

ERGONOMICS ASSESSMENT APPROACH



INTRODUCTION

The regulations speak to an ergonomics programme approach which should be integrated into existing occupational health and safety programme.

It is important to acknowledge that ergonomics is not a stand alone hazard, but rather part of the broader approach to ensuring a workplace that is safe and without risk to the health of employees as well as productivity at work.

SNAGS ABOUT THIS REGULATION

SHORTCOMINGS	IMPLICATIONS
Broad and generalized definition of ergonomic risk	<ul style="list-style-type: none">• Employer has to identify; align and prioritize potential ergonomics hazards and associated risks• Then decide on the approach for ergonomics programme
Currently, no SANS codes available for ergonomics	<ul style="list-style-type: none">• Employer to identify and / or decide on best practice to follow

TYPES OF ERGONOMICS RISKS

■ Cognitive ergonomics

Field of study that focuses on how well the use of a product matches the cognitive capabilities of users. It draws on knowledge of human perception, mental processing, and memory. Rather than being a design discipline, it is a source of knowledge for designers to use as guidelines for ensuring good usability

■ Organizational ergonomics

How work is organized, for example shift patterns

■ Physical ergonomics

The physical requirements of an activity

REGULATION 1 - DEFINITIONS

“**competent person**” in relation to ergonomics, means a person who—

- (a) has in respect of the work or task to be performed the required knowledge, training and experience in ergonomics and, **where applicable** qualifications specific to ergonomics, provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualifications Framework Act, 2008 (Act No. 67 of 2008), those qualifications and that training must be regarded as the required qualifications and training; and
- (b) is familiar with the Act and the applicable regulations made under the Act

REGULATION 3 – INFORMATION, INSTRUCTION AND TRAINING

Employer, **in consultation** with the health and safety committee or health and safety representatives of the respective workplace(s):

- Establish a training programme for all employees exposed to ergonomic risks

Also

- Provide training for health and safety committees and health and safety representatives
 - ▶ to ensure that they are able to make informed decisions relating to their discretionary powers
- Training frequency / intervals
 - ▶ **Recommended** by health and safety committees and health and safety representatives

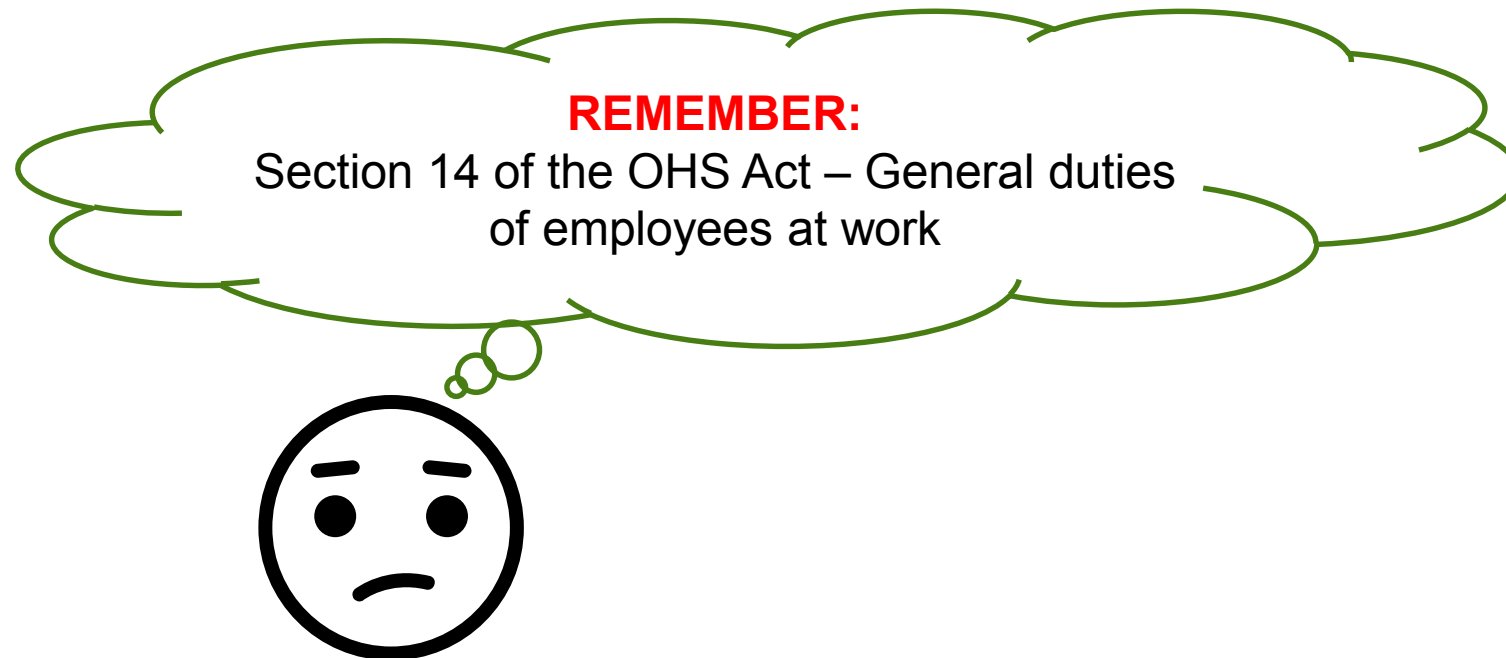
REGULATION 3 – INFORMATION, INSTRUCTION AND TRAINING

- Training outline / content (minimum requirements):
 - a) the content and scope of these Regulations;
 - b) the potential sources of exposure to ergonomic risks;
 - c) the nature of ergonomic risks;
 - d) the potential risk to health associated with ergonomic risks;
 - e) the control measures that are in place to prevent exposure to ergonomic risks;
 - f) the procedure for reporting ergonomic risks to the health and safety representative or employer;
 - g) the precautions to be taken by an employee to protect himself or herself against ergonomic risks; and
 - h) the assessment of exposure, the necessity for medical surveillance and the long-term benefits of undergoing such surveillance.

- Training of employees may be conducted either internally or externally

REGULATION 4 – DUTIES OF THOSE WHO MAY BE EXPOSED TO ERGONOMIC RISKS

- have a moral and legal duty to comply with any
 - ▶ lawful instruction and procedure (written or oral) given by or on behalf of employers
 - ▶ of the requirements laid down by the Act and other applicable regulations



REGULATION 6 –ERGONOMICS RISK ASSESSMENT

(1)

- a) An employer must, before the commencement of any work that may expose employees to ergonomic risks, have an ergonomic risk assessment performed by a **competent person**

NOTE -

(2) The ergonomic risk assessment contemplated in sub regulation (1) must–

(b) include–

- (i) a complete hazard identification;
- (ii) the identification of all persons who may be affected by the ergonomic risks;
- (iii) how employees may be affected by the ergonomic risks;
- (iv) the analysis and evaluation of the ergonomic risks; and
- (v) the prioritization of ergonomic risks

REGULATION 6 –ERGONOMICS RISK ASSESSMENT *(continued)*

- Ergonomic risk assessment frequency
 - ▶ at intervals not exceeding two years

- Ergonomic risk assessment review
 - ▶ if a reportable incident occurs
 - ▶ when control measures are no longer effective
 - ▶ when there is a change
 - ▶ if medical surveillance reveals an adverse health effect as a result of exposure to ergonomic risks

REGULATION 7 –RISK CONTROL

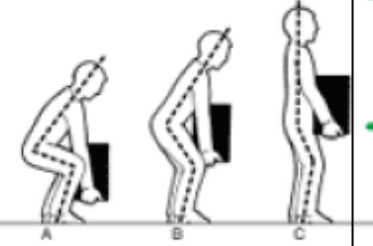
- Follow hierarchy of controls:
 - ▶ Elimination
 - ▶ Substitution
 - ▶ Engineering / Technical
 - ▶ Administrative
 - ▶ PPE

REGULATION 8 –MEDICAL SURVEILLANCE

- Should be incorporated into existing medical surveillance programme:

BASF ERGONOMICS ASSESSMENT APPROACH

HEAVY PHYSICAL WORK

Risk and Stress Factors	Examples for Safeguard Measures (Specific Legal Bases)
<p data-bbox="665 307 1006 435"> ■ Handling of Loads (e. g. Lifting, Dropping, Pushing, Pulling, Carrying) </p> 	<ul style="list-style-type: none"> <li data-bbox="1044 307 1921 406">→ Check if the standard values for lifting and carrying are not exceeded (see Key Indicator Method in Appendix 1). <li data-bbox="1044 456 1921 521">→ Avoid manual handling of loads by technical measures (e. g. by transfer of input substances through pipes). <li data-bbox="1044 585 1921 621">→ Lower the load weights (e. g. smaller containers). <li data-bbox="1044 721 1921 778">→ Ensure that the load can be grabbed safely (e. g. handles, recesses for hands). <li data-bbox="1044 849 1921 906">→ Make the load available at ergonomic height (e. g. lifting equipment, tables with adjustable height). <li data-bbox="1044 978 1921 1006">→ Make transport and carrier tools available. <li data-bbox="1044 1106 1921 1206">→ Pay attention to a healthy posture (e. g. lifting with straight spinal column, keep load close to trunk, avoid lifting and carrying with a twisted body). <li data-bbox="1044 1263 1921 1292">→ Instruct employees

PHYSICAL WORK STRAINING ON ONE SIDE

Risk and Stress Factors	Examples for Safeguard Measures (Specific Legal Bases)
<p>Permanently Repetitive Processes</p>	<p>→ Avoid frequent and permanent activities with a high movement frequency:</p> <ul style="list-style-type: none"> - uniform conventional assembly, - frequent handling of hand-operated lever presses, scissors, - text input with a keyboard.
<p>Recurrent Movements of Small Finger Muscles, Hands or Arms with Relatively High Frequency</p>	<p>→ Avoid forced or unfavourable postures through design of:</p> <ul style="list-style-type: none"> - Workplace (e. g. working height, vision distance and vision angle adequate for task, hand reach envelope),


- Work equipment (e. g. location of handling elements on machines),
- Working environment (e. g. location of lighting system).

- Change posture (e. g. between sitting and standing).

- Provide suitable chairs and standing aids.

- Avoid static work of long duration without load change.

- Forced Postures** (Cowering, kneeling, standing, sitting, laying, twisted turning, bending, stretching (working overhead))
- Narrow Spatial Relations**
- Holding**
- Pushing**



Key Indicator Method for the Assessment of Lifting, Holding and Carrying Loads

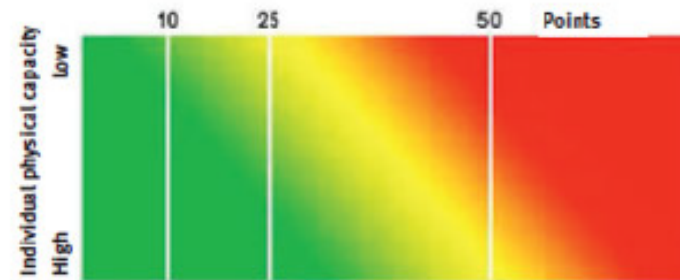
The Key Indicator Method is recommended for the practical analysis of the objectively existent workload.

The first step is the recording and documentation of four key indicators:

- Duration/Frequency
- Load weight
- Posture
- Working conditions

The next step is calculating the risk value based on the assessment of these key indicators, which can be situated between 2 and approx. 80. In purely arithmetical terms higher values are possible, however, they are unattainable adapted from practical experience.

Values up to 25 are regarded as practically safe, whereas values above 50 are substantially risky. If the values range between 25 and 50 a risk evaluation must be applied taking the employees' individual capacity into account.



Assessment Model

Profound knowledge of the activity evaluated is an indispensable precondition for the application of this method. Additional knowledge in ergonomics or occupational safety is not required. Based on this knowledge the method takes only a few minutes to perform.

If this knowledge is missing, a task analysis has to be carried out.

1st step: Determination of time rating points (Select only one column!)

Lifting or displacement operations (< 5 s)		Holding (> 5 s)		Carrying (> 5 m)	
Number on working day	Time rating points	Total duration on working day	Time rating points	Overall length on working day	Time rating points
< 10	1	< 5 min	1	< 300 m	1
10 to < 40	2	5 to 15 min	2	300 m to < 1 km	2
40 to < 200	4	15 min to < 1 hr	4	1 km to < 4 km	4
200 to < 500	6	1 hrs to < 2 hrs	6	4 to < 8 km	6
500 to < 1000	8	2 hrs to < 4 hrs	8	8 to < 16 km	8



≥ 1000	10	≥ 4 hrs	10	≥ 16 km	10
<i>Examples:</i> <ul style="list-style-type: none"> • laying bricks, • placing workpieces into a machine, • taking boxes out of a container and putting them onto a conveyor belt. 		<i>Examples:</i> <ul style="list-style-type: none"> • holding and guiding a cast iron slug while working on a wheel stand, • operating a hand grinding machine, • operating a weedeater. 		<i>Examples:</i> <ul style="list-style-type: none"> • furniture removal, • delivering scaffolding parts to a building site. 	

2nd step: Determination of rating points of load, posture and working conditions

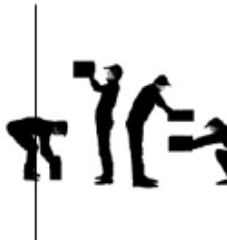

Effective load ¹⁾ for men	Load rating points	Effective load ¹⁾ for women	Load rating points
< 10 kg	1	< 5 kg	1
10 to < 20 kg	2	5 to < 10 kg	2
20 to < 30 kg	4	10 to < 15 kg	4
30 to < 40 kg	7	15 to < 25 kg	7
≥ 40 kg	25	≥ 25 kg	25

¹ **Effective load** means in this context the real action force which is necessary for moving load.

This action force does not correspond to the load mass in each case. For e.g., when lifting a carton, only 50% of the load mass will have an effect on worker and when using a cart, only 10%

Typical postures, position of load ²⁾	Posture, position of load	Posture rating point
	<ul style="list-style-type: none"> • Upper body upright, not twisted • When lifting, holding, carrying and lowering the load is close to body 	1
	<ul style="list-style-type: none"> • Slightly bending forward or twisting the trunk • When lifting, holding, carrying and lowering load is near to medium to body 	2

^{2) To determine the posture rating points, the typical posture during manual handling must be used. For example, when there are different postures with load an average value must be used and not occasional extreme values}

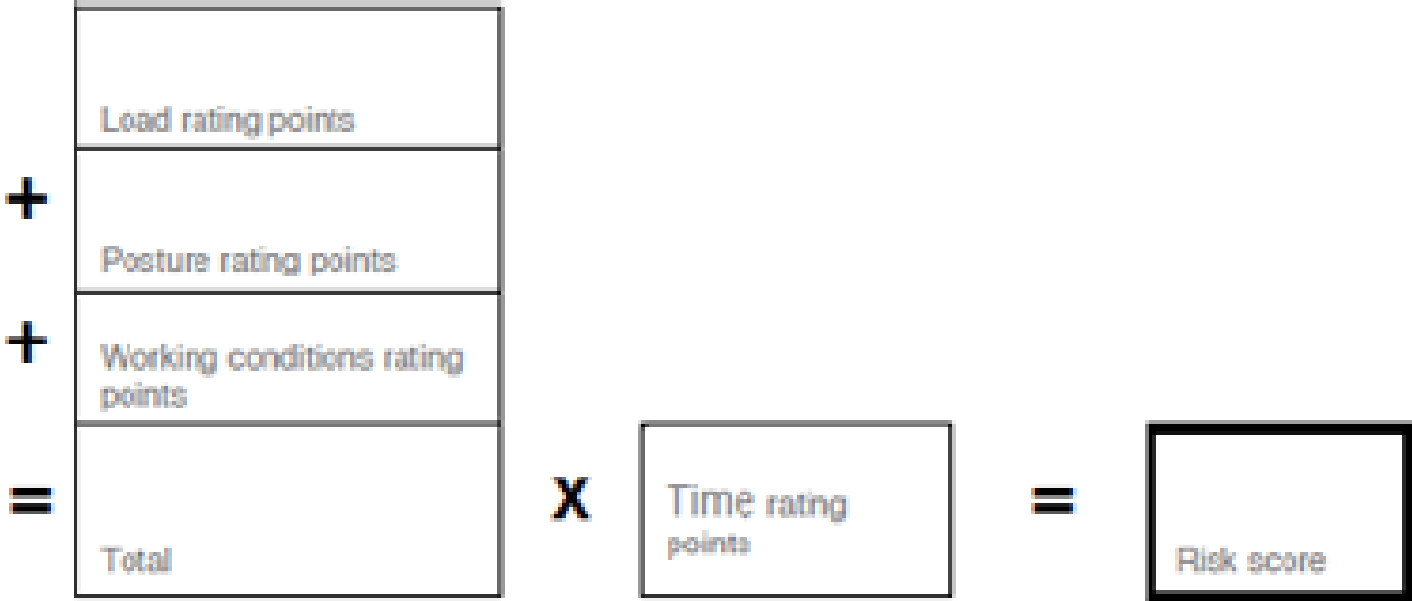
	<ul style="list-style-type: none"> • Low bending or far bending forward • Slightly bending forward with simultaneous twisting of trunk • Load far from the body or above shoulder height 	4
	<ul style="list-style-type: none"> • Bending far forward with simultaneous twisting of trunk • Load far from body • Restricted stability of posture when standing • Crouching or kneeling 	8

Working conditions	Working conditions rating point
Good ergonomic conditions, e.g. sufficient space, no physical obstacles within the workspace, even level and solid flooring, sufficient lighting, good gripping conditions	0
Space for movement restricted and unfavourable ergonomic conditions (e.g. 1: space for movement restricted by too low high or working area less than 1,5 m ² or 2: posture stability impaired by uneven floor or soft ground)	1
Strongly restricted space of movement and/or instability of centre of gravity of load (e.g. transfer of patients)	2

EVALUATION

3rd step: Evaluation

The rating points relevant to this activity are to be entered and calculated in the diagram.



QUANTIFICATION MATRIX

1	< 10	Low load situation, physical overload unlikely to appear.
2	10 up to < 25	Increased load situation, physical overload is possible for less resilient persons ⁴ . For that group redesign of workplace is helpful.
3	25 up to < 50	Highly increased load situation, physical overload also possible for normal persons. Redesign of the workplace is recommended.
4	≥ 50	High load situation, physical overload is likely to appear. Workplace redesign is necessary ⁵ .

