EFFECTIVENESS OF AN AQUATIC PLYOMETRIC TRAINING PROGRAM
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OBJECTIVE: Plyometrics are used to increase explosiveness and strength. Whereas, aquatic activities are used to decrease joint compression forces via the benefits of buoyancy. There is interesting potential in the blending of these two techniques. The purpose of this study was to compare the effectiveness of an aquatic and a land plyometric program. DESIGN: Three-group randomized design with repeated measurements. Independent variables were the training program (aquatic, land, control) and time. The three dependent variables were strength (quadriceps), power (vertical jump), and agility (T-run). SUBJECTS: Twenty-four volunteers (13 female, 11 male; 25.4 ± 4.7 yrs) read and signed an informed consent approved by the University Institutional Review Board. After completing a questionnaire to screen for past medical history and current injuries, volunteers were randomly divided into three groups: control, land, and aquatic. MEASUREMENTS: Each participant completed a pre-test, mid-test (after phase 1), and post-test (after phase 2) protocol for strength, power, and agility. Quadriceps strength was assessed with a Lafayette hand-held dynamometer at 45° of knee flexion, power was assessed via a vertical jump test, and agility was assessed via a T-run. The mean of three trials was used for data analysis. Intervention phase I included 3 sets of 10 repetitions of 4 plyometric exercises: ricochets, tuck jumps, high knee skip, and box drops (120-foot contacts). Intervention phase II included 3 sets of 12 repetitions of 5 plyometric exercises: ricochets over a hurdle, tuck jumps, high knee skip, box drops, and side jumps over a hurdle (180-foot contacts). Each phase included 6 sessions (2x/wk x 3 wks). RESULTS: There was no significant difference in strength or power between the groups. Land vs. aquatic group strength approached a significant level (p = 0.103). There was a significant difference between control vs. land and control vs. aquatics for agility, and the land vs. aquatics groups also approached significance (p = 0.075). There are also some interesting trends with respect to the acquisition of strength and agility. The aquatic group demonstrated more rapid improvement at the mid-test than the land group. Given the number of participants, the power is only modest and is expected to increase with additional data (see note below). CONCLUSIONS: The implications of this study are that plyometric aquatics may be as good or better for improving strength and agility as a land program, but not as effective for power development. Protection of joints from compression forces may allow for the inclusion of plyometric activities in water at an earlier point in rehabilitation. The more rapid acquisition of strength, power, and agility are also valuable entities noted in the aquatic program.

KEY WORDS: aquatic exercise, plyometrics, strength, power, agility