

# DANCERS' HEALTH CORNER

## Pointing you in the right direction

BY KATHERINE EWALT

**Note:** "Dancers' Health Corner" is a regular column for DSD written by Katherine Ewalt from Performing Arts and Athletic Restorative Training Specialists (PAARTS) in San Diego. The column presents information and/or advice about dance-related injury and injury prevention. The information is provided as a resource and should not be used to self diagnose or treat. Dancers who experience ongoing pain should seek the advice of a physician or clinician to avoid aggravating current symptoms or potentially causing other more serious injury. Due to legal limitations, no individual diagnosis or treatment plans will be provided through this forum. If you have questions, e-mail them to [info@PAARTSsandiego.com](mailto:info@PAARTSsandiego.com).

**Q: I am a 12-year-old ballet dancer. I have been dancing for eight years. Why do my knee bones crack when I first do a grand plié? — Leah Nepomuceno**

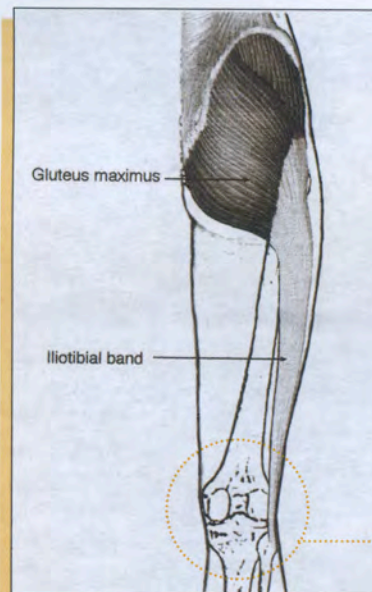
**A:** "Cracking" of the knee joint during deep knee bending, such as grand plié (figures 1-12) is an extremely common occurrence in the dance population. In the knee joint, this audible sound most often comes from behind the knee cap. However, it may be associated with a few possible scenarios.

One possible reason for the loud cracking/popping is related to the pressure changes within the fluid of the joint (similar to the noise made when a person pops a finger joint). A second cause may be due to one or more of the tendons surrounding the knee joint simply rubbing over a bony ridge, for example the iliotibial band (IT Band) as it crosses the lateral femoral condyle (figure 13). As the tendon moves from one side of the bony ridge to the other, a "snap" may be heard. This sound is related to increased tension where the tendon crosses the bony prominence as a result of tightness in the muscle. Third, the position of the knee cap in relation to the femur (thigh bone) during the bending and straightening motion of the knee may also result in an audible sound. A brief discussion of the anatomy of the knee may help to clarify this cause of the audible cracking/popping heard during grand plié.

The patella (knee cap) is "suspended" in

a tendon and thus "floats" above the femur (thigh bone). As the knee bends, the undersurface of the patella comes in contact with the femur; the deeper the knee bend, the greater the contact between these two bones. Additionally, the patella glides in a groove of the femur commonly known as the femoral or patellar groove. At times, with repeated knee bending and straightening, the patella is "held up" for a brief moment and then moves into the appropriate position within the groove with a slight click, crack or pop.

If the crack, snap or pop is the main problem, it is quite harmless. Sometimes, a previously painless click may become slightly painful. This most often occurs when there is an increase in the dancer's work load (i.e., the number of hours spent in dance class, rehearsal and performance). With adequate rest it will usually become painless again, although the audible crack, snap or pop may remain unchanged. However, if there is an associated pain, swelling or some other symptom present with the audible noise, it is recommended the dancer seek medical advice to make sure the sound is not caused by an injury. Dancers should also make sure to practice proper technique such as keeping the knee in line with the second toe (the toe next to the big toe) during demi-plié and grand plié to limit cracking, snapping or popping that may be related to poor alignment. **DSD**



Katherine Ewalt, MS ATC, NCTM, HHP, is the owner and director of Performing Arts and Athletic Restorative Training Specialists (PAARTS) Wellness Studio in San Diego. PAARTS is a multifaceted wellness studio specializing in the needs of performing artists, athletes and active people. Ms. Ewalt has worked in the fields of Sport and Performing Arts Medicine for 10 years and is actively involved with the International Association for Dance Medicine and Science (IADMS) and the National Athletic Trainers' Association (NATA) Performing Arts Medicine Work Group. She is the dance medicine consultant to the San Diego Ballet. For more information, please e-mail [info@PAARTSsandiego.com](mailto:info@PAARTSsandiego.com), or call (619) 225-5762.

Anatomical figures: Karen Clippinger "Dance Anatomy and Kinesiology," Human Kinetics, 2007, p.167.





Figure 10



Figure 11



Figure 12



Figure 1



Figure 2



Figure 9



Figure 3



Figure 8



Figure 7

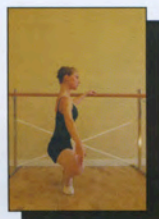


Figure 6



Figure 5



Figure 4

Figures 1-12 demonstrate the progression of the grand plié in first position turned out. The grand plié in first position requires full bending of the knees, which passes through demi-plié (figure 3) and continues until the thighs are parallel with the ground with only the balls of the feet remaining in contact with the floor.

Model for figures:  
Claire Bletz, San Diego Ballet

Figure 13: Note the iliotibial band as it passes over the bony prominence at the outside of the right knee (view is from the back side of the right knee). As the knee bends and straightens, the iliotibial band may create and audible "snap" as it crosses this bony prominence.

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