

## **Correlations Between Physical Characteristics and Hip Pain in Dancers**

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### ABSTRACT

Dance places unusual strain on a dancer's body, and therefore pain and injury are common among dancers. The hip joint is often the site of this pain. The purpose of this study is to determine the relationship between lower leg dynamic stiffness, trunk muscular endurance and hip range of motion with hip pain in dancers. Eight dancers from Oklahoma City University (age =  $20 \pm 1$  yrs, height =  $67.3 \pm 1.1$  in, weight =  $144.2 \pm 17.9$  lbs) reported their level of anterior and lateral hip pain when dancing and at rest on a visual analog scale (McGill Pain Questionnaire – Short Version) and were assessed through the 60-jump test, maximum plank hold times and measurement of passive internal and external hip rotation. The 60-jump assessment was completed on a contact mat (Just Jump, Probotics, Huntsville, AL) as an indicator of lower leg dynamic stiffness. Maximum plank hold time as a measurement of trunk endurance was identified as the moment when the participant lost form for a second time during a bout. The order of the prone, right and left planks was randomly assigned. Passive external and internal rotation were measured using a goniometer with the participant in prone position and the knee flexed to  $90^\circ$ . A comparison between external and internal rotation was determined by the difference between degrees of external and internal rotation. Results show a moderate positive correlation between pain level while dancing and prone plank hold time ( $r = 0.49$ ) and a moderate negative correlation between pain level while dancing and passive external-internal rotation ( $r = -0.63$ ). The same relationships also exist between prone plank hold time and external-internal rotation difference with hip pain at rest ( $r = 0.40$  and  $r = -0.49$ , respectively). A strong negative correlation was found between pain level and age ( $r = -0.83$ ). Dancers might benefit from strength exercises that place the hip in external rotation and by addressing possible imbalances between the anterior and posterior chain. It is possible that movement efficiency and technique are improved with age and experience, decreasing the pain caused by dancing. Further study is required to measure other factors that may clarify these relationships.