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Effects of lumbar motor control exercises in paddle-tennis players



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Keywords: Injury prevention; Racquet-sport; Physiotherapy; Low back pain

Objective. To establish the effects of lumbar motor-control training using the model of activation of transversus abdominis, posterior fibers of the psoas major and lumbar multifidus in paddle-tennis players with Low Back Pain (LBP).

Method. The sample was composed of 62 active paddle-tennis players with LBP; with a mean age of 34.8 ± 9.2 years and 1.76 ± 0.07 m, 73.1 ± 13.4 kg and an average playtime of 8.2 ± 6.3 years. The 35.5% played at the right position; 53.2% over the medium level, 90.3% were right-hand and 71% were federated. Using the form of an experimental pre-post-test design were randomly assigned in 2 groups: Experimental group ($N = 31$, 34.2 ± 9.4 years; 16 hombres, 15 mujeres) and a comparison group ($N = 31$; 35.4 ± 9.1 years; 16 hombres, 15 mujeres). The amount of paddle-tennis training was the same in both groups: 6 weeks; 3 times/week for 2 hours/session. Furthermore, the experimental group performed a motor control training after each session. The selective activation of the transversus abdominis, posterior fibers of the psoas major was the main focus of the intervention, with the intent of improving its stabilising core function, especially within the lumbar region, via increased

tension of the thoracolumbar fascia. The tests to compare each pre-post-test group were: Modified Star Excursion Balance Test (SEBT); Sit and Reach Test (SRT); Schober Test (ST) and Visual Analogous Scale (VAS).

Results. The results show that the main predictors of LBP were age (area-under-the-curve, AUC=0.943), height (AUC=0.912), weight (AUC=0.994), time of play (AUC=0.904) and level (AUC=0.895). Also we found a statistically significant improvement in the experimental group respect to the control group; being that there was an increase SEBT reach distances (anterior $p<0.001$; lateral $p<0.001$; and medial $p<0.001$), increased SRT ($p<0.001$); increased ST ($p<0.004$) and a decrease in pain ($p = 0.003$). In the control group there were no statistically significant changes.

Conclusions. Paddle-tennis creates specific demands on the low back that can cause chronic lumbar pain. In the experimental group, the lumbar spine flexibility and pelvic tilt range of motion increased; improved balance and reach distances; and decreased pain. These results provides new and valuable insights to create preventive programmes, and it confirms the usefulness of integrating the new form of intervention into existing multimodal back therapy training concepts, taking into account the main predictors of LBP.

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