

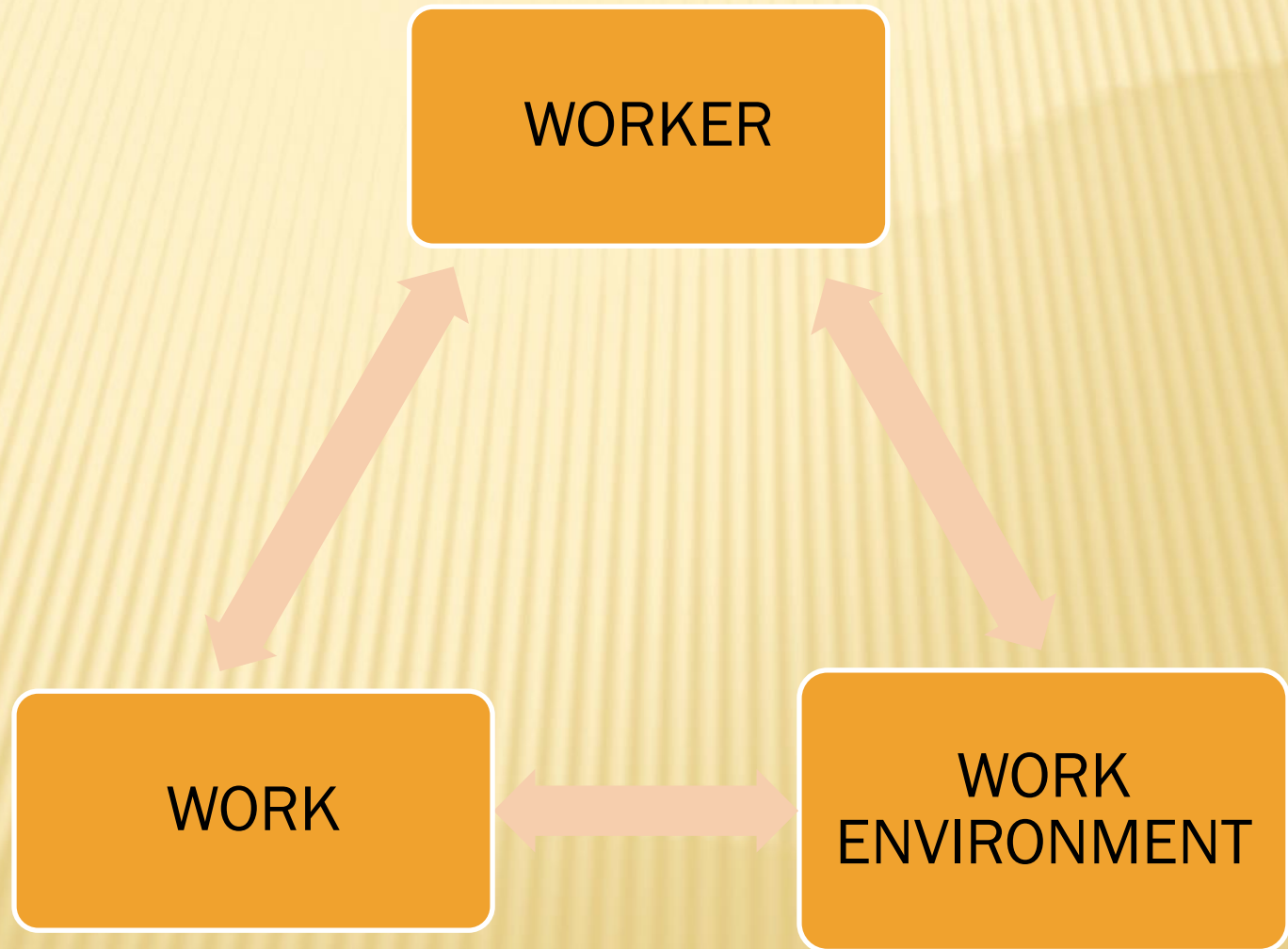
# **ERGONOMICS IN EVERYDAY LIFE**

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# WHAT IS ERGONOMICS?

- ERGO=“work”
- NOMICS= “rules” or “laws”
- **Ergonomics literally means “the laws of work”**

# ERGONOMIC FOCUS





# WORKER

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- Knowledge
- Skill
- Abilities
- Interest
- Time awareness
- Physical capabilities
- Attitude

# WORK

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- Proper tools
- Proper machines
- Proper procedure
- Work station
- Proper furniture

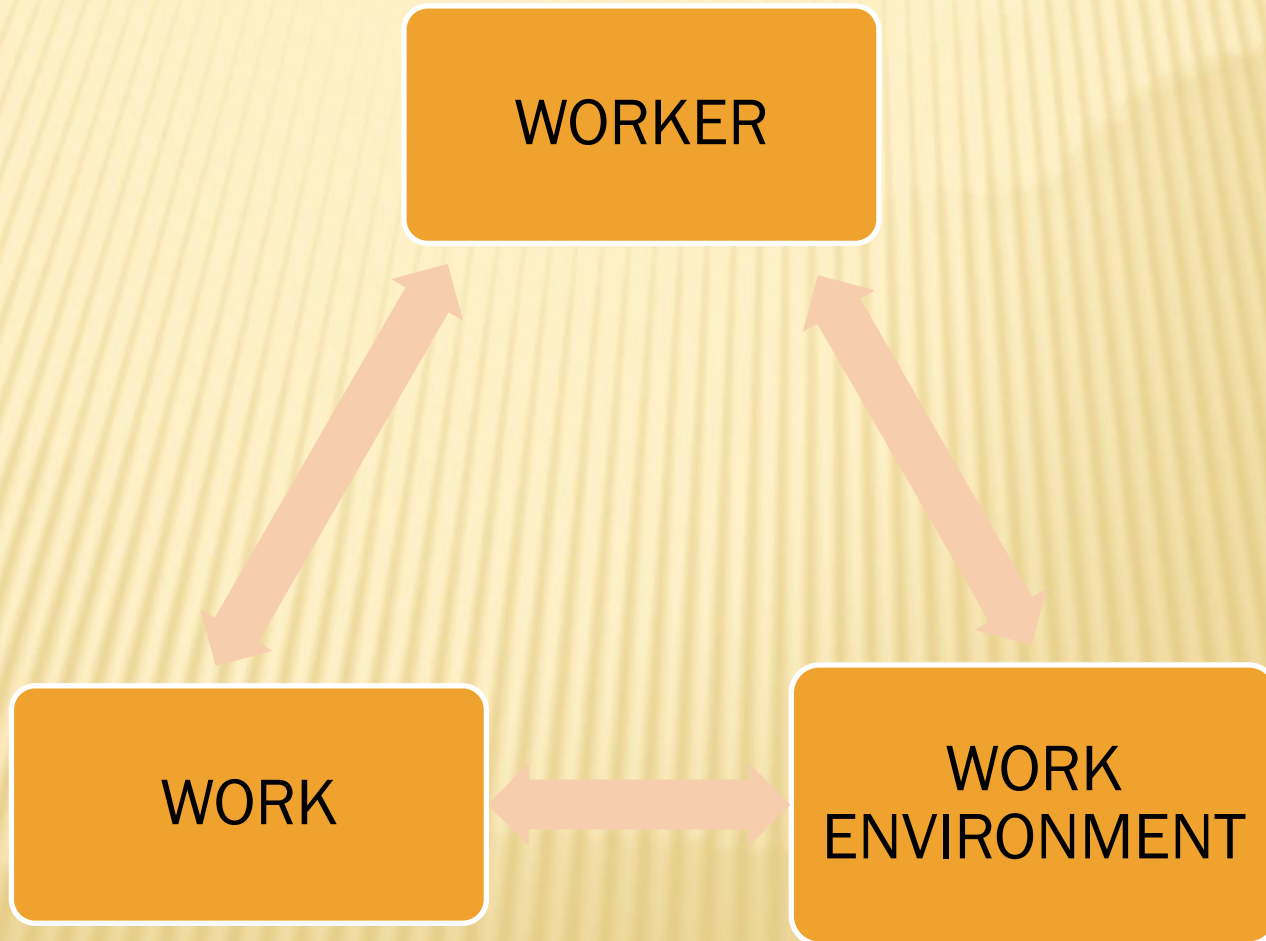
# WORK ENVIRONMENT

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- Light
- Noise/ sound
- Temperature (heat and cold)
- Humidity
- Vibrations
- Radiations

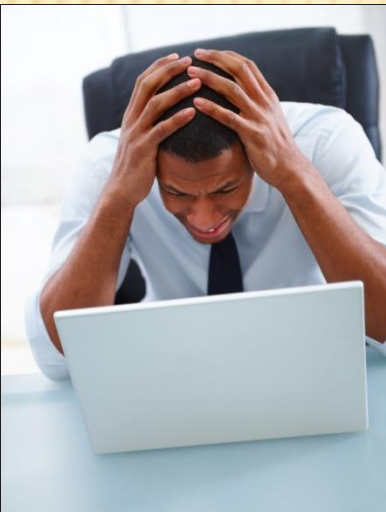


All these components are inter-related  
and one affects the other



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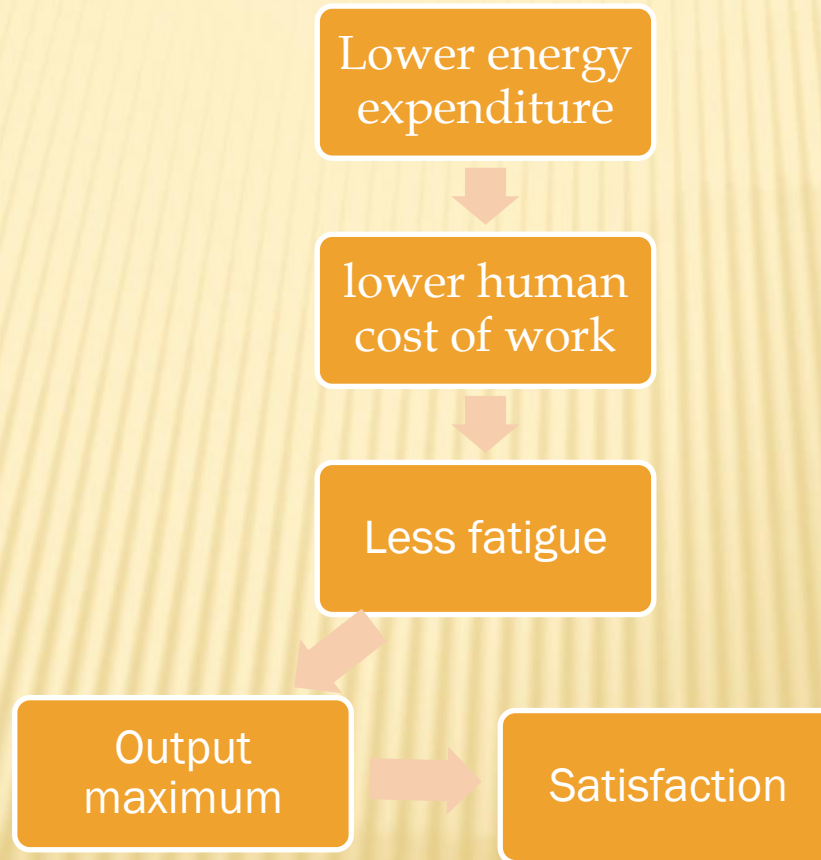
**Where is the  
problem?????**





# We measure work in terms of human cost.

## Work = Human energy used



# IT'S NOT EASY !!!!!

We have to control lot of factors because people are different



Age Differences



Height Differences

# ALL ARE UNIQUE & DIFFERENT FROM EACH OTHER

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- Body Size
  - Body Weight
  - Age
  - Body Measurement of different parts
  - Way of doing same Work
  - Different Posture
- etc.....

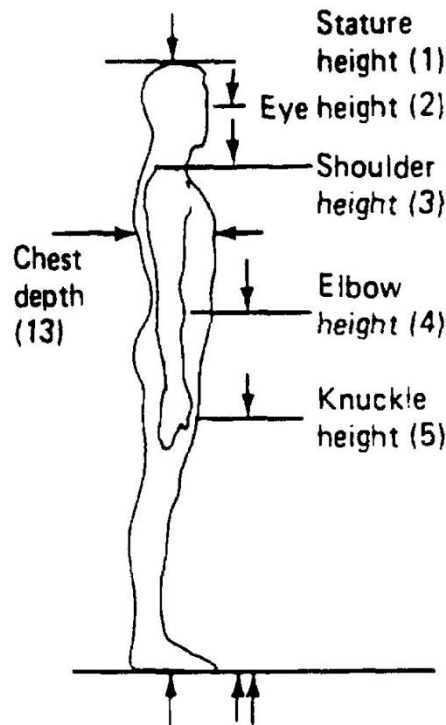


# Anthropometry

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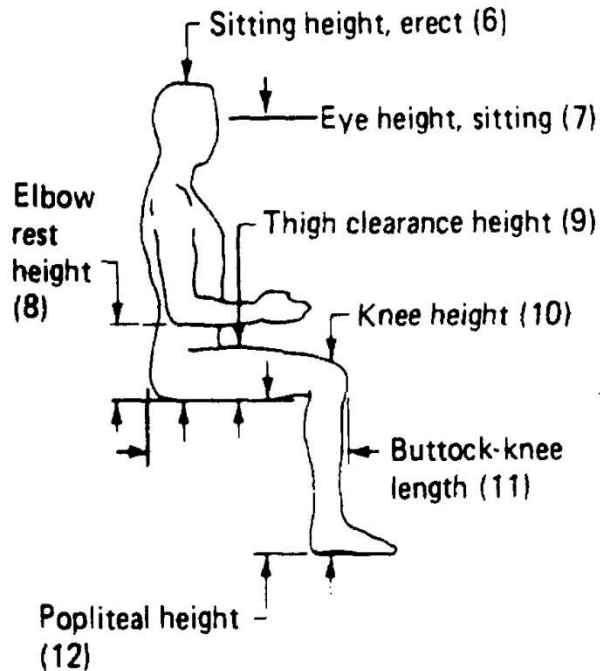
- × Measurement of human dimensions
- × Anthropos = human
- × Metrikos = measuring

# Anthropometric Data



Body dimension	Sex	Dimension, In		
		5th	50th	95th
1. Stature (height)	Male	63.7	68.3	72.6
	Female	58.9	63.2	67.4
2. Eye height	Male	59.5	63.9	68.0
	Female	54.4	58.6	62.7
3. Shoulder height	Male	52.1	56.2	60.0
	Female	47.7	51.6	55.9
4. Elbow height	Male	39.4	43.3	46.9
	Female	36.9	39.8	42.8
5. Knuckle height	Male	27.5	29.7	31.7
	Female	25.3	27.6	29.9
13. Chest depth	Male	8.4	9.5	10.9
	Female	8.4	9.5	11.7

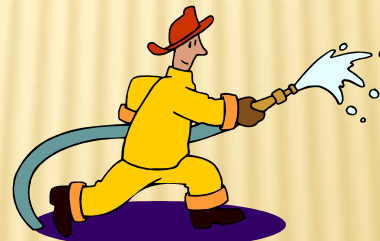
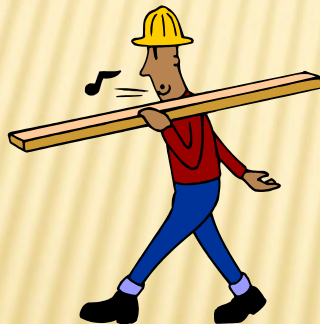
# Anthropometric Data



Body dimension	Sex	Dimension, In		
		5th	50th	95th
6. Height, sitting	Male	33.1	35.7	38.1
	Female	30.9	33.5	35.7
7. Eye height, sitting	Male	28.6	30.9	33.2
	Female	26.6	28.9	30.9
8. Elbow rest height, sitting	Male	7.5	9.6	11.6
	Female	7.1	9.2	11.1
9. Thigh clearance height	Male	4.5	5.7	7.
	Female	4.2	5.4	6.9
10. Knee height, sitting	Male	19.4	21.4	23.3
	Female	17.8	19.6	21.5
11. Buttock-knee distance, sitting	Male	21.3	23.4	25.3
	Female	20.4	22.4	24.6
12. Popliteal height, sitting	Male	15.4	17.4	19.2
	Female	14.0	15.7	17.4

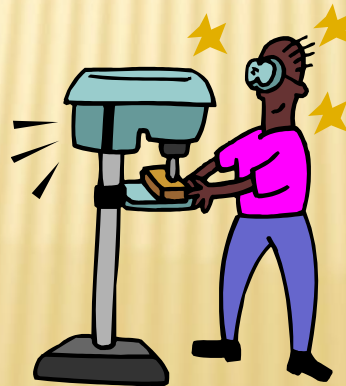
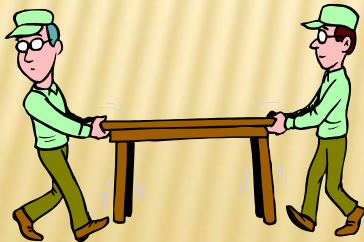


# WORK AREAS EACH ONE IS UNIQUE



# HOWEVER, THE GENERAL IDEAS STILL APPLY...

- + Keep items in easy reach.
- + Adjust the height of tables, chairs, etc.
- + Use proper bending and lifting techniques.
- + Take microbreaks from repetitive motions.



# KEEP ITEMS IN EASY REACH

## Reach Requirements



- USUAL WORK : Forearm Length
- OCCASIONAL WORK : Full Arm Length
- NON-WORK AREA : Beyond Arm Length

adapted from : CCOHS Ergonomic Infogram E-A01



INDUSTRIAL ERGONOMICS – REPETITIVE STRAIN INJURIES

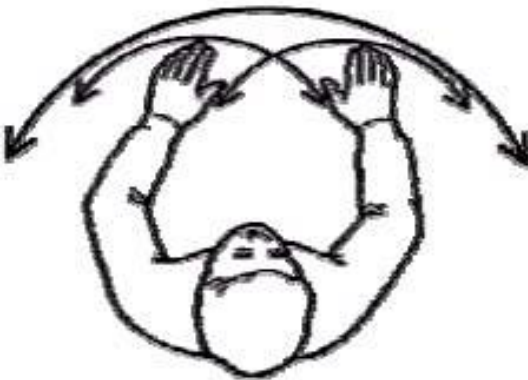
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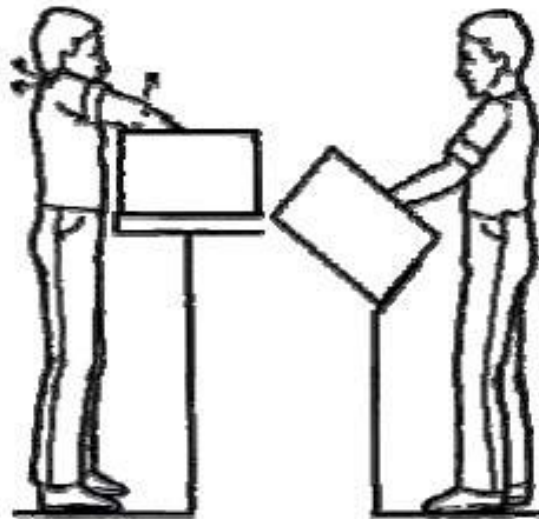
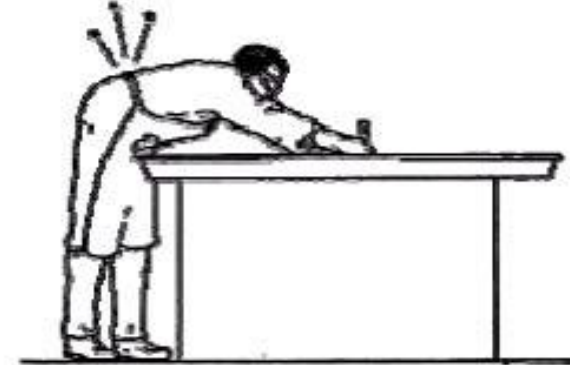
# KEEP EVERYTHING IN EASY REACH



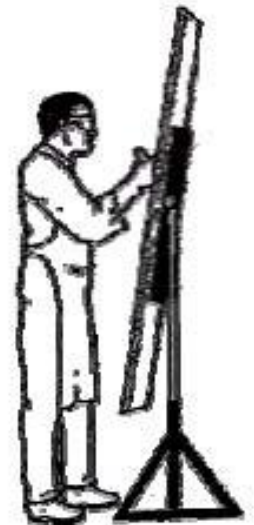
Cutout

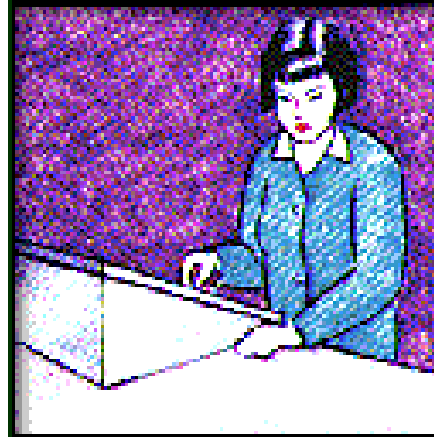


Reach envelope



Tilting container stands is one of the most common, low-cost ways of reducing reaches.





Keep elbows close to the body.

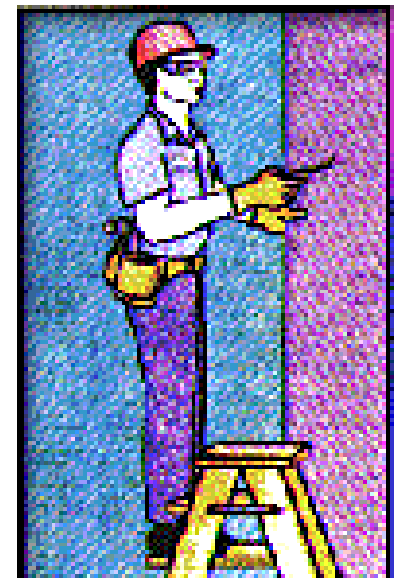
Reduce the need for  
outstretched arms.  
Use a higher work  
surface.





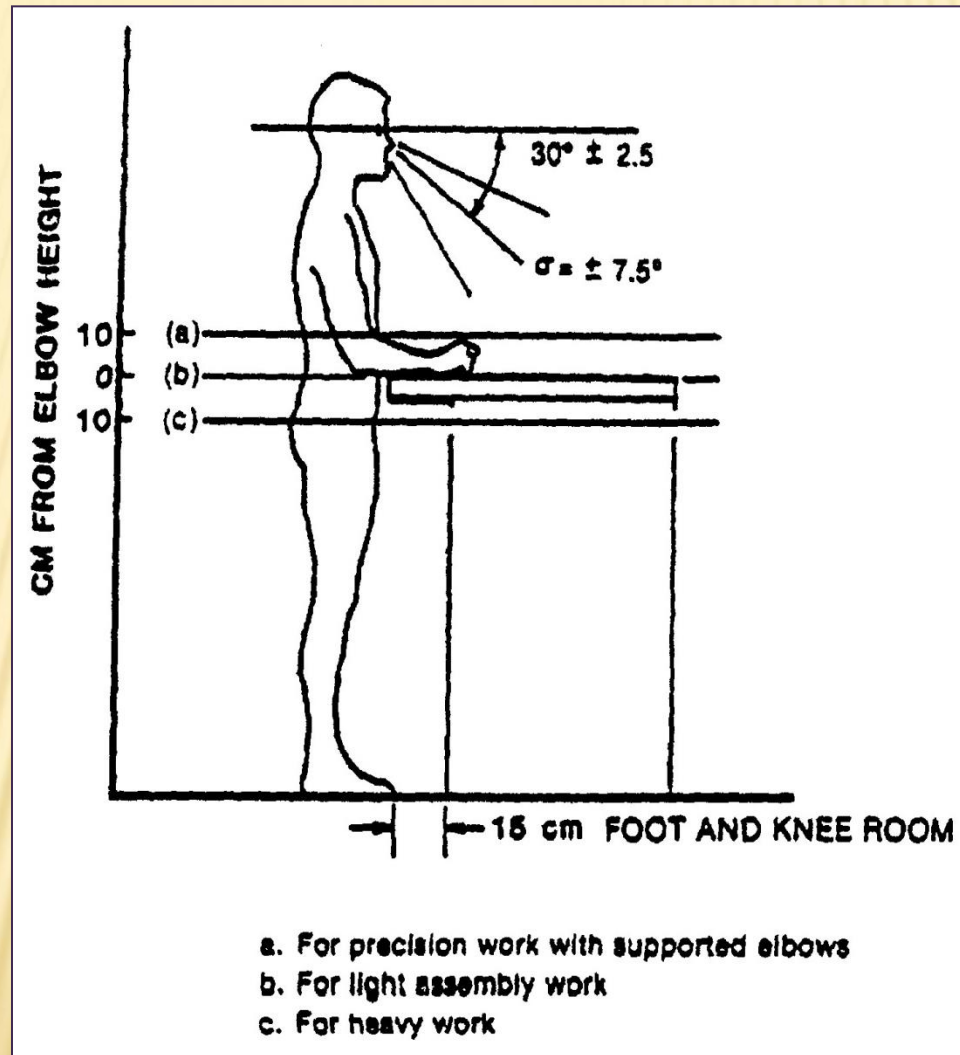
Avoid bending over your work.

Avoid overhead work.  
Use a ladder.





# Adjust the work surface heights

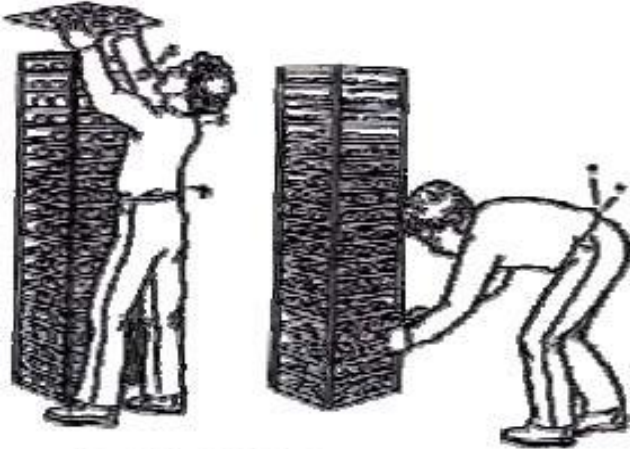


# VARIABLE WORKSTATIONS

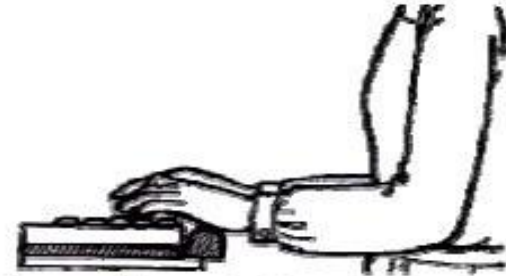


Different work surface heights depending on the type of work performed.

# WORK AT PROPER HEIGHTS



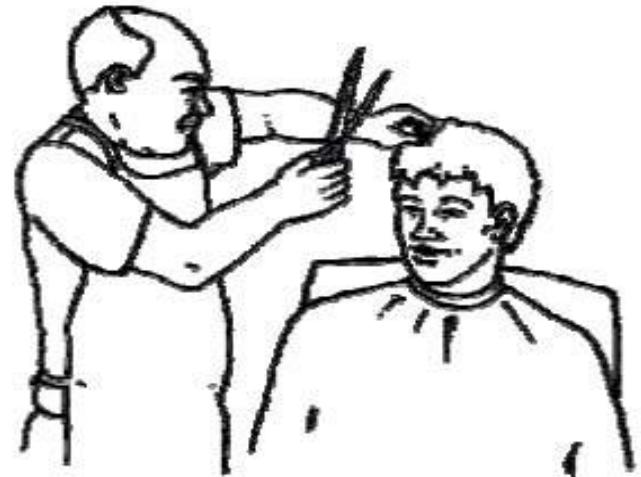
The first priority is to avoid extremes.



Generally, working at about elbow height is optimal.



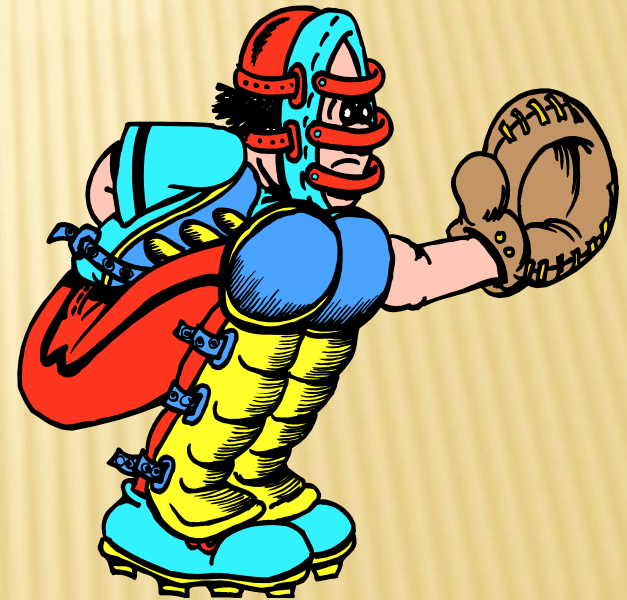
Height differences in equipment can create unnecessary work.





# USE PROPER BENDING TECHNIQUES

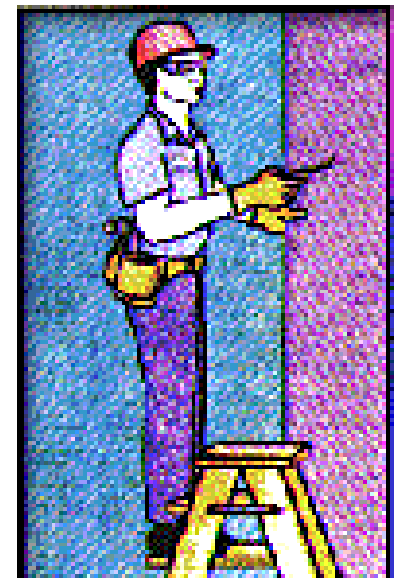
- ✗ These procedures apply to everyone, regardless of where you work.
- ✗ Avoid excessive bending.
- ✗ If you must bend:
  - + bend at the knees, not at the waist.
  - + turn your whole body, do not twist.





Avoid bending over your work.

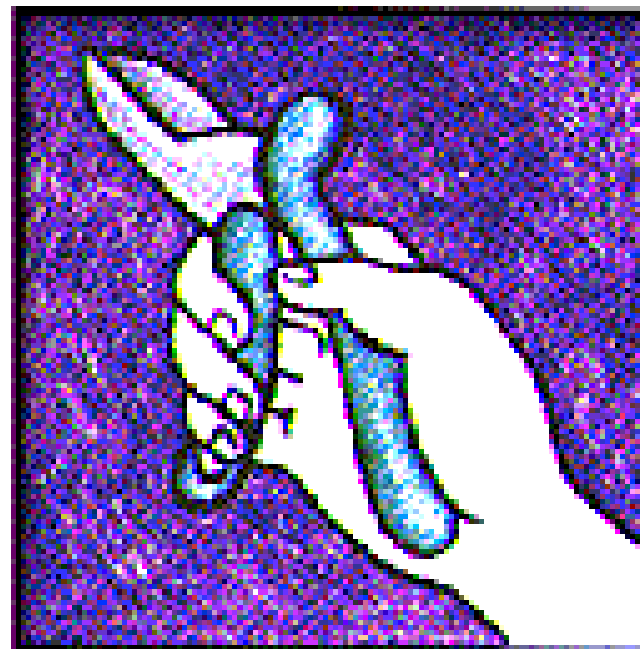
Avoid overhead work.  
Use a ladder.





Bend the tool, not the wrist.

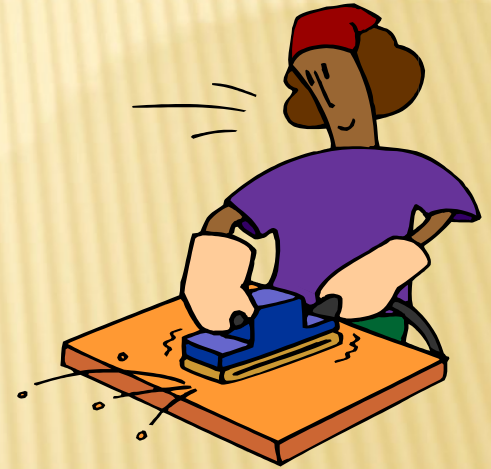
Use tools that  
distribute pressure  
evenly across the palm.





# LIFTING TECHNIQUES (EVERYONE)

- ✗ The best lift is NO lift
  - + Put objects on a table instead of the floor.
  - + Use a cart, dolly, forklift, or some type of lifting device.
  - + As a last resort, lift the object using the following procedure:



# Lifting

- Size up the load



- If too heavy for one person, get help!
- Lift together or use mechanical assistance



# LIFTING (IF YOU MUST)

- ✗ Put one knee on the floor to steady yourself.
- ✗ Tilt the object sideways to get a firm grip.
- ✗ Hold it close to the front of your body.
- ✗ Take your knee off the floor and use both legs to stand up.
  - + If you can't stand easily, ASK FOR HELP!!





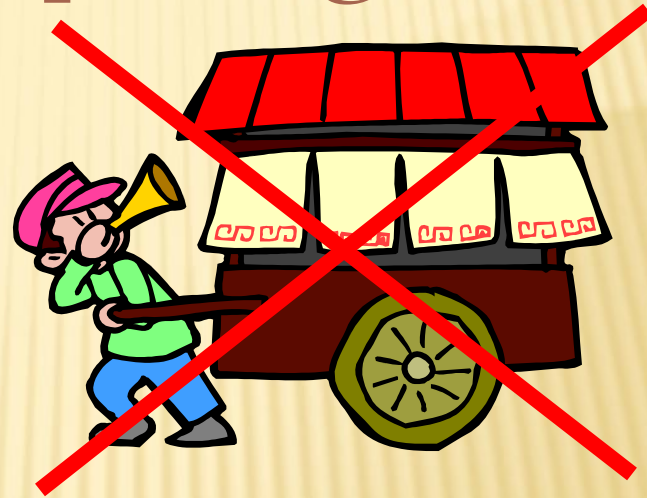
# Lifting Safely



# UNSAFE LIFTING TECHNIQUES



# Pushing and pulling



Has potential for straining arm, shoulder and neck muscles

Use your legs and tighten abdominal muscles



# MOVE, EXERCISE AND STRETCH



Warm ups can help prevent injuries and stretch breaks can relieve fatigue from being in a static posture.



Alternate between sitting and standing



Adjustable-height worksurfaces can facilitate effective work.

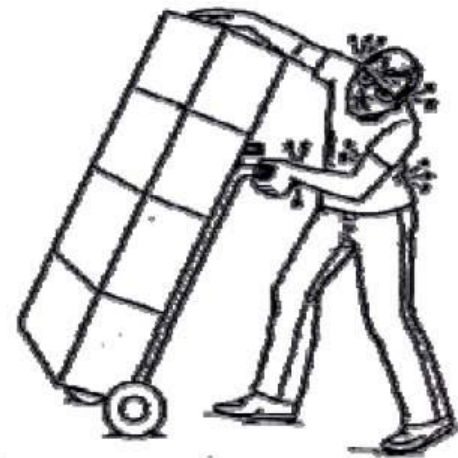


There is no one posture that is correct for an eight-hour day. Change positions often.

# PROVIDE CLEARANCE

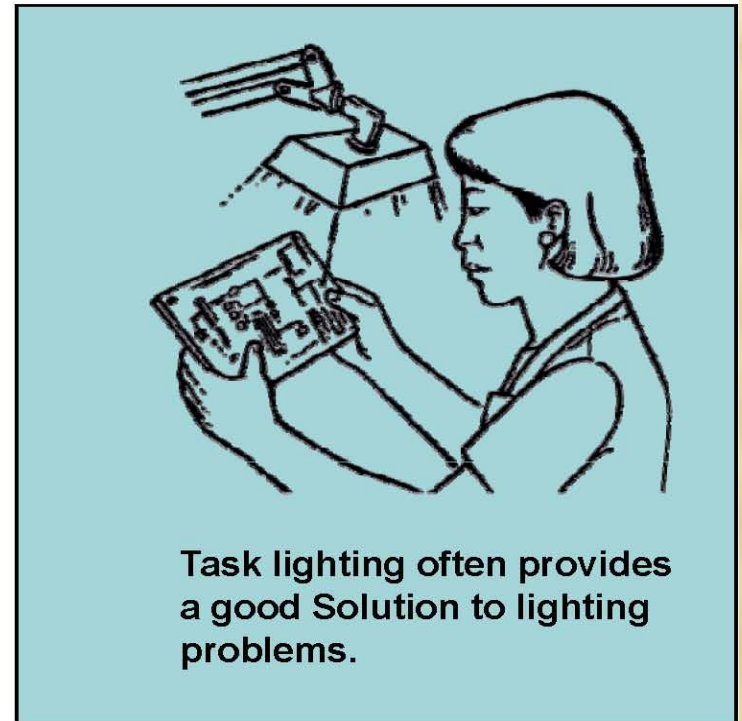
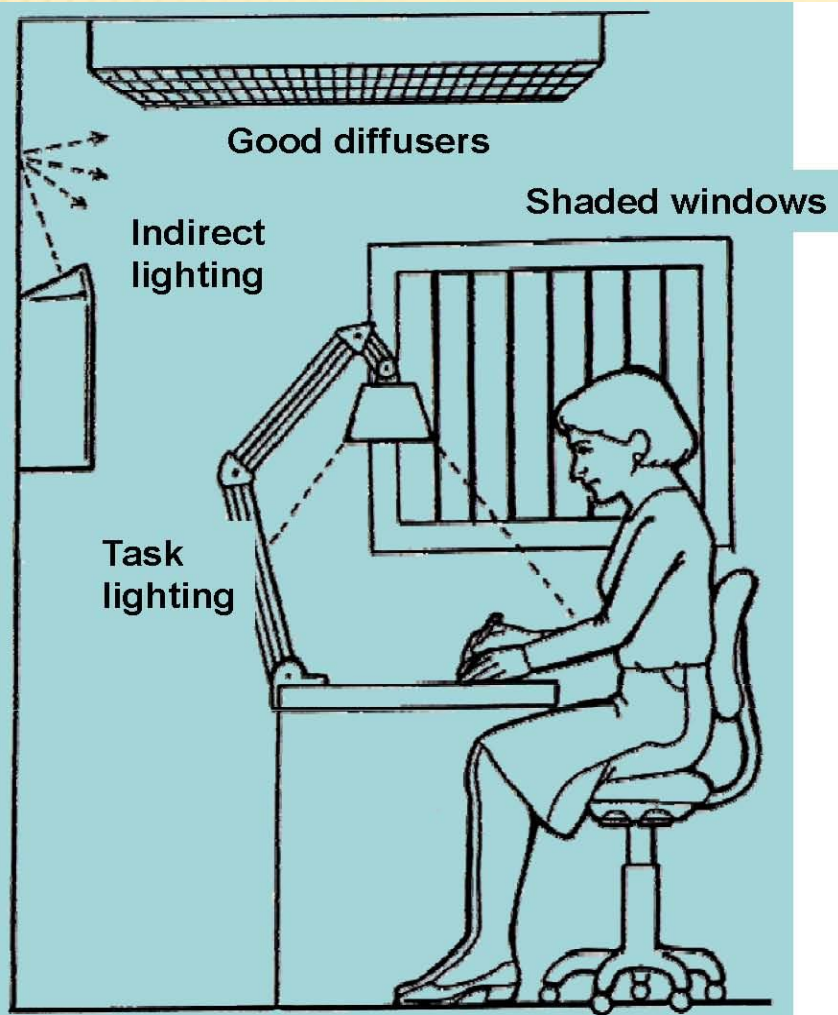


Clearance is needed for maintenance personnel to access equipment that needs repair or replacement.



Visual clearance is important for both safety and production reasons.

# MAINTAIN A COMFORTABLE ENVIRONMENT





# ERGONOMICS AT HOME

- ✗ These same principles apply at home as well as at work.



- ✗ Improper conditions at home or work can cause injuries.
  - + So use these guidelines in both places.



# Work Smarter – Not Harder

- ✓ Notice and report symptoms EARLY
- ✓ Stretch
- ✓ Take adequate and frequent breathers
- ✓ Do a different task or do the task differently