

ABSTRACT

Clinicians working on motor skill learning interventions often find that improvements observed during training are not sustained and do not transfer to very similar tasks. Research suggests that strategies such as real-time biofeedback and learner's focus of attention seem to facilitate motor skill learning. However, research on the implications of these strategies in rehabilitation is limited and has not been investigated in healthy individuals. The motor learning effects of these strategies need to be assessed as they offer the possibility of enhancing rehabilitation regimens. The purpose of this study was to investigate the generalizability of real-time biofeedback and learner's focus of attention to a treadmill gait retraining program aimed at correcting knee hyperextension insidious gait patterns in healthy young women. Assessing the acquisition, retention, and transfer of kinematic improvements was the focus of this study.

1. Knee sagittal plane kinematics could be influenced with dynamic gait training using real-time biofeedback. Gained proficiency in controlling knee hyperextension during treadmill training was evident during overground walking immediately and 1 month after training.
2. The effectiveness of real-time biofeedback in improving performance does not seem to be influenced by the focus of attention, internal or external, induced during treadmill training. Participants in both intervention groups improved in a similar way as a consequence of practice. However, there were trends in the data that pointed that the external focus of attention group had better long-term retention. It is not known if participants actively switched to an external focus of attention despite the instructions provided during training. Tests to ensure instructional compliance should be used.
3. A treadmill gait retraining program using learner's focus of attention indicated that there were not differences in learning acquisition, short and long-term

retention, and transfer to overground walking and obstacle crossing between intervention groups. It is not known if these changes persist beyond the 4-month follow-up included in this study.

The results of this study will help to reduce knee hyperextension gait patterns in women. Future studies may also use the methodology used in this study to further investigate the implications of learner's focus of attention in rehabilitation. Similarly, the findings of this study could offer an additional strategy for rehabilitation regimens.

Abstract Approved: _____
Thesis Supervisor

Title and Department

Date

Thesis Supervisor

Title and Department

Date