

ASSESSMENT AND TRAINING OF FUNCTIONAL INTER-LIMB ASYMMETRIES IN FOOTBALL PLAYERS

Alejandro Moreno Azze

Department of Musical, Visual and Physical Expression, University of Saragosa, Spain

Abstract: *Over the last years, between-limb asymmetries of team athletes have generated a great deal of interest in the scientific literature, as well as their association with performance, especially in those tests such as strength, power, jumping, leg stiffness, dynamic balance and sprinting. To determine the effects on between-limb asymmetries of team sports athletes, training methods of strength, balance, CORE stability, eccentric overload, isoinertial devices, and cable resistance training have been developed. The main aim of this doctoral thesis was to enhance the knowledge of functional asymmetries in football players, with special emphasis on analyzing the reliability and validity of performance tests and their real application to team sports, and to design specific training interventions according to their characteristics. Based on this, the following studies were carried out: (a) Comparison of three unilateral strength training strategies on jumping and between-limb asymmetries in football players (article 1); (b) Comparison of three eccentric overload training strategies on power output and limb asymmetry in young football players (article 2); (c) Effects of three combined training interventions on jumping, change of direction, power output and limb asymmetry in young football players (article 3). The main findings of this doctoral thesis are: (a) Unilateral eccentric overload training programs were shown to substantially improve performance in concentric and eccentric, mean and maximal power, as well as bilateral jumping; (b) Those groups that started the eccentric overload training program with the weaker leg showed a moderate reduction in concentric and eccentric mean and maximal power asymmetry, as well as unilateral jumps, especially in those composed of several jumps with the same leg; (c) Those groups that began the combined training program with the weaker leg showed a performance improvement in unilateral horizontal and vertical jumps; (d) Better results in mean concentric power were obtained in both legs in the group that performed the double volume with the weaker leg in the eccentric overload training program; (e) A reduction of between-limb asymmetries in the triple jump and change of direction could be observed in the group that performed the double volume with the weaker leg after a combined training program. The results obtained in this doctoral thesis show us that, when performing a unilateral strength training program, it would be recommended to start this program with the weaker leg, as this improves the performance variables. At the same time, it is suggested that performing double volume on the weaker leg in these training programs will only obtain better results in inter-limb reduction in those performance variables related to specific football skills, such as jumps or change of direction.*

Key words: Functional asymmetries; inter-limb asymmetry; soccer players; unilateral strength training; eccentric overload training; jump performance; return to play.