



THE  **TEMCO** **INDUSTRIAL ATHLETE**
LOGISTICS

3/3/20, 5:24 AM

PRINCIPLES OF ATHLETICS AT WORK



Agility



Strength



Endurance

Ergonomic Controls

Engineering Controls
Administrative Controls

Maintain Health and
Improve Performance

CONTROLLING ALL CAUSATIVE RISK FACTORS PREVENTS MSDs

Individual Controls

Workplace Athlete Training
Early Intervention
Warm-up Stretching
Work Recovery Tools



PRINCIPLES OF ERGONOMICS



Prevent

- Repetitive Motion Injuries [RMI]
- Musculoskeletal Disorders {MSDs}

Fit The Job To The Worker

- Not the worker to the job.
- In the case of the Temco worker they do not yet know what particular methods are incorrect.

Range of Motion

- Gait
- Compromised Body Mechanics
- Postures

Specificity in Training

- Anthropometry/Biomechanics
- Engineering
- Physiology/Kinesiology





Repetitive Motion Injury (RMI)

- **Musculoskeletal disorders [MSDs] involving:**
 - Tendons and tendon sheaths
 - Synovial lubrication of the tendon sheaths
- **Related bone, muscles and nerves of:**
 - Hands-Wrists-Elbows
 - Shoulders-Neck
 - Knees-Back

ALL NEUTRAL IN THE ZONE

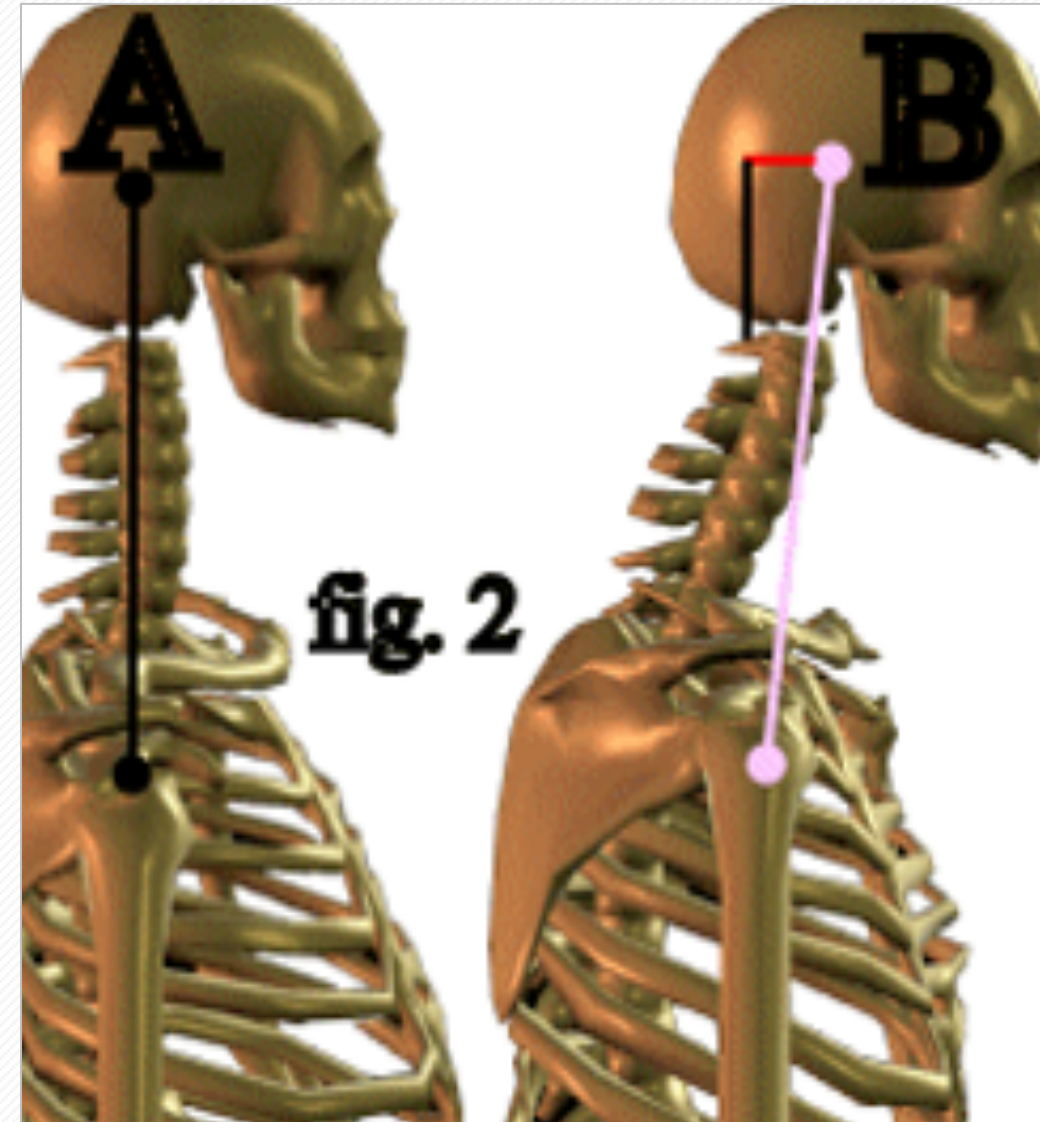




TEMCO ATHLETES: MSDs AND HOW TO CORRECT

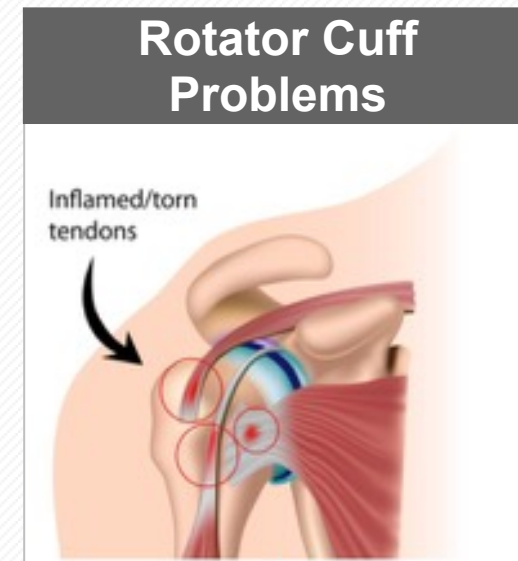
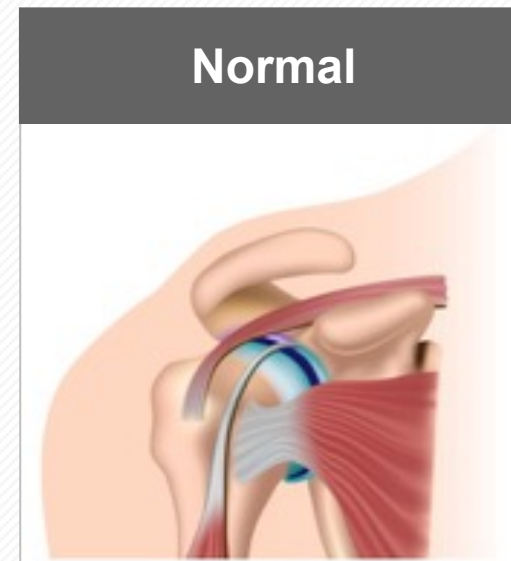
FORWARD HEAD POSTURE

- This common poor work posture contributes significantly to the risks of cumulative overload.
- Rounded shoulder posture (FIGURE 2) places the ligaments of the cervical spine in a sustained end range stretch. This sustained tension is a mechanical and nutritional overload to the ligaments, leading to ligament tenderness, pain and swelling.
- These postures lead to compression to the joints and soft tissues of the upper neck, in turn this leads to headache and neck pain.
- The posture muscles of the upper spine and shoulder blades are also placed on a sustained end range stretch.
- This weakens those muscles, which increases the risk of muscle strain and reduced postural endurance. This reduction in endurance increases the risk of back injuries.



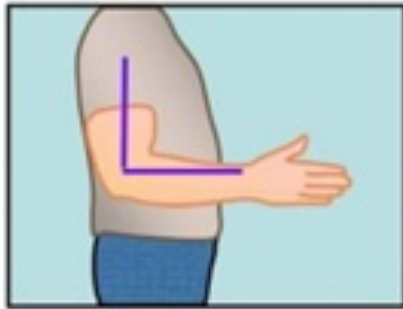
SHOULDER

- Shoulder-reach at greater than 120 degrees flexion with the palm down (internal rotation) across the chest (midline) places the rotator cuff in a position of maximum impingement. Repetitive or sustained tension to these muscle and tendon groups contributes significantly to the risk of Rotator Cuff injuries.
- Shoulder with palm open arm in abduction creates an unstable position for the shoulder joint and ligaments. Adding forceful exertions, repetition or sustained tension in an unstable posture leads to greater muscular fatigue and postural endurance and potential for injury.
- Repetitive motion injuries associated with repeated outward reaching include Rotator Cuff or bicep tendonitis or bursitis.



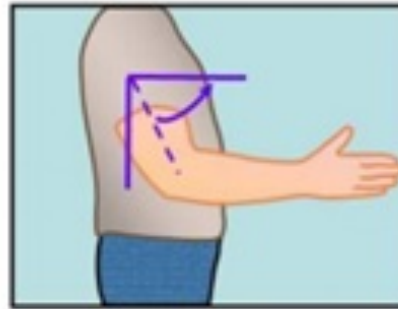
ERGONOMIC PRINCIPLES: SHOULDER

Neutral Posture

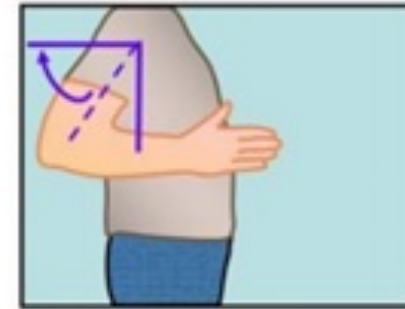


Awkward Postures

Shoulder Flexion



Shoulder Extension



Shoulder Abduction



Shoulder Abduction & Extension



ELBOWS

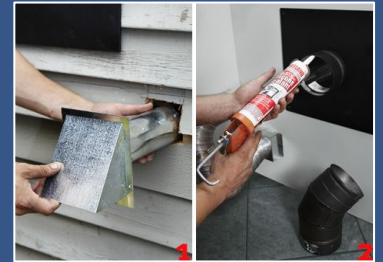
- Keep your elbows close to your body when performing tasks
- This posture keeps your shoulder and head in the correct posture as well.



WRIST & ULNAR

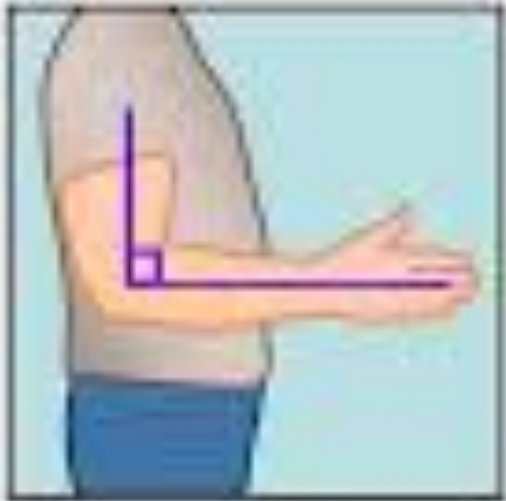
GOOD WRIST POSTURES AT WORK

- Carrying packages with the forearm or hand in a palm up position (supination) creates tension in the flexor tendons originating at the medial epicondyle, running down the front of the forearm, through the carpal tunnel into the hand. Repetitive or sustained tension to this muscle and tendon group can contribute significantly to the risk of Medial Epicondylitis, Flexor Tendinitis, and Carpal Tunnel Syndrome.
- **Wrist/Ulnar Deviation:** Tipping the wrist in the direction of the little finger causes compression at the carpal tunnel, risking Carpal Tunnel Syndrome and Tendinitis at the wrist. The range of movement in this direction, frequency in addition to the weight being handled with either a grip or pinch hold greatly magnifies the risk.
- **Wrist/Flexion:** Tipping the hand down toward the palm causes compression of the wrist tendons passing through the carpal tunnels. This risks Carpal Tunnel Syndrome and Tendinitis at the wrist.



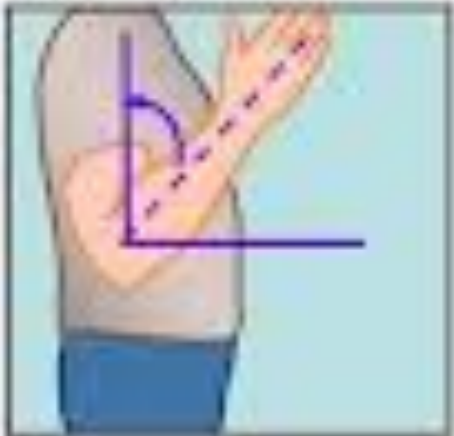
ERGONOMIC PRINCIPLES: ELBOW

Neutral Posture



Awkward Postures

Elbow Flexion



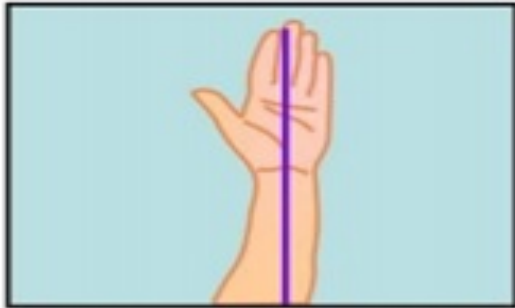
Elbow Extension



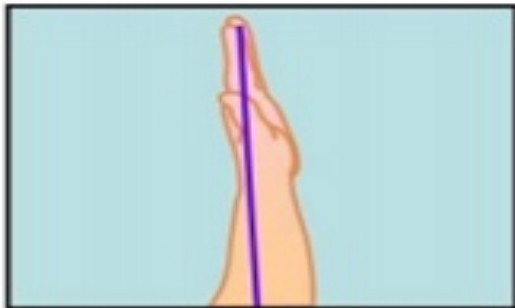
ERGONOMIC PRINCIPLES: WRIST

Neutral Posture

View#1
(minimal radial/ulnar deviation)

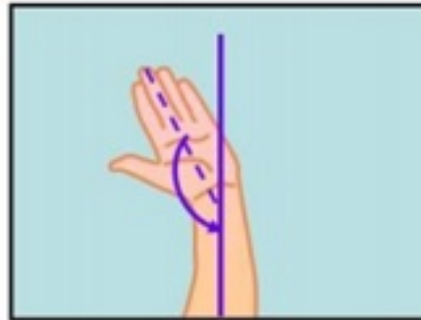


View#2
(minimal flexion/extension)

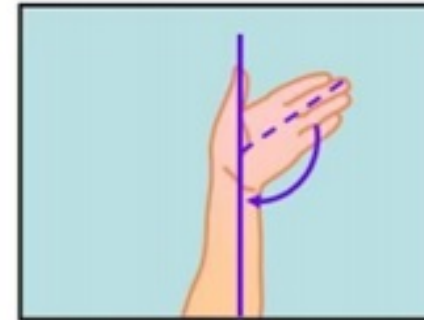


Awkward Postures

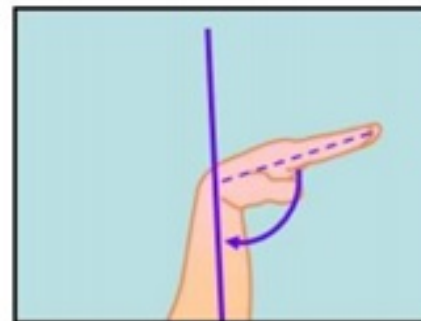
Radial Deviation



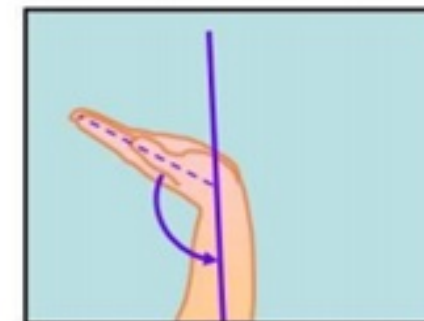
Ulnar Deviation



Flexion



Extension



KNEES

- Your knees are the biggest, strongest, joints in your body, and most people use them almost constantly throughout the day to sit, stand, walk, jump, and bend.
- Knees bear 80% of your body weight when you stand still and 150% or more when you walk across the room.
- In a 160-pound person, that's 240 pounds of force!
- Multiple the force by 5-7 times when jumping [up to 1,120 pounds of force and that is a lot of unnecessary wear and tear on your knees.
- Calculate the force you are placing on your knees based on your body weight!
- Lose just 10 pounds to take 40 pounds of pressure off your knees!
- The vertical drop measures 48" the force on body is 7x your body weight. Don't Jump.





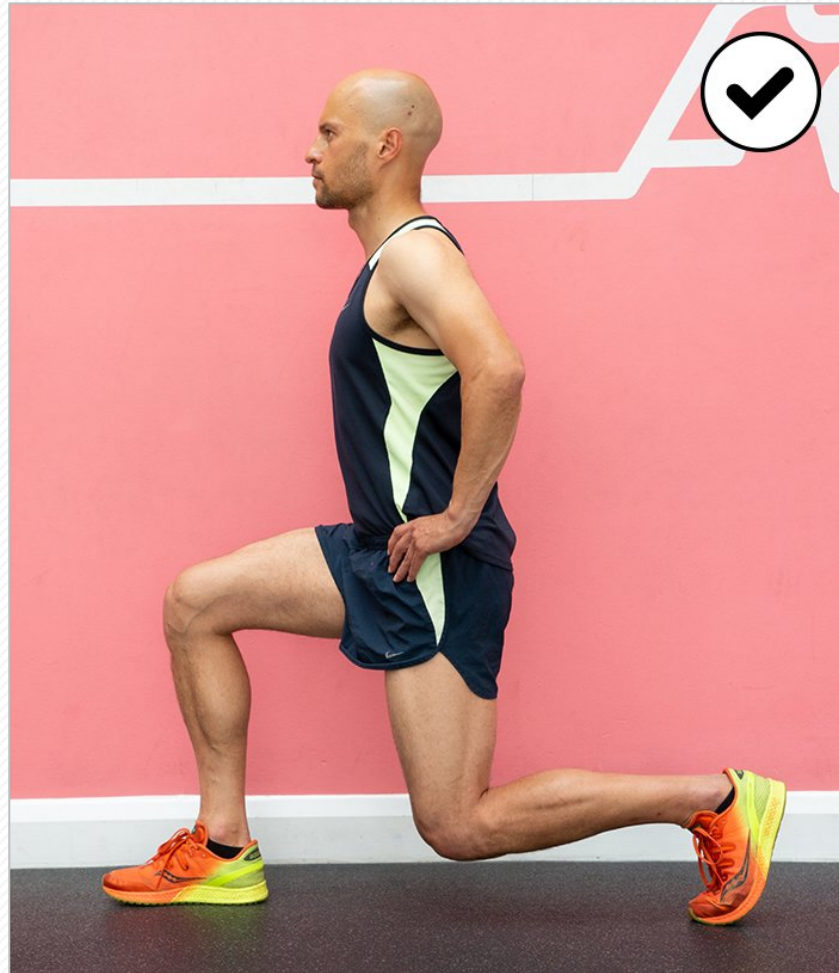
MUSCLES THAT OPERATE THE KNEE

- Quadriceps, hamstrings, calf muscles
- These muscles work in groups to flex, extend and stabilize the knee joint.
- These motions of the knee allow the body to perform such important movements as walking, running, kicking, and jumping.
- When one or more of these muscles are not in balance it throws off the knee function.

SQUAT- KNEEL: KNEE



ERGONOMIC PRINCIPLES: KNEE



BACK – SPINE

❑ **Forward Back Bend**

- Forward bends overloads the back.
- This can result in sprained or strained (tears) back muscles, spasms, micro-fractures or herniation of the discs. To reduce back overloads, forward bending of the torso on an occasional basis should be limited to less than 45°.
- The weight, size, and repetition of lifting may further reduce the acceptable amount of trunk bending.

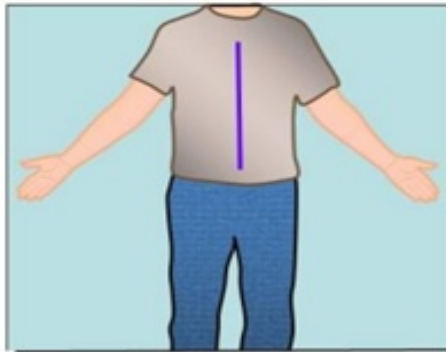
❑ **Backward Back Bend**

- Backward back bend overloads the lower back. This can result in sprained or strained back muscles, spasms, micro-fractures or herniation of the discs. Excessive lumbar extension may be related to lordosis or scoliosis of the spine.



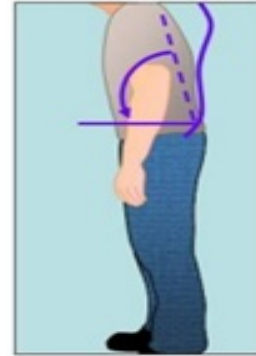
ERGONOMIC PRINCIPLES: BACK

Neutral Posture

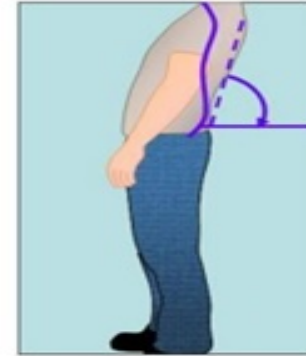


Awkward Postures

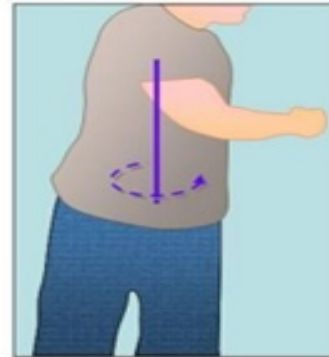
Back Flexion



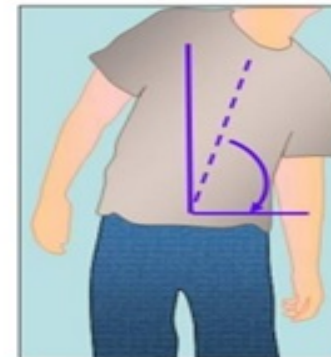
Back Extension

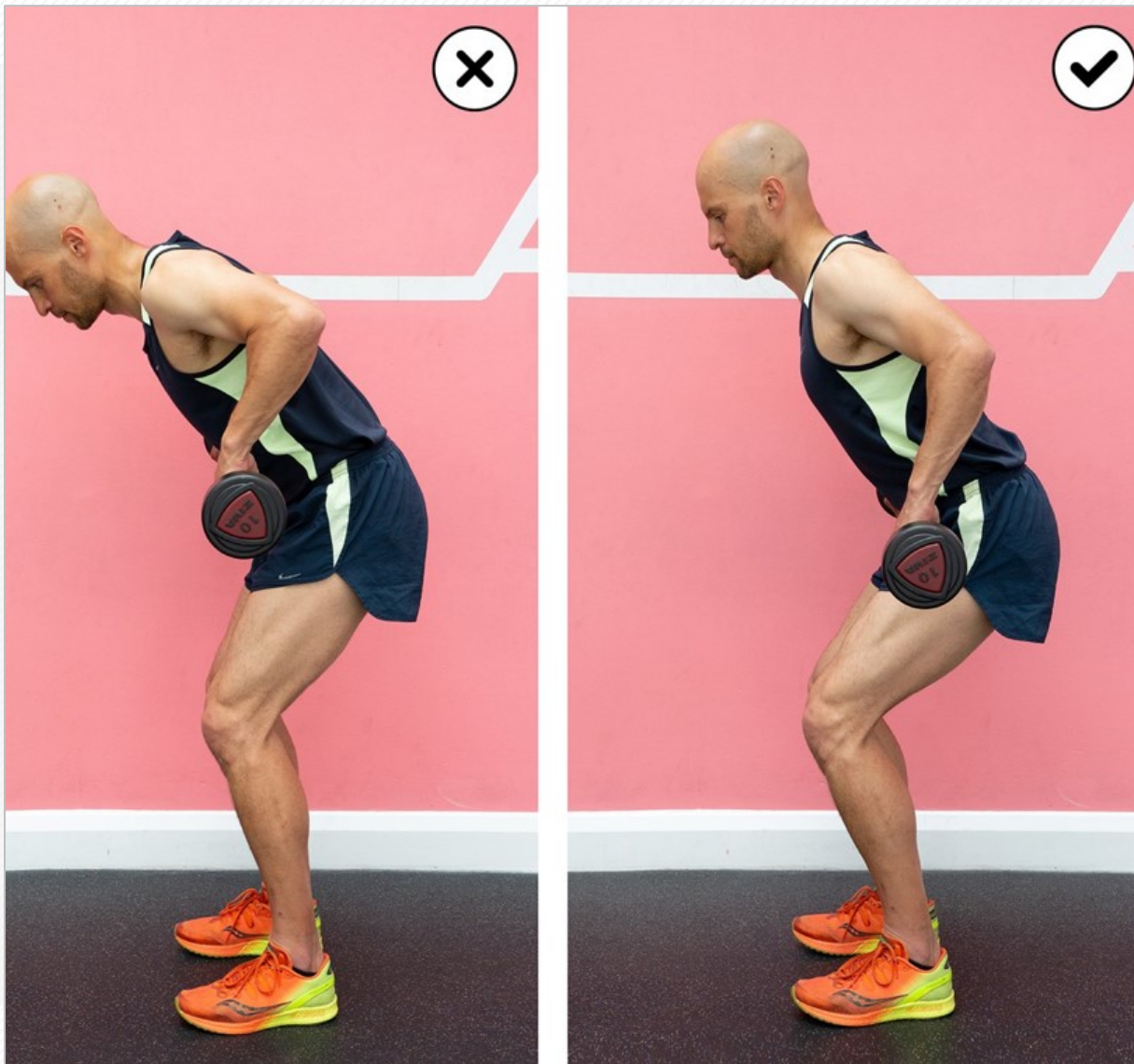


Twisting about Waist



Lateral Bending





FORWARD BACK BEND

- Forward head off axis
- Rounded spine end range stretch
- Glutes in wrong position
- Knees in wrong position
- Corrected in the second photo
- Using the right body mechanics when lifting involves the whole body.

BACKWARD BACK BEND

- Lift is too heavy
- Deviated spine from cervical through lumbar
- Corrected in the side by side
- The same thing happens when you lift an appliance by yourself and is compounded when you lift over your shoulder.



WHAT COULD GO WRONG?



WORK PANTS FOR THE WORK



"If they fit, we can return them."



FOOTWEAR FOR THE JOB

- **EXAMPLE OF A SHOE \$85.00**
- **Slip Resistant: Gladiator Outsole™:** Superior SFC slip-resistant outsole
- **CSA Approved:** Puncture Resistant
- **Zone Traction:** Combination of environment-specific SFC lug patterns for all-new performance outsoles.
- **Water-Resistant:** Treated to repel liquids from the surface.
- **Ladder Grab:** Notches in our Gladiator Outsole™ are engineered to catch ladder steps.
- **Puncture Resistant:** Thick puncture resistant material added to midsole for protection without sacrificing lightness.
- **Clog Resistant:** Wider spaced traction lugs don't let dirt and debris get stuck in the outsole.
- **Electrical Hazard Protection (EH Rated):** Equipped with electric shock resistant soles and heels, capable of withstanding 18,000 volts.
- **Composite Toe:** Composite safety toe footwear meets ASTM F-2413 standards bearing a class 75 rating.





PREPARE

SMALL CHANGES BRING BIG RESULTS

**SAFETY 24/7 BUILDING AN INCIDENT-
FREE CULTURE**



TEMCO

LOGISTICS