ABSTRACT

Background: Glenohumeral internal rotation deficit and external rotation strength have been associated with the development of shoulder pain in overhead athletes.

Objective: To examine the bilateral passive shoulder rotational range of motion (ROM), the isometric rotational strength and unilateral serve speed in elite tennis players with and without shoulder pain history (PH and NPH, respectively) and compare between dominant and non-dominant limbs and between groups.

Study Design: Cohort study.

Methods: Fifty-eight elite tennis players were distributed into the PH group (n = 20) and the NPH group (n = 38). Serve velocity, dominant and non-dominant passive shoulder external and internal rotation (ER and IR) ROM, total arc of motion (TAM: the sum of IR and ER ROM), ER and IR isometric strength, bilateral deficits and ER/IR strength ratio were measured in both groups. Questionnaires were administered in order to classify characteristics of shoulder pain.

Results: The dominant shoulder showed significantly reduced IR ROM and TAM, and increased ER ROM compared to the non-dominant shoulder in both groups. Isometric ER strength and ER/IR strength ratio were significantly lower in the dominant shoulder in the PH group when compared with the NPH group. No significant differences between groups were found for serve speed.

Conclusion: These data show specific adaptations in the IR, TAM and ER ROM in the dominant shoulder in both groups. Isometric ER muscle weakness and ER/IR strength ratio deficit appear to be associated with history of shoulder injuries in elite tennis players. It would be advisable for clinicians to use the present information to design injury prevention programs.

Level of evidence: 2

Key words: Isometric strength, range of motion, serve speed, shoulder injury, tennis