

Impact of Physical Therapy following Posterior Spinal Fusion: Assessment of Return to Activity and Level of Play

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RESEARCH QUESTION

In a cohort of patients with adolescent idiopathic scoliosis who undergo posterior spinal fusion (PSF), does participation in physical therapy (PT) lead to faster return to prior level of play and decreased back pain levels?

BACKGROUND

Posterior spinal fusion (PSF) surgery to treat scoliosis can affect adolescents who want to participate in physical activity or their sport of choice. However, PSF surgery, the most common surgery type for scoliosis patients, has a prolonged recovery time in comparison to other common adolescent orthopedic injuries. Furthermore, the intervention of physical therapy in the post-operative period and the effect on the timeline of return to sport (RTS) has not been studied after PSF.

MATERIALS AND METHODS

All eligible patients undergoing PSF surgery met the following criteria: between the ages of 10-18, involved in any level of physical activity, prescribed physical therapy as a post-operative recovery intervention, and underwent PSF surgery at Cook Children's Medical Center in Fort Worth, Texas. Once determined as eligible, each potential study participant was administered several surveys (SRS 22, SRS 30, VAS, Psychological Readiness Scale and the Pediatric PSF and Return to Sport/Activity Assessment Form pre-operatively, 6 months, 12 months, and 24 months following the surgery.

We have established a functioning RTS Assessment measure for use towards adolescent PSF patients and return to sport/activity as there are no pediatric specific outcome measures for scoliosis or spine problems.

Pediatric PSF and Return to Sport/Activity Assessment Form - RESEARCH

Subject number: _____ Date: ____/____/____

Visit: Baseline 6M Post 12M Post 24M Post

ACTIVITY LEVEL SCALE

Circle the activity level you are able to currently participate in today.

A. **No Activity** (ex: watching TV, computer/electronic use, or gaming).
B. **Light-Intensity Activity** (ex: walking, light household chores, general yard work, playground activities).
C. **Moderate-Intensity Activity** (ex: jogging, hiking, riding a bike, recreational fitness classes/swimming, going to the gym, yoga, playing a pick-up basketball game).
D. **Heavy-Intensity Activity** (ex: running, cycling, swimming laps, jumping rope, hiking, playing organized or league sports, martial arts, competitive dance/cheer, gymnastics).
E. **Vigorous-Intensity Activity** (ex: Year round sports, competes on multiple sports teams in same season, elite athlete in sport).

	Answer:
1. What physical activities do you do?	
2. Do you exercise?	<input type="checkbox"/> YES <input type="checkbox"/> NO a) How many days per week? _____ b) How many minutes/hours per day? _____
3. Do you take a PE class in school?	<input type="checkbox"/> YES <input type="checkbox"/> NO a) If yes, how many days per week? _____
4. Do you play a sport?	<input type="checkbox"/> YES <input type="checkbox"/> NO a) How many days per week? _____ b) How many minutes/hours per day? _____
5. Do you play a sport on a team?	<input type="checkbox"/> YES <input type="checkbox"/> NO a) How many days per week? _____ b) How many minutes/hours per day? _____

RESULTS

Based on the limited data that has been collected, study participants have been able to return to activity at the same or at a higher level by one year following PSF and do have decreased back pain when compared to their pre-operative baseline. Back pain is an important outcome given that patients with scoliosis can have lower back pain that may not go away even following PSF. Therefore, continuing to trend pain scores following PT intervention, VAS score, SRS-30, RTS Assessment scores, and other measurements will be critical moving forward with a larger sample size to best identify effective post-operative interventions and reducing or eliminating back pain.

FUTURE DIRECTIONS

This study inherently is limited in that PT is a standard order following PSF and therefore were not able to conduct a randomized-control trial. However, with further patient enrollment, we hope to identify patients who may not attend PT in the post-operative period for other reasons (for example: cost, location, or transportation limitations) and compare their outcomes to study participants who did participate in PT.

Ultimately, this project has acted as a pilot study for the creation of a novel return to sport/activity assessment form specific for adolescents undergoing PSF. It is our goal that this form can become a validated tool with further studies in the scoliosis population.



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