

Installation Safety and the Role of Ergonomics

By Arpi Nalbandian, associate editor



Installation of flooring – whether it's carpet, LVT, laminate, hardwood, tile or stone – is a repetitive process. After years of day-to-day repetitive motions, a high percentage of installers have experienced or currently suffer debilitating pain when trying to do their work. The solution can range from being mindful of your body and preventing musculoskeletal disorders (MSDs), to implementing ergonomic installation tools in your arsenal.

Defining Ergonomics

Ergonomics is the application of scientific information (sourced from engineering, physiology and psychology) to the design of objects, systems and environment specific to human use.

As a fairly new science, ergonomics originated in World War II when scientists designed new and potentially improved systems without fully considering the people who would be using them. It gradually became clear that systems and products would have to be designed to take account of many human and environmental factors if they are to be used safely and effectively. This awareness of people's requirements resulted in the discipline of ergonomics.

According to former U.S. Secretary of Labor Alexis Herman, who served under President Bill Clinton, "Work-related musculoskeletal disorders such as back injuries and carpal tunnel syndrome are the most prevalent, most expensive and most preventable workplace injuries in the country. Real people are suffering real injuries that can disable their bodies and destroy their lives."

Ergonomics and the Flooring Contractor

A recently conducted Participatory Ergonomics research project by the CPWR (The Center for Construction Research and Training) focused specifically on flooring contractors. This target group was chosen because installers face "high exposures to

stress and strain in multiple body parts."

With the cooperative efforts of Washington University in St. Louis, University of Massachusetts Lowell, Carpenters' District Council of Greater St. Louis, Carpenters' Health and Welfare Trust Fund of St. Louis, Floor Layers Local 1310, Sheet Metal Local 36, and Sheet Metal Local 36 Benefit Fund, the research team "analyzed 45 videos of 32 floor layers at work to determine the time in task, forces, postures, and repetitive hand movements entailed in the installation of four common flooring materials," according to CPWR.

Further, the research team revealed:

"Prolonged and potentially hazardous kneeling positions, poor neck and low back postures, and repeated stressful hand grip forces merited special concern. Analysis of medical claims data confirmed what the task analysis suggested: not just knee injuries but back, shoulder and hand stresses are important problems of the trade. Next, researchers tested workers' knowledge and attitudes about ergonomic safety. For the participatory intervention program, researchers conducted a training program with floor layers in ergonomic principles and then held group problem solving sessions to identify tools and equipment that could reduce stresses to the body."

Read the complete report at www.cpwr.com/research/participatory-ergonomics.

In the case of hardwood installation, flooring installation contractors succumb to a great deal of pain and injury due to repetitive motions and heavy, hand-held tools.

Fact: Flooring nail guns generally weigh 10-18 lbs., and that weight is held in one hand over a period of time. While firing the nail gun, installers are bent over in positions of 45- to 110-degrees, while continuously repositioning planks and the nail gun.

The Department of Labor and Industry has concluded that flooring installers with nail guns operate in the 'haz-

Continued

Installation Safety and the Role of Ergonomics, Continued

ard zone' from an ergonomic perspective. Based on a study by CPWR (Center for Protection of Workers' Rights, now Center for Construction Research and Training), it is estimated that 70% of floor covering installers using nail guns in a stooping position experience lower back pain at one point or another. The hazard zone is defined as a back being bent at 45 degrees for two hours or 30 degrees for 4 hours.

Anita Howard, chief operating officer of the National Wood Flooring Association (NWFA) feels that the percentage of installers using nail guns experiencing pain is extraordinary. "The percentage is very high, and I'd add to that knee and hip pain and surgery, as well as hearing loss" are prevalent among installers.

Fortunately, there are solutions to the ergonomic problems flooring installers face when using nail guns and hand-held tools – such as molded or cushioned hand grips, and extended handles.

For those on the go, there's even an app for ergonomic safety and guidelines. The U.S. Department of Labor recently issued a challenge to interested participants: Worker Safety and Health App Challenge. Participants of this challenge were asked to submit "tools that best demonstrate the importance of recognizing and preventing workplace safety and health hazards." Awarded with the People's Choice Award, and a \$3,000 prize, Sidharth Garg was recognized for his Ergonomics iOS Application. According to the app's descriptions, Ergonomics is a "complete mobile workplace health solution" that offers "ergonomic equipment setup advice, a variety of workplace-specific stretching exercises and programmable reminders to help time breaks and prevent musculoskeletal injuries."

Though a professional flooring contractor's job is never easy, it can be made safer and more comfortable with the right tools, training and exercises.

Work related MSDs are among the most frequently reported causes of lost or restricted work time.

- In 2011, the Bureau of Labor Statistics (BLS) reported that industries with the highest MSD rates include health care, transportation and

warehousing, retail and wholesale trade and construction.

- According to BLS, the 387,820 MSD cases accounted for 33% of all worker injury and illness cases in 2011.

Source: OSHA

Examples of Musculoskeletal Disorders (MSDs)

- Carpal tunnel syndrome
- Tendinitis
- Rotator cuff injuries (a shoulder problem)
- Epicondylitis (an elbow problem)
- Trigger finger
- Muscle strains and low back injuries

Source: OSHA

According to *Nail Gun Safety: A Guide for Construction Contractors*, nail guns are responsible for an estimated 37,000 emergency room visits each year. Because of their powerful, ease-of-operation, and productivity boosting capabilities, it's easy to forget these same tools are the cause for "more than half of reported nail gun injuries that involve structural damage to tendons, joints, nerves, and bones." After hands, "the next most often injured are the leg, knee, thigh, foot, and toes. Less common are injuries to the forearm or wrist, head and neck, and trunk," the guide notes. Whether you use a pneumatic or manual nail gun, safety should always be priority. The safety tips detailed within the guide include:

- Provide training;
- Establish nail gun work procedures;
- Provide personal protective equipment (PPE);
- Encourage reporting and discussion of injuries and close calls;
- Provide first aid and medical treatment.
- Proper eyewear (protect your eyes from a ricocheting nail)
- Ear protection (pneumatic nailers are loud).

The guide, *Nail Gun Safety: A Guide for Construction Contractors*, can be accessed at: www.osha.gov/Publications/NailgunFinal_508_02_optimized.pdf.

PROINSTALLER

Resources:

CPWR - The Center for Construction Research and Training: www.cpwr.com

CPWR's Ergonomics for Flooring Installers: www.cpwr.com/research/participatory-ergonomics

Occupational Safety & Health Administration (OSHA): www.osha.gov

Centers for Disease Control and Prevention (CDC): www.cdc.gov

International Staple, Nail, And Tool Association (ISANTA): www.isanta.org

U.S. Department of Labor (DOL): www.dol.gov