Abstract

Shoulder recentering technique: An isokinetic analysis

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Introduction. Decentering of the humeral head, which is painful and limits the range of shoulder motion, may be caused by an imbalance of the rotator muscles [3]. Isokinetic analysis provides reliable and precise information on range of motion and rotator muscles balance and can therefore be used to evaluate the impact of manual techniques of recentering on joint range of motion and rotator balance. This use of isokinetic analysis is a novel approach to evaluating manual therapies.

Material and methods. Our study included 28 athletes, all nationally ranked hand-ball players presenting with anterior-superior decentering of the humeral head confirmed by clinical examination. The players were randomly assigned to one of two groups. Group A benefited from Sohier’s reharmonizing technique (mean age, height and weight respectively: 23.6 years, 168.1 cm and 58.4 kg; 11 players right and 3 left dominant). Group B received placebo treatment consisting of touch-pressure manipulations at a distance from the shoulder and without recentering effect (26.2 years, 168.7 cm and 61.2 kg; 12 right and 2 left dominant).

The evaluation were made before and immediately following treatment or placebo using the following method:

– Sohier’s manipulation tests to determine the presence of decentering (clinical manoeuvre)
– Measurement of range of motion in internal (IR) and external (ER) rotation using the goniometer included in the dynameter
– Concentric isokinetic evaluation of the rotator cuff with the subject in seated position and the arm in 45° abduction in the scapular plane. 5 internal and external rotations repetitions of movement at 180°/s were followed by 30 s of rest and then by 3 repetitions at 60°/s. The maximal moment (MM) was recorded for both IR and ER in order to calculate the IR/ER ratio

Results. Before treatment, no difference in range of motion or muscle strength was noted between the two groups. IR/ER was within the normal range (between 1.3 and 1.5) in 75% of the players and above normal for the others (between 1.5 and 1.7) [1,4].

– In the control group , range of motion showed no difference between the two tests. In the treated group a significant increase ($p < 0.001$) in IR was noted, without change in ER.
– The results for muscle strength were discordant. In the control group we noted a significant increase ($p < 0.05$) in the strength of IR at 60°/s and 180°/s and of ER at 180°/s, probably by a learning effect. In the treated group only IR strength was increased at 180°/s ($p < 0.001$). IR/ER showed no change across groups or test speeds.

Discussion. The reharmonizing technique for the decentered shoulder, as described by Sohier [3], led to an increased range of motion for the internal rotation but this was not accompanied by a significant increase...
in rotator muscle strength. This does not invalidate the technique. This result suggests that the modification in IR/ER ratio thought to be the cause of decentering may instead be the consequence. Decentering may thus be just the first stage in shoulder dysfunction, with minimal instability due to lesion of the means of passive contention, preceding a more serious stage marked by rotator cuff pain and altered muscle balance [2]. Longitudinal study of treated versus control groups is now needed to further evaluate both the clinical progress and the modifications in muscles strength.

Isokinetic analysis to evaluate manual treatment of the decentered shoulder has the advantage of providing detailed information on change in range of motion and muscle strength, as well as of broadening discussion on the etiology underlying shoulder dysfunction. It is however insufficient on its own to evaluate treatment efficacy either in clinical or biomechanical terms.

References


Table 1

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<tr>
<th></th>
<th>Dif IR</th>
<th>Dif ER</th>
<th>Dif MM IR 60°/s</th>
<th>Dif MM IR 180°/s</th>
<th>Dif MM ER 60°/s</th>
<th>Dif MM ER 180°/s</th>
<th>Dif IR/ER IR 60°/s</th>
<th>Dif IR/ER IR 180°/s</th>
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