



IT CERTIFICATION SERVICES
Ergonomics Assessment & Evaluation

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Amendment Record

Amendment No.	Date of Amendment	Nature of Amendment	Page Ref.

Ergonomics Assessment & Evaluation – Guidelines & Checklist

Iris Authentication Biometric Device

Ergonomics - Overview: In very simple way Ergonomics is a way to work smarter by designing tools, equipment, work stations and tasks to fit the job to the worker, which is balancing job characteristics with human capabilities.

Ergonomics is a systems-oriented discipline which now extends across all aspects of human activity. When practically applied, ergonomics seeks to optimize the functioning of systems by ensuring that they are compatible with human capabilities and needs.

The application of Ergonomics to job design, results on employers reduced absenteeism, increase productivity, and decreased costs for injured workers, improved union/management relations, improved morale of employees with a greater satisfaction and less stress.

The official definition of Ergonomics, by the International Ergonomics Association in 2000 was: "Ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, it is also the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance" (IEA, 2001).

So Ergonomics contribute to the design and evaluation of tasks, jobs, products, environments and systems in order to make them compatible with the needs, abilities and limitations of people.

Ergonomics is defined as the design of the workplace, equipment, machine, tool, product, environment and system, taking into consideration a human being's:

- Physical,
- Physiological,
- Biomedical and
- Psychological capabilities

In other words, "fit the job to the person" rather than "fitting the person to the job." Ergonomics means designing the work environment and specific job tasks to fit the worker's need for comfort, health and safety.

Key Factors ergonomic analysis methodology provides practical solutions to ergonomic hazards encountered in a myriad of working conditions where cumulative trauma disorders (CTDs)/repetitive strain injuries (RSIs), cognitive workload, or other ergonomic concerns are present.

What Is an Ergonomic Assessment & Evaluation?

An ergonomic assessment & evaluation uses the science of ergonomics to determine the physical relationship of the worker to his or her work station. The purpose of the evaluation is to increase workplace comfort and productivity as well as prevent repetitive strain injuries. Every individual has different ergonomic needs and so should align his or her work station with those needs.

Many work environments require repetitive movement or remaining in one position for long periods of time. Often, these positions or movements are not the way human muscles and joints are supposed to function. Over time, the continuous strain can cause serious injury and even disability. An ergonomic evaluation can detect what adjustments should be made in order to prevent injury. Injury prevention also means worker compensation savings to the employer.

Not only can ignorance about ergonomics lead to injury, but it can also drain the body of energy and cause discomfort. When the body is working in an uncomfortable position, even mild symptoms can cause distraction from the work at hand. The person's focus will likely keep shifting back to his or her discomfort. An ergonomic evaluation can show how to get more work done with the body and mind in harmony.

Common tools used during an ergonomics assessment & evaluation include an ergonomic checklist. Desk design, height, and organization are assessed during an office ergonomic evaluation. Chair adjustment as well as working posture is considered. The computer monitor's position and angle in relation to the employee's eye-line are observed. Keyboard and mouse position and the elevation of the wrist when using these tools are also noted during evaluation. Finally, the overall posture is assessed to eliminate strain so the joints are comfortably and naturally aligned.

Ergonomic evaluation can also help rule out the work environment as a cause for symptoms. A proper assessment will look for other possibilities for the symptoms if it isn't obvious that the problem is ergonomics related. For example, if a person is suffering shoulder pain that is constant and the work station doesn't appear to be problematic, the symptoms may be primarily caused by a hobby or even sleeping habits.

Ergonomic Assessment & Evaluation: Guidelines & Checklist

Introduction: Ergonomics is a scientific discipline, which is concerned with improving the productivity, health, safety and comfort of people, as well as promoting effective interaction among people, technology and the environment in which both must operate.

Purpose: Ergonomic device should be designed to facilitate task performance, minimize fatigue and injury by fitting equipment to the body size, strength and range of motion of the user.

The device should be task specific to eliminate:

- a) Static or awkward posture,
- b) Repetitive motion,
- c) Poor access or inadequate clearance and excessive reach,
- d) Display that are difficult to read and understand, and
- e) Controls that are confusing to operate or require too much force.

Therefore, the device should be suitable for the types of tasks performed and be adaptable to multi-purpose use. Device must be designed carefully to meet the need of the staff and to accomplish the goals of the facility.

Objectives: Design objectives should support humans to achieve the operational objectives for which they are responsible. There are three goals to consider in human-centered design.

1. Enhance human abilities
2. Overcome human limitations
3. Foster user acceptance

Scope: Biometric Device (Iris Authentication)

Context of Use: Use of biometric device by the **device operator** for **user** authentication.

Process: The ergonomics assessment & evaluation will be based on 5-key characteristics:

- Ease of use/ Operability
- Comfort
- Safety / Health
- Effectiveness
- Efficiency/ Productivity

Each of these key characteristics is further expanded into related checkpoints – resulting in an Ergonomics Assessment & Evaluation Checklist.

The Ergonomics Assessment & Evaluation Checklist will be filled by a group of users/ tester (minimum 10). Each checkpoint will be responded with either (Yes/ No/ / NA) along with comments, if any.

Ergonomics Assessment & Evaluation Checklist – Iris Authentication Biometric Device

(To be filled by Tester)

Device (Make, Model, Serial Number):

Assessment & Evaluated By:

A) Ease of Use/ Operability

The device should be operator/ user friendly and promote understanding and easy operability. All objects, options, controls and instructions should be readily visible or accessible, alleviating the user from having to remember the location or meaning of things.

#	Checkpoint	Yes	NA	No	Comments
1.	The device controls/ settings are easy to understand & operate.				
2.	The indicators/ displays (visual/ audio) on the device are clearly visible and meaningful. Visual indicators may be LED, LCD with adjustable brightness against the ambient. Audio indicators may have different languages.				
3.	Device has proper instructions and messages for its use & operation (e.g., encourage the user/ resident to sufficiently open the eyes & look in a specific direction).				
4.	Device provides assistant (including actionable feedback such as open eyes wider, look straight, hold sturdily, move closer/ farther to focus) to the operator & user through visual/ audio indicators.				
5.	Device has progress status indicators (Capture Ready/ Capture In-progress/ Capture Complete)				

B) Comfort to Use

The operator/ user should be able to comfortably operate the device.

#	Checkpoint	Yes	NA	No	Comments
1.	It is easy & quick to position/ align the device to capture the biometric.				
2.	There are sufficient margins to adjust (left/ right/ Up/ down) the device to capture the biometric.				
3.	The device is adjustable for distance/ height/ angle.				
4.	The device allows quick and automatic capture.				
5.	The device has physical support/ guide (e.g., stand, viewfinder, visor,LED/ LCD etc.) for comfortable				



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	usage of the device.				
6.	It is easy to stabilize the device to capture the biometric.				
7.	The operator & user feel comfort (do not feel fatigue) while operating the device.				
8.	Device can be used in a conformable sitting/ standing (no awkward posture) position.				

C) Safety

The device should be safe to use by the operator and user.

#	Checkpoint	Yes	NA	No	Comments
1.	It is safe to use the device without any risk of injury.				
2.	The device can be used without any stringent safety instructions.				

D) Effectiveness

The device should be able to serve the purpose by allowing successful authentication.

#	Checkpoint	Yes	NA	No	Comments
1.	The device allows the operator & user to complete the successfully authentication.				
2.	The operator & user is able to successfully complete the authentication with minimum number (1-3) of attempts.				

E) Efficiency/ Productivity

The use of device should enhance the throughput of performing the tasks/ operations.

#	Checkpoint	Yes	NA	No	Comments
1.	Average time to complete the successful authentication is low (within 30 Seconds).				
2.	Number of successful authentications by the device per hour (about 50-60).				