

## Can I Touch My Toes After Spinal Fusion?

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**INTRODUCTION:** Despite the frequent occurrence of AIS, there is still paucity in the literature in terms of flexibility, with few studies including patients' self-perception of flexibility. The purpose of this study is to evaluate the effect of PSF on perceived flexibility in AIS.

### **METHODS:**

68 patients were included in this study. This study was a retrospective radiographic and chart review of 45 AIS patients undergoing PSF between 2016 and 2021. 180 patients were included via phone or email. 94 patients did not have a working phone or email via EHR. Out of the 86 patients that had a working contact, 45 patients responded (52.23%).

Toe-touch, lateral bending, and trunk rotation were asked about during phone or email survey. Patients were also asked to rate flexibility and activity levels on a 1 – 10 revised Likert scale, with 1 indicating severely limited flexibility and sedentary lifestyles, and 10 representing high flexibility and activity levels, respectively. Additionally, patients were asked how long it took them to return to competitive sports, gym, running, bicycle riding. Patients were also asked about the length of their rehabilitation. 23 non-surgical spine patients were included as controls.

### **RESULTS:**

45 patients underwent posterior spinal fusion, with lowest instrumented vertebra of T9 to L4. 31 patients were fused to L3/L4 and 14 patients were fused to T12/L1. Demographic information, including age, BMI, pre- and postop major curves, curve correction and levels fused were similar between the two groups ( $p > 0.05$ ). L3/L4 patients had an average 4.3-day hospital stay compared to 4.1 days including day of surgery for T12/L1 ( $p = 0.73$ ).

Preoperatively, self-assessed flexibility (L3/4: 7.1 vs T12/L1: 6.6  $p = 0.80$ ) and activity levels Likert scale results (7.6 vs 7.1,  $p = 0.46$ ) were similar between groups. Postoperatively, both groups had similar flexibility (6.2 vs 6.4,  $p = 0.18$ ) and activity levels (6.5 vs 6.6,  $p = 0.13$ ). Flexibility levels did not change between pre- and postoperative visit for L3/L4 ( $p = 0.22$ ) or T12/L1 ( $p = 0.93$ ) patients.

There was no difference in reported toe touch ability between the groups pre (77.4% vs. 78.6%,  $p=0.31$ ) and post-surgery (70.9% vs. 71.4%,  $p=0.83$ ) and neither significantly changed after surgery (77.4% vs. 70.9%,  $p=0.10$ ; 78.6% vs. 71.4%,  $p=0.22$ ). These groups were similar to the control group before ( $p=0.16$ ) and after ( $p=0.35$ ) surgery.

L3/L4 patients returned to unrestricted gym at an average of 6.1 months versus 6.8 months for T12/L1 ( $p = 0.36$ ). Both groups returned to competitive sports at average 7.1 months ( $p = 0.21$ ).

**DISCUSSION AND CONCLUSION:** While it is generally believed that fusion to L3/L4 limits patient flexibility, ability to perform sports activities and ability to touch toes, our study found that adolescents who were flexible preoperatively regained that ability postoperatively.