ALTER G® Case Study

Unicompartmental Knee Replacement

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Who: 69 year-old active male with long history of degenerative joint disease (DJD) to med compartment of right knee. Underwent elective right knee unicompartmental replacement to allow him to stay active with Pickleball and hiking club.

What: 2 weeks post-op a walking program was initiated on the AlterG® Anti-Gravity Treadmill™.

Why: Body weight support helped with normalising gait pattern and allowed patient to work on lower extremity strength/endurance, as well as cardiovascular conditioning, in preparation for hiking trip scheduled at 3 months post-op.

Introduction

69 year-old active male with long history of DJD to the medial compartment of his right knee. The patient underwent elective right knee unicompartmental replacement. The patient is very active, he plays pickleball (a version of tennis) and is a member of a hiking club. At 3 months post-op, the patient was scheduled to go hiking in Nova Scotia for one month.

Goals

- Initiate early weight bearing to prepare for hiking trip.
- Develop a normal gait pattern.
- Progressively improve hip, knee, and core strength.
- Return to a normal walking program and be able to walk on even and uneven surfaces and multiple speeds and angles.

History

Plan

- Patient is a retired surgeon. He was very active throughout his whole life and played tennis for many years, but was eventually unable to do so secondary to knee pain. Patient then started pickleball, which causes less stress on his joints and played pickleball until symptoms increased to the point where he was unable to do any lateral movements.
- Patient had Synvisc® injection series with no noticeable improvement in knee symptoms.
- Consulted with doctors and elected to undergo right partial medial knee arthroplasty.
- Underwent 4 days of inpatient care post-op, followed by 10 days of inpatient rehabilitation, then started outpatient rehabilitation.
- Patient initially had significant medial knee pain with any active or passive flexion beyond 90 degrees. Discussed case with patient's doctor and surgeon subsequently released medial collateral ligament which resulted in decreased medial knee pain.
- 2 weeks post-op, the patient initiated a walking program on the Alter G Anti-Gravity Treadmill at 40% of his body weight at 1.7 mph and no incline.
- This patient's treatment protocol included gait training (on AlterG), soft tissue mobilisation, patellar mobilisation, joint mobilisation, knee strength and stability exercises and proprioceptive drills.
- Program duration was 3 months 160 beats per minute. Unsupported running remained difficult due to continued, but improving, right leg weakness.

Considerations

- Pain, swelling and soreness were monitored when progressing ambulation on the AlterG.
- Speed and incline were increased as patient's pain level improved.

Results

The patient was seen 3 times per week for 4 weeks, 2 times per week for a further 4 weeks, then once a week for 4 weeks until month 4 post-op. The patient initially had increased medial knee pain with flexion, but did not have pain while ambulating. The patient did achieve all of his functional goals and has returned back to an exercise program, but not pickleball currently. At the time of this case study, the patient was leaving for Nova Scotia. The AlterG Anti-Gravity Treadmill was incorporated early in the rehabilitation program as a way to restore his normal gait. We also used the AlterG as a way to prepare the patient for the extreme amount of walking that he was going to do in Nova Scotia. Physicians kept his unloading to a maximum of 75% as a way to improve patient's cardiovascular endurance without stressing his knee. The patient was discharged, ready for his hiking trip. He will be seen as needed when he returns.

Weeks (Post-Op)	Program	Speed (mph)	Incline %	Time (mins.)	Frequency
2	Walking at 40% of body-weight	1.7-2.0	0.0	15	3 x week
2-3	Walking at 45% of body-weight	2.0-2.5	0.0	20	3 x week
5	Walking at 45-55% of body-weight *(Progressed as tolerated)*	2.5-2.8	0.0	25	2 x week
6-7	Walking at 50-60% of body-weight	2.8-3.0	1.0	30	2 x week
8*	Walking at 60% of body-weight	3.0	1.0	30	2 x week
9-10	Walking at 60% of body-weight	3.0	2.0-3.0	35	1 x week
11-12	Walking at 65-75% of body-weight	3.0	3.0	45	1 x week

* Big transition week, increased speed and incline