Full Article (link to full text): Sousa CO, Nascimento JDS, Pozzi F, Kardouni JR, Michener LA. Shoulder Performance Activity Test (SPAT) for People With Shoulder Pain: Feasibility, Reliability, and Validity. *Physical Therapy*. 2023;103(3):pzad006. doi:10.1093/ptj/pzad006

Study Design: Cross-Sectional

Abstract:

Objective. The purpose of this study was to assess feasibility, reliability, and validity of a new performance-based test, the Shoulder Performance Activity Test (SPAT).

Methods. People with shoulder pain (n = 93) and without shoulder pain (n = 43) were included. The SPAT consists of overhead reach, hand behind head, and hand behind back tasks, each performed with 20 repetitions and rated by time, pain, and effort. The SPAT scores were summed for time, pain, and effort, and a total score across the 3 tasks. Feasibility was assessed by the percentage of SPAT task completion, test–retest reliability by intraclass correlation coefficient (ICC), standard error measurement, minimal detectable change, and known-groups construct validity by comparing between groups (shoulder pain and no pain) and between shoulders in those with pain.

Results. All participants performed the 3 SPAT tasks. The ICC was 0.74–0.91, and the minimal detectable change was 3.1–4.7 for task scores and 10.0 points for the total score. Individuals with pain presented higher tasks and total scores compared with those without pain. The moderate/severe pain group had higher scores than the low pain and no shoulder pain groups, and the low pain group had higher scores than the no pain group. Scores were higher in the involved shoulder compared with the uninvolved shoulder.

Conclusion. The SPAT is a feasible and reliable performance-based test for use in patients with shoulder pain and can differentiate between individuals with and without pain, among different levels of pain, and between involved and uninvolved shoulders.

Impact. The SPAT provides a standardized method for clinicians to assess shoulder functional performance tasks, which can enable a comprehensive assessment of shoulder disability and clinical decision making. The error metrics can be used to determine meaningful changes in performance.

Key Findings: The Shoulder Performance Activity Test (SPAT) is a feasible, reliable, and valid test for clinical use with patients presenting with shoulder pain. The participants presenting with and without shoulder pain were able to perform all 3 tasks with little to no adaptation in a total time of under 10 minutes, including rest breaks between tasks. The Minimum Detectable Change (MDC) was determined to be 3.7 to 4.1 points for individual tasks and 10 points for all 3 tasks combined. The SPAT was able to effectively differentiate between individuals with and without shoulder pain, varying levels of pain, and between involved/uninvolved shoulders. Statistically significant higher total scores and individual task scoreson the SPAT were present for

participants with higher levels of pain in comparison to no pain and when comparing the involved shoulder to the uninvolved.

Reviewer Summary: This study provides good evidence for the use of a reliable and valid performance test when evaluating objective outcomes for patients presenting with shoulder pain. The participants were recruited via physical therapy clinics and flyers across three different geographical locations (Richmond, VA, Los Angeles, CA, and Natal, Rio Grande do Norte, Brazil). Participants presenting with shoulder pain performed two SPAT data measures, each 7 days apart, to determine reliability, with the evaluator blinded to the original data collection. The three tasks as a part of the SPAT included reaching overhead to a functional position (~120 degrees elevation), reaching behind the head, and reaching behind the back. The participants were asked to perform each task for 20 repetitions and were assessed for total time, level of pain during each task (NPRS), and amount of exertion (Borg scale). The scoring was then determined as total time + pain + effort = total score. The Intraclass Correlation Coefficient (ICC) ranged from 0.74 to 0.91 for the three tasks, demonstrating good reliability. Between group differences were performed for the pain vs no pain group, involved vs uninvolved shoulder, and for varying levels of pain (no vs low vs moderate/severe pain). The results showed significantly higher total scores and individual task scores for the higher pain group compared to low pain and for low pain compared to no pain, as well as for the involved shoulder vs uninvolved, demonstrating excellent validity for the SPAT. Overall, the results of this study demonstrate the usefulness of the SPAT as a valid, reliable, and feasible outcome measure for patients with shoulder pain. The SPAT can be used with this population for assessing intervention outcomes to accurately and objectively determine shoulder physical performance in relation to functional activity performance.