Context and Overview

Our objective is to update and improve our current Computerized Gait Assessment (CGA) online course, supported in a 2011 TLEF grant application, with a thorough needs assessment and backwards design approach. This updated course will expand on the assessment of children with neuromotor issues, providing clinicians and students with insight into quantitative movement analysis.

Project Goals

Work with New Knowledge and Innovation at BCCH to:
1. Align learning outcomes, assessments and activities with an instructional design storyboard template.
2. Remove and replace Flash content with H5P; update plug-in tools; and create new media.

Future Work

We aim to continue our work by creating:
1. A new, online visual gait analysis course for children with pathological gait, with additional case studies.
2. A new, online course for standardized lower extremity pediatric assessment.

Acknowledgements

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Before

In the original version of the online course, students passively read through key definitions of prerequisite material.

After

Now, students are prompted to review the key terms via an interactive activity and receive immediate feedback. The activity was made using H5P (1). This promotes personalized, active learning.

Before

Each phase of the gait cycle was shown separately. Students had to manually select each phase, shown as ambiguous circles.

After

A diagram of the full gait cycle (2) is displayed while learning about each phase. Students are automatically shown the next phase to avoid accidental skips. This allows for easier navigation and less cognitive overload.

Before

Students had to interpret the graph by reading a large block of text and memorizing the gait cycle shown earlier.

After

Phases are separated and highlighted for easy reference on the graph. Gait cycle diagram displayed for easy reference, allowing students to recall what was learned and relate the concepts to the graphs presented.

Strategy 1: Interactive Assessments

Kinematic Variables
Once segment positions are calculated we can then calculate the following kinematic variables:
- Segment angles: the angles between distal and proximal segments
- Segment lengths: the position changes of segments in space
- Segment velocities: the rate of change of segment displacements
- Segment accelerations: the rate of change of segment velocities

Strategy 2: Clearly Segmented Content

Definitions of the Gait Cycle
Initial Contact
During initial contact (the first 2% of the gait cycle), the hip is in flexion; the knee is in extension and the ankle is dorsiflexed and ready to accept weight. During this phase, both feet are still on the ground (double-limb support).

Reading Kinematic Graphs for Gait: Knee Angle – Sagittal
The primary plane of motion at the knee is sagittal.

Strategy 3: Relating Concepts in Data Visualization

In the original version of the online course, students passively read through key definitions of prerequisite material.

Access our Course!
This open-access course can be found on the PHSA Learning Hub, or scan this QR code!