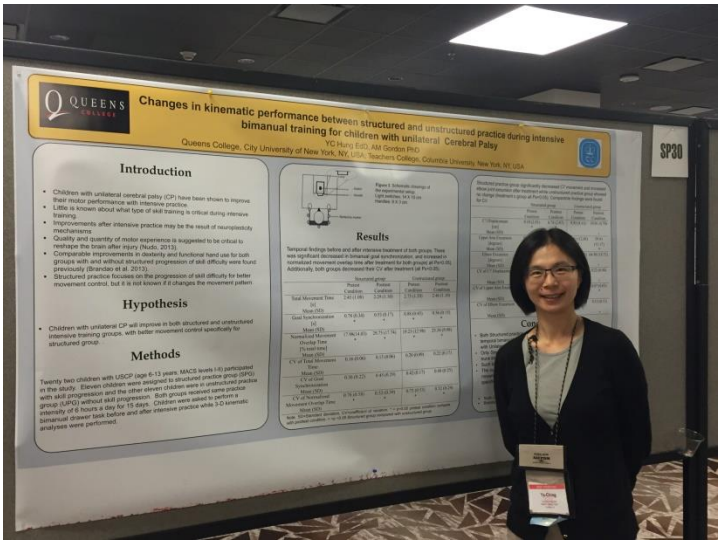
Biomechanical Laboratory

Location: Fitzgerald Gymnasium 219

The laboratory is equipped with VICON three-dimensional motion analysis system with eight infra-red cameras, two force platforms, and a wireless EMG system.



Director: Dr. Ya Ching Hung
Phone number: 718-997-2739
Email:
yaching.hung@qc.cuny.edu

Teaching

The biomechanical laboratory is currently used for two major required classes FNES 341 Biomechanics (undergraduate class) and FNES 730 Analysis of Human Movements (graduate class). Students can observe how to collect 3-D data during functional activities and physical trainings. They are also able to process the data and interpret it for brief fun projects.

Research

The research projects are mainly focusing on evaluating bimanual coordination and whole body posture and gait movement control and learning of typically developed children, children who are overweight or obese, and children with unilateral spastic cerebral palsy (USCP) using three-dimensional kinematic analysis. We also assess the effectiveness of intensive upper extremity trainings: constraint-induced movement therapy (CIMT) and bimanual training (e.g., hand-arm bimanual intensive therapy, HABIT) for children with USCP using functional bimanual and whole body complex tasks.

Current Students and Projects

Graduate students

Aryeh Spingarn (2014-2019) Exercise Science Program:

Research paper: Hung YC, Spingarn A (2018). Whole body organization during a symmetric bimanual pick up task for children with unilateral cerebral palsy. *Gait and Postural* 64:38-42.

Research paper: Hung YC, Spingarn A, Friel KM, Gordon, AM. Changes in movement control during a reach to eat task for children with unilateral CP after intensive training. *Physical Occupational Therapy in Pediatrics* (Resubmitted with second revision).

Undergraduate students

Payal Shah (2019- present) Honors program for research in Science

Jaqueline Garcia (2018- present) Honors program for research in Science
Topic: Whole body complex task movement control in children

Joseph Fernandez (2018- present) Honors program for research in Science
Topic: Whole body complex task movement control in children with and without USCP

Stephanie Balkara (2018-present) Biology program

Jillan Kang (2018-present) Biology program
Topic: Influence of accuracy constraints during ball activities in children with USCP

Previous Students and Projects

Graduate students

Burak T Cilhoroz (2016-2017) Master Thesis of Exercise Science Program

Hannah-Marie Williams (2012-2013) Exercise Science Program

Rod Joseph (2009-2010) Exercise Science Program

Henry Wang (2009-2010) Exercise Science Program

Undergraduate students

Fawzia Shirzad (2017-2019) Honors program for research in Science (received Excellence in Neuroscience Research Award of 2019):
Research paper: Hung YC, Shirzad F, Saleem M, Gordon, AM. Changes in whole body coordination during walking for children with unilateral cerebral palsy after intensive training. *Gait and Posture* (Submitted).

Maria Saleem (2017-2019) Honors program for research in Science:
Research paper: Hung YC, Shirzad F, Saleem M, Gordon, AM. Changes in whole body coordination during walking for children with unilateral cerebral palsy after intensive training. *Gait and Posture* (Submitted).

Brooke Serebryansky (2017-2018) Nutrition and Exercise Science program

Deana Fedkowskyi (2017-2018) Nutrition and Exercise Science program:

Jackie Beak (2016-2019) Honors program for research in Science

Wenhui Zeng (2015-2018) Honors program for research in Science:
Research paper: Hung YC, Zeng W (2019). Influence of accuracy constraints for children with unilateral cerebral palsy during bimanual tasks. *Developmental Neurorehabilitation* 1-9. doi: 10.1080/17518423.2019.1616845. [Epub ahead of print].

Alla Yakubova (2015-2017) Nutrition and Exercise Science program

Melissa Mangiafreno (2014-2017) Nutrition and Exercise Science program:
Research paper: Hung YC, Mangiafreno M, Gill SV (2016). Whole body organization during a symmetric bimanual pick up task in overweight and obese children. *Gait Posture* 52:95-99.

Shane Mitchiko (2014-2017) Nutrition and Exercise Science program

Marco Palabasan (2014-2017) Nutrition and Exercise Science program

Max Castrogaleas (2013-2015) Nutrition and Exercise Science program

David Rodriguez (2013-2015) Nutrition and Exercise Science program

Silky Kataria (2012-2014) Honors program for research in Science

Maryan Mudasir (2012-2014) Honors program for research in Science

Arouna Qamar (2012-2014) Honors program for research in Science

Geneva Meredith (2011-2014) Undergraduate research assistantship from Alliance for Minority Participation in Science, Engineering and Mathematics:
Research paper: Hung YC, Meredith GS (2014). Influence of dual task constraints on gait performance and bimanual coordination during walking in children with unilateral cerebral palsy. *Research in Developmental Disabilities* 35(4): 755-60.

Research paper: Hung YC, Gill SV, Meredith GS (2013). Influence of dual task constraints on whole body organization during walking in children who are overweight and obese. *American Journal of Physical Medicine & Rehabilitation* 92(6): 461-7.

Research paper: Hung YC, Gill SV, Meredith GS (2013). Bimanual and whole body organization during walking. *Gait and Posture* 38(3): 450-4.

Julissa Vargas (2011-2013) Nutrition and Exercise Science program

Zahava Polishuk (2011-2013) Nutrition and Exercise Science program

Juan Cfuentes (2011-2013) Nutrition and Exercise Science program

Diana Ramos (2010-2011) Undergraduate research assistantship from Alliance for Minority Participation in Science, Engineering and Mathematics

Yull hee Kang (2010-2011) Nutrition and Exercise Science program

Leslie Valte (2009-2011) Nutrition and Exercise Science program:

Research paper: Hung YC, Enderson E, Akbasheva F, Valte L, Ke WS, Gordon AM (2011). Joint Coordination during a Reach-grasp-eat Task in Children with hemiplegia. *Research in Developmental Disabilities* 33(5): 1649-57.

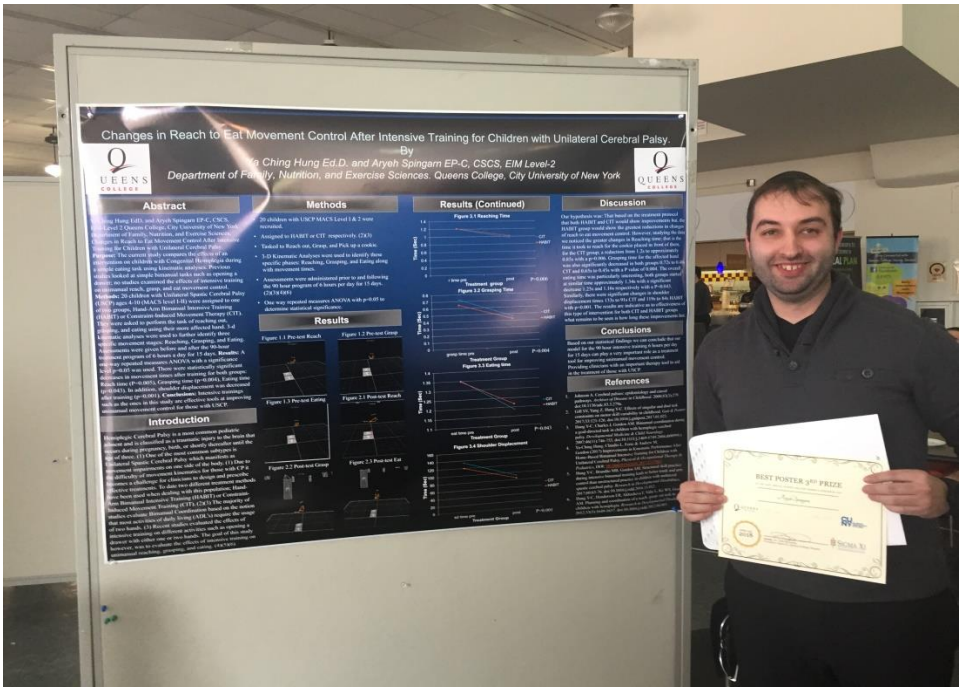
Frida Akbasheva (2009-2011) Nutrition and Exercise Science program:
Research paper: Hung YC, Enderson E, Akbasheva F, Valte L, Ke WS, Gordon AM (2011). Joint Coordination during a Reach-grasp-eat Task in Children with hemiplegia. *Research in Developmental Disabilities* 33(5): 1649-57.

Eugene Henderson (2009-2010) Undergraduate research assistantship from Alliance for Minority Participation in Science, Engineering and Mathematics:
Research paper: Hung YC, Enderson E, Akbasheva F, Valte L, Ke WS, Gordon AM (2011). Joint Coordination during a Reach-grasp-eat Task in Children with hemiplegia. *Research in Developmental Disabilities* 33(5): 1649-57.

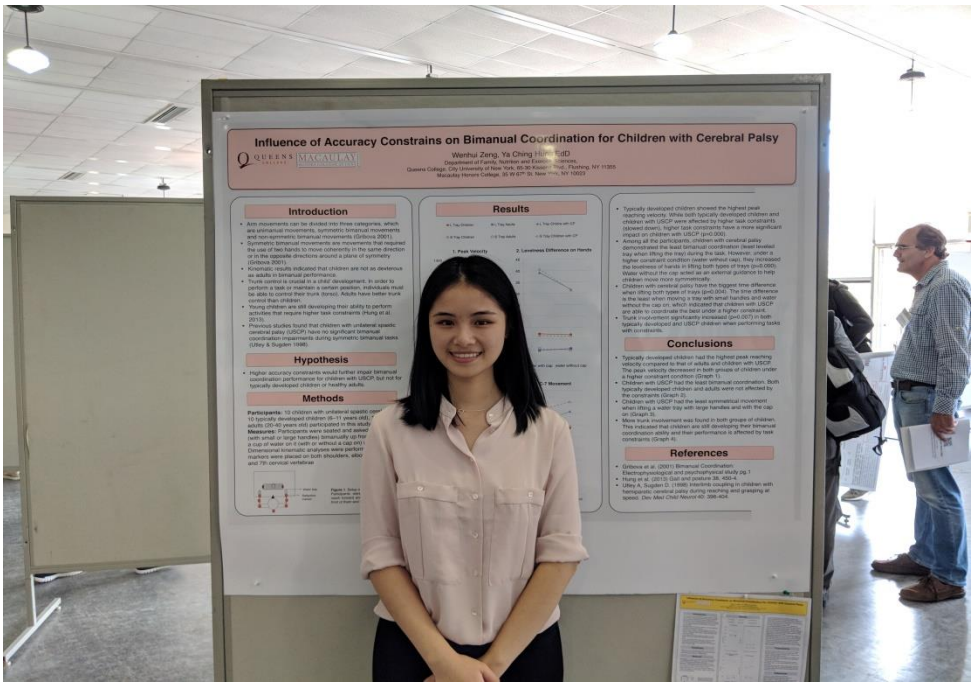
Andrew Hillman (2008-2010) MARC U-STAR research program: (Winner of the Research Presentation Award at Student National Medical Association Conference in Chicago, and Best Oral Presentation Award at Annual Biomedical Research Conference for Minority Students in Phoenix):
Research paper: Hung YC, Casertano L, Hillman A, Gordon, AM (2011). The Effect of Training Specificity on Bimanual Coordination in Children with Hemiplegia. *Research in Developmental Disabilities* 32(6): 2724-31.

Student Presentations

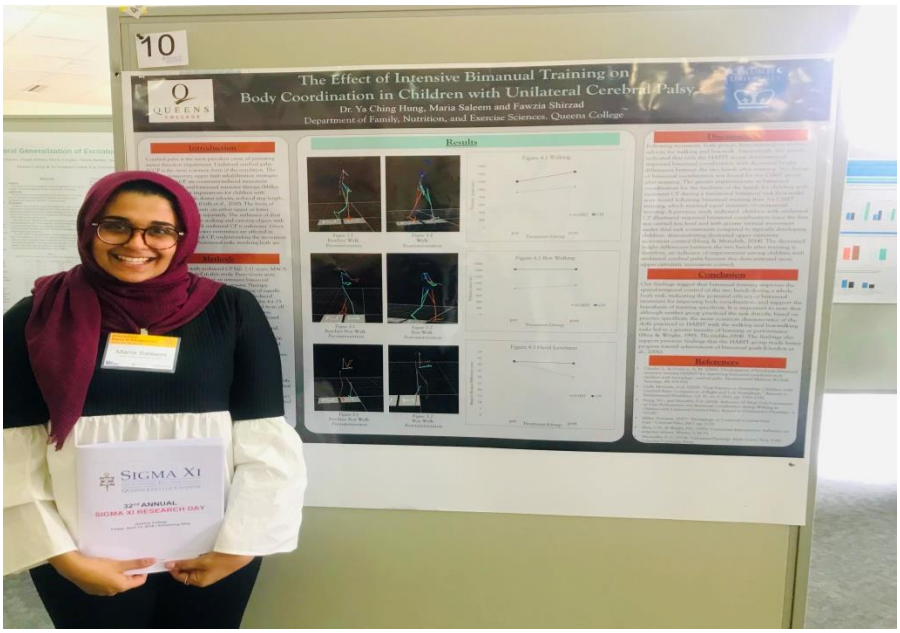
Poster Presentation: "Improvements in reach-grasp-eat movement control after intensive training for children with unilateral cerebral palsy", Sigma Xi Queens College chapter 2018. (Aryeh Spingarn, won the third place for best poster).



Poster Presentation: "Influence of accuracy constraints for children with unilateral cerebral palsy during bimanual tasks", Sigma Xi Queens College chapter 2018. (Wenhui Zeng).



Poster Presentation: "Improvements in gait and bimanual movement control after intensive training for children with unilateral cerebral palsy", Sigma Xi Queens College chapter 2018. (Fawzia Shirzad and Maria Saleem).



Poster Presentation: "Influence of dual-task constraints for children during walking", Sigma Xi Queens College chapter 2017. (Wenhui Zeng).

Poster Presentation: "Influence of dual-task constraints for children during walking", Sigma Xi Queens College chapter 2017. (Aryeh Spingarn).

Poster Presentation: "Influence of dual-task constraints for children during walking", Sigma Xi Queens College chapter 2017. (Wenhui Zeng).

Poster Presentation: "Influence of dual-task constraints for children during walking", Sigma Xi Queens College chapter 2017. (Aryeh Spingarn).

Poster Presentation: "Influence of dual-task constraints for children during walking", Sigma Xi Queens College chapter 2017. (Shane Mitchiko Palabasan).

Poster presentation: "Bimanual coordination during walking", Undergraduate science research day 2013. (Geneva Meredith).

Poster presentation: "Bimanual coordination for children with hemiplegia during a lifting task", Undergraduate science research day 2013. (Julissa, Zahava, Juan).

Poster presentation: "Influence of dual-task constraints for children during walking", Sigma Xi Queens College chapter 2013. (Geneva Meredith).

Poster presentation: "Changes in movement organization during learning a multi-joint kicking task ", Sigma Xi Queens College chapter 2013. (Silky, Maryan, Arouna).

Poster presentation: "Bimanual coordination during walking", Sigma Xi Queens College chapter 2012. (Geneva Meredith).

Poster presentation: "Bimanual coordination for children with hemiplegia during a lifting task", Sigma Xi Queens College chapter 2012. (Julissa, Zahava, Juan).

Poster presentation: "Changes in movement organization during learning a multi-joint kicking task ", Sigma Xi Queens College chapter 2012. (Silky, Maryan, Arouna).

Poster presentation: "Movement control for children with hemiplegia during a reach-grasp-eat task ", Sigma Xi Queens College chapter 2011. (Geneva Meredith, Eugene Henderson).

Poster presentation: "Changes in movement organization during learning a multi-joint kicking task ", Sigma Xi Queens College chapter 2011. (Diana Ramos, Yull hee Kang).

Oral presentation: "Intensive bimanual training in children with hemiplegia improves bimanual coordination more than intensive unimanuul training", Student National Medical Association Conference in Chicago. 2009.(Andrew Hillman)

Oral presentation: "Intensive bimanual training in children with hemiplegia improves bimanual coordination more than intensive unimanual training", Annual Biomedical Research Conference for Minority Students in Phoenix, 2009. (Andrew Hillman)

Poster presentation: "Both intensive bimanual and unimanual training improve unimanual reach-grasp-eat movement control in children with hemiplegia", Sigma Xi Queens College chapter 2009. (Eugene Henderson, Leslie Valte, Frida Akbasheva).

Oral presentation: "Intensive bimanual training in children with hemiplegia improves bimanual coordination more than intensive unimanual training", Sigma Xi Queens College chapter 2009. (Andrew Hillman).