

Conference Abstract

The Relationship Between Body Position and Low Back Pain in Amatorial Cyclists: Case Series

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Abstract

Background: An incorrect posture during cycling induces a direct stress on lumbar spine structures, resulting in lower back pain. This is a common complaint among cyclists and is usually prevented by strengthening back and core muscles and stretching. However, this condition tends to exacerbate in amatorial cyclists leading to abuse of painkillers. The Bike Fit approach combines physiotherapy with a bespoke modification of the cyclist-bike points of contact, optimising muscle recruitment and easing mechanical stress on the spine. In this study, we apply the Bike Fit recommendations to three amateur cyclists with low back pain.

Case Series: This study enrolled three amatorial cyclists aged between 52-64 years old, suffering lower back pain. The clinical protocol consisted of three phases: initial assessment, bike fitting, and follow-up. Both the initial assessment and follow-up visit included a preliminary interview, the postural and muscular evaluation of the cyclist, and a biomechanical analysis of the pedal stroke. Bike fitting was based on the adjustment of handlebar, saddle and cleats. None of the three cases undergo physiotherapy treatment or changed lifestyle during the study.

Interestingly, we identified a range of muscular problems across all the three cases. Alterations spanned from low muscular flexibility and lack of the spinal muscles strength, to reduced core stability and tendinopathy of the gluteus medius. All these conditions are directly associated with an increased muscle stress in the lower back. Using sensors and 2D video analyses, we were able to find different criticisms of key mechanical points of the bike, that were corrected to result in a better biokinetics.

Outcomes: Four-weeks after the intervention, all three cases were invited to a follow up visit and to give feedback using the Numeric Rating Pain Scale (NPRS). Two cases were both resolved with positive results, while one case has improved greatly, but has not yet been fully resolved.

Conclusion: Herein, we successfully applied the Bike Fit method to treat lower back pain in three amatorial cyclists. All cases presented an incorrect posture on the bike that resulted in spine stress. The adjustment of the points of contact (the cleats, the saddle and the handlebars) between the cyclist's body and the bike was able to improve lower back pain. Altogether, the results clearly demonstrate the positive effect of the Bike Fit approach in resolving musculoskeletal pain in the cyclists involved in the study.

Limitations of the study: The study is limited to the analysis of three amatorial cyclists and does not include a control group. The small number of enrolled cases and the absence of a reference cohort does not allow to extend the observations to the general population.

Key Words: Cyclist, Lower Back Pain, Bike Fitting, Case Series

