Introduction: Researchers have postulated that co-activation of the hamstrings during knee extension assists the anterior cruciate ligament in maintaining knee joint stability. A lack of knee-joint stability can result in unwanted stresses on the internal structures of the knee, episodes of the knee “giving out” and atrophy of the surrounding musculature. Rehabilitation for anterior cruciate ligament injuries often includes both open and closed chain exercises to strengthen the hamstrings. Objective: To analyze the root mean square (rmsEMG) and the median frequency (mfEMG) of the electromyogram for the reciprocal co-activation of the hamstrings. Analyses will be done while performing low and high velocity isokinetic open chain movements and two closed chain exercises, a one and two-legged squat. Hamstring co-activation is defined as the hamstring activity during knee extension. The rmsEMG is a measure of total muscular activity and the mfEMG measures shifts in muscle fiber activity. Subjects: The subjects were 11 healthy adult females (age = 21.7 ± 1.5 years, mean height = 159.1 ± 5.3 cm, mean weight = 61.0 ± 5.6 kg.) with no known knee pathologies and familiarity with isokinetic testing and the prescribed closed chain exercises. Design and Setting: Subjects performed six continuous isokinetic movements at 1000 s⁻¹ and 4000 s⁻¹ in a reciprocal pattern, (maximal knee extension followed by maximal knee flexion) on a Cybex Norm. They also performed one-legged and two-legged squat exercises, both for six repetitions. Measurements: The rmsEMG is reported as a percentage of the maximal voluntary contraction (MVC) and mfEMG is measured in Hz. The rmsEMG and the mfEMG were calculated for the hamstrings during the repetition of peak muscular activity for both the open and closed chain movements. Results: The rmsEMG for hamstring co-activation showed significant differences between the open chain isokinetic movements and the closed chain exercises (F= 15.799, P<0.01) with greater co-activation when performing the isokinetic movements (28% vs. 17% MVC). In addition differences were seen between 1000 s⁻¹ and 4000 s⁻¹ (F= 6.051, P<0.05) with the greater activity seen at the higher velocity (31% vs. 24% MVC) and between the one and two legged squats (F= 14.142, P<0.01) with greater co-activation during the one legged squat (22% vs. 12% MVC). For the mfEMG no differences were noted between the isokinetic and closed chain movements or between the low velocity and high speed isokinetic movements or the closed chain exercises. Conclusions: Within the limitations of the study design these results suggest isokinetic movements, particularly at high speed have a higher level of muscular recruitment when compared to closed chain movements with the type of muscle fibers recruited remaining relatively constant.