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Who: 12-year-old female cheerleader with history of bilateral knee pain.

What: Running program initiated on the AlterG® Anti-Gravity Treadmill™ to help patient return to impact activities. The patient had excellent carryover from AlterG to overground activities.

Why: Body weight support was used in the rehabilitation process to restore normal gait and running mechanics, and to help patient with progressively loading lower extremities.

Introduction

The patient is 12 year-old female competitive cheerleader with history of bilateral knee pain. Running, jumping, tumbling, flips, and squats aggravated the patient's symptoms.

Goals

- Restore normal gait and running mechanics.
- Increase hip and lower extremity strengthening bilaterally.
- Restore normal jumping, squatting, and lunging mechanics.
- Return to competitive cheerleading without symptoms.

History

Plan

- The patient has a history of bilateral knee pain aggravated by jumping, tumbling, flips, running, and squatting.
- The patient had no diagnostic studies completed.
- The patient underwent recent growth spurt.
- The patient presented with bilateral hip weakness and positive test for bilateral knee valgus with double/single leg squat, double/single leg lunge, and double/ single leg jump.
- The patient demonstrated altered gait and running mechanics with increased knee valgus and toe out bilaterally.
- The patient initiated a running program on the AlterG Anti-Gravity Treadmill at 50% of her body weight at 4.5 mph and no incline.
- The protocol included gait training on the AlterG and level ground, hip strengthening and stability training, balance training, and plyometric return to sport drills.
- Program duration was 9 weeks.

Considerations

Pain, soreness, and gait deviations were considered when progressing ambulation on the AlterG. Speed, incline, and body weight percentage were increased to patient tolerance.

Results

The patient was seen once a week for 8 weeks, then once 2 weeks later for the last appointment in the 9-week program. The patient began with moderate to severe infrapatellar pain bilaterally, which was monitored throughout the program.

At the initial evaluation, the patient reported an average pain of 4-6/10 and a maximum of 6-7/10 in bilateral knees sub-patellar. The patient had bilateral hip weakness with valgus moments at bilateral knees with squatting, lunging, jumping, running, and minimally during walking, which was monitored throughout the program.

The AlterG Anti-Gravity Treadmill was utilised early in the rehab process in order to restore normal gait and running mechanics. The patient had excellent carry over from AlterG training, and was able to demonstrate normal gait and running mechanics outdoors on level ground at the end of the treatment session.



AlterG Case Study

By the end of week 5, the patient was able to achieve normal gait and running mechanics on level ground without warm-up or training on the AlterG. The patient continued to progress running for endurance training on level ground as part of home exercise program.

The patient was able to achieve all her goals, and return to full time competitive level cheerleading without symptoms.

Weeks (post-op)	Program	Speed (mph)	Incline %	Time (mins)	Frequency
3	Walking progressing to run at 50% of BW	2.5-5.5	0	10	One per week
4	Walking progressing to run at 50-65% of BW (progressed as tolerated)	4.5-6.5	0	10	One per week
5	Walking progressing to run at 65-75% of BW (progressed as tolerated)	2.5-6.5	0	10	One per week

