Musculoskeletal Injuries
Rebar Workers
CM 598 A
Madhusudan Dhoot
Musculoskeletal Disorders

- An injury or disorder of the muscles, nerves, tendons, joints, cartilage, and spinal discs.

- A Sprain is an injury to a ligament, the tough, fibrous tissue that connects bones to other bones. Sprain injuries involve a stretching or a tearing of this tissue. Ankle, knee and wrist injuries account for the majority of sprains.

- A Strain is an injury to either a muscle or a tendon, the tissue that connects muscles to bones. Back injuries are the most prevalent in regard to strains. Depending on the severity of the injury, a strain may be a simple overstretch of the muscle or tendon, or it can result in a partial or complete tear.
Musculoskeletal Disorders

Distribution of injuries and illnesses by nature, 2008

Source: Bureau of Labor Statistics (BLS)
Body Parts Affected

Reasons for Back Injuries (Rebar workers)

- Lifting, exceeds the limits of the human joint system capacity
- Reaching
- Poor posture
- Repetition
- Bending and Twisting
- Poorly Designed Tools
- Some personal factors have been associated with overexertion injuries:
  - Age factor
  - Poor physical condition
  - Overweight
Lifting

- Assess the weight of the load.
- Bend at the knees.
- Hug the load
- Keep the back straight.
- Avoid twisting.
- Avoid heavy loads (lighten if possible).
- Get help with heavy loads.
Reaching

Repetition and Poor posture

https://www.shutterstock.com/search/rebar+isolated
Bending and Twisting
Poorly Designed Tools

Photo Source: Construction Solutions: Solution: Rebar-Tying Tools, CPWR

Photo Source: Rebar-Tying Machines Part 1 (Part of Construction Safety Magazine, Volume 12, Number 4, Winter 2001/02, Ontario Canada.)
Personal Factors

- Age factor
- Poor physical condition
- Overweight
Planning

https://www.pinterest.com/joetown5039/iron-workers/
Planning

http://www.trusupply.com/rebar-caps.htm
Administrative Controls

- Training
- Production schedule demands
- Rest breaks
- Not enough workers
- Planning
- Supervision
- Stretch and flex
NIOSH Study

- NIOSH studied rebar tying during the construction of a freeway bridge deck. Rodbusters’ hand/wrist movements and body positions were measured, first when using pliers to twist 16-gauge wire, and then when using a powered tie gun with 21-gauge wire. The tie gun was used alone, and then used again with a 3-foot extension handle.

- The results showed that:
  - Twisting with pliers required harmful hand/wrist motions, increasing the chance of a serious injury.
  - Unsupported stooping when twisting with pliers at ground level, using both hands, increased the risk of back pain and injury.
  - Power rebar tying tools reduced harmful hand/wrist movements.
  - Tying rebar at ground level, using an extension handle on a powered rebar tying tool, gave the most protection against back pain and injury.
  - Using a powered rebar tying tool was faster than hand-twisting wire.

Thank you