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Original Article

Common dance related musculoskeletal injuries

MALKOGEORGOS, A.[1], MAVROVOUNIOTIS, F.[2], ZAGGELIDIS, G.[3], CIUCUREL, C.[4]
[1,2,3]Department of Physical Education and Sport Sciences, Aristotle University of Thessaloniki, Hellas, Greece
[4] Department of Kinesitherapy, Faculty of Physical Education and Sport, University of Pitesti, Romania

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Abstract
There is evidence that musculoskeletal injuries are an important health issue for dancers at all skill levels. Most dancers in various dance techniques and styles such as hip-hop, tap, musical theater, jazz, folk, ethnic, modern, and classical ballet reported more than 1 dance-related injury. However the dancers have received little attention in the medical literature. Most of all dance injuries have been found in the lower limbs (hip, lower leg and knee, ankle, and foot), and less frequently in the spine (lower back and/or pelvis). Dance-related injuries usually result from anatomic alignment, poor training, technical errors, unfamiliar choreography or style, and environmental factors including flooring surfaces and theater temperature. Amenorrhea, disordered eating, and low bone density, in female dancers have been also implicated as contributing factors to dance injuries. Age may also have a significant impact on injury incidence. Preventive strategies are the key to avoid injuries. Most information is available from ballet which has probably been the most studied of all dance styles regarding injuries and contributes to understanding of the dance injury mechanisms and can be useful in the treatment and diagnosis of injuries in other dance disciplines. More research is needed to expand the knowledge on injury patterns of different dance styles.
Key Words Dancing; Injuries; Musculoskeletal problems; Rehabilitation; prevention

Introduction

There is evidence that musculoskeletal injuries and pain is an important health issue for dancers at all skill levels. There is a high prevalence of incidences predominating on lower extremities, back, soft tissue and overuse injuries (Hincapié, Morton, & Cassidy, 2008). The physical demands placed on dancers from performance schedules make their physiology and fitness just as important as skill development. The specific demands placed on the dancer's body in terms of endurance and aerobic capacity, muscle strength, overall flexibility, joint stability, somatosensory integration, and neuromuscular coordination envision them as much an athlete as an artist. Today, dance encompasses various techniques and styles such as hip-hop, tap, musical theater, jazz, folk, ethnic, modern, and classical ballet (Motta-Valencia, 2006). The more involved are the participants in different dancing activities the more they expose themselves to a probability of musculoskeletal injury. Injuries incurred during sports and recreation represent a significant public health problem, and while much information is available about the major organized sports, there is little information about activities which are more loosely organized or have lower injury or participation rates. As an occupational group, dancers have received little attention in the health literature (Kraus & Conroy, 1984; Bronner, Ojofeitimi, & Spriggs, 2003; Tuffery, 1989). Previous studies have reported injury incidence rates of 67% to 95% among professional ballet dancers and 17% to 24% in modern dancers (Bronner, Ojofeitimi, & Rose, 2003; Byhring, & Bø, 2002; Garrick, 1999; Nilsson, Leanderson, Wykman, & Strender, 2001). The point prevalence of minor injury in a diverse group of university and professional ballet, modern, and theatrical dancers was 74%, (Chmelar, Fitt, Shultz, Ruhling, & Zupan, 1987) and that of pain related to chronic injuries in professional ballet and modern dancers was 48% (Bowling, 1989). Lifetime prevalence estimates for injury in professional ballet dancers ranged between 40% and 84%, with most dancers reporting more than 1 dance-related injury. In a study of musculoskeletal injuries among Greek folk dancers the 41.62% experienced serious injuries in the lower extremities, specifically in the feet and ankles (Malkogeorgos, Mavrovouniotis, Argiriadou, & Zaggelidis, 2010). The many different styles of dance, the various techniques and training can contribute to the kind of injury that occurs within each form. Ballet is probably the dance style that has been mostly studied regarding specific lesions and injuries cases which consistently have been reported. However most dancers receive training in traditional Ballet, and some of the patterns of injury may be shared with other dance styles. So knowledge of the basic dance positions and technique from the Ballet repertoire can contribute to understanding of the dance injury mechanisms (Motta-Valencia, 2006). Due to the fact that most dancers start training in a very young age, and there is potential for a great impact on their future health, the injury problems of dancers are worth more attention. Also, the interplay of physical and aesthetic demands in dance may lead to various health issues such

Correspondence: Georgios Zaggelidis Email: gzangel@phed.auth.gr

as a variety of musculoskeletal, metabolic, and nutritional disorders which have been described among dancers and this may have a significant impact on their health-related quality of life (Hincapie et al, 2008).

The majority of dance injuries fall in two basic categories: those due to acute incidents (usually the results of faulty technique) and those due to overuse. One of the more common problems for the practitioners in addressing musculoskeletal disorders of the dancers is appreciating the injury mechanisms and how they relate to dance technique. In an acute injury, the mechanism is not usually difficult to understand especially because such injuries are not specific to dance, they may be observed in other athletes or performers. Incorrect performance of dance movements is a potential cause for acute injuries to which may contributed secondary factors such as, tiredness, muscle fatigue, or loss of balance (Macintyre & Joy, 2000). In general, in the upper extremities male dancers usually experience acute injuries during lifting maneuvers and in the lower extremities both male and female dancers while performing difficult jumps or landings (Motta-Valencia, 2006).

On a more challenging level the repetitive movements of dance may lead to overuse injuries such as tendinitis, neuritis and stress fractures (Schon & Weinfeld, 1996). Overuse injuries arise from repetitive microtrauma to bone or soft tissue structures, in which structure and function may be rendered insufficient when the injury cycle persists and offending factors are not eliminated. A variety of direct and indirect causative variables have been implicated in overuse injuries of dancers (Howse, 2000; Bronner & Brownstein, 1997; Quirk, 1994).

These variables can be thought of as physiologic, technical, or environmental aspects of the dancer's experience. Physiologic aspects include the influence of age; as an example, younger dancers have a greater tendency toward hip and back injuries, whereas older dancers are more likely to incur leg, ankle, and foot injuries. The dancer's anatomic alignment may be a determinant factor of the individual's abilities and constraints in movement, and when trying to prevail over such boundaries, the dancer may become more susceptible to injury (Bronner & Brownstein, 1997; Quirk, 1994). Muscle strength imbalances may be developed from dance training by itself, for which supplemental strength training may be considered (Reid, 1988; Koutedakis & Jamurtas, 2004). Tendon imbalances may be observed in dancers, and although flexibility is desired, hypermobility may represent a negative influence (McCormack, Briggs, Hakim, & Grahame, 2004).

Environmental aspects are mostly related to the available footwear and dance surfaces. Footwear is a significant factor because dance shoes should provide proper support and be replaced as needed. Sprung floors are advantageous for dancing because they are built with layers of different materials and a specific resiliency (Bronner & Brownstein, 1997; Bowling, 1989).

The use of improper dance technique, attributable to poor application or lack of knowledge of the correct approach, has been suggested as a risk factor for injury (Howse, 2000). For those injuries related to technique, any "cure" is only temporary until the fault is corrected.

Professional dancers embody the ultimate consequences brought about by rigorous training to master techniques that repetitively risk injury by exceeding the limits of their anatomic and physiologic capabilities. Knowledge about the technical requisites of dance is an important consideration in the care of the dancer. Understanding the biomechanics of dance is essential for dance medicine practitioners to identify the specific anatomic demands placed on body structures and to uncover pathomechanics leading to injury. As an example, ballet dance technique is characterized by the use of extreme positions, such as turnout (legs facing out) and pointe (maximal ankle and foot plantarflexion), which are positions that can potentially place undue stress on muscles, joints, and tendons. Ballet dancers who cannot attain these specific esthetic standards may disregard proper technique with an increased potential for injury. The diversity of dance styles, techniques, and training may contribute to the type of lesions encountered within each form. Ballet has possibly been the dance style most exhaustively studied, from which specific lesions and injury patterns have been consistently reported. Nevertheless, most dancers receive training in traditional ballet, and some of its patterns of injury may be shared by other dance styles (Motta-Valencia, 2006).

Table 1: Factors That Contribute to Dance Injury

- Improper training
- Lack of warm-up exercise routine
- Repetitive jumping
- Poor alignment of body weight
- Faulty technique
- "Sickling" (calcaneus varus or valgus)
- "Rolling in" (foot hyperpronation)
- Poor turnout (inadequate hip external rotation)
- Environmental hazard
- Hard floors
- Ill-fitting shoes
- Barefoot dancing
- Structural deformity of the foot
- Hallux rigidus
- Pes cavus (high arched)
- Biomechanical imbalance
- Poor core strength
- Weak eccentric strength of leg muscles
- Pelvic muscle imbalance
- Tight Achilles tendon

(Toledo, Akuthota, Drake, Nadler, & Chou, 2004)

Methods

The literature data was primarily collected through computer and manual searches of primary sources (e.g., journal articles, theses). For the computer search, online data bases of Pub Med, Google Scholar and Sport Discus were used to retrieve available English language publications, entire articles and abstracts (when available), related to dance injury, using keywords, such as dancing, injuries, musculoskeletal problems, rehabilitation and prevention.

The results of this literature study described in the present review, consists of the following parts according to the kind of injury such as, back, hip, Lower leg and knee, ankle and foot injuries, as well as related health issues. Finally, a conclusion is presented and recommendations are provided for further investigation.

Specific injuries

Musculoskeletal injuries are common in dancers, with a lifetime incidence of up to 90% having been reported. (Luke et al, 2002). Of all dance injuries, 80% occur in the lower limbs and 20% occur in the spine (Macintyre & Joy, 2000). Medical literature profiling the incidence of injury within modern, theatrical, and classical ballet companies reports that the incidence of injuries ranges from 17% to 95% (Bronner et al, 2003) The patterns of injury seem to be fairly consistent, particularly in ballet, and the incidence of injuries in a variety of studies has been found to be greatest for the lower extremity (57%–75%), followed by the ankle and/or foot (34%–54%), and, less frequently, the lower back and/or pelvis (12%–23%) (Bronner et al, 2003; Nilsson et al, 2001; Solomon, Solomon, Micheli, & McGray, 1999; Garrick & Requa, 1993).

A survey of injuries to Broadway performers and its results may be useful for the growing number of physicians who practice performing arts medicine (Evans, Evans, Carvajal, & Perry, 1996). The survey reveals an extensive level of injuries to dancers and actors in Broadway productions and touring companies, with 55% of all performers surveyed sustaining at least one injury and 1.08 mean injuries per performer. For dancers, the most frequent sites of injuries were the lower extremities (52%), back (22%), and neck (12%). The most common lower extremity injuries involved the knee (29%), ankle (25%), foot (20%), hip (12%), and calf (6%).

Age and gender differences in patterns of injury within a classical ballet company were described by Nilsson and coworkers (Nilsson et al, 2001). In their study, younger dancers incurred traumatic injuries more often. They reported that acute knee injuries occurred most frequently in male dancers, particularly traumatic knee injuries in soloistmen, possibly because of the demands of their dance roles (eg, performing high jumps). Conversely, they found that overuse injuries, particularly of the foot and ankle, were most common in ballerinas.

Hip

Hip and/or pelvis pain have been reported among dancers. The ‘‘*snapping hip*’’ refers to a click with a snapping sensation that occurs during movement of the thigh. Snapping and clicking noises at the hip are frequently due to the iliofemoral ligament rubbing over the head of the femur (internal variant or medial snapping hip), or the iliotibial band band sliding over the greater trochanter (external variant or lateral snapping hip) when landing a jump. Stress reaction or fracture at the femoral neck may be a cause of groin pain in running and/or jumping athletes and ballet dancers (Reid, 1988; Teitz, 2000; DeFranco, Recht, Schils, & Parker, 2006).

Labral tears have been confused with internal snapping hip. Athletes often experience a deep sensation of pain and locking or clicking within the hip joint. Only one third of patients describe an instigating trauma. Moreover, an association between developmental hip dysplasia and labral tears has been recognized (Mason, 2001). *Iliopsoas strain* can be caused by incorrect trunk position (Khan et al, 1995).

The piriformis is a deep external rotaror of the hip. *Piriformis syndrome*, commonly seen in dancers, usually presents as a posterior hip pain with shooting, burning symptoms often confused with sciatica.

In the dancer, *ischiogluteal syndrome* involves a strain of the muscles originating from the “sits” bone (ischial tuberosity) and usually presents as posterior pain around the hip (Schon & Weinfeld, 1996).

Lower leg and knee

Chondromalacia patellae refers to softening of the cartilage on the under surface of the patella. It is more commonly seen in runners, gymnasts, and dancers than in other types of athletes (Petrucci, 1993).

Shin Splints is a generic term used to describe pain in the anterior (or sometimes medial) calf. This is also a common problem among runners who run on hard surfaces. A number of injuries to the lower extremity, including shin splints, inflammation of the tendons of the ankle and foot, and stress fractures are all attributable to dancing floors (Weiker, 1981).

Infrapatellar tendinitis (or jumper’s Knee) is often observed in dancers and other athletes. Pain can be provoked during grand-plie and should be sought during examination (Hamilton, Hamilton, Marshall, & Molnar, 1992). *Plica syndrome* or medial capsular strain is a common problem in dancers who force their turnout, which places increased stress along the medial portion of the knee as the feet are planted with the knee flexed.

Ligamentous injuries. Perhaps the most serious injury to the knee in dancers is a tear of the anterior cruciate ligament (Hamilton et al, 1992).

Meniscal injuries are also commonly seen in the professional dancer. A history of twisting injury with locking of the knee or inability to fully straighten the knee is reported (Schon & Weinfeld, 1996).

Stress fractures are the consequence of accumulated impact and shock over time without any relationship to a single specific incident. Most injuries affecting dancers are considered to be overuse injuries, such as tendinosis and stress fractures, among others (Nilsson et al, 2001; Stretanski, 2002).

Within the medical literature, stress fractures have been reported as a common overuse injury within certain athletic populations (Bennell & Brukner, 1997) among these are military personnel, runners, and ballet dancers (Kadel, Teitz, & Kronmal, 1992; Frusztajer, Dhuper, Warren, Brooks-Gunn, & Fox, 1990).

A selfreport survey of female ballet dancers reported an overall incidence of stress fractures in 45% of the respondents (Warren, Brooks-Gunn, Hamilton, Warren, & Hamilton, 1986). Characteristically, dancers have the greatest incidence of stress fractures at the metatarsals (Warren et al, 1986; Frusztajer et al, 1990; Micheli, Sohn, & Solomon, 1985), particularly the second metatarsal (Harrington, Crichton, & Anderson, 1993). Other common sites for stress fractures in dancers are the distal third of the fibula (Hardaker, 1989; Stretanski, 2002), sesamoid (Hardaker, 1989), and pars interarticularis (Stretanski, 2002; Bennell & Brukner, 1997).

Ankle

The most common acute injury in dancers is ankle sprain. Anterior and posterior impingement syndromes may occur in association with acute and overuse injuries (Nilsson et al, 2001; Quirk, 1994; Hardaker, 1989). The mechanism for inversion ankle sprains involves foot plantarflexion and inversion, such as when the dancer performs in demipointe or while landing from a jump.

Bony impingement syndromes may occur in dancers both anteriorly and posteriorly. If the ballet dancer complains of anterior ankle pain with dorsiflexion of the foot (ie, in plie), anterior impingement syndrome should be suspected. Anterior ankle impingement syndrome is a cause of chronic pain at the ankle, commonly seen in athletes and dancers who perform repetitive dorsiflexion at the ankle (Ogilvie-Harris, Mahomed, & Demaziere, 1993; Nihal, Rose, & Trepman, 2005; Tol, Verheyen, & van Dijk, 2001; Takao et al, 2004)

Posterior ankle impingement syndrome should be differentiated from Achilles' tendinopathy. In ballet dancers, posterior impingement syndrome appears to be a more common cause of posterior ankle pain than Achilles' tendinopathy. Active and passive plantarflexion will elicit pain, unlike Achilles' tendinopathy, which causes pain only with active plantarflexion.

Flexor hallucis longus (FHL) tendinopathy may also cause medial ankle pain with maximal plantarflexion. In these cases, the tendon is compressed between the sustentaculum tali and posterior talar tubercle. With ankle plantarflexion and great toe flexion, pain is provoked at the tarsal tunnel or distally. Pain may also be seen with jumping and landing because, respectively, the FHL concentrically and eccentrically contracts in these movements.

Other soft tissue injuries around the ankle that are described in dancers include posterior tibial and peroneal tendinitis (Brown & Micheli, 2004; Stretanski & Weber, 2002). Shin splints in dancers may commonly produce posterolateral pain at the leg. Peroneal tendinitis. Dancers may experience tendinitis, longitudinal tears of the tendon, or subluxation or dislocations of the peroneal tendons. Posterior tibial tendinitis usually causes a dull aching pain during landing or taking off from jumps.

After initial acute tendinitis, dancers who continue working through pain may progress to chronic tendinosis with intratendinous degeneration and increased risk of tendon rupture. In the acute phase, Achilles tendinitis causes pain on strenuous physical activity and landing from jumps aggravates symptoms. (Stretanski & Weber, 2002). Chronic strain to the Achilles' tendon may occur with overwork, particularly with overperformed plie and grand plie. Poor technique, such as working with weight back or knee hyperextended, places undue stress on the Achilles' tendon. Hyperpronation of the foot leads to an increased torsional stress on the Achilles' (Toledo, et al, 2004). Forced turnout is also a contributing factor in tendonitis about the foot and ankle.

Foot

Acute foot injuries may include fractures and subluxations, whereas the most common overuse injuries are stress fractures. Dancer's fracture is an acute spiral fracture on the fifth metatarsal neck that is associated with twisting and inversion of the foot on demipointe (Hardaker, 1989; Micheli et al,1985). Metatarsal stress fractures are overuse injuries that may occur at any of the metatarsals. The second metatarsal is most commonly affected in female ballet dancers who practice full pointe. Because of increased stress forces transmitted on the second metatarsal, it is locked in position between the cuneiforms and distal tarsal bones (Mickeli & Wood, 1985).

Subtalar subluxation has been described to occur in classical ballet dancers after performing a grand plie´ en pointe or landing from a jump on demipointe, with the reported mechanism of injury being ankle hyperflexion, external rotation, and probably slight inversion (Menetrey & Fritschy, 1999).

Hallux valgus may be associated with formation of painful bunions on the medial border of the first MTP joint. For dancers, associated symptoms are exacerbated by pointe work (Khan et al, 1995).

Sesamoid lesions, such as stress fractures and sesamoiditis, require special attention to the correction of dancers' improper techniques. Rolling in caused by forced turn out and abrupt landings without proper deceleration are contributing factors (Quirk, 1994).

Toenail disorders. A dancer's toenail are vulnerable to several problems, including subungual hematoma (bleeding under the nail), onycholysis (destruction and thinning of the nail), ingrown nails (paronychia), infections and onychomycosis (Fungal nail infections).

Clawtoes and hammertoes. Flexible clawtoes and hammertoes (flexion deformities of the proximal interphalangeal joints and often the distal interphalangeal joints) are common in the dance population.

Soft and hard corns. Hard corns appear over bony prominences, metatarsal heads, proximal and distal interfalangeal joints, or tips of the toes and reflect pressure between prominence and external surface. The callus, a thickening of keratin layer of the skin, is the body's defense against these forces. This condition is common in dancers, given the pressures of the shoe and floor.

Bunions. A bunion is the prominence of a metatarsal head that is exposed when the big toe drifts laterally, a condition called hallux valgus. This deformity is often asymptomatic in dancers (Schon & Weinfeld, 1996)

Back

Back pain is the most common musculoskeletal problem seen in the dancer. Some studies have reported a lifetime incidence as high as 70% to 80% (Mickeli & Wood, 1995; Ramel & Moritz, 1994).

Disk hernietion. Discogenic back pain is more common in male than in female dancers. A dancer with a serious disk injury should be treated as any athlete with this condition.

Spondylolysis is a stress fracture of the parts interarticularis of the vertebra. The incidence of spondylolysis in dancers is four times that in the general population. It is thought to be caused by the increased flexion and extension that occur in dance (Mickeli, 1983).

Spondylolisthesis a common condition among dancers, is a subluxation of one vertebra on another (Hamilton et al, 1992).

Table 2: Common injuries in Dancers

Back	Achilles' tendinopathy
Spondylolysis	Lateral ligamentous ankle sprain
Spondylolisthesis	FHL tendinopathy
Disk problem with radicular pain	Peroneal tendinopathy
Thoracic spine pain	Anterior tibialis tendinopathy
Hip	Posterior tibialis tendinopathy
Snapping hip syndrome	Anterior ankle impingement syndrome
Hip labral tears	Posterior ankle impingement syndrome (os trigonum)
Iliopsoas strain	Subtalar subluxation
Piriformis syndrome	**Foot**
Ischiogluteal syndrome	Midfoot sprains (Lisfranc sprains)
Lower leg and knee	Plantar fasciitis
Patellofemoral pain (especially patellar tendonitis)	Cuboid syndrome
Chondromalacia	Stress fractures (especially of the base of 2nd metatarsal)
Shin Splints	Sesamoiditis
Medial tibial stress syndrome	Hallux rigidus or valgus
Infrapatellar tendinitis	Toenail disorders
Plica syndrome	Clawtoes and hammertoes
Ligamentous injuries.	Soft and hard corns
Meniscal injuries	Bunions
Fibular stress fracture	
Ankle	

Related health issues

Female athlete triad

Similar to other athletes involved in sports activities that place a high emphasis on esthetics, the female dancer is at increased risk of the female athlete triad, (disordered eating, amenorrhea, and osteoporosis). Dancers aspiring to attain or maintain an ideal lean figure may place significant efforts on aggressive dieting and a vigorous training regimen. These efforts may lead to amenorrhea and an increased risk of osteoporosis. For

dancers who maintain an intensive training regimen, these physiologic changes potentiate the risk for overuse injuries, such as stress fractures. Stress fractures are a common cause of leg problems in dancers (Motta-Valencia, 2006). Recent research in dancers during puberty has shown that intense ballet training, dietary restriction, and low BMI are associated with gonadotropin alterations with subsequent delayed menarche and menstrual dysfunction and reduced lumbar spine bone mass density (BMD) and insufficient peak bone mass (Valentino et al, 2001).

Amenorrhea. Dieting has been linked to secondary amenorrhea, which is twice as high in dancers who experience stress fractures. This suggests that hypoestrogenic states have a negative influence on bone mineralization, making it more susceptible to fracture. A longer duration of amenorrhea and excessive training (O5 h/d) were demonstrated to be independent risk factors for stress fracture (Kadel et al, 1992).

Nutrition. Dance training emphasizes esthetics and a lean body figure, placing dancers at increased risk for the female athlete triad of disordered eating, amenorrhea, and osteoporosis. Nutritional status and its importance in maintaining physiologic reserves are significant; when physiologic reserves are deficient, the dancer is more susceptible to stress fractures (Kaufman et al, 2002; Frusztajer et al, 1990; Benson, Geiger, Eiserman, & Wardlaw, 1989).

Discussion

Causes of dance injuries anatomic alignment, poor training, technical errors, unfamiliar choreography or style, and environmental factors including flooring surfaces and theater temperature have been implicated as contributing factors to dance injuries. The female athlete triad, amenorrhea, disordered eating, and low bone density, has been implicated in an increased risk of stress fractures in dancers (Negus V, et al 2005; Bauman, Singson, & Hamilton, 1994). Delayed menarche, common in ballet dancers, has been shown to have an association with increased risk for stress fracture (Negus, Hopper, & Briffa, 2005).

Rigorous rehearsal schedules, lengthy show runs, and intensive summer dance programs that require an increase in daily class and rehearsal time have been associated with a higher frequency of injuries. (Kadel, 2006). Age may also have a significant impact on injury incidence. Adolescent dancers may be more subject to overload injury because of muscle tissue quality and technical skill typical of that age. Injuries are also more likely to occur in the late afternoon, a reflection of muscular and psychological fatigue.

Among elite and professional level dancers for whom dance training is a way of life and the impact of injury transcends from physical health to other constructs, such as emotional, financial, and social well-being, injuries can cause significant anxiety when the dancer is unable to perform. Dancers may attempt to dance through the injury without seeking medical attention or may return to work before full recovery when still prone to reinjury (Bronner et al, 2003). Prevention is the keystone to avoid injuries, and for dance injuries, preventive strategies may be directed toward previously identified risk factors. When emphasizing prevention of new injuries, a supervised training regimen should be monitored for gradual progression of intensity (length and frequency) and type of activity (eg, initiating a new dance style). (Klugl et al, 2010)

Most informations are available from ballet which has probably been the most studied dance style regarding injuries and contributes to understanding of the dance injury mechanisms and can be useful in the treatment and diagnosis of injuries in other dance disciplines. More research needs to expand the knowledge on injury patterns of different dance styles.

Table 3: Components of an Injury Prevention for Dancers

1. Warm up
2. Training: This includes all forms of physical preparation for dance performance
   Muscular strength and power (Variable resistance exercises in dance-specific patterns)
   Plyometric (jump) training
   Muscular endurance (Aerobic endurance program)
   Agility(Pilates or yoga, traditional static stretches and ballistic stretches)
   Balance or perturbation (proprioception) training
   Joint stability (cocontraction) exercises
   Dance-specific skills training
3. Equipment: This includes devices, footwear, orthotics, and surfaces (dancing floors)
4. Regulatory: This includes the rules and regulations that govern dance, (dancing rules and education regarding regulations)
5. Self-care: Education on presentation of common dance injuries.
   Self-massage, self-mobilization technique: subtalar joint and anterior hip
   Capsule mobilization

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