ErgoPlus

# REBA

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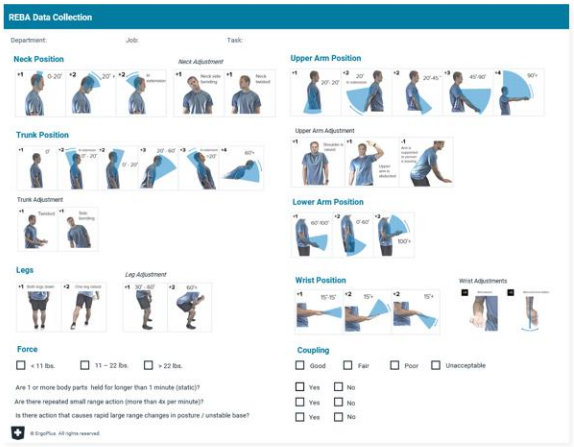
# When to Use REBA

## When To Use It

- When tasks have been flagged by the Job Screen
- Task-level entire body postural evaluations






REBA or Rapid Entire Body Assessment is a task-level assessment tool that evaluates upper and lower parts of the musculoskeletal system for biomechanical and MSD risks.

There are a few things to keep in mind when using REBA:

1) REBA does not consider the duration of the task, available recovery time, or hand-arm vibration.
2) REBA only allows the evaluator to assess one employee's worst case posture at one point in time, requiring the use of representative postures.
3) REBA requires separate assessment of right and left sides of the body.

# Inputs

## Inputs

**Neck, Trunk, and Leg Analysis**:

- Neck
- Trunk
- Legs
- Force/Load

**Arm and Wrist Analysis**:

- Upper Arm
- Lower Arm
- Wrist Position
- Coupling
- Activity Score

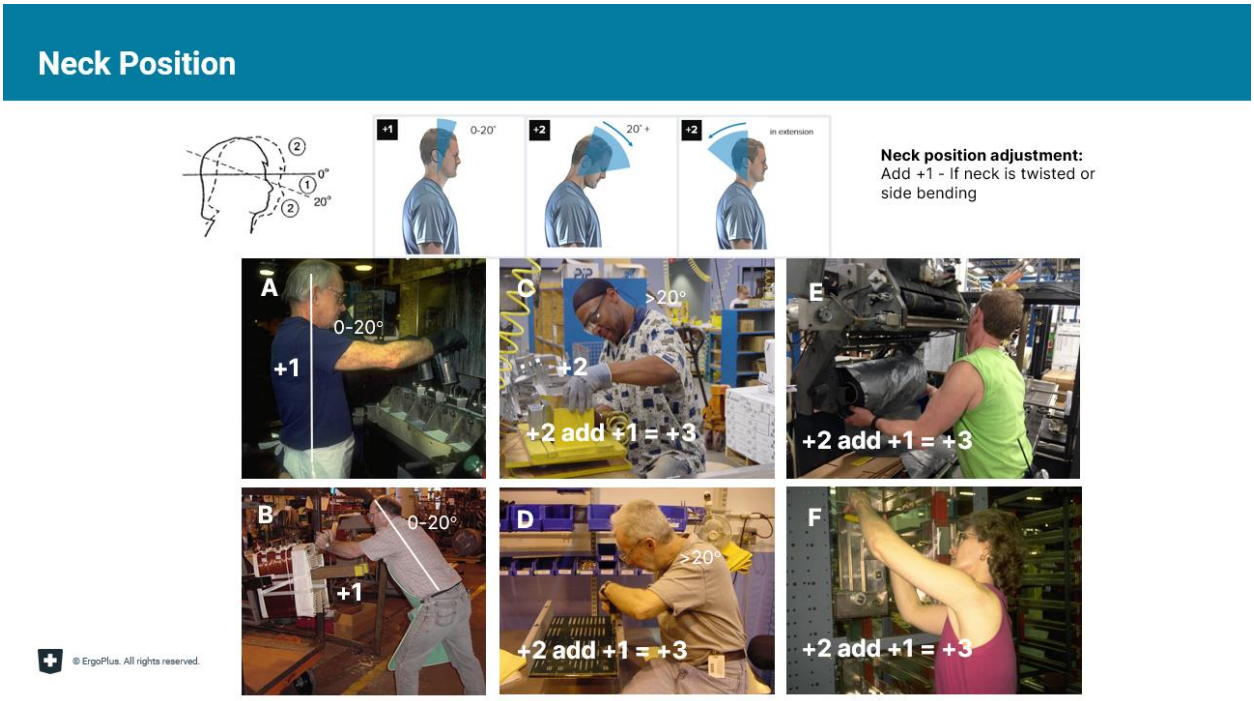
There are 9 inputs to the REBA assessment tool. The goal for this lesson is to get you comfortable with each of them.

Prepare for the assessment by interviewing the worker being evaluated to gain an understanding of the job tasks and demands, and observing the worker's movements and postures during several work cycles.

Selection of the postures to be evaluated should be based on:

- The most difficult postures and demanding work tasks (based on worker interview and initial observation).
- The posture sustained for the longest period of time.
- The posture where the highest force loads occur.

# Neck Position




Now, let's go over how to determine and measure the REBA task variables in greater detail. We'll start with the neck position:

The neck position score will be between 1-3. The score is based on the degree of neck flexion or extension, along with any adjustment for neck twisting or side bending (lateral flexion). Neck flexion is movement of the chin towards the chest from a neutral neck position. Neck extension is moving the chin away from the chest (backwards) from a neutral neck position. Experts in biomechanics use a variety of landmarks and methods to define the neutral position (or the zero point between flexion and extension) of the neck. To keep it really simple, I would define neutral as the posture of the head/neck when the trunk of the body is erect (sitting or standing up straight) and looking at a visual target directly ahead at eye level.

Neck position scoring examples:

**A:** Neck flexion is less than 20 degrees with no twisting or side bending, therefore the neck position score is +1.

**B:** Even though the trunk is flexed 30 degrees, the neck is not flexed (chin to chest) more than 20 degrees. So in this case, the neck position score is +1. Note: Be sure to look at neck flexion relative to the trunk position.

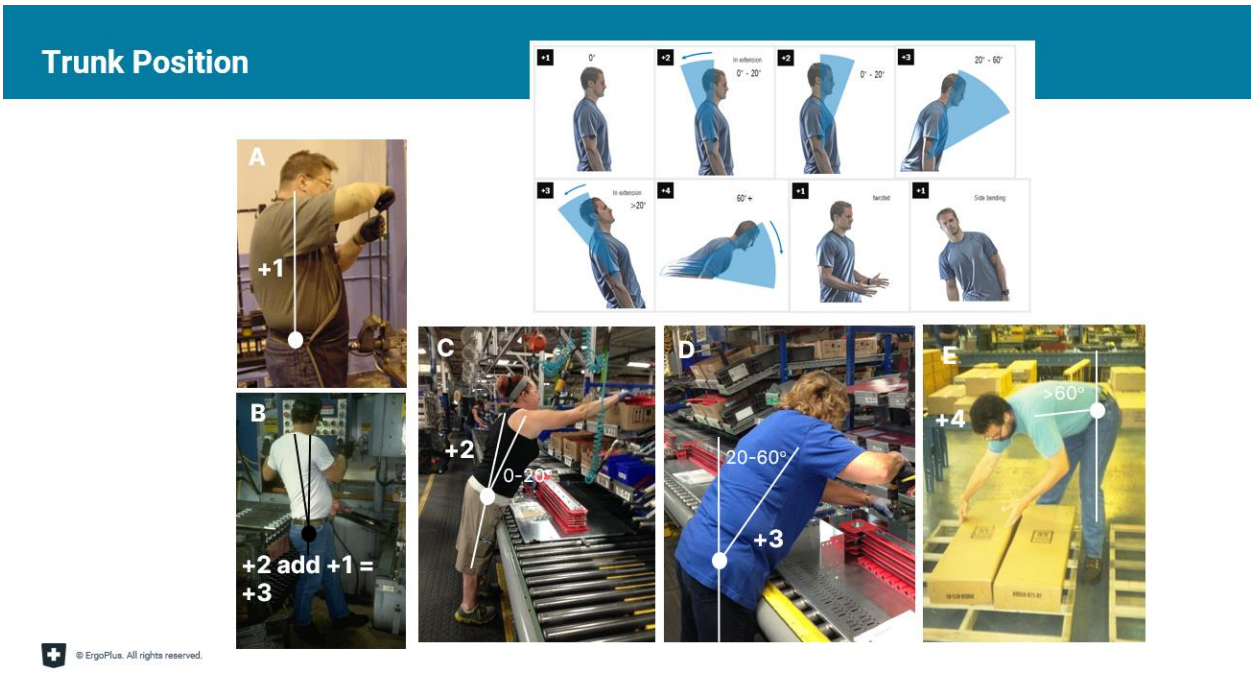
**C:** Neck flexion is greater than 20 degrees (+2) and neck is twisted (+1) in this example (neck twist or side bending is best observed from a position directly behind the worker). The neck position score in this example is +3.

**D:** Neck flexion is greater than 20 degrees (+2) and the neck is twisted (+1), therefore the neck position score is +3.

**E:** Neck is extended and twisted, so the proper scoring is +2 for extension and add +1 for twisting. Note: Neck extension is typically caused by a physical or visual obstruction.

**F:** Neck is extended and side bending, so neck position scoring is +2 for neck extension and add +1 for the neck side bending adjustment.

# Trunk Position




The trunk position score will be between 1-5. The score is based on the degree of trunk flexion or extension, along with any adjustment for twisting or side bending (lateral flexion) of the trunk/back.  Trunk flexion is defined as anterior (forward) movement of the trunk in the sagittal plane (think toe touching). Trunk extension is defined as posterior (backward) movement of the trunk in the sagittal plane.

Trunk position scoring examples:

**A:** Trunk is neutral with no twisting or side bending, therefore the trunk position score is +1.

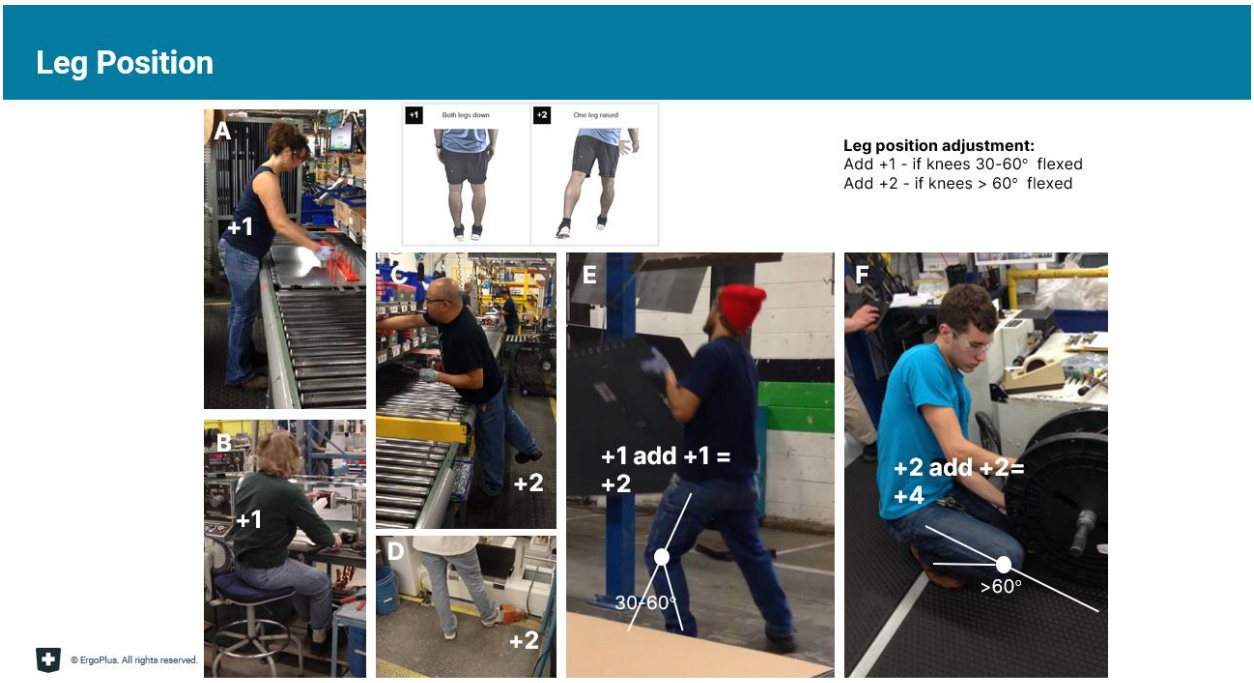
**B:** Trunk is extended between 0 - 20 degrees and the trunk is also twisted. So in this case, the trunk position score is +2 for extension and we need to add a +1 adjustment for twisting.

**C:** Trunk flexion is between 0 - 20 degrees with no twisting or side bending, therefore the trunk position score is +2.

**D:** Trunk flexion is between 20 - 60 degrees, therefore the trunk position score is +3.

**E:** Trunk flexion is greater than 60 degrees, so the score is +4. If trunk flexion is greater than 60 degrees and either side bending or twisting is required, an adjustment of +1 would be added for a total score of +5 (maximum trunk position score).

# Leg Position




The leg position score will be between 1-4. The score is based on bilateral or unilateral weight bearing on the legs, along with any adjustment for the degree of knee flexion. Knee flexion is defined as bending or decreasing the angle between the femur and tibia bones of the limb at the knee joint.

Leg position scoring examples:

**A:** Bilateral weight bearing on legs with <30 degrees of knee flexion, therefore the leg score is +1.

**B:** Seated positions or walking is scored +1.

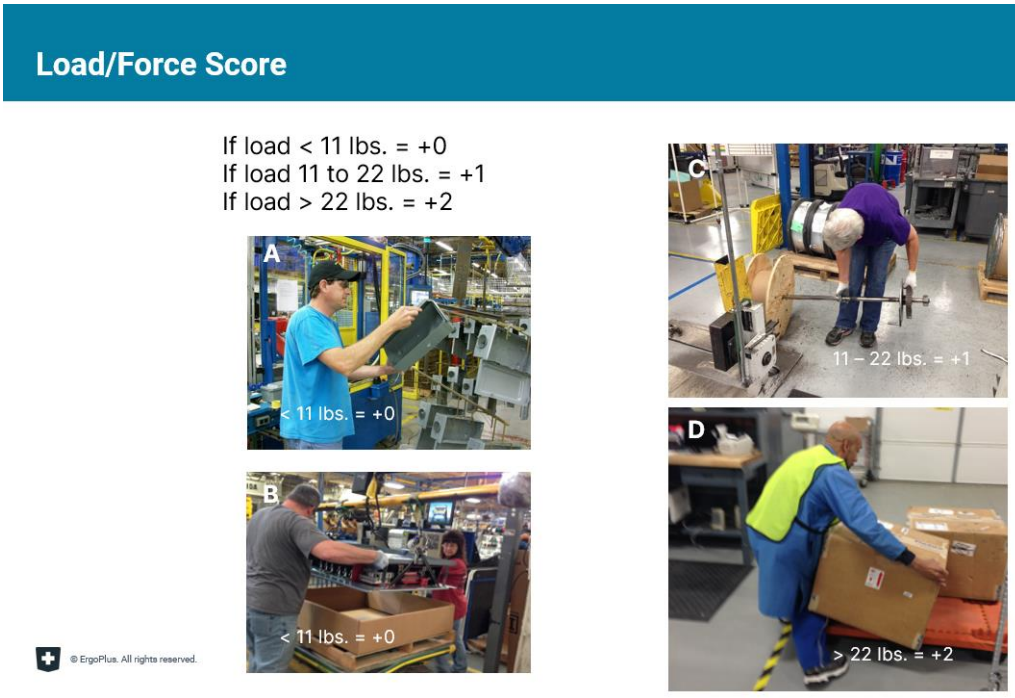
**C:** Unilateral weight bearing on left leg with less than 30 degrees of knee flexion, so the leg score is +2 in this case.

**D:** In this example, unilateral weight bearing on the left leg is required to actuate a foot pedal control in this operation. The leg score is +2 in this example.

**E:** There is bilateral weight bearing (+1) and the left knee is flexed between 30 – 60 degrees (40 degrees) so we would add +1 for a total leg score of +2 in this example.

**F:** In this case there is an unstable weight bearing posture with most of the weight on the right forefoot (unbalanced and unstable base of support) = initial leg score of +2. In addition, the worker's knees are flexed beyond 60 degrees so we would add a leg position adjustment score of +2 for a total leg score of +4 in this example.

# Load/Force Score




The last step in section A is to determine the load/force score, which will be a minimum of +0 and maximum of +3. Often, you can obtain the weight of the load from company production or shipping records. If necessary, use the nearest scale in the facility to determine the exact weight of any load being lifted. You will usually be able to find a scale in shipping and receiving departments. If the weight of the load varies significantly, you should obtain the average and maximum weights lifted.

If load < 11 lbs. (5kg)= +0

If load 11 to 22 lbs. (5-10kg) = +1

If load > 22 lbs. (10kg) = +2

**Adjustment:** If shock, rapid build up, or sudden exertion of force: add +1

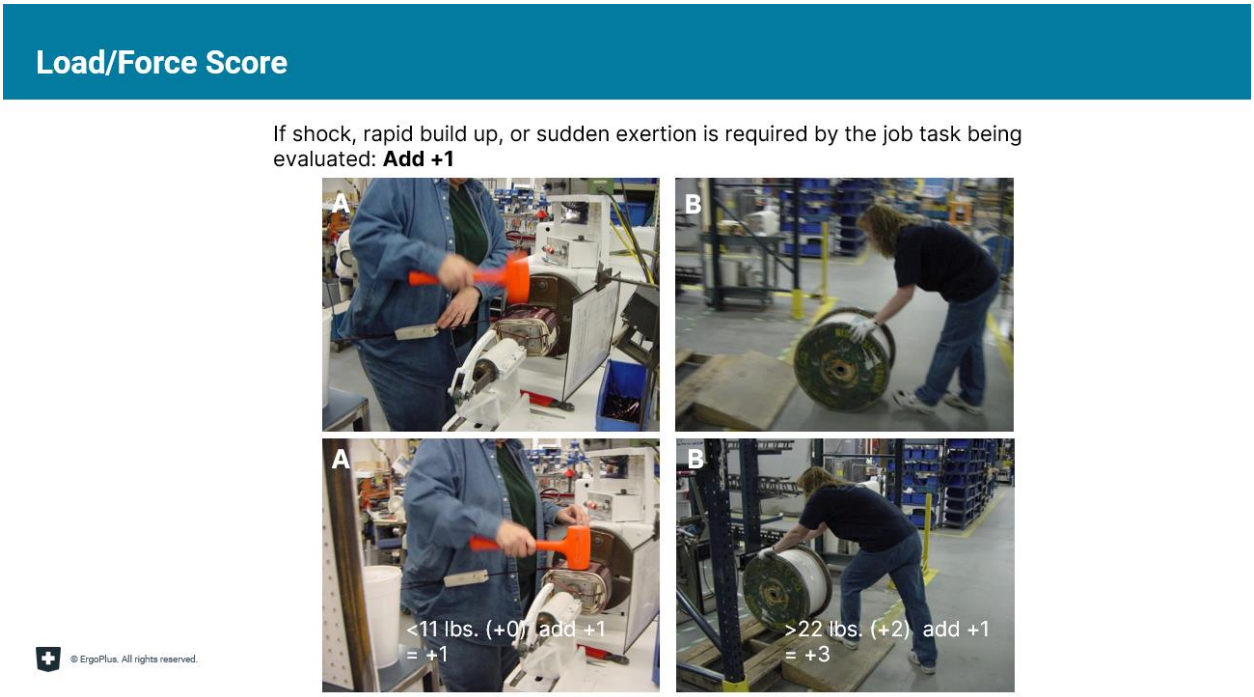
Examples:

**A & B:** The load / force in both examples is less than 11 pounds. Score = +0

**C:** The load / force is 21 pounds. Score for 11 – 22 pounds = +1

**D:** The load / force is greater than 22 pounds. Score = +2

# Load/Force Score (continued)

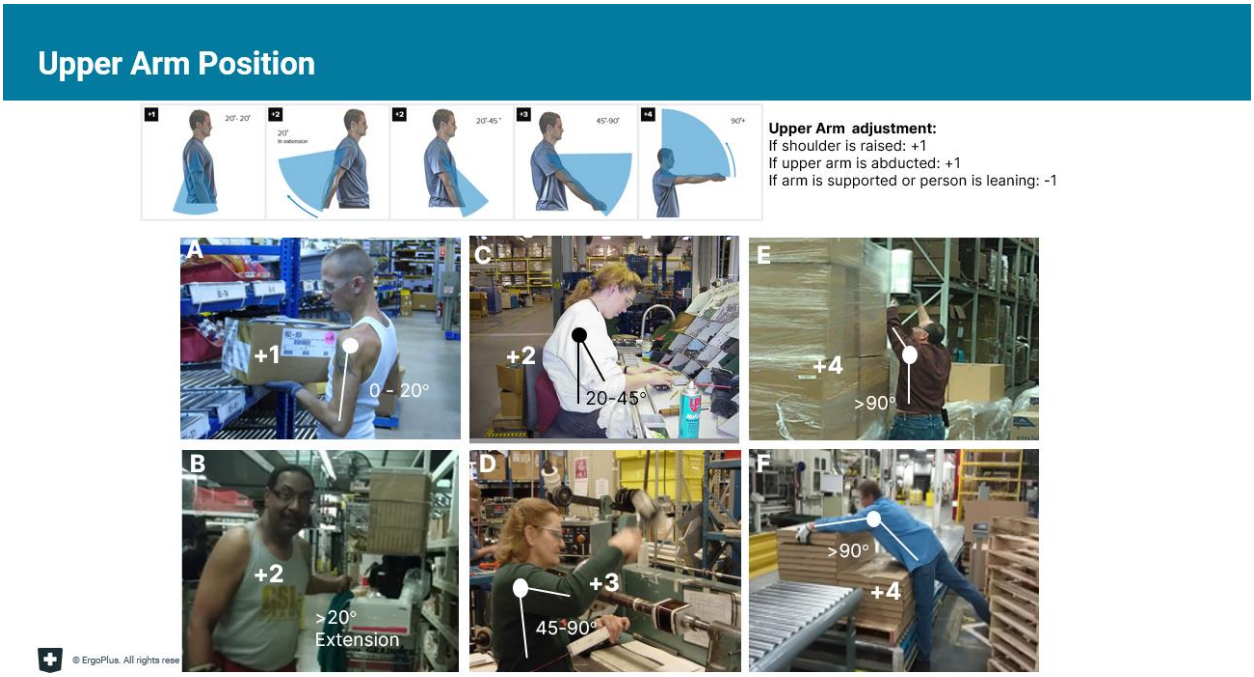



If shock force, rapid build up, or sudden exertion is required by the job task being evaluated: **Add +1**

**Example A (left):** The hammer weighs 3 pounds for a load score of +0. Rapid buildup and shock force is required by this task, so a +1 adjustment will be added for a total load/force score of +1 in this example.

**Example B (right):** The push force requirement to roll the spool of copper wire is 37 pounds (measured with a force gauge) for a load/force score of +2. Because a rapid buildup of force is required when pushing the spool up the pallet ramp, a +1 adjustment will be added for a total load/force score of +3 (+2 add +1 = +3) in this case.

# Upper Arm Position




The upper arm position score will be between 1-6. The score is based on the degree of shoulder flexion or extension, along with any adjustment for the shoulder being raised and/or abducted. Shoulder flexion is defined as anterior movement of the upper arm in the sagittal plane (forward reaching). Shoulder extension is defined as posterior movement of the upper arm in the sagittal plane (backward reaching). Shoulder abduction is defined as sideways movement of the upper arm away from the body.

Upper arm position scoring examples:

**A:** Shoulder is neutral between 0-20 degrees of flexion and extension, the upper arm position score for this example is +1.

**B:** Shoulder is extended beyond 20 degrees. So in this case the upper arm position score is +2.

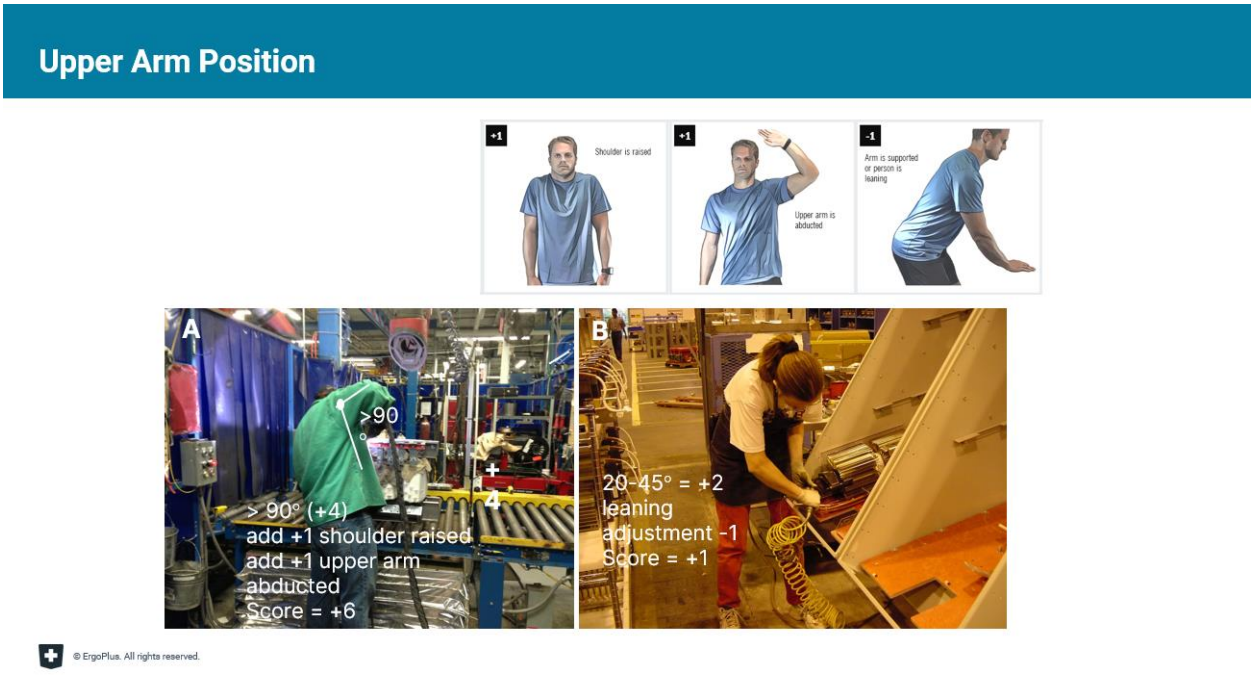
**C:** Shoulder is flexed between 20- 45 degrees, therefore the upper arm position score is +2.

**D:** Shoulder is flexed between 45 - 90 degrees, so the upper arm position score is +3 in this example.

**E:** Shoulder flexion is greater than 90 degrees, so the score in this case is +4.

**F:** Again, shoulder flexion is greater than 90 degrees and the score is +4.

# Upper Arm Position




Upper Arm  adjustments:

If shoulder is raised: +1

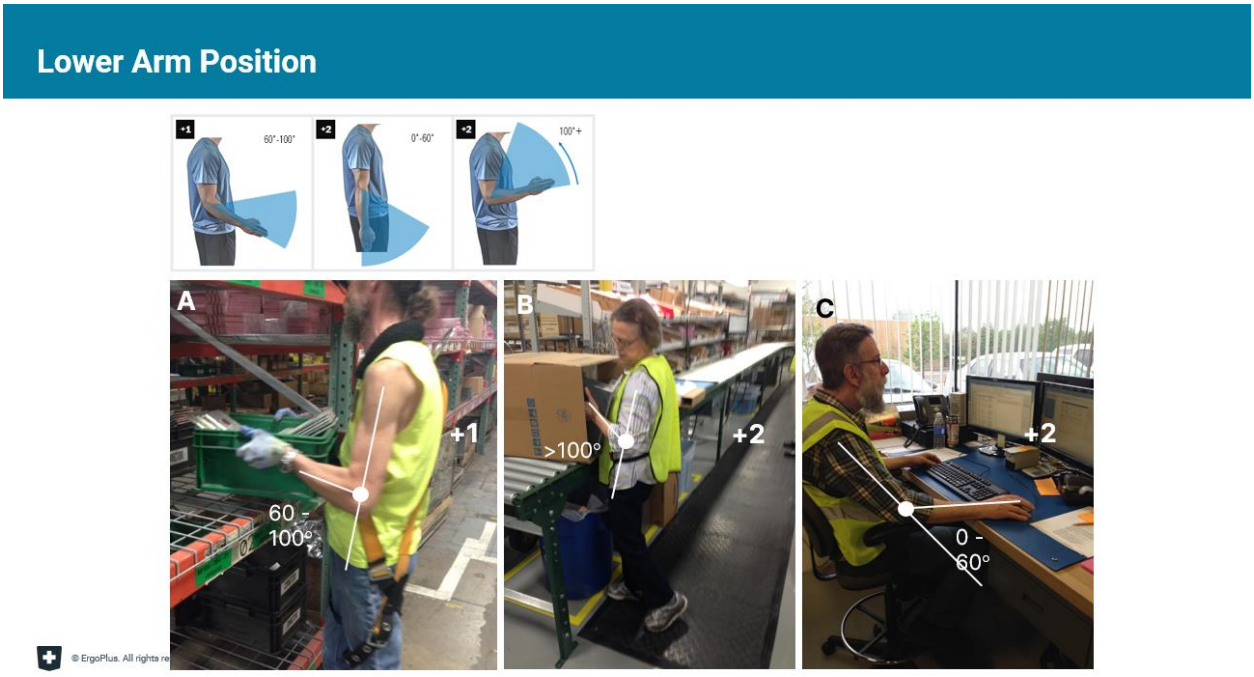
If upper arm is abducted: +1

If arm is supported or person is leaning: -1

**A:** Shoulder flexion is greater than 90 degrees, so the base score in this case is +4. In addition the shoulder is raised and abducted, adding +1 adjustments for both. Therefore, the total score is 4 + 1 + 1 = 6.

**B:** In this example, the shoulder is flexed between 20-45 degrees yielding an upper arm position score of +2. However, in this case the worker is leaning creating an assist by gravity in this position and a -1 adjustment in the score. The total score in this case is +2 -1 = +1.

# Lower Arm Position




The lower arm position score will be +1 or +2. The score is based on the degree of elbow flexion or bending.

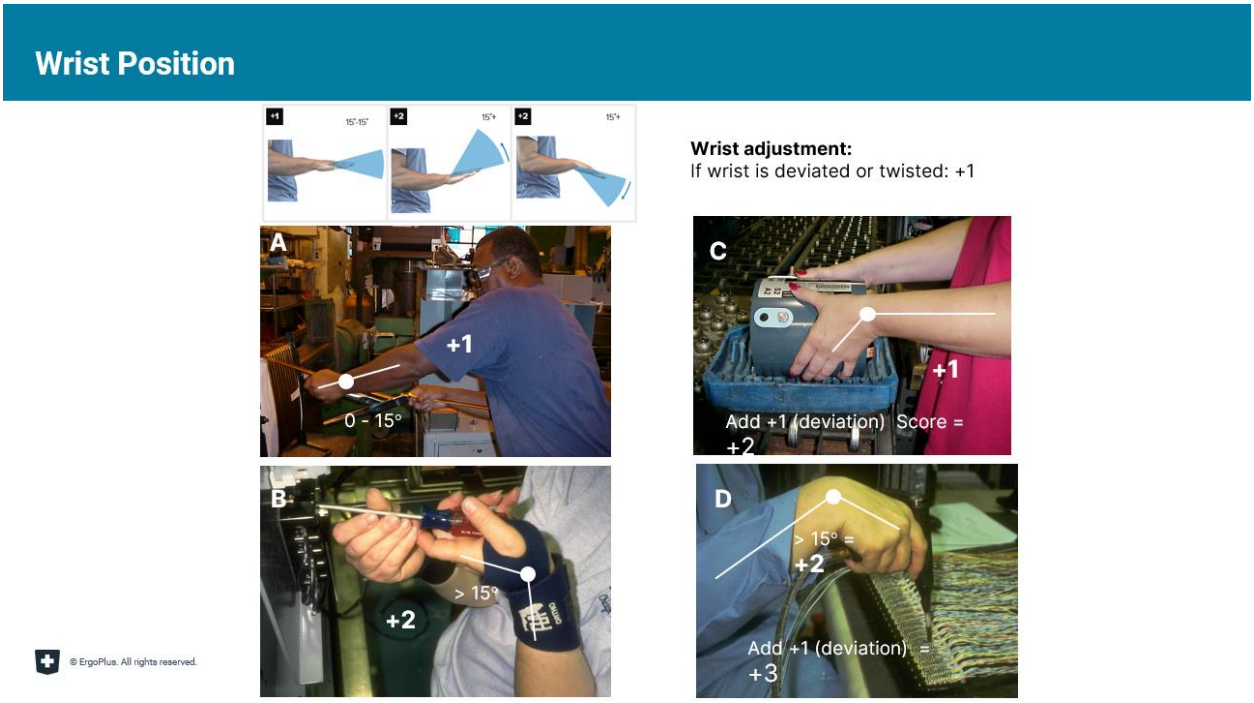
Lower arm position scoring examples:

**A:** Elbow is flexed between 60 – 100 degrees, so the lower arm position score for this example is +1.

**B:** Elbow is flexed more than 100 degrees. Score = +2

**C:** Elbow is flexed between 0 – 60 degrees. Score = +2

# Wrist Position




The wrist position score will be 1-3. The score is based on the degree of wrist flexion or extension, along with an adjustment of +1 for wrist deviation or twisting.

Wrist position scoring examples:

**A:** Wrist position is neutral (0-15 degrees), so the position score for this example is +1.

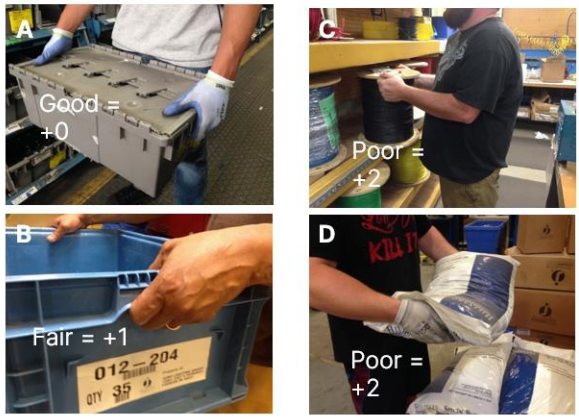
**B:** Wrist is extended > 15 degrees. Score = +2

**C:** Wrist is flexed less than 15 degrees. Score = +1. However, the wrist is ulnar deviated, so add a +1 adjustment. Total score = +2.

**D:** Wrist is flexed > 15 degrees for a +2 base score. The wrist is also ulnar deviated, so add a +1 adjustment. Total score for this example = +3.

## Coupling

Add Coupling Score
Good - well fitting handle and mid-range power grip. Score = +0
Fair - Acceptable but not ideal hand hold or coupling acceptable with another body part. Score = +1
Poor - Hand hold not acceptable but possible. Score = +2
Unacceptable - No handles, awkward, unsafe with any body part. Score = +3






Add Coupling Score

**Good** - well fitting handle with mid-range power grip. **Score = +0**

**Fair** - Acceptable but not ideal hand hold or coupling acceptable with another body part. **Score = +1**

**Poor** - Hand hold not acceptable but possible. **Score = +2**

**Unacceptable** - No handles, awkward, unsafe with any body part. **Score = +3**

Coupling scoring examples:

**A:** Well fitting handle and mid-range power grip. Score = +0

**B:** Acceptable but not ideal hand hold or coupling acceptable with another body part. Score = +1

**C:** Hand hold not acceptable but possible. Score = +2

**D:** Hand hold not acceptable but possible. Score = +2

No picture available for awkward and unsafe coupling.

# Activity Score

## Activity Score

**Activity Score:**
+1 - One or more body parts are held for longer than 1 minute (static)
+1 - Repeated small range actions (more than 4x per minute)
+1 - Action causes rapid large range changes in postures or unstable base



The activity score will be either +0 or +1, as the criteria are mutually exclusive.

**Activity Score** - Add +1 if any of the following are true:

+1 - One or more body parts are held in a static position for longer than 1 minute

+1 - Repeated small range actions (more than 4x per minute)

+1 - Action causes rapid large range changes in postures or unstable base

# REBA Outputs

## Outputs

The output of the REBA assessment tool is the final REBA Score, which is a single score that represents the level of MSD risk for the work task being evaluated:

| Score | Level of MSD Risk |
|---|---|
| 1 | negligible risk, no action required |
| 2-3 | low risk, change may be needed |
| 4-7 | medium risk, further investigation, change soon |
| 8-10 | high risk, investigate and implement change |
| 11+ | very high risk, implement change |



The output of the REBA assessment tool is the final REBA Score, which is a single score that represents the level of MSD risk for the job task being evaluated. The minimum REBA Score = 1, and the maximum REBA Score = 15.