION is a risk factor for OOS. Cold air may cause local cooling of the flesh and increase the risk of the problem.

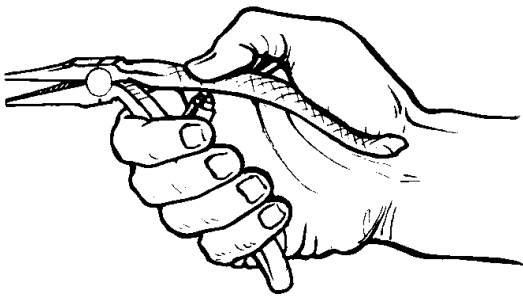
61 WHERE TOOLS have been modified, it may be that the original design posed an increased risk of OOS.

NOTES

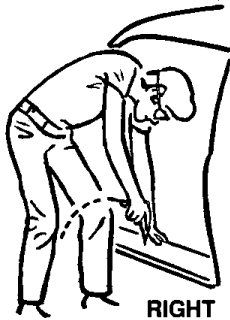
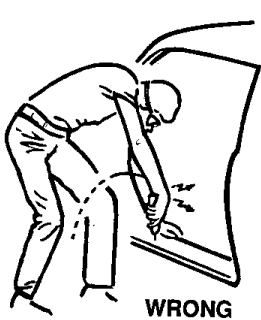
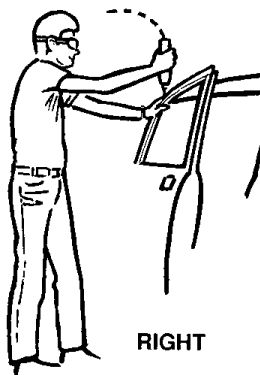
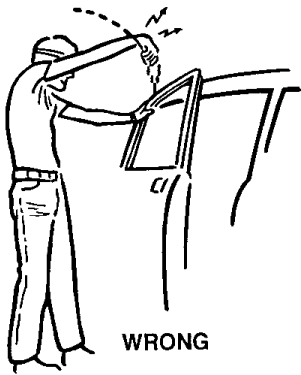
(63) BEND the tool, not the wrist.



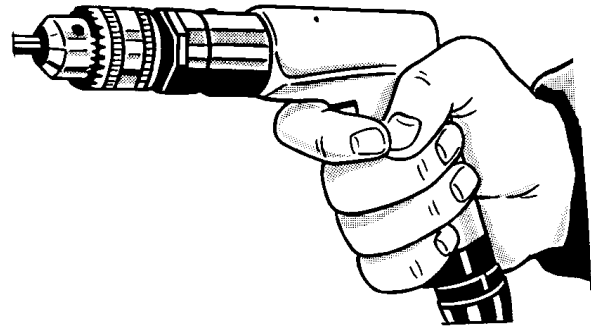
(64) FIT the tool to the hand. Here, the handle opening is not too great; it is spring-loaded to assist repetitive squeezing and the handle length is about right.



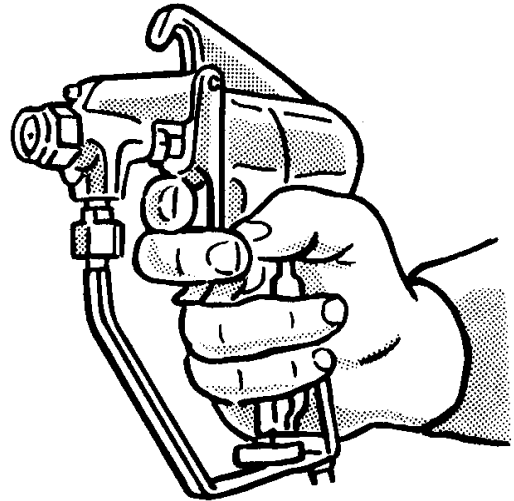
(65) BEND the tool, not the wrist. Here, the application of rule requires proper tool choice.



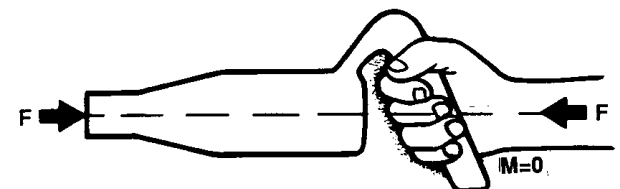
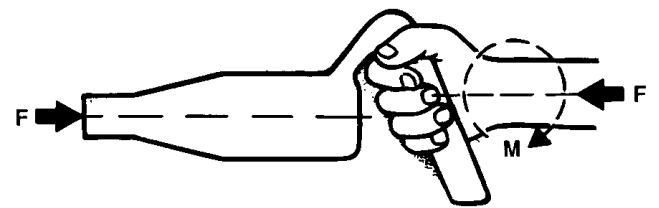
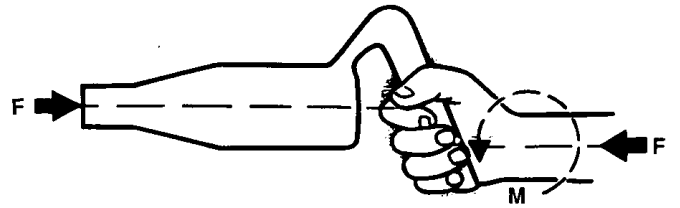
(66) USE the middle part of the finger to depress the trigger.



(67) A TRIGGER designed for two-finger use (shown) or for four-finger use is better for prolonged or repetitive work.



(68) THE LINE of action of the tool should coincide with the line of action of the wrist and forearm.



# •CHECKLIST 7: OPERATOR TECHNIQUE

## NOTES

### A TRAINING

- \* Has the operator had training for the task?
- \* Has the operator been trained in proper working techniques?
- \* Does the operator demonstrate skills appropriate for the tasks?
- \* Has the operator been trained in warm-up exercises?

### B KNOWLEDGE

- \* Does the operator know how to adjust the chair? (51)
- \* Does the operator know how to adjust the workstation?
- \* Does the operator know the early warning symptoms of OOS? (69)

### C WORK PRACTICES

- \* Does the operator take the agreed breaks at the set times?
- \* Does the operator demonstrate an ability to relax? (70)
- \* Does the operator use the micropause technique? (19)
- \* Does the operator practice relaxation during micropauses?

### D WORK TECHNIQUES

- \* Does the operator avoid using jerky movements?
- \* Does the operator avoid using an excessively tight grip? (71)

69 THE SYMPTOMS of OOS are:

muscle discomfort	fatigue
aches and pains	soreness
hot and cold feelings	muscle tightness
numbness and tingling	stiffness
muscle weakness.	

70 RELAXATION IS THE KEY to success in all physical activity, be it sport, hobby or work. It is useful to remember that when a muscle is relaxed, a cessation of activity (in the nerves) is required.

Relaxing is learning to let go. To see if someone can relax, support their wrist (with their forearm horizontal and their upper arm vertical) on your pointing finger. Then remove your finger unexpectedly. If they are relaxed, their arm should swing away freely.

Muscle relaxation is a beginning. Some people can do it easily, others can't. It is something that must be learned. There are many good methods of relaxation. One method starts by asking you to tense and then relax your muscles. Some people prefer to just "let go" the tension without tensing first. Some other good methods are:

- \* Feel your breathing. Sit quietly, feel your breath coming and going.
- \* Repeat a word or sound over and over, such as "one... one... one..."
- \* Imagine a relaxing scene, by the beach or in the country.

All of these methods ensure that the mind is occupied. A drifting mind soon finds something else to think about! The most important ingredient is repetition. Even the best technique is useless unless you practice frequently.

Relaxation training has three steps:

- (a) Practice relaxation twice daily for 10 to 15 minutes until deep relaxation comes easily.
- (b) Learn rapid relaxation and use it several times daily.

- \* Does the operator avoid using excess force?
- \* Does the operator know that skilled working is more comfortable?
- \* Does the operator use a power grip (not a pinch grip) when possible? (38)

**E BODY POSTURE**

- \* Does the operator avoid the use of a single posture?
- \* Does the operator avoid the use of a prolonged abnormal posture? (43)
- \* Does the operator have relaxed shoulders?
- \* Do the operator's elbows swing free?
- \* Is the operator's weight born equally by both feet?
- \* Does the operator avoid tilting the head forward to look down?

**F HAND/ARM MOVEMENTS**

- \* Does the operator avoid flexing (bending up) the wrist? (46)
- \* Does the operator avoid extending (bending down) the wrist? (46)
- \* Does the operator avoid deviation (bending sideways) the wrist? (46)
- \* Does the operator avoid overspanning? (47)
- \* Does the operator avoid repeated turning of the forearm?
- \* Does the operator avoid a "clothes wringing" motion of the hands? (48)

**G PERSONAL FACTORS**

- \* Is the operator new to the job?
- \* Has the operator recently returned from a holiday or an illness?
- \* Does the operator think the workstation is comfortable?
- \* Is the operator shorter or taller than the majority (5th percentile) of people?
- \* Is the operator's strength smaller than that of the majority?
- \* Are sports or hobbies a confounding factor?

**NOTES**

(c) Identify the situations which make your pain worse, and deal with these through rapid relaxation.

71 EXCESSIVELY TIGHT grip is common in writing.

