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Who: 19-year-old female snowboarder s/p ACL reconstruction and microfracture surgery after crashing during boarder cross race

What: Body weight support was incorporated into the rehabilitation protocol once patient cleared for Partial Weight Bearing

Why: The AlterG Anti-Gravity Treadmill was incorporated into the athlete's rehabilitation plan to normalize gait pattern, progressively load lower extremity safely, establish athletic confidence, and maintain fitness levels.

Introduction

19 y/o female Snowboard athlete sustained an ACL tear and medial and lateral meniscal tear during sport activity. Boarder Cross snowboard is a dynamic sport, including explosive bouts of snowboarding, jumps and turns.

1. Athlete crashed during a race. Diagnostic imaging confirmed diagnosis of an ACL tear and medial and lateral meniscal tear.
2. Upon diagnosis the athlete elected for surgical intervention

Goals

- Following release to partial weight-bearing, incorporate de-weighting into rehabilitation protocol
- Develop a progressive return to activity
- Maintain fitness and function during rehabilitation
- Return to participation

History

Plan

- Athlete was diagnosed with an ACL tear and medial and lateral meniscus tear
- Upon consultation with treating physician and review of diagnostic imaging, the athlete elected to undergo surgery to reconstruct the ruptured ligament and to address the torn meniscus. A microfracture procedure of the femoral condyle was also performed
- After physician release to partial weight-bearing, a complementary conditioning program was developed incorporating the AlterG Anti-Gravity Treadmill
- Along with traditional medical treatment: modalities, therapeutic exercise and NSAID's, the AlterG Anti-Gravity Treadmill was added to the treatment protocol
- Program duration was for 20 weeks

- AlterG Anti-Gravity Treadmill was incorporated after post-op week 12, athlete was cleared for partial weight-bearing
- Athlete achieved desired competition goals and returned to full participation

Considerations

Pain/ soreness levels were considered and used to gauge weight percentage and speed. Pain level reported by athlete was not to exceed 4 on a scale of 1-10 during Phase I, and not to exceed 3 on a scale of 1-10 during Phases II-IV

- Gait training was incorporated into treatment protocol
- Athlete feedback was considered prior to each workout

Results

The athlete was released for return to sport by the treating physician after 20 weeks of rehabilitation. The athlete achieved the goals of the rehabilitation plan, incorporating a progressive sport specific conditioning plan to transition the athlete to full participation. The AlterG Anti-Gravity Treadmill® was incorporated into the athlete's rehabilitation plan to establish athletic confidence, maintain fitness, manage gait and progressively increase impact on the extremity. The athlete resumed full activity after release from rehabilitation and continued using the AlterG Anti-Gravity Treadmill as part of the reconditioning and sport specific training program.

Progression Table 1 (weeks are post-op)

Phase I Week 13-18	Partial Weight-bearing
	Range of Motion
	Gait evaluation/ re education
	Neuromuscular activation
	Neuromuscular conditioning
	Pain Management
Phase II Week 19- 24	Proprioception
	Weight-bearing as tolerated
	Emphasize heel to toe walk
	Pain free activity
	Proprioception
	Initiate cardiovascular training
Phase III Week 25- 28	Increase load bearing
	Increase volume
	Increase strike frequency
	Increase musculoskeletal strength and endurance
	Decrease incline of surface
	Preparation
Phase IV Week 29- 32	Full foot strike
	Increase intrinsic muscular function
	Proprioception/Technique
	Maintain volume
	Increase intensity/ load
	Increase musculoskeletal strength and conditioning
Return to activity	Increase cardiovascular training
	Decrease angle of surface
	Increase load and intensity
	Challenge Proprioception
	Maintain Volume
	Maintain Conditioning
Return to activity	Maintain Technique
	Maintain angle of surface

AlterG Case Study

Progression Table 2

(The following table represents the patient's actual device settings during his rehabilitation, beginning post-op week 4, based on his individual progress and pain levels. Please consult a physician before initiating any exercise or rehabilitation program.)

Days	Time	Speed(mph)	Frequency	BodyWeight %	Incline
1-6	8 min	1.5	1 x daily	40%	2 degrees
7 - 13	12 min	2.5	1 x daily	45%	2 degrees
14 - 20	15 min	3.0	1 x daily	50%	2 degrees
21	10 min	4.0	1 x daily	60%	2 degrees
23	15 min	5.0	1 x daily	65%	2 degrees
25	20 min	5.0	1 x daily	65%	2 degrees
28	25 min	5.0	1 x daily	70%	1 degree
31	25 min	5.5	1 x daily	70%	1 degree
34	2 min intervals 2'x10 sets	5.5	1 x daily	70%	1 degree
36	25 min	6.0	1 x daily	75%	1 degree
40	34 min	6.0	1 x daily	80%	1 degree
46	2 min intervals 2'x10 sets	6.5	1 x daily	80%	1 degree
51	30 min	6.5	1 x daily	85%	1 degree
55	2 min intervals 2'x10 sets	6.5	1 x daily	85%	1 degree
60	30 min	3.5	1 x daily	85%	1 degree
65	30 min	3.5	1 x daily	85-90%	1 degree
70	30 min	4.0	1 x daily	85-90%	1 degree
75	30 min	4.0	1 x daily	85-90%	1 degree
80	30 min	4.0	1 x daily	85-90%	2 degrees
85	30 min	4.0	1 x daily	85-90%	0 degree
90	30 min	4.5	1 x daily	85-90%	0 degree
95	30 min	4.5	1 x daily	85-90%	0 degree
100	30 min	4.5	1 x daily	85-90%	0 degree
100-119	30 min	4.5	1 x daily	85-90%	0 degree
120-140	30 min	5.0	1 x daily	85-90%	0 degree