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Reliability of the manual muscle resistance test as a measure of shoulder function

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【Purpose】

A physical examination such as the manual muscle resistance test is one of the common clinical assessments for patients with shoulder pain or weakness, and it is judged as positive, when muscle weakness as well as pain is detected. However, there have been no studies on the threshold for muscle weakness of the shoulder joint, but only of the hip or knee joint. Our purposes were to clarify the threshold for muscle weakness in the common shoulder muscle strength tests, and to compare manual judgment with the side-to-side ratio measured by instrumental measurement.

【Methods】

Fifty-three patients (mean age, 37.9 years) with some functional disorder of one shoulder were administered three manual muscle resistance tests (abduction strength, external rotation, and belly press tests) by one physical therapist (PT), then divided into the positive and negative groups to compare muscle strength between the two shoulders. Another PT measured isometric strength at the same positions using a hand-held dynamometer. Comparing instrument measurement with manual measurement, the cut-off point was calculated by receiver operating characteristic analysis.

【Results】

The cut-off point was 78.9% in the abduction strength test, 73.8% in the external rotation test, and 84.0% in the belly press test.

【Discussion】

We found that muscle weakness in involved shoulders, compared with the opposite uninvolved shoulders, could not be detected when there was a small difference in muscle strength. We suggested that a side-to-side difference could be manually detected when loss of muscle strength was more than 15%-25% compared with the contra-lateral side.