World Academy of Science, Engineering and Technology
International Journal of Sport and Health Sciences
Vol:17, No:08, 2023

Abdominal Exercises Can Modify Abdominal Function in Postpartum Women: A Randomized Control Trial Comparing Curl-up to Drawing-in Combined With Diaphragmatic Aspiration

Authors : Yollande Sènan Djivoh, Dominique de Jaeger

Abstract : Background: Abdominal exercises are commonly practised nowadays. Specific techniques of abdominal muscles strengthening like hypopressive exercises have recently emerged and their practice is encouraged against the practice of Curl-up especially in postpartum. The acute and the training effects of these exercises did not allow to advise one exercise to the detriment of another. However, physiotherapists remain reluctant to perform Curl-up with postpartum women because of its potential harmful effect on the pelvic floor. Design: This study was a randomized control trial registered under the number PACTR202110679363984. Objective: to observe the training effect of two experimental protocols (Curl-up versus Drawing-in+Diaphragmatic aspiration) on the abdominal wall (interrecti distance, rectus and transversus abdominis thickness, abdominal strength) in Beninese postpartum women. Pelvic floor function (tone, endurance, urinary incontinence) will be assessed to evaluate potential side effects of exercises on the pelvic floor. Method: Postpartum women diagnosed with diastasis recti were randomly assigned to one of three groups (Curl-up, Drawingin+Diaphragmatic aspiration and control). Abdominal and pelvic floor parameters were assessed before and at the end of the 6-week protocol. The interrecti distance and the abdominal muscles thickness were assessed by ultrasound and abdominal strength by dynamometer. Pelvic floor tone and strength were assessed with Biofeedback and urinary incontinence was quantified by pad test. To compare the results between the three groups and the two measurements, a two-way Anova test with repeated measures was used ($p<0.05$). When interaction was significant, a posthoc using Student t test, with Bonferroni correction, was used to compare the three groups regarding the difference (end value minus initial value). To complete these results, a paired Student t test was used to compare in each group the initial and end values. Results: Fifty-eight women participated in this study, divided in three groups with similar characteristics regarding their age (29±5 years), parity (2±1 children), BMI (26±4 kg/m2), time since the last birth (10±2 weeks), weight of their baby at birth (330±50 grams). Time effect and interaction were significant ($p<0.001$) for all abdominal parameters. Experimental groups improved more than control group. Curl-up group improved more ($p=0.001$) than Drawing-in+Diaphragmatic aspiration group regarding the interrecti distance (9.3±4.2 mm versus 6.6±4.6 mm) and abdominal strength (20.4±16.4 Newton versus 11.4±12.8 Newton). Drawingin+Diaphragmatic aspiration group improved (0.8±0.7 mm) more than Curl-up group (0.5±0.7 mm) regarding the transversus abdominis thickness ($p=0.001$). Only Curl-up group improved ($p<0.001$) the rectus abdominis thickness (1.5±1.2 mm). For pelvic floor parameters, both experimental groups improved ($p=0.01$) except for tone which improved ($p=0.03$) only in Drawing-in+Diaphragmatic aspiration group from 19.9±4.1 cmH2O to 22.2±4.5 cmH2O. Conclusion: Curl-up was more efficient to improve abdominal function than Drawingin+Diaphragmatic aspiration. However, these exercises are complementary. None of them degraded the pelvic floor, but Drawing-in+Diaphragmatic aspiration improved further the pelvic floor function. Clinical implications: Curl-up, Drawing-in and Diaphragmatic aspiration can be used for the management of abdominal function in postpartum women. Exercises must be chosen considering the specific needs of each woman’s abdominal and pelvic floor function.

Keywords : curl-up, drawing-in, diaphragmatic aspiration, hypopressive exercise, postpartum women
Conference Title : ICPASS 2023 : International Conference on Physical Activity and Sports Science
Conference Location : Montreal, Canada
Conference Dates : August 03-04, 2023