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Title (type in CAPITAL LETTERS, leave one blank line before the text)  <b>JOINT HYPERMOBILITY IN WOMEN WITH GENITOURINARY DYSFUNCTION: A CONTROLLED STUDY</b>  <u>Aims of study</u> Articular hypermobility is not a distinct entity, but a graded trait, and normal individuals with a considerable degree of joint laxity will lie at one end of that spectrum. Joint laxity is also a component of a variety of genetically determined syndromes (connective tissue disorders such as Ehlers-Danlos and Marfan's syndrome) although it can occur, in the absence of other stigmata, as a simple inherited entity. These syndromes are characterised by joint hypermobility, caused by a connective tissue weakness, which may also affect other organ systems. In general however, women are more mobile than men and racial variation exists.  Genitourinary dysfunction, specifically genuine stress incontinence (GSI) and genitourinary prolapse, is a common problem with a number of predisposing factors. Theories into the origin of pelvic floor support have debated the role of fascial and ligamentous failure, and muscle weakness. Collagen, a fibrous protein, plays a major role in pelvic floor support imparting high tensile strength. A reduction in vaginal collagen has been implicated in the development of genitourinary dysfunction with biochemical studies demonstrating a reduction in total collagen in women with stress incontinence and genitourinary prolapse when compared to controls <sup>1</sup> . Joint mobility has been associated with stress incontinence <sup>2</sup> and genital prolapse <sup>3</sup> but not in the same study. No, one, study has looked at both these conditions on their own when compared to controls. We set out to demonstrate whether there is an association between genitourinary dysfunction and joint hypermobility thus suggesting a common connective tissue weakness.  <u>Methods</u> This was a controlled study performed in our unit between 1998-9. All women recruited into this study were premenopausal and placed into three groups: incontinence alone, prolapse alone and control (no incontinence or prolapse). CSI was confirmed by conventional cystometric testing. The validated Bristol Female Lower urinary tract symptom questionnaire was used to exclude urinary incontinence in the control and prolapse group. The International Continence Society's female pelvic organ prolapse grading system was used to assess genitourinary prolapse and women were withdrawn from the incontinence or control group if their score was greater than 1. The 9 point validated Beighton score was used to assess articular mobility which involved assessing the mobility of the 5 <sup>th</sup> finger, wrists, elbows, and knees <sup>4</sup> .  <u>Results</u> There were: 31 women in the control group with a mean age of 41 years (range 28-56), 29 women in the GSI group with a mean age of 43 years (range 26-53) and 22 in the prolapse group with a mean age of 40 years (range 28-50). The data was analysed using Wilcoxon non parametric testing.

	<i>Control</i>	<i>GSI</i>	<i>Prolapse</i>
<b>Beighton Score</b>	1.1 (± 1.8)	1.8 (± 2.3)	2.6 (1.8)*

\* Cont v Prol (p = 0.01)

<p><b>Conclusion</b></p> <p>We have demonstrated that joint hypermobility is associated with genitourinary prolapse when compared to controls as reported in other studies. There was a higher degree of joint hypermobility in the incontinent group however, when compared to controls this was not significant. These findings agree with previous work<sup>3</sup> even though a more rigorous 9 point scoring system was used and the control group were women without a history of genitourinary dysfunction. If joint hypermobility is considered together with the known reduction of vaginal collagen in women with genitourinary dysfunction we must assume a common underlying connective tissue abnormality must exist. GSI may therefore be expressed as a milder form of this abnormality as suggested with biochemical analysis<sup>1</sup> which shows prolapse has a lower overall collagen concentration than GSI. However, joint mobility can be acquired, e.g. ballerinas, and therefore excess strain on the pelvic floor should also be considered. Continuation of this study with larger numbers may clarify these suppositions.</p> <ol style="list-style-type: none"> <li>1. <i>Neurourol Urodyn</i> 1999; 18:283-5</li> <li>2. <i>Gynecol Obstet Inv</i> 1996; 41:135-9</li> <li>3. <i>Obstet Gynecol</i> 1995; 85:225-228</li> <li>4. <i>Ann rheum Dis</i> 1973; 32:413-18</li> </ol>
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