

THE Evidence-Based Dancer

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RESEARCH ARTICLE

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Generalized joint hypermobility, scoliosis, patellofemoral pain, and physical abilities in young dancers



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Abstract

Background: Many young girls with generalized joint hypermobility (GJH) choose to participate in dance because their bodies are suited for this activity. Scoliosis tends to occur often in thin girls, who also are more likely to choose dance. Both anomalies (GJH and scoliosis) may be related to reduced abilities such as diminished strength and insufficient postural balance, with increased risk for musculoskeletal conditions. The main objectives of the present study were to determine the prevalence of dancers with GJH, the prevalence of dancers with scoliosis, and the prevalence of dancers with these two anomalies; and, to determine differences in physical abilities and the presence of patellofemoral pain (PFP) between young female dancers with and without such anomalies.

Methods: One hundred thirty-two female dancers, aged 12–14 years, were assessed for anthropometric parameters, GJH, scoliosis, knee muscle strength, postural balance, proprioception ability, and PFP.

Results: GJH was identified in 54 dancers (40.9%) and scoliosis in 38 dancers (28.8%). Significant differences were found in the proportion of dancers with no anomalies (74 dancers, 56.1%) and dancers with both anomalies (34 dancers, 25.8%) ($p < .001$). Dancers with both anomalies had reduced dynamic postural balance in the anterior direction ($p = .023$), reduced proprioception ability ($p < .001$), and weaker knee extensors ($p = .036$) and flexors ($p = .040$) compared with dancers with no anomalies. Among dancers with both anomalies, 73.5% suffered bilateral PFP, 17.6% suffered unilateral PFP, and 8.8% had no PFP ($p < .001$).

Conclusions: A high prevalence of young girls participating in dance classes had GJH, as the increased joint flexibility probably provides them with some esthetic advantages. The high prevalence of scoliosis found in these young dancers might be attributed to their relatively low body mass, their delayed maturation, and the selection process of dancers. Dancers with both GJH and scoliosis had decreased muscle strength, reduced postural balance, reduced proprioception, with higher risk of PFP. The main clinical implications are the need to reduce the risk of PFP among dancers by developing appropriate strength and stabilizing exercises combined with proprioceptive and postural balance training, to improve the correct alignment of the hyperextended and hypermobile joints, and to improve their supporting muscle strength.

Keywords: Generalized joint hypermobility, Scoliosis, PFP, Strength ability, Postural balance

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THE Article

- a cross sectional study of 132 female dancers ages 12-14
- assessed for anthropometric parameters, Generalized Joint Hypermobility (GJH), scoliosis, knee muscle strength, postural balance, proprioception ability, and Patellofemoral Pain (PFP)
- published in 2021 by BMC Musculoskeletal Disorders

THE Takeaways

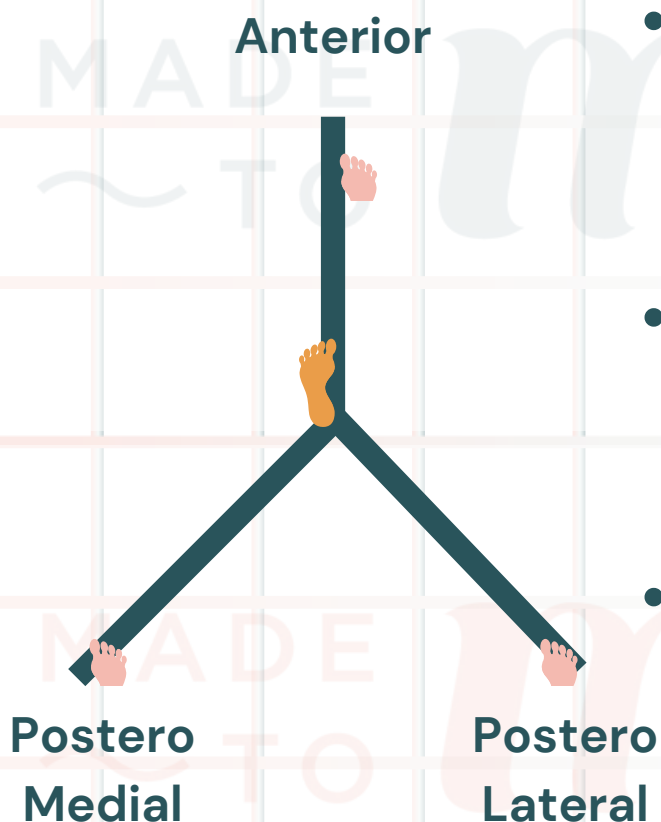
- Dance teachers, healthcare practitioners, and dance experts should develop screening programs to identify GJH and scoliosis
- Proprioceptive and postural balance exercises should be used for every joint in these dancers
- These dancers are at high risk for patellofemoral pain (PFP)

THE Takeaways

- Specific strength training should be used to improve muscle strength in dancers with scoliosis and/or GJH to counteract hyperextension (specifically at the knee)
- Hyperextension should be brought into correct alignment
- Exercise plans should be symmetric and balanced

THE Takeaways

- Y Balance Test used for testing Dynamic Postural Balance



- Take average length of toe reach en fondu from supporting leg (3 attempts) in each direction, parallel
- Divide each average by the length of your leg
 - Leg length = ASIS to tip of medial malleolus
- Multiply by 100 for balance score %
 - use this as an assessment and training tool

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