



# Anti-gravity treadmill training with 19-year-old soccer player status post leukemia

Britni Barber, SPT and Lisa Chase PT, DPT

## PURPOSE:

The purpose of this case report was to describe the effects of anti-gravity treadmill training, in addition to standard treatment protocol, on endurance performance in a 19-year-old female collegiate soccer player following chemotherapy treatment for leukemia.



## METHODS:

Standard treatment interventions for balance and weakness were initiated during the first half of treatment. This included things like single leg stands, sit to stands and mini squats. As the patient progressed more advanced functional exercises were introduced such as plyometrics, multidirectional cone taps and static soccer ball kicks. Initial and final testing performed on the AlterG consisted of the patient walking until she no longer could. Interval training on the AlterG was performed during the last 10 minutes of every treatment session. A target RPE was used for the interval training of between 7-9 on the Borg scale (0-10 scale). The patient was seen twice a week for four weeks.

## CONCLUSION:

Physical therapy rehabilitation of patients who are experiencing chemotherapy-related fatigue may benefit from anti-gravity treadmill training. This case report not only identifies a successful outcome using such intervention but also introduces a more aggressive approach to treatment for a patient whose goals included going back to play division one sports. The patient was not only able to reach her goals of being able to perform activities of daily living but also make significant improvements in other skills required to play her sport such as improvements in balance, coordination, and agility.

## RESULTS:

### Alter-G Protocol

Visit number	Working interval	% body weight at work	Rest interval	% body weight at rest	Total time
2	2 minutes @ 4.0 mph	60%	1 minute @ 2.5 mph	80%	12 minutes
3	2 minutes @ 4.0 mph	60%	1 minute @ 2.5 mph	80%	12 minutes
4	2 minutes @ 4.0 mph	80%	1 minute @ 2.8 mph	80%	12 minutes
5	2 minutes @ 4.0 mph	80%	1 minute @ 2.8 mph	80%	12 minutes

## CLINICAL APPLICATION:

Risk reduction of cancer from physical activity from cancer only varies from about 10-30%.<sup>29</sup> This means athletes are at almost just as high a risk as the general population for developing cancer. They too will suffer the same side effects from chemotherapy requiring a need for a more aggressive protocol for treatment of chemotherapy-related fatigue for this patient population.

## CASE DESCRIPTION:

The patient was a 19-year-old female collegiate soccer player who was diagnosed with leukemia days after completing her first season with the team. After numerous chemotherapy treatments she was cancer free but left with multiple side effects from the chemotherapy. The greatest side effect was the chronic fatigue and weakness.

Patient presented with decreased strength bilaterally, decreased coordination, and decreased balance. Outcome measures that were used included single and double leg balance assessments, lower extremity functional scale (LEFS), manual muscle tests (MMTs) and a 30 second sit to stand test and a gait analysis. Cardiovascular fitness was assessed on the AlterG

Patient doubled her time spent on the AlterG and the test was terminated by the patient due to her RPE only being a 2/10 after 20 minutes. In addition to increasing time spent on the AlterG, patient also showed improvements in balance, MMT scores, gait deviations, 30 second sit to stand test and LEFS score. Patient reported increases functional activities such as being able to walk prolonged distances to go to the store and drive a car.

## REFERENCES:

For full reference list please scan:

