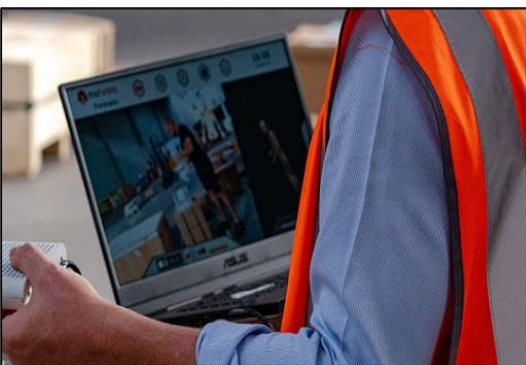
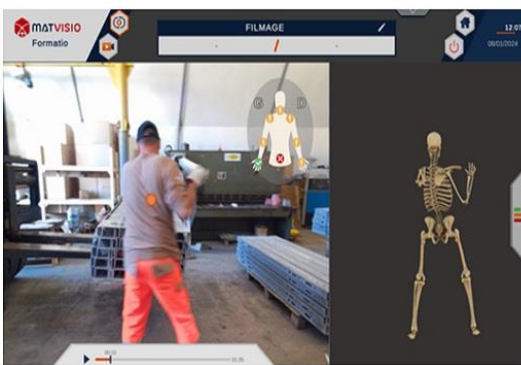
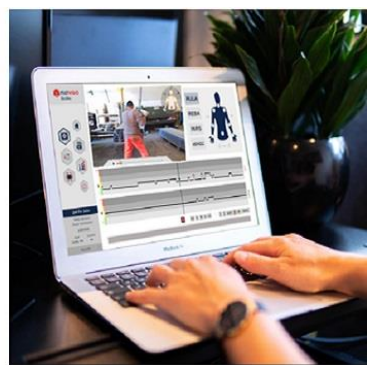




ERGONOMIC ASSESSMENT METHODS FOR WORKSTATIONS USED BY MATVISIO :

- RULA
- REBA
- INRS Recommendations
- Mode ADHOC



RULA Method — Overview

Source : McAtamney, L. & Corlett, E.N. (1993). RULA: a survey method for the investigation of work-related upper limb disorders. Applied Ergonomics, 24(2), 91–99.
DOI: 10.1016/0003-6870(93)90080-S

Objective	Scope	Duration
Quickly assess upper limb postures that expose workers to MSDs	Upper limbs, neck, trunk — sedentary & light standing work	15 to 20 minutes per workstation observation

Principle: scoring by anatomical groups A (arm, forearm, wrist) and B (neck, trunk, legs), combined into a final action score.

RULA — Group A: Upper Limb

Segment	Angle / Position	Base Score	Adjustments
Arm	Flexion/extension: 0–20° : +1 20–45° ou ext. : +2 45–90° : +3 > 90° : +4	1 to 4	+1 if shoulder raised +1 if arm abducted –1 if arm is supported or person is leaning
Forearm	Flexion: 60–100° : +1 Other : + 2	1 to 2	+1 if either arm is working across midline or out to side of body
Wrist	Neutral : +1 0–15° flex/ext.: 2 > 15° : +3	1 to 3	+1 if wrist is bent from midline

RULA Table A combines these scores to produce a posture score A (1–9).

RULA — Add Force/Load Score

If load < 4.4 lbs (intermittant) : +0

If load 4.4 to 22 lbs (intermittant) : +1

If load 4.4 to 22 lbs (static or repeated) : +2

If more than 22 lbs or repeated or shocks : +3

RULA — Group B & Final Action Score

Group B — Neck, Trunk, Legs

Segment	Base Score (angle)	Adjustments
Neck	0–10° : +1 10–20° : +2 > 20° : +3 Extension : +4	+1 if neck is twisted +1 if neck is side bending
Trunk	Upright sitting: +1 0–20°: +2 20–60°: +3 > 60°: +4	+1 if trunk is twisted +1 if trunk is side bendin

Final RULA Score — Action Levels

Score 1–2	Score 3–4	Score 5–6	Score 7+
Level 1 Acceptable posture if not held for extended periods	Level 2 Further investigation, improvement may be needed	Level 3 Investigation and changes needed soon	Level 4 Investigation and changes IMMEDIATELY required

REBA Method — Overview

Source : Hignett, S. & McAtamney, L. (2000). Rapid Entire Body Assessment (REBA). Applied Ergonomics, 31(2), 201–205. DOI: 10.1016/S0003-6870(99)00039-3

Objective	Scope	Specificity
Assess whole-body posture, especially during manual handling and dynamic postures	Whole body: upper limbs, neck, trunk, lower limbs — load included	Integrates the load/force factor and type of muscular activity (static, dynamic, shock)

Principle: scoring by groups A (trunk, neck, legs) and B (arm, forearm, wrist), adjusted by the load and activity score.

REBA — Group A: Trunk, Neck, Legs

Segment	Position / Angle	Score	Adjustments
Trunk	Upright: 1 0–20° flex/ext.: +2 20–60° flex/ext : +3 > 60° flex : +4	1–4	+1 if trunk is twisted +1 if trunk is side bending
Neck	0–20°: +1 > 20° or extension: +2	1–2	+1 if neck is twisted +1 if neck is side bending
Legs	Both legs down : +1 One leg raised : +2 Unilatéral / non supporté : 2	1–2	+1 if knee flex 30–60° +2 if knee flex > 60°

RULA — Add Force/Load Score

If load < 11 lbs : +0
If load 11 to 22 lbs : +1
If more than22 lbs : +2
Adjust : If shock or rapid build up of force : +1

REBA — Group B & Final REBA Score

Group B — Arm, Forearm, Wrist

Segment	Angle / Position	Base Score	Adjustments
Arm	Flexion/extension: 0–20° : +1 20–45° ou ext. : +2 45–90° : +3 > 90° : +4	1 to 4	+1 if shoulder raised +1 if arm abducted –1 if arm is supported or person is leaning
Forearm	Flexion: 60–100° : +1 Other : + 2	1 to 2	+1 if either arm is working across midline or out to side of body
Wrist	Neutral : +1 0–15° flex/ext.: 2 > 15° : +3	1 to 3	+1 if wrist is bent from midline

REBA Risk Levels

Score 1	Score 2–3	Score 4–7	Score 8–10	Score 11+
Negligible No action required	Low Action may be needed	Medium Action necessary	High Action necessary rapidement	Very High IMMEDIATE action

INRS Recommendations — Presentation

Sources :

OREGE — Aptel M., Lahaye S., Gerling A. — INRS, Documents pour le médecin du travail, n°83, TC 78, 2000
ISO 11226:2000 — Ergonomics — Evaluation of static working postures

3 colors — 3 levels of joint stress

1

COMFORT Zone

2

NOT RECOMMENDED

3

TO AVOID

Joints: NECK · SHOULDER · ELBOW · WRIST · TRUNK

NECK — Joint Zones

Flexion · Extension · Lateral Tilt

1 — COMFORT Zone

- Forward flexion: 0° – 20°
- Backward extension: 0° – 5°
- Lateral tilt: 0° – 10°
- Rotation: 0° – 15°

2 — NOT RECOMMENDED

- Forward flexion: 20° – 45°
- Backward extension: 5° – 20°
- Lateral tilt: 10° – 20°
- Rotation: 15° – 30°

3 — TO AVOID

- Forward flexion: ≥ 45°
- Backward extension: ≥ 20°
- Lateral tilt: ≥ 20°
- Rotation: ≥ 30°

SHOULDER — Joint Zones

Anterior Flexion · Abduction · Arms Raised

1 — COMFORT Zone

- Flexion (arm extended forward) : 0° – 20°
- Extension (arm behind the back) : 0°-20°
- Abduction: 0°–20°
- Arms resting at sides

2 — NOT RECOMMENDED

- Flexion (arm extended forward) : 20° – 60°
- Extension (arm behind the back) : 20°-45°
- Abduction: 20° – 45°
- Prolonged work with the arms raised halfway

3 — TO AVOID ⚠

- Flexion (arm extended forward) : ≥ 60°
- Extension (arm behind the back) : ≥ 45°
- Abduction: ≥ 45°

ELBOW — Joint Zones

Flexion · Extension

1 — COMFORT Zone

- Flexion: 60° – 100°
- Midrange = recommended working position
- Forearm near horizontal or slightly flexed

2 — NOT RECOMMENDED

- Flexion: 0° – 60° (arm too extended)
- Flexion: 100° – 130° (arm too flexed)
- Working outside the body's median axis

3 — TO AVOID

- Flexion: ≥ 130° (forearm folded)
- Hyperextension: < 0°
- Static positions held at the extremes

WRIST — Joint Zones

Flexion palmaire · Extension dorsale

1 — COMFORT Zone

- Palmar flexion (wrist bent toward the palm) : 0° – 15°
- Dorsal extension (wrist bent toward the back of the hand) : 0° – 15°

2 — NOT RECOMMENDED

- Palmar flexion (wrist bent toward the palm) : 15° – 45°
- Dorsal extension (wrist bent toward the back of the hand) 15° – 45°

3 — TO AVOID

- Palmar flexion (wrist bent toward the palm) : ≥ 45°
- Dorsal extension (wrist bent toward the back of the hand) : ≥ 45°

TRUNK — Joint Zones

Extension · Inclinaison latérale · Torsion

1 — COMFORT Zone

- Forward flexion: 0° – 20°
- Backward extension: 0° – 5°
- Lateral tilt: 0° – 10°
- Upright seated or slightly supported

2 — NOT RECOMMENDED

- Forward flexion: 20° – 60°
- Backward extension: 5° – 20°
- Lateral tilt: 10° – 20°
- Torsion modérée : ≤ 20°

3 — TO AVOID ⚠

- Flexion avant : ≥ 60°
- Backward extension: ≥ 20°
- Lateral tilt: ≥ 20°
- Torsion extrême : > 20°
- Torsion + flexion combinées : risque très élevé

ADHOC mode — Overview

ADHOC is a feature developed exclusively for MATVISIO

Objective

Adapt constraint levels to the user's needs.

Scope

Whole body: upper limbs, neck, trunk, lower limbs.

Use case

Medical recommendations, internal standards, job retention....

Principle: The scoring principle is, by default, based on the INRS color reference system.

The user can move the sliders to define different thresholds.

Ability to create custom "profiles".

Screenshot from the ADHOC mode :

