ABSTRACT

Background: Primary dysmenorrhea is associated with pain and neuromuscular alterations that may influence functional movement patterns. Lumbopelvic rhythm plays a crucial role during forward bending by ensuring coordinated interaction between lumbar spine flexion and anterior pelvic tilt. However, its phase-wise alteration across the menstrual cycle remains insufficiently explored.

Objective: To quantify phase-dependent alterations in lumbopelvic rhythm during forward bending among college students with primary dysmenorrhea.

Methodology: A prospective repeated-measures observational study was conducted on 88 female college students with primary dysmenorrhea. Lumbar flexion and anterior pelvic tilt were assessed during menstrual, follicular, ovulatory, and luteal phases using standardized inclinometric techniques. Data were analyzed using repeated measures ANOVA with post-hoc comparisons.

Results: Lumbar flexion was lowest during the menstrual phase (39.17° ± 0.56 SE) and significantly increased during follicular (47.01° ± 0.60 SE) and luteal phases (47.25° ± 0.58 SE). A moderate increase (~2.3°) was observed from ovulatory to luteal phase. Anterior pelvic tilt demonstrated comparatively minimal variation across phases. Statistical analysis confirmed significant phase-wise differences ($p < 0.001$).

Conclusion: Primary dysmenorrhea is associated with significant phase-dependent alterations in lumbopelvic rhythm, characterized by reduced lumbar mobility during menstruation and increased lumbar contribution during the luteal phase. These findings highlight the need for phase-specific physiotherapy interventions.

Keywords: Dysmenorrhea, Lumbopelvic Rhythm, Biomechanics, Forward Bending, Kinematics.

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