HOME-BASED VIDEO APPLICATION TO QUANTIFY INFANT POSTURAL CONTROL AND MOVEMENT: Angles-Video Goniometer©

Regina Harbourne1, Jaclynn Stankus2, Nathaniel J. Cochran3; Hui-Ju Chang1, START-Play Consortium*

1Rangos School of Health Sciences, Duquesne University; 2School of Education, Duquesne University; 3Collaborative Laboratories

Background
- Early intervention takes places primarily outside of clinics in the natural setting of the home
- Infant posture and movement is difficult to document
- Both visual and goniometric methods of measurement in infants have low reliability;
- Purpose: Create a method to capture natural, functional movement in a quantitative way in infants
- Provide the method as an inexpensive, user-friendly application on phone or iPad

Description
- The Angles Video Goniometer application for iPhone and iPad was developed as a simple and intuitive tool for measurement of infant movement.
- The app either takes or imports videos from iPhone or iPad, and allows the user to drag the video to select specific frames for goniometric measurement of angles
- Use mirrors that of a real goniometer, but allows measurement to be taken during a functional, goal-directed movement

Use
- Move video to desired movement with slider
- Use + or – buttons to find the exact frame
- Touch angle points on screen just as you would line up a goniometer – must be a sagittal view
- Drag points to get exact position of angle
- Take multiple frames if you want to calculate velocity

Reliability & Validity
- Within 1° of goniometer in pilot testing
- Intraclass correlation coefficient=0.91 between 3 raters for infant sitting videos in START-Play study
- ICC agreement higher than manual goniometry
- ICC between 3 coders for infant angles greater than photo method

After marking angles:
- Drag marked dots to adjust or undo mark and correct
- Select any unwanted frames and trash them
- Press the export button to get spreadsheet of values for quantification of movement or further analysis

Export will provide:
- Times of each selected frame
- X-Y coordinates of selected points
- Angles created for intersecting lines

- Select points (x-y coordinates) if desired for further analysis; points represent pixels of screen
- Select angles for goniometric measures

References
3. ©Nathanial Joseph Cochran 2017; nathancochran.info

Acknowledgements
Institute of Education Sciences, U.S. Department of Education; Early childhood and early intervention R324A150103
Faculty Development Fund Grant 2015-2016, Duquesne University
Thank you to all the therapists and families in START-Play!

*Start-Play Consortium http://start-play.unl.edu/
University of Delaware – malolo@udel.edu
Michele A. Lobo, PhD, PT; James C. Galloway, PhD, PT; Iryna Babik, PhD; Andrea Cunha, PhD, PT
Virginia Commonwealth University – scdusing@vcu.edu
Stacey C. Duong, PhD, PT; Emily Marcinowski, PhD; Tanya Topabi, PT
Duquesne University – harbourner@duq.edu
Regina Harbourne, PT, PhD; Hui-Ju Chang, PhD, PT; Mhiiee An, PhD, PT; Jaclynn Stankus, MS.Ed
University of Washington – westcs@uw.edu
Sally Westcott McCoy, PT, PhD; Lin-Xu Hu, PhD, PT; Whitney Gregory, PT
University of Nebraska-Lincoln – jbovaird2@unl.edu
James Bovaird, PhD; Susan Sheridan, PhD; Natalie Kozii, PhD

©Nathanial	Joseph	Cochran	2017;	nathancochran.info