Auburn University
College of Education
School of Kinesiology
Fall 2015
August 17 – December 11, 2015

1) Course Number: KINE7740
Course Title: Advanced Motor Development
Credit Hours: 3 semester hours
Class: MWF 2-2:50 (COLSM 2043)
Pre-Requisites: None
Co-Requisites: None

2) Instructor: Dr. Melissa Pangelinan, Ph.D.
Office: 168 School of Kinesiology Building (301 Wire Road)
Email: melissa.pangelinan@auburn.edu
Office Hours: M/W 3-5pm or by appointment

3) Course Materials: No textbook is required for this course. All course materials will be provided on Canvas.

4) Course Description: This course will critically evaluate motor development across the lifespan with respect to theory, research, and practice. The course will help students contextualize their research or fieldwork with respect to the theories, methods, and current approaches to examining the factors that influence the development of the motor skills at different ages and abilities.

5) Course Objectives / Student Learning Outcomes: At the end of this course, students will:

A) Contextualize motor development within the broader field of developmental science (psychology, human development, etc.).
B) Characterize the historical periods of the field of motor development and corresponding approaches.
C) Assess motor development and physical fitness using standardized assessments and critically evaluate the differences amongst different assessments.
D) Describe the changes that occur during prenatal development and how these changes influence behaviors following birth.
E) Explain the relationship between infant motor milestones and the physical, biomechanical, and neurological constraints influencing infant development.
F) Describe the stages and patterns of motor development across childhood (preschool through elementary school).
G) Characterize the physical, neurological, and hormonal changes that affect adolescent development and the impact of these changes on the motor system.
H) Describe the factors that influence the continued development of motor skills and physical activity participation in adulthood and aging.

I) Contextualize movement disabilities with respect to the typical trajectory for motor development, the assessments used in those populations, and adapted activities that would be appropriate for developing motor skills and promoting physical activities.

6) Requirements & Evaluation:

A) **Online and in-class discussions (20%)**
Students will respond to discussion questions posted to canvas by 11:59pm the day before the class during which the readings will be discussed. Students should build upon the responses of the previous posts (i.e., student 2 should not have the same responses as student 1). In addition to responding to discussion questions, students will also receive credit for posting and responding to questions posed by students. The purpose of these online discussions is to facilitate critical analysis of the readings, which will serve as a framework for in-class discussions. In-class discussion/participation point will be assessed via active participation in class.

B) **Participation in Activity/Assessment Sessions (10%)**
Each student should be able to assist in the administration of the assessment based on readings from the instructional manual. Preparation of note cards to assist with the administration is suggested.

C) **Research Paper Presentation (15%)**
Students will create a PowerPoint presentation that provides an overview of an assigned paper. These presentations (slides) will be 20 minutes max. These presentations should be modeled after the presentations by Dr. Pangelinan. For the rest of the session, the student will facilitate discussion by discussing relevant posts from the class on these materials. The discussions will also be facilitated by Dr. Pangelinan as need. A rubric will be provided for grading.

D) **Two Reflection Papers (15% each, 30% Total)** – 3 pages max, 5 references minimum. A rubric will be provided for grading.
- Option 1 (Synthesis and Update): Synthesize at least 2 papers from one developmental period assigned for class. Identify themes, problems, or methods that are consistent across these two papers. Read and critically evaluate at least 3 additional papers from the last 5 years that has built upon these readings. For example, evaluate the papers regarding the relationship between motor development and physical fitness in childhood. Provide a research update on new studies that have investigated this topic in the last 5 years.
- Option 2 (Disabilities): Synthesize at least 2 papers from one developmental period assigned for class. With this framework in mind, read and critically evaluate at least 3 additional papers that use a similar methodology or are focused on a particular set of movement abilities in those with a developmental disability. For example, evaluate at the papers focused on

infant motor milestones. Then examine research papers that examine the development of these motor milestones in infants born premature.

- Option 3 (Assessment): Using both the assessment manual (counts as 1 reference) and recent research critically evaluate the strengths and weaknesses of one of the assessment tools presented in class. Describe the reliability/validity of this measure. Describe what research has been done to assess it's utility (i.e., cross-cultural analyses, comparisons with other tools, use with special populations). For example, evaluate the Movement Assessment Battery for Children in comparison to the Bruininks-Oseretsky Test of Motor Proficiency (BOT).

E) **Movement Analysis (25%) – Due Monday 12/7**

Videotape an individual during the performance of one of the standardized assessments described in class. In a written report provide a description of participant (demographics such as age at testing, sex, and other factors that might influence performance). Provide a summary of the participant's performance analysis with normative values. Create a report with a qualitative assessment of the participant's performance. Provide recommendations to promote skill development for this participant. For example, videotape an individual performing the TGMD. Create a report of the participant's performance in each performance area and provide standardized scores where applicable. Describe the performance (qualitative assessment) and describe any factors that may have influenced performance (i.e., participant was hyperactive and did not wait for full instructions). Provide examples of activities to promote motor skills in areas in which the participant performed poorly. An example and rubric will be provided for grading.

F) **Extra Credit/Experiential Learning (5%)**

Students may participate in the monthly parent seminar for children with developmental disabilities run by the Pediatric Movement and Physical Activity Lab. The seminars will take place in the School of Kinesiology Building (Room 156 and Lab 24) from 6:30 – 7:30 on the following dates: Thursday September 17th, Thursday October 22nd, and Thursday November 19th. The set up for the seminar will start at 6pm and the clean up will take place at 7:30.

During the seminars graduate students will have opportunity to work in small groups with children with developmental disabilities and engage these children in appropriate physical activities. The activities will be planned in advanced and coordinators will assist graduate students during the session. Participation in one session is required to receive extra credit. Participation in additional sessions will be on a volunteer basis (i.e., no additional credit will be given beyond the 5%).

7) Grading Scale (100 possible points):

A = 90 -100%; B = 80-89%, C = 70-79%; D = 60-69%; F < 60%

8) Course Policies

A) Participation – Participation during each class session is necessary for student engagement and learning. As such, students are expected to arrive on time for each session, unless the student has contacted me in ADVANCE via email and has received an email from me confirming the absence. Documentation is required for any excused absence (i.e., doctor's note, bereavement, note from an academic official) provided on the day of the student's return.

- For each unexcused absence the student's total grade will drop by 5 points (i.e., the maximum total points resulting from one absence is 95%).
- Students with 2 late arrivals to class (more than 5 minutes late) or early departures (more than 5 minutes before the end of class) will drop ½ a letter grade.

B) Plagiarism – Students are to uphold the University Academic Honesty Code. Please refer to the Student Policy eHandbook for more details: www.auburn.edu/studentpolicies.

C) Statement of Student Accommodations – Student who request accommodations are asked to submit their approved accommodations through AU Access and arrange a meeting via during the first week of class. If you have not established accommodations through the Office of Accessibility, but need accommodations, please make an appointment with the Office of Accessibility (1228 Haley Center, 334-844-2096).

D) Classroom Policies / Professionalism - Students are expected to be on-time, prepared (i.e., read the material for class and responded to online discussion posts), and respectful during class.

- Texting, emailing, or engaging in activities unrelated to class will not be tolerated.

9) Course Schedule

Date	Developmental Period	Readings
M 8/17	Overview	
W 8/19	Overview	1. (Adolph & Robinson, 2015)
F 8/21	Overview	2. (Thelen, 2000) 3. (Clark & Metcalfe, 2002)
M 8/24	Methods	1. (Lavelli et al., 2006) in (Teti, 2006)
W 8/26	Methods	2. (Zernicke & Schneider, 1993) 3. (Jensen, 2005)
F 8/28	Methods	
M 8/31	Prenatal Development	1. (Gottlieb, 1976)
W 9/2	Prenatal Development	2. (De Vries & Fong, 2006)
F 9/4	Prenatal Development	3. (Abo-Yaqoub, Kurjak, Mohammed, Shadad, & Abdel-

		Maaboud, 2012)
M 9/7	Labor Day – No Class	
W 9/9	Infancy	1. (Amiel-Tison, 1968)
F 9/11	Infancy	2. Bayley Scales Manual – Day 1
M 9/14	Infancy	1. (Bertenthal & Von Hofsten, 1998)
W 9/16	Infancy	2. (Gilmore et al., 2012)
F 9/18	Infancy	3. Bayley Scale Manual – Day 2
M 9/21	Toddlerhood/Preschool	1. (Williams et al., 2008) 2. (Bürgi et al., 2011)
W 9/23	Toddlerhood/Preschool	3. (Cools, Martelaer, Samaey, & Andries, 2009)
F 9/25	Toddlerhood/Preschool	4. TGMD Manual
M 9/28	Childhood	1. (Brown & Jernigan, 2012)
W 9/30	Childhood	2. (Branta, Haubenstricker, & Seefeldt, 1984)
F 10/2	Childhood	3. MABC-2 Manual Intro and Age Band 1
M 10/5	Childhood	1. (Logan, Robinson, Wilson, & Lucas, 2012)
W 10/7	Childhood	2. (Stodden et al., 2008)
F 10/9	Childhood	3. MABC-2 Age Band 2
M 10/12	No Class – Work on your reflection papers and assessment project	
W 10/14	No Class – Work on your reflection papers and assessment project	
F 10/16	No Class – Work on your reflection papers and assessment project	
M 10/19	Childhood	1. (Barnett, van Beurden, Morgan, Brooks, & Beard, 2009)
W 10/21	Childhood	2. (Kantomaa et al., 2013)
F 10/23	Childhood	3. MABC-2 Age Band 3
M 10/26	Adolescence	1. (Rogol, Clark, & Roemmich, 2000) 2. (Van Praagh & Doré, 2002)
W 10/28	Adolescence	3. (Riddell, 2008)
F 10/30	Adolescence	3. Fitnessgram
M 11/2	Adolescence	1. (Fransen et al., 2012)
W 11/4	Adolescence	2. (N. Jayanthi, Pinkham, Dugas, Patrick, & LaBella, 2012) 3. (N. A. Jayanthi, LaBella, Fischer, Pasulka, & Dugas, 2015)
F 11/6	Adolescence	Play to Play w/Reita Clanton
M 11/9	Adulthood	1. (Thomas & French, 1985)
W 11/11	Adulthood	2. (Stodden, True, Langendorfer, & Gao, 2013)
F 11/13	Adulthood	Tigerfit
M 11/16	Adulthood/Aging	1. (Voelcker-Rehage & Niemann, 2013)
W 11/18	Adulthood/Aging	2. (Yarrow, Brown, & Krakauer, 2009)
F 11/20	Adulthood/Aging	Tigerfit
M 11/23 – F 11/25	Thanksgiving Break – No Classes	
M 11/30	Aging	1. (Greene & Harriet, 1996)

W 12/2	Aging	2. (Seidler et al., 2010)
F 12/4	Aging	3. (Nelson et al., 2007)
M 12/7	Movement Assessment Due!	

Readings

Abo-Yaqoub, S., Kurjak, A., Mohammed, A.-B., Shadad, A., & Abdel-Maaboud, M. (2012). The role of 4-D ultrasonography in prenatal assessment of fetal neurobehaviour and prediction of neurological outcome. *Journal of Maternal-Fetal and Neonatal Medicine*, *25*(August 2009), 231–236. doi:10.3109/14767058.2011.568552

Adolph, K. E., & Robinson, S. R. (2015). Motor Development. In *Handbook of Child Psychology and Developmental Science* (Vol. 2, pp. 113–147). John Wiley & Sons, Ltd.

Amiel-Tison, C. (1968). Neurological evaluation of the maturity of newborn infants. *Archives of Disease in Childhood*, *43*(2), 89–93. doi:10.1136/adc.43.227.89

Barnett, L. M., van Beurden, E., Morgan, P. J., Brooks, L. O., & Beard, J. R. (2009). Childhood motor skill proficiency as a predictor of adolescent physical activity. *Journal of Adolescent Health*, *44*(3), 252–259. doi:10.1016/j.jadohealth.2008.07.004

Bertenthal, B., & Von Hofsten, C. (1998). Eye, head and trunk control: The foundation for manual development. *Neuroscience and Biobehavioral Reviews*, *22*(4), 515–520. doi:10.1016/S0149-7634(97)00038-9

Branta, C., Haubenstricker, J., & Seefeldt, V. (1984). Age changes in motor skills during childhood and adolescence. *Exercise and Sport Sciences Reviews*, *12*, 467–520.

Brown, T. T., & Jernigan, T. L. (2012). Brain development during the preschool years. *Neuropsychology Review*, *22*(4), 313–333. doi:10.1007/s11065-012-9214-1

Bürgi, F., Meyer, U., Granacher, U., Schindler, C., Marques-Vidal, P., Kriemler, S., & Puder, J. J. (2011). Relationship of physical activity with motor skills, aerobic fitness and body fat in preschool children: a cross-sectional and longitudinal study (Ballabeina). *International Journal of Obesity*, *35*, 937–944. doi:10.1038/ijo.2011.54

Clark, J. E., & Metcalfe, J. S. (2002). The Mountain of Motor Development: A Metaphor. In J. E. Clark & J. Humphrey (Eds.), *Motor Development: Research and Reviews* (Vol. 2, pp. 163–190). Reston, VA: NASPE Publications. doi:10.4081/jlimnol.2013.e10

Cools, W., Martelaer, K. De, Samaey, C., & Andries, C. (2009). Movement skill assessment of typically developing preschool children: a review of seven movement skill assessment tools. *Journal of Sports Science & Medicine*, *8*(June), 154–68. doi:10.1016/S0031-9406(05)66164-0

De Vries, J. I. P., & Fong, B. F. (2006). Normal fetal motility: An overview. *Ultrasound in Obstetrics and Gynecology*, *27*(January), 701–711. doi:10.1002/uog.2740

Fransen, J., Pion, J., Vandendriessche, J., Vandorpe, B., Vaeyens, R., Lenoir, M., & Philippaerts, R. M. (2012). Differences in physical fitness and gross motor coordination in boys aged 6–12 years specializing in one versus sampling more than one sport. *Journal of Sports Sciences*, *30*(August 2015), 379–386. doi:10.1080/02640414.2011.642808

Gilmore, J. H., Shi, F., Woolson, S. L., Knickmeyer, R. C., Short, S. J., Lin, W., … Shen, D. (2012). Longitudinal development of cortical and subcortical gray matter from birth to 2 years. *Cerebral Cortex*, *22*(November), 2478–2485. doi:10.1093/cercor/bhr327

Gottlieb, G. (1976). Conceptions of prenatal development: behavioral embryology. *Psychological Review*, *83*(3), 215–234. doi:10.1037/0033-295X.83.3.215

Greene, L. S., & Harriet, G. (1996). Aging and coordination from the dynamic pattern perspective. In A.-M. Ferrandez & N. Teasdale (Eds.), *Changes in sensory motor behavior in aging* (pp. 89–131). Elsevier.

Jayanthi, N. A., LaBella, C. R., Fischer, D., Pasulka, J., & Dugas, L. R. (2015). Sports-specialized intensive training and the risk of injury in young athletes: A clinical case-control study. *The American Journal of Sports Medicine*, (August). doi:10.1177/0363546514567298

Jayanthi, N., Pinkham, C., Dugas, L., Patrick, B., & LaBella, C. (2012). Sports specialization in young athletes: Evidence-based recommendations. *Sports Health: A Multidisciplinary Approach*, (August 2015). doi:10.1177/1941738112464626

Jensen, J. L. (2005). The puzzles of motor development: How the study of developmental biomechanics contributes to the puzzle solutions. *Infant and Child Development*, *14*, 501–511. doi:10.1002/icd.425

Kantomaa, M. T., Stamatakis, E., Kankaanpää, A., Kaakinen, M., Rodriguez, A., Taanila, A., … Tammelin, T. (2013). Physical activity and obesity mediate the association between childhood motor function and adolescents' academic achievement. *Proceedings of the National Academy of Sciences of the United States of America*, *110*, 1917–1922. doi:10.1073/pnas.1214574110

Logan, S. W., Robinson, L. E., Wilson, a E., & Lucas, W. a. (2012). Getting the fundamentals of movement: a meta-analysis of the effectiveness of motor skill interventions in children. *Child: Care, Health and Development*, *38*, 305–315. doi:10.1111/j.1365-2214.2011.01307.x

Nelson, M. E., Rejeski, W. J., Blair, S. N., Duncan, P. W., Judge, J. O., King, A. C., … Castaneda-Sceppa, C. (2007). Physical activity and public health in older adults: Recommendation from the American College of Sports Medicine and the American Heart Association. *Circulation*, *116*(9), 1094–1105. doi:10.1161/CIRCULATIONAHA.107.185650

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Stodden, D. F., Goodway, J. D., Langendorfer, S. J., Roberton, M. A., Rudisill, M. E., Garcia, C., & Garcia, L. E. (2008). A developmental perspective on the role of motor skill competence in physical activity: An emergent relationship. *Quest*, *60*, 290–306. doi:10.1080/00336297.2008.10483582

Stodden, D. F., True, L. K., Langendorfer, S. J., & Gao, Z. (2013). Associations among selected motor skills and health-related fitness: Indirect evidence for Seefeldt's proficiency barrier in young adults? *Research Quarterly for Exercise and Sport*, *84*(August 2015), 397–403. doi:10.1080/02701367.2013.814910

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Van Praagh, E., & Doré, E. (2002). Short-term muscle power during growth and maturation. *Sports Medicine*, *32*(11), 701–728. doi:10.2165/00007256-200232110-00003

Voelcker-Rehage, C., & Niemann, C. (2013). Structural and functional brain changes related to different types of physical activity across the life span. *Neuroscience and Biobehavioral Reviews*, *37*(August 2015), 2268–2295. doi:10.1016/j.neubiorev.2013.01.028

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Yarrow, K., Brown, P., & Krakauer, J. W. (2009). Inside the brain of an elite athlete: the neural processes that support high achievement in sports. *Nature Reviews. Neuroscience*, *10*(8), 585–596. doi:10.1038/nrn2700

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