EFFECTS OF 4 WEEKS OF YOGA ON BIOMECHANICAL CHARACTERISTICS IN JUMP TASKS IN PERSONS WITH FUNCTIONAL ANKLE INSTABILITY
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Objective: The purpose of this study was to determine the effects of 4 wks of yoga training on dynamic balance, vertical ground reaction forces (GRF), and lower extremity kinematics during two jump landing tasks in persons with functional ankle instability (FAI). Design and Setting: We used the FAI Questionnaire to qualify self-reported FAI subjects for the study participation. Subjects performed two landing tasks from a 40 cm platform: lateral and forward jump landing. GRF was measured by an AMTI force plate and calculated by the VICONPeak System. Then, the subjects were divided into two groups: yoga and control. For a yoga group, 50 min Hatha yoga sessions were held twice a week for 4 weeks, and for control group no intervention was given. After 4 weeks, all subjects performed jump landing tasks for post-training data collection. Independent t tests were used to compare the changes of pre- and post- training values between the groups and for both jump landings. Subjects: There were 8 physically active subjects (4 females, 4 males), age 25 ± 5.4 yrs (ht 170.6 ± 12.4 cm; mass 69.5 ± 14.6 kg) with unilateral FAI. Yoga group had 4 subjects (3 females, 1 male) and control group had 4 subjects (1 female, 3 males). Measurements: We used GRF to analyze characteristics of landings by time to stabilization (TTS) in anterior/posterior (A/P), medial/lateral (M/L), and vertical directions, maximum vertical GRF, timing of the maximum vertical GRF, and maximum angles of knee flexion and ankle dorsiflexion. Results: Significant differences between groups in changes of pre- and post- training were found with TTS in the M/L direction during the lateral jump ($t(6) = -2.816, p < .05$), and TTS in the A/P direction during forward jump ($t(6) = -2.765, p < .05$). No significances were found with TTS in the vertical direction, magnitude and timing of maximum vertical GRF, and maximum angles of knee flexion and ankle dorsiflexion. Conclusion: Our results indicated that Hatha yoga training may improve TTS, but may not reduce GRF nor does it alter knee and ankle joint kinematics during jump landings. However the improvement on important components of dynamic stability makes it a possible tool for inclusion in ankle injury prevention or rehabilitation programs. Key Words: dynamic balance, ground reaction force, time to stabilization