SUPERVISOR INSTRUCTIONS:

- *Use toolbox trainings to encourage safety/environmental discussions during monthly meetings with employees*.
- *Campus Services' employees should maintain the employee sign-in sheet in their department's safety/environmental compliance binder as a record of training. All other groups should maintain a record of training in accordance with their Division's training procedures*.

Our knees are complex. Often thought of as a simple hinge in our legs, knees support the majority of our body weight; allow us to stand, walk, run, climb stairs, kick, crouch, sit and stand up again. In the workplace, our knees may be used to operate controls, hold or kick objects into place, or serve as a support when kneeling. For workers who spend a great deal of time working on floor level surfaces, or crawling in confined areas, the phrase, "Our knees are our feet!" is appropriate. As a result, workplace injuries to knees are not uncommon. In 2006 the US Bureau of Labor Statistics (BLS) recorded over 95,000 serious knee injuries. One knee injury is attributed to about 15 days away from work.

Knee Physiology

The knees are the largest joints in our body. Each is made up of the three main leg bones (femur, tibia, and fibula) and the knee cap (patella). Cartilage helps lubricate bone movement along with fluid filled sacs called bursa, which cushion direct impacts to the knees. If the tendons and ligaments that hold the knee components together become weak or damaged, the bones can become misaligned, resulting in pain or injury to the area.

Injury Types

Knee injuries can be from a single traumatic incident, or due to overuse over time. Examples of traumatic and overuse injuries and the area affected by each are listed below:

Traumatic Injuries	Overuse Injuries
Falls	Repeated Actions
Impact	Wear
Severe Twisting	Tear
Damage to bones, tendons, ligaments, etc.	Often affect the bursa cartilage

Ways to Decrease the Risk of Injury

Several approaches could be used to reduce worker exposure to recognized risk factors for common knee injuries, depending upon the task and the working environment.

Ergonomics

- *Work positioning* – using the ergonomic approach of 'fitting the task to the worker', raise work up off of the floor, where possible, to eliminate kneeling or squatting.

- *Sit rather than kneel or squat* - where possible, to reduce direct pressure on the knees and stress on the tendons and ligaments, consider the use of a rolling stool instead of crawling where movement is required.
- *Supports* - use chairs or specialized kneeling supports to distribute the worker's weight across a broader area (shins, thighs, chest, etc.), reducing direct pressure on the knees.
- *Evaluate lifting tasks* – many risk factors for manual lifting are also risk factors for knee injuries. Improvements made to lifting tasks may pay dividends in the prevention of knee injuries as well.

Personal Protective Equipment (PPE)

- Wear kneepads, or use portable cushions, to pad, insulate, and distribute pressure across a broader portion of the knee. This is especially true on hard or irregular surfaces, cold surfaces or where hard or sharp items might dig into the knees.
- Regularly clean work clothes and PPE - skin irritations on the knee leading to inflammation and infection of the cartilage and bursa were noted in one major study as a significant factor. The study suggested that workers who use kneepads on a regular basis have multiple pairs to allow for cleaning and drying time between uses.
- Walking and sustained standing on hard surfaces transmits shocks through the knees. Selection of quality footwear and insoles, or anti-fatigue matting, can cushion these shocks. Supportive footwear is also important to reduce the risk of twisting a knee due to a slip, when climbing or when walking on uneven surfaces

Work Environment and Activities

- Avoid shocks transmitted to the knee caused by jumping off of trucks, using the knee as a hammer, etc. Provide and use ladders for access and task specific tools for applying impact.
- Avoid sudden twisting, stopping or changing of direction when walking. These motions are associated with high risks of knee damage in the workplace, just as they are in high-risk sports such as football, basketball and skiing.

Health and Fitness

- Move and change postures frequently – static postures, including kneeling or sitting for long periods, or the sustained operation of foot pedals, decrease blood and nutrient flow to the tendons, ligaments, cartilage and bursa.
- Exercise to maintain the condition of leg muscles, tendons and ligaments that stabilize the knee, reducing the risks of twisting or misalignment. Conditioning exercises also improve joint flexibility, strength and range of motion.
- Reduce excess weight - improvements in overall health will be noted in addition to reducing wear and direct impact on the supporting knee joints with every step.

Summary

Our knees support us at work as well as in general life activities. In some occupations, worn or tired knees become the limiting factors in determining whether an employee can remain on that job. The extent of the problem is significant in terms of disability, personnel costs and the ability to work, workers ' compensation costs and the physical agility to perform tasks around the home in addition to personal family activities.

While some risk exposures, such as the act of walking and the aging process are unavoidable, certain actions, ergonomic controls and the smart use of PPE can reduce the risks of injury.

Questions for Discussion

1. **True or False**: The knee is made up of the three main leg bones (femur, tibia, and fibula) and the knee cap (patella).

Answer: True

2. **True or False**: Examples of overuse injuries include: falls, impact, severe twisting, and damage to bones, tendons, ligaments, etc.
   Answer: False. The injuries listed in the question are examples of single traumatic injuries. Examples of overuse injuries include repeated actions, wear and tear, and damage to the bursa cartilage.

3. **True or False**: Avoid sudden twisting, stopping, or changing of direction when walking. These motions are associated with high risks of knee damage in the work place, just as they are in high-risk sports such as football, basketball, and skiing.
   Answer: True