

Gymnastics Ergonomics for Coaches

By Michael A. Taylor & Kris Buchheister

Chronic back pain, sore shoulders, strained knees, tender wrists, elbow pain... Sound like a checklist of injuries for our National Team? Fortunately it is not. Unfortunately, it is a checklist of common ailments to Gymnastics coaches. I think it might be time to add another chapter to the USAG Safety Manual dedicated to the safety of the coaches.

The number one cause of workplace fatalities is slips and falls. OSHA safety studies show that back injuries are the primary cause of many lost workdays. Nearly 18% of the lost work time for employees in 1990 was due to chronic back pain. Back problems can result in pain, lost work time, inconvenience, and possible disability. The back is the most injury-prone part of the body. Almost everyone will suffer back pain at some time in his or her life. Gymnastics coaches are inherently at risk for back injuries. Can you afford to be out of work due to a bad back? Can your gym afford to lose a valuable employee to an injury? Preventing back injury is much easier than correcting or healing a back injury.

At work or play, we are likely to push our bodies past their capacity by doing the same action over and over. With camp season soon upon us, think about the number of kips you could end up spotting in a week. Over time, improper lifting practices cause fatigue and pain that can lead to structural problems in the spine and to back injuries. Gymnastics coaches must learn and practice correct lifting techniques and foster back and muscle health. Use good body mechanics while spotting:

- Lift with the gymnast as close to you as possible. The load on the spine increases as the distance away from the spine increases.
- Pivot your feet! Practice moving your feet a lot as you spot.
- Twisting and lifting is extremely hazardous to the spine. The low back vertebrae are only meant to rotate four degrees.
- Look for innovative ways to protect yourself, as well as the gymnast.
- Position spotting blocks safely and create gadgets to save your back and body.
- Bend your knees, keep your back straight and keep your head up. You will need to have normal hamstring length.
- Think about good mechanics ALWAYS. In the gym it's a must, but do not forget to carry it out for the rest of your day.
- Use your lower abdominals - contract the external obliques as a corset.

On-the-job safety and a healthy workplace are crucial factors in creating an environment that facilitates success and productivity for you, your employees, and your students. Start building a more healthy and safe workplace by incorporating an ergonomic safety program in your gym for all employees who might be at risk of Cumulative Trauma Disorders (CTD) or Carpal Tunnel Syndrome (CTS) resulting from repetitive motions, use of excessive force, or awkward positions during the course of their duties in the workplace. Provide your staff with back supports, braces, or try to vary their work assignments in order to avoid Repetitive Stress Injuries (RSI). Offer classes on how the back works, common types and causes of back injuries, effects of back injuries, injury prevention and safety practices, proper lifting techniques, and back exercises. Make sure you and your staff maintain healthy lifestyles (the same as you are promoting to your athletes):

- Be in the best aerobic shape that you can get in.
- Get a check-up by your physician.
- Engage in aerobic exercise (regularly exercise: walk, run, bike, NordicTrak, swim, etc.).
- Stand and sit in good posture (*see below).
- Stretch the muscle groups that need to be stretched by strengthening the opposite side (work the antagonist).

**Posture Test and Exercise:*

- Stand with your back against a wall (heels about 3 inches away from the wall) and place one hand behind your neck and one hand behind your low back. If there is too much space between your back and the wall, i.e., if you can easily move your hands back and forth, you may need to correct your posture. Corrective Exercise: Wall Exercise: Stand with back against the wall, heels about 3 inches from the wall. Place hands up beside head with elbows touching wall. If needed, correct feet and knees, then tilt pelvis to flatten low back against wall by pulling up and in with the lower abdominal muscles. Keeping arms in contact with wall, move arms slowly to a diagonally overhead position. (Hold several seconds and repeat 5 to 8 times.)

- Check your hamstring length. Back lying, single straight leg raise should be 80 degrees.

Corrective Exercise: Hamstring Stretch: Sit on a mat with the low back against the wall or in a chair. Keep one knee bent and straighten the other leg. Be sure to keep the pelvis in a neutral position - do not slump or excessively arch the low back. Pull the ankle into dorsiflexion to stretch the gastrocnemius (calf) muscles that originate above the knee. Hold several seconds and repeat 5 to 8 times, alternating legs.

Elbow, wrist, and hand injuries also account for lost work time. I doubt I am the only coach to ever suffer a jammed thumb from improper placement of my hand while spotting aerials. Repetitive spotting of handsprings can place an enormous amount of stress and strain on sensitive soft

tissues. Ergonomics can help physically position you in your workspace to reduce stress, strain, and fatigue. Learn and practice easy, effective, and inexpensive things you can do right now to reduce your risk of injury. By doing so, you will also increase your productivity. With improved ergonomics, you will reduce your risk of injuries or discomforts related to repetitive strain injuries. If any activities cause pain or discomfort, employees (coaches or office staff) as well as athletes should stop immediately and consult a doctor.

Coaches should take steps to improve their personal work environment.

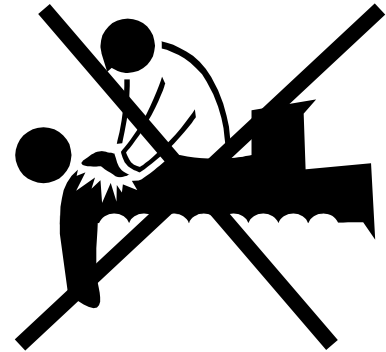
- Identify the effects of improper positions and poor habits on your body
- Identify easy, effective, and inexpensive things that you can begin doing right now to reduce your risk of injury
- Recognize how stress may contribute to repetitive strain injuries, and list common sources of stress, and techniques for reducing stress
- Identify the basic concepts of ergonomics.
- Recognize the fundamental components of human anatomy commonly affected by ergonomic-related disorders.
- Recognize typical ergonomic-related disorders.
- Identify the ergonomic risk factors associated with the job.
- Select how to evaluate ergonomic risks and identify control measures for avoiding ergonomic-related disorders.

Proper positions and technique is essential to helping prevent injuries due to cumulative trauma from repetitive tasks such as spotting. The costs of teaching your coaches how to protect themselves against injuries such as Cumulative Trauma Disorders can be expensive. But the costs of not making that investment are much higher -- and sometimes ruinous. Employers often must pay for medical treatment or workers' compensation for employees injured by repetitive work. In extreme cases, workers with serious workplace-related cumulative trauma injuries have sued their employers under OSHA regulation 51(a), which requires employers to provide a safe environment for their employees.

The hidden costs of cumulative trauma injuries are even more damaging. In fact, experts estimate that the hidden costs of cumulative trauma injuries are two to seven times as great as the visible costs. Avoidable injuries such as carpal tunnel syndrome and back strain cut into workers' productivity, sometimes forcing employees to miss work or change careers altogether. In these times of near 3% unemployment, who among us can afford to lose coaches and instructors?

Before your employees complain of sore forearms or wrists or lower back pain, invest in their as well as your future. Think of it as an investment in your employees. The fact that you are willing to invest in their well being can also help build loyalty, boost morale, and improve employee retention.

Originally submitted on September 10, 2000



Kris Buchheister is a former elite gymnast from St. Louis, MO and was a member of the University of Missouri Gymnastics and Diving Teams. She is a licensed physical therapist of 13 years and presents posture and muscle balance information at Congress, Future Stars, Region I, GAT, and NCAA meetings. Kris enjoys writing articles for USECA, Technique, USA Gymnastics, USA Diving, and IG. She is the head of the injury prevention subcommittee of the National Association of Collegiate Gymnastics Coaches. Kris choreographs for Levels 7 – Elite and college gymnasts, has held a Level 10 judges rating and is entering her 14th season coaching collegiate gymnastics. Her ongoing mission is to help the Gymnastics community prevent injuries through good posture techniques and muscle balance programs.

Michael A. Taylor is a USA Gymnastics National Safety Instructor, USAG Kinder Accreditation for Teachers (KAT) Instructor, a USAG PDP I Video Clinic Administrator, an American Red Cross Sports Safety and CPR/First Aid Instructor, and an American Sport Education Program Coaching Principles (PDP II) Instructor. Michael is a long-time member of the United States Elite Coaches Association and a former gym owner. He is currently the Director of the Burgess Sports Center in Menlo Park, CA, which includes the 1700 student Menlo Park Gymnastics program. Michael is also the owner of Gym.Net, a Gymnastics Professional's Network of Educational Services, Internet consulting, and Web site creation.

If you have any questions, please e-mail coacht@gym.net or give me a call at 650-330-2274 or 650-325-2883. Thank You!