

CANADIAN CHIROPRACTOR

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Centre Stage

Treating overuse
injuries in dance

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Chiropractic Takes Centre Stage

Treating overuse injuries in the world of dance



Jake Simons (Johnny Castle), Britta Lazenga (Penny) and Monica West (Baby Houseman).

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Scott Howitt, DC, FCCSS(C), FCCRS(C)



Nobody puts chiropractic in the corner – no one from the Toronto stage cast of *Dirty Dancing*, at least. In fact, treatments for the cast of this hit production occur backstage in a room, at the famous Royal Alexandra Theatre, alongside stage props and understudy costumes or off site in a typical clinical setting.

The athletic prowess and physical conditioning of the cast are simply amazing, and are largely responsible for the ability of these actors to shine on stage day after day. However, keeping up with a schedule that involves eight performances a week is bound to result in some cast members suffering from the occasional injury.

THE SHIMMY ON DANCE

Dance is a physically demanding sport requiring significant strength, flexibility and endurance, in addition to the essential artistic flair. In fact many of the moves a dancer regularly

Typical Treatments May Include

- Spinal and extremity manipulation/mobilization
- Active Release or Graston Technique soft-tissue treatments
- Acupuncture
- Kinesio taping
- Therapeutic modalities (such as muscle stimulation, laser and ultrasound)
- Training or technique advice
- Diet and supplement advice
- Movement modification
- Rehabilitation (including flexibility, stability, proprioceptive, and eccentric exercises for tendonopathies)

performs involve positions requiring extremes of flexibility, repetitively challenging the limits of power and endurance.

Historically, even at the heights of their careers, dancers did not train their aerobic power, muscular strength or muscular balance adequately, electing for a dance-only training regiment¹. This was a reflection of the misconception that exercise training, which is not directly related to dance, may diminish esthetic appearance.

Recent data from studies done with dancers has changed this traditional approach to training. Supplementary exercise training has been shown to contribute to improvements in fitness parameters that not only increase performance, but reduce incidence of injury, without interfering with artistic or esthetic requirements¹. Furthermore, research on the effect of different modes of activity, and forms of preparation, on strength and muscle contractile characteristics show no differences in performance between professional dancers, Olympic bobsledders or Olympic rowers¹.

In consideration of neuromuscular, psychometric, and environmental parameters some researchers rank ballet just behind football as the overall most demanding activity². It is interesting to note that lactic acid blood levels have been reported to reach 10 mmol/L during a choreographed dance solo, which is comparable to what top-class football, squash and hockey players achieve during a game¹.

INJURIES IN DANCE

As in other sports, levels of physical fitness, particularly strength, can contribute to the development of injuries in dancers. Researchers have demonstrated that dancers with low thigh strength levels had a greater degree of injury in the lower extremity. Similar results were also evident when the hamstrings were disproportionately weaker than the quadriceps, among dancers¹.

As a matter of fact, an entire recent issue of *Clinics in Sports Medicine* was devoted to injuries of the lower leg and feet in dancers. The demanding nature of dance results in a lifetime injury incidence of up to 90 per cent with 30-50 per cent of dancers being injured in a given year, with a previous injury recognized as a significant risk factor^{1,2,3,4}. The most common injury is in the foot/ankle (53 per cent), followed by the hip (21.6 per cent), the knee (16.1 per cent), and the back (9.4 per cent)⁵. In general, dancers experience lower extremity

Factors That Relate to Dance Injuries

Intrinsic risk factors include anatomical characteristics, biomechanical imbalance, past medical history, and dance experience.

Extrinsic risk factors include improper training, faulty technique, fatigue, stress, diet, flooring and footwear.

injuries during difficult jumps, specifically landing. However, male dancers can also be prone to injuries in the upper extremities, or back, due to lifting manoeuvres.

CHIROPRACTORS STEP UP

As anyone can imagine, treating dance injuries can often be challenging. In my experience, dancers often have unusual difficulties related to specific movement patterns necessary to perform their routines. My understanding of movement patterns, biomechanics and functional anatomy helps guide me in finding the true cause of their disability, particularly with respect to overuse injuries. Of course, a complete history which includes a description of the mechanism of injury, aggravating factors and a careful physical examination is necessary for an accurate diagnosis, treatment, and advice on return to performance.

CONSIDERING CAUSE AND CONTEXT OF THE INJURY

In general, dancers can suffer from a myriad of athletic injuries due to the extreme demands and repetitive nature of their moves. Overuse tendon injuries associated with improper technique are most common; however, pathologies of the bones and ligaments must also be ruled out⁶. I cannot overstate the importance of assessing dance injuries not in isolation, but rather through tracing the cause of the injury. Intrinsic anatomic misalignment or extrinsic poor form, technique or training regime must be considered.

Another aspect of physical performance to be considered with dancers is overtraining or burnout. Most dancers participate in shows that can be year-round undertakings, and if starring in a production like *Dirty Dancing*, the same choreography is performed every night throughout the production's run. Overtraining in dancers is not related to the energy cost itself, rather to the sheer number of stage performances. Incidentally, a three-to-four-week rest period after the end of a demanding run of shows has been linked to a return to normal

fitness-related parameters in all athletes, including dancers².

My experience, through working with athletes from various sports – particularly the cast of *Dirty Dancing* – is that elite competitors and performers are very much in touch with their bodies. Although some neglect their acute injuries, when they do have an injury that affects performance, they typically have an understanding of how or why it may have occurred. By carefully listening to the history of the injury, and systematically analyzing the biomechanical and anatomical function of the injured area, the underlying cause can be identified. Treatment to reduce the acute symptoms, minimize residual effects, prevent re-injury and ultimately decrease lost performance time is the end goal.

A combination of maintaining, or enhancing, physical fitness, and treating the causes of injuries before they progress to full-blown debilitating situations is the best way to ensure the performers of Broadway productions such as *Dirty Dancing* keep “having the time of their lives.” •

For article with references please go to www.canadianchiropractor.ca.

Common Overuse Injuries

- Metatarsalgia
- Plantar fasciitis
- Tibialis posterior dysfunction
- Ankle instability
- Peroneal tendonitis
- Patellar tendonitis
- Iliotibial band syndrome
- Hamstring tendonitis
- Hip flexor tendonopathy
- Sacroiliac dysfunction
- Lumbar and cervical facet irritation/syndrome
- Rotator cuff tendonopathies
- Lateral and medial epicondylitis