CO-ORDINATION ANALYSIS OF LANDING STRATEGIES IN BEAM DISMOUNTS

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INTRODUCTION: Landing strategies selected by female gymnasts performing somersault dismounts from the beam may be related to the availability of feedback (McNitt-Gray *et al.*, 2001). This study aims to employ co-ordination analysis to examine how female gymnasts control dropping and landing from forward and backward somersault beam dismounts.
METHOD: A female regional level gymnast performed 10 forward and 10 backward somersault dismounts from a competitive beam. Kinematic data for each skill were recorded at 200 Hz using a CODA (CX1) automated motion analysis system. CRP profiles of hip-knee and ankle-knee joint couplings and coefficients of variation were determined.
RESULTS: Phase differences for each dismount in the drop and balance phases are shown in Figure 1. Variability in hip-knee coupling in both phases of backward dismounts () were twice that of the forward dismounts (Table 1). Forward somersaulting variability was similar in the knee-ankle coupling for forward and backward dismounts, (Table 1).

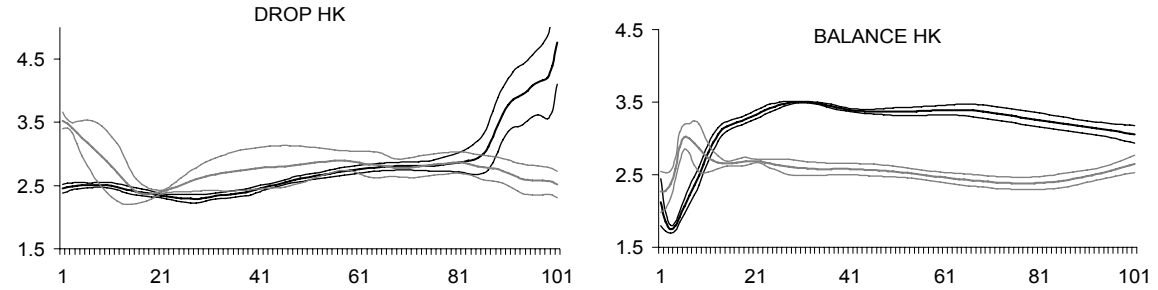

Figure 1. CRP profiles of hip-knee coupling (HK) for 'drop' and 'balance' phases of forward (grey) and backward (black) somersault beam dismounts.

Table 1. Coefficients of variability for Hip-Knee (HK) and Knee-Ankle (KA) couplings for the drop and balance phases of forward and backward somersault beam dismounts.

CV (%)	DROP HK	DROP KA	BALANCE HK	BALANCE KA
F	8	17	5	11
B	19	17	12	12

DISCUSSION: Lower variability in the forward somersault can be explained by reduced visual feedback and hence more constrained joint coupling. This finding supports ideas that movement variability is dependent on the constraints on action (Newell & Vaillancourt, 2001).
CONCLUSION: The initial insights suggest that there may be a relationship between visual feedback and landing strategy in gymnastics. Greater sample size and more detailed analyses will add further to this area.

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