PROGRESSION FOR FIRST RESPONDERS TO HELP PREVENT LIFTING INJURIES

There is little dispute that fit individuals typically get injured less often. It has even been shown that with a 28% risk of potential injury from training on duty, the benefits still outweigh the risks of not training at all (2). In addition to the benefits of training, fit but fatigued first responders will outperform 70% of untrained responders (1). For first responders, the majority of back injuries will occur during tasks that involve lifting and bending, while most knee injuries will occur during tasks which involve stepping and lunging (1,2).

Looking at the typical job requirements of a first responder, the average powered stretcher weighs 130 to 140 lb (depending on configuration) while manual lift stretchers weigh in at roughly 98 to 105 lb. In addition, a patient that can weigh 200 lb or more. As such, first responders will have to lift a sizable load at least twice per call (once to lift and load the stretcher, and once to remove and lower the wheels of a stretcher). When faced with varied terrain and ambulance load heights requiring a higher than normal load height, a first responder is often faced with a heavy and dangerous lift. Looking at the mechanics of the movement, they occur in predominantly in the sagittal plane and involve dynamic contractions with potential isometric holds. To complicate matters, the patient may be combative, shifting position during the lift, or very tall which can obstruct the responders performing the load/unload.

A seemingly normal task like a bed-to-bed patient transfer (moving a patient that is supine from a bed to a stretcher and then from a stretcher to a hospital bed) also poses risks for a first responder. These moves require excessive trunk flexion angles and are often performed kneeling or reaching over and around in a confined space. Many times these seemingly benign transfers can place 2 – 3 times the recommended compressive load on the spine; essentially these first responders have trained their bodies to compensate for external loads from unstable and suboptimal lifting positions. So, what is seen is a constant loading of the spine during critical job tasks from suboptimal positions. What is also seen is the inability of many first responders to maintain a neutral spine during job tasks.

Tactical facilitators must understand that no matter how much they coach exercises, the job tasks will always beat the bad patterns back into the first responder, especially in high call volume departments. The following is a sample progression to use with high call volume departments to help maintain mobility while building job-specific strength, yet being careful to not provoke a hyper-fatigued state (due to the high job demand). It is also important to realize most departments and responders have not used or been trained in many of these techniques so coaching and mentoring each individual is incredibly important for the tactical facilitator.

SAMPLE PROGRESSION FOR FIRST RESPONDERS

1. **Warm-up:** It may seem strange that most first responders have never been on a foam roller. If they have used one, they may still have never been formally coached on how to apply the roller to the job. In addition to myofascial release, tactical facilitators should make sure that mobility and warm-up occurs early in the shift; a good mantra to apply is “check off the truck, check off your body.” Make sure that the calves, glutes, adductors, hip flexors, and thoracic spine have all been “checked off” before fully engaging in job tasks.

2. **Trigger point:** After the warm-up, if anything is still feeling tight or restrictive, a tennis or lacrosse ball can be utilized to go after the more active trigger points that may be too deep for the foam roller to massage. Again, the responders must be coached and educated about the importance of these techniques and be aware of the risks before implementing trigger point release. Some common restrictions that tactical facilitators should focus on coaching include in the hips (glute minimus, medius, piriformis, and TFL), paraspinals at the thoracolumbar junction, levator scapula, pec minor, and subscapularis, to name a few.

3. **Kettlebell progression:** Keeping with the theme of efficiency, a specific kettlebell (KB) routine that is both progressive and serves as a self-check can be effective in preparing first responders for job tasks. At this point, if anything does not move or feel right during the movements, the first responder should return to foam
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rolling, warm-ups, and trigger point release. Initially, first responders can be asked to perform KB Turkish get-ups before working into the exercises below.

a. The KB Sumo Squat focuses on hip hinge, heels down, spine neutral, and the concentric drive through the hips to teach the glutes to fire without utilizing the back. If this exercise proves difficult, which in many cases it does, then move to the floor for bridging progressions.

b. The KB Bottom Down Squat (empty goblet) focuses on scapular retraction while keeping the kettlebell slightly off the body. This is very important as it mimics many equipment-lifting tasks commonly faced on the job.

c. The KB Bottom Up Squat (full goblet) focuses on the same points as above. With any movement deviation, the first responder should immediately refer back to the mobility tools and earlier steps in this progression.

d. The Single-Arm KB Suitcase Carry is an effective exercise to train lateral stabilization and unilateral hip stability while still reinforcing spine position.

4. Once the first responder can perform all the above movements, move up to a traditional sumo deadlift using a barbell. The wide stance with narrow hand position is very similar to many of the floor lifts a first responder performs and further teaches the specifics of mobility and biomechanics. No extension or flexion moment in the spine should be tolerated with this exercise.

5. Suspension training progressions are used as adjuncts to introduce the stability needed while not inducing fatigue patterns. Tactical facilitators should prescribe saws, rows of all kinds, squats (building up to single-leg if possible), and some overhead movements. However, the responder being conditioned must be able to execute the movement with proper mechanics before advancing to more complex movements.

While some of these exercises may seem simple, many first responders are unable to squat or lunge without profound biomechanical abnormalities. Implementing a progression like the sample provided may help first responders improve their job-specific mobility and help reduce the compressive loads that cause so many injuries in the field.

REFERENCES

ABOUT THE AUTHOR
Bryan Fass is an expert on public safety, injury prevention, fitness and wellness, speaking, consultations, as well as being an author of the “Fit Responder” and column writer for officer.com, firerescuel.com, and ems1.com. Fass works nationally with departments, corporations, and state and local governments to design and run targeted injury prevention and wellness programs for public entities and private organizations. He is frequently contacted for expert opinion and content contribution for all aspects of public safety. President and Founder of Fit Responder, Fass also functioned as a paramedic for over eight years.