

All outcomes were analysed using an intention-to-treat approach, ensuring inclusion of all enrolled participants regardless of adherence or study completion. Statistical analyses were performed using IBM SPSS Statistics (version 29, IBM Corp.). One-way ANOVAs were conducted to assess group differences in demographic variables after confirming normality. Linear Mixed Models (LMMs) were used to examine the main effects of group, time, and their interaction on outcome measures, accounting for both fixed and random effects. LMM was selected for their ability to handle missing data and unbalanced designs while accommodating individual variability in repeated measure. The model included Group (gait pattern group, knee moment group, control group) and Time (Baseline, Post, Follow-up) as fixed effects, along with their interaction (Group \times Time). Participant ID was included as a random intercept. Dependent variables included the 1st peak KAM, activity knee pain scores, WOMAC scores and gait parameters. LMMs were compared using maximum likelihood. Bonferroni correction was applied to adjust p-values for multiple post-hoc comparisons, and statistical significance was set at $p < 0.05$.