

Agility Outcome Measures and Gait Analysis in the Physical Therapy Rehabilitation of an Adolescent with an Acetabular Hip Fracture: A Case Report



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Unique

- Pediatric hip fractures are uncommon.
- 85 to 90 percent of pediatric hip fracture are a result of high-energy trauma.⁴
- There is a paucity of literature describing best rehabilitation practices.
- Agility outcome measures, as well as observational and video gait analysis have not been fully investigated in the rehabilitation of pediatric hip fractures.^{2,3,5}

Purpose

The purpose of this case report was to investigate the use of agility outcome measures, as well as observational and video gait analysis in the rehabilitation of a fourteen year-old male motocross athlete with a hip fracture.

Foundation

- The use of the Agility T-test, Figure 8 Hop Test and the Lower Extremity Functional Scale (LEFS) has been well documented in adult athletes.
- Observational and video gait analysis have been shown to be useful outcome measures in the rehabilitation of children with cerebral palsy.¹
- Gait analysis has been used successfully in adult athletes in evaluating running biomechanics and the effectiveness of intervention.
- While there is excellent data that supports the use of agility outcome measures, and gait analysis in neurologically affected pediatric patients and adult athletes, there is little data investigating the use in a pediatric hip trauma population.

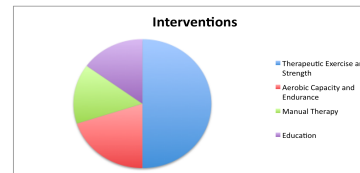
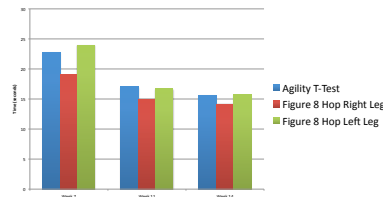
Description

The subject was a fourteen-year-old patient who suffered a left posterior wall acetabular fracture from a motocross accident. He underwent surgical open reduction internal fixation (ORIF). His initial visit to physical therapy was 10 weeks after surgical intervention.



Patient X-Ray 8-weeks post-op

Interventions



Therapeutic Exercises:

- Non-Weight Bearing: Clamshells, weight shifts
- Balance: Ball toss, wobble board, single leg stance, bosu step overs
- Strength: Reverse bridges, 2 in. step downs, bosu squats, monster walks
- Functional Activity: Ladders, Plyojumps, resisted walking & lateral hops

Aerobic Capacity and Endurance:

- Biking, reverse incline treadmill walking, agility tests, walk/jog

Agility Outcome Measures:

- Agility T-test and Figure 8 Hop Test, which occurred at week 7, 11, and 14.

Gait Analysis:

- Observational occurred continuously, with video analysis at 11 weeks

Observations

- Improvements were noted to strength and flexibility from initial examination to discharge.
- LEFS improved from 21/80 at initial examination to 70/80 at re-examination #2.

Table 4. Summary of System Review Findings.

		Initial Examination	Re-examination #2
Manual Muscle Testing (Left Lower Extremity)	Hip Abduction	4/5	5/5
	Hip Flexion	4/5	5/5
	Hip Extension	4/5	4+/5
	Hip Adduction	Not Tested	5/5
	Gluteus Medius	4-/5	4/5
Goniometry	Hip Flexion	Not Tested	100 degrees
	Hip Abduction	Not Tested	35 degrees

Conclusions

A rehabilitation program that utilized agility outcome measures, as well as observational and video gait analysis was successful in treating a fourteen-year-old adolescent with a posterior wall acetabular fracture. Future research should investigate the range of uses of agility outcome measures and gait analysis for variable pathologies in adolescent patients.

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