

13-61
AP-9/3/13
Senate info-10/8/13

Undergraduate Distance Education Review Form

(Required for all courses taught by distance education for more than one-third of teaching contact hours.)

Existing and Special Topics Course

Course: HPED 209: Motor Behavior

Instructor(s) of Record: Dr. David A. Wachob, D.Ed

Phone: 724-357-3194 Email: d.wachob@iup.edu

Step Two: Departmental/Dean Approval

Recommendation: Positive (The objectives of this course can be met via distance education)

Negative

Richard Harris 8/26/2013
Signature of Department Designee Date

Endorsed: *M. E. C.* 8.26.13
Signature of College Dean Date

Forward form and supporting materials to Liberal Studies Office for consideration by the University-wide Undergraduate Curriculum Committee. Dual-level courses also require review by the University-wide Graduate Committee for graduate-level section.

Step Three: University-wide Undergraduate Curriculum Committee Approval

Recommendation: Positive (The objectives of this course can be met via distance education)

Negative

Gail Sechrist 9/4/13
Signature of Committee Co-Chair Date

Forward form and supporting materials to the Provost within 30 calendar days after received by committee.

Step Four: Provost Approval

Approved as distance education course Rejected as distance education course

Thomas S. Marshall 9/6/13
Signature of Provost Date

Forward form and supporting materials to Associate Provost.

Received Received
SEP 4 2013 AUG 28 2013
Liberal Studies Liberal Studies

Undergraduate Distance Education Review Form

(Required for all courses taught by distance education for more than one-third of teaching contact hours.)

Existing and Special Topics Course

Course: HPED 209- Motor Behavior

Instructor(s) of Record: Dr. David Wachob, D.Ed

Phone: 724-357-3194

Email: d.wachob@iup.edu

Provide a brief narrative rationale for each of the items, A1- A5.

- 1. How is/are the instructor(s) qualified in the distance education delivery method as well as the discipline?**

I have knowledge in the content of this course as evident through both my undergraduate and graduate degrees in Health and Physical Education. Furthermore, I have previously taught this course in a face-to-face setting. In regards to distance education qualifications, I have experience teaching several distance education courses in the role of assistant professor at Lock Haven University. While there, I completed training in distance education and in the use of D2L. Furthermore, I currently use D2L for my face-to-face courses as a supplemental resource for students to gain access to course documents, supplemental readings, assignment submissions, and lecture materials. Lastly, I have consulted with an IUP Online Learning Specialist regarding online pedagogy and online technologies in developing this proposed course.

- 2. How will each objective in the course be met using distance education technologies?**

Objective 1: The student will be able to identify and define the subfields of motor behavior. The students will receive the materials to address this objective through assigned text readings (Chapter #1 Perspectives in Motor Behavior; and Chapter #4 Methodological Considerations) and through power point lectures which will be posted under the appropriate chapter modules. The students will practice their ability to identify and define the subfields of motor behavior by answering the Exam#1 Study Guide questions after reading assigned chapter #1 and #4 readings. This objective will be evaluated and the students will receive feedback by completing exam#1 through the online learning management system.

Objective 2: The student will be able to demonstrate an understanding of research in the area of motor behavior through discussion of theoretical perspectives.

The students will receive the materials to address this objective through assigned text readings (Chapter #1 Perspectives in Motor Behavior) and through a power point lecture which will be posted under the appropriate chapter module. The students will practice their ability to demonstrate an understanding of research in the area of motor behavior by completing a discussion board assignment. This assignment asks students to answer questions associated with the content in Chapter #1 that pertains to views of perceptual-motor development; influenced aspects of perceptions; and the influences on contemporary researchers to develop their theories around the connections between cognitive and motor development. This objective will be evaluated and the students will receive feedback by discussing their understanding and interpretation of the perspectives outlined in chapter#1 by posting a response to questions on the discussion board set up under Module #2. Students will be required to respond to 2 other student posts to help elicit discussion between students.

Objective 3: The student will be able to apply motor behavior concepts to the instructional setting through assessment of performance and identifying level of readiness and individual progression.

The students will receive the materials to address this objective through assigned text readings (Chapter #3 Stages of Skill Acquisition) and through a power point lecture which will be posted under

the appropriate chapter module. The students will practice their ability to apply motor behavior concepts to the instructional setting by completing Lab #2: Throwing and Catching Performance. This assignment asks students to use the information associated with the content in Chapter #3 to assess the performance of the individuals in three video clips of multiple skills being performed and identifying motor behavior indicators that determine the each level of progression presented. This objective will be evaluated and the students will receive feedback by uploading their video analysis responses to the associated Lab#2 dropbox to be assessed by the instructor.

Objective 4: The student will be able to demonstrate an understanding of movement patterns and motor behavior factors that influence change in movement patterns.
The students will receive the materials to address this objective through assigned text readings (Chapter #5 Fundamental Movement in Skills) and through a power point lecture which will be posted under the appropriate chapter module. The students will practice their ability to discuss lifespan changes in movement skill patterns and selected movement dimensions by completing the Lab #3: Locomotor Skill Development. This assignment asks students to use the information associated with the content in Chapter #5 to assess the running patterns of three individuals in the video clip, and identifying motor behavior patterns that influence change in the patterns of running. This objective will be evaluated and the students will receive feedback by uploading their video analysis responses to the associated Lab#3 dropbox to be assessed by the instructor.

Objective 5: The student will be able to discuss lifespan changes in movement skill patterns and selected movement dimensions.
The students will receive the materials to address this objective through assigned text readings (Chapter #3 Stages of Skill Acquisition) and through power point lectures which will be posted under the appropriate chapter modules. The students will practice their ability to discuss lifespan changes in movement skill patterns and selected movement dimensions by answering the Exam#1 Study Guide questions after reading the assigned chapter #3. This objective will be evaluated and the students will receive feedback by completing exam#1 through the online learning management system.

Objective 6: The student will be able to identify and discuss physical growth, physiological development, and aging characteristics across the lifespan.
The students will receive the materials to address this objective through assigned text readings (Chapter #6 Structural Constraints in Childhood and Adolescence; Chapter #7 Functional Constraints of Thinking, Knowing, and Processing; Chapter #10 Structural Constraints in Adulthood; and Chapter #11 Functional Constraints in Adulthood) and through power point lectures which will be posted under the appropriate chapter modules. The students will practice their ability to identify and discuss physical growth, physiological development, and aging characteristics by answering the study guide review essay questions that pertain to both children and adolescents (exams #3 Study Guide) as well as adults (exams #4 Study Guide). This objective will be evaluated and the students will receive feedback by uploading the Exams #3 and #4 Study Guides to the appropriate dropbox, as well as, completing Exams #3 and #4 through online learning management system.

Objective 7: The student will be able to define genetic and environmental factors and identify what impact they have on motor behavior.
The students will receive the materials to address this objective through assigned text readings (Chapter #4 Methodological Considerations) and through a power point lecture which will be posted under the appropriate chapter module. The students will practice their ability to define genetic and environmental factors by completing Lab#4: The Juggling Lab. This assignment asks students to use the information associated with the content in Chapter #4 to identify the impact that genetic and/or environmental factors has on their ability to complete the tasks outlined in Lab#3. This objective will be evaluated and the students will receive feedback by uploading their answers to Lab#3 the associated Lab#4 dropbox to be assessed by the instructor.

Objective 8: Assess and evaluate growth, skill, and movement development using growth factors, movement sequences, and screening tests/scales.

The students will receive the materials to address this objective through assigned text readings (Chapter #5 Fundamental Movement in Skills) and through a power point lecture which will be posted under the appropriate chapter module. The students will practice their ability to assess and evaluate growth, skill, and movement development by completing the Lab #3: Locomotor Skill Development. This assignment asks students to use the information associated with the content in Chapter #5 to assess the jumping patterns of two individuals in the video clips (Video Clip #3: Female Child Jumping and Video Clip #4: Male Teenager Jumping), and evaluate the growth, skill, and movement development using growth factors, movement sequences, and screening scales that are outlined in Chapter#5. This objective will be evaluated and the students will receive feedback by uploading their video analysis responses to the associated Lab#3 dropbox to be assessed by the instructor.

Objective 9: The student will be able to apply motor learning content to design developmentally and theoretically appropriate practice/ instructional/ lesson plans.

The students will receive the materials to address this objective through assigned text readings (Chapter #7 Functional Constraints of Thinking, Knowing, and Processing; and # Chapter 12 Physical, Affective, and Instructional Factors) and through a power point lecture which will be posted under the appropriate chapter module. The students will practice their ability to apply motor learning content to design developmentally and theoretically appropriate practice/ instructional/ lesson plans by completing Lab #5: Cognitive and Motor Deficits. This assignment asks students to choose one disability (i.e. autism, dyslexia, attention-deficit/hyperactivity disorder, etc...), and research the common motor characteristics of the disorder. Students will then determine possible developmental and theoretical approaches to developing an instructional plan for teaching various skills (kicking, throwing, striking, etc...) to an individual with the specific disability. The students will answer questions associated with the content in Chapter #12 that pertains to views of perceptual-motor development; influenced aspects of perceptions; and the influences on contemporary researchers to develop their theories around the connections between cognitive and motor development. This objective will be evaluated and the students will receive feedback by uploading their research response on cognitive and motor deficits to the associated Lab#5 dropbox to be assessed by the instructor.

3. How will instructor-student and student-student, if applicable, interaction take place?

The instructor-student and student-student interaction will occur through several methods. For instance, the instructor-student interaction will occur through emailing and monitoring and adding commentary to online discussion boards. The use of discussion boards will also encourage student-student interactions as well. By completing several assignments through discussion boards, students will be required to not only post their own discussions, but also respond to several other student comments as well. It is my experience with online courses that the use of discussion boards in this manner typically generates rich dialog between the students and the instructor in an informal yet informational manner.

4. How will student achievement be evaluated?

Specific Evaluation

Exam #1	50 points
Exam #1 Study Guide	15 points
Exam #2	50 points
Exam #2 Study Guide	15 points
Exam #3	50 points
Exam #3 Study Guide	15 points
Exam #4	50 points
Exam #4 Study Guide	15 points
Final Exam	50 points
Final Exam Study Guide	15 points

Internet Assignment		10 points
Discussion Posts		15 points
Lab #1		10 points
Lab #2		10 points
Lab #3		10 points
Lab #4		10 points
Lab #5		10 points
Total	=	400 points

Grade Scale

A = 360-400	D = 240-279
B = 320-359	F = 239 - 0
C = 280-319	

Description of Assessments

Examinations: A total of five examinations will be given during the course of the semester. Each exam will generally consist of multiple choice, true/false, sentence completion, and short-answer types of questions. Exam material will come from assigned textbook readings, handouts, notes, and power point lectures. Examinations will usually include some bonus questions.

Examination Study Guides: For each of the five examinations, there will be a study guide that students must complete and upload to dropbox prior to taking the corresponding exam. These study guides will include essay based questions that will assist students in studying for the exams by helping them organize their thoughts and study materials. The study guides will be evaluated primarily on completion and correctness of the assigned topics. Points will be deducted for incomplete or inaccurate responses to the questions.

Internet Assignment: Students will be asked to search the internet for three different motor development websites including, a website that sells motor development products, related to infancy and motor development, and a professional organization focused on motor behavior or development. Students must provide a four sentence description of the type of information found each of the selected websites.

Labs: There will be a total of (5) laboratory activities assigned to the students. The labs are designed to provide students with a practice experience related to the course content covered through lecture and the assigned textbook readings. Each lab consists of varying themes that apply to different motor behavior concepts. Labs will include students assessing their own performance in specific motor activities; analyzing video clips of individuals engaged in several motor-related movements; and researching potential influences on motor develop as it is relevant to designing instruction or lesson plans. Points will be deducted for incomplete or inaccurate responses to the lab activities.

Discussion Posts: There will be a total of (3) graded discussion posts. These posts will require students to answer questions around a particular topic. Additional discussion posts may be added throughout the semester if the instructor deems it necessary and beneficial to the students.

5. How will academic honesty for tests and assignments be addressed?

This course will implement several procedures to encourage academic honesty for tests and assignments. For instance, the examinations will be designed with the use of LMS-based measures, such as timed testing, secure test windows, and time-tracking features. Furthermore, the exams will include random question assignment from a pool of possible items. This ensures that every student has a different exam. In regards to the labs, exam study guides, and the internet assignment, they all use informal writing techniques, so plagiarism is easily detected. Additional measures include the inclusion of an honor statement in the course syllabus, and the use of a commitment to academic integrity at the beginning of the course.

Syllabus of Record

I. Catalog Description

HPED 209 Motor Behavior

3 Class Hours

0 Lab Hours

3 Credits 3

c-01-3 cr

Prerequisite: Health and Physical Education major or instructor permission.

Study of the process of human motor behavior across the lifespan, specifically examining how development of mental and motor abilities affect human movement.

II. Course Objectives

The student will be able to:

- 1. identify and define the subfields of motor behavior.**
- 2. demonstrate an understanding of research in the area of motor behavior through discussion of theoretical perspectives.**
- 3. apply motor behavior concepts to the instructional setting through assessment of performance and identifying level of readiness and individual progression.**
- 4. demonstrate an understanding of movement patterns and motor behavior factors that influence changes in movement patterns.**
- 5. discuss lifespan changes in movement skill patterns and selected movement dimensions.**
- 6. identify and discuss physical growth, physiological development, and aging characteristics across the lifespan.**
- 7. define genetic and environmental factors and identify what impact they have on motor behavior.**
- 8. assess and evaluate growth, skill, and movement development using growth factors, movement sequences, and screening tests/scales.**
- 9. apply motor learning content to design developmentally and theoretically appropriate practice/instructional/ lesson plans.**

III. Detailed Course Outline

A. Motor Behavior

4 Hours

- Syllabus Review and Classroom Management**
- Overview and Introduction to Motor Behavior**
- Motor Behavior Theory**

B. Motor Development **9 Hours**

- Overview of lifelong human development
- Biological Growth and Development
- Sociocultural Influences
- Exam

C. Motor Development **10 Hours**

- Motor Development Theory
- Assessment Methods
- Hands on Learning Activities
- Exam

D. Motor Control **9 Hours**

- The Human Brain and Nervous System
- Perception and Information Processing
- Motor Control Theories
- Hands on Learning Activities
- Exam

E. Motor Learning **10 Hours**

- Assessment Techniques
- Practice Strategies
- Motor Learning Theories
- Exam

F. Culminating Activity **2 Hours**

IV. Evaluation Methods

Weighting

- | | |
|---|------------|
| Written Exams | 60% |
| Including but not limited to true/false, multiple choice, open ended, or short answer questions. | |
| Quizzes | 20% |
| Announced and unannounced quizzes based on text, presentations, assigned readings, and other related course material. | |
| Class Projects | 20% |
| Including but not limited to presentations, research projects, and practical application of course related theories. | |

V. Example Grading Scale

Scale	
A	90-100
B	80-89
C	70-79
D	60-69
F	59 or Lower

VI. Undergraduate Course Attendance Policy

The university expects all students to attend class.

- It is recognized that students may need to miss class due to illness or personal emergency.
- A suggested limited level of allowable absences for this course would be 3 classes.

VII. Required Textbook(s), Supplemental Books and Readings

Gabbard, C.P. (2004). Lifelong Motor Development, 4th Edition. Pearson, Benjamin Cummings Publishers.

Coker, C.A. (2004). Motor Learning and Control for Practitioners. Mc Graw Hill Publishers.

VIII. Special Resource Requirements.

- Existing motor behavior equipment:

IX. Bibliography

- Cech, D., & Martin, S.T. (2001). Functional Movement Development Across the Life Span. Philadelphia: Saunders Publishing Company.
- Coker, C.A. (2004). Motor Learning and Control for Practioners. Mc Graw Hill Publishers.
- Gabbard, C.P. (2004). Lifelong motor development, 4th Edition. Pearson, Benjamin Cummings Publishers.
- Haywood, K.M., & Getchell, N. (2001). Learning Activities for Life Span Motor Development, 3rd Edition, Champaign, IL: Human Kinetics Publishers.
- Jurimae, T., & Jurimae, J. (2001). Growth, Physical Activity, and Motor Development in Prepubertal Children, Boca Raton, FL: CRC Press LLC.
- Landy, J.M., & Burrige, K.R. (2000). Ready-to-Use Motor Skills and Movement Station Lesson Plans for Young Children: Teaching, Remediation, and Assessment. Upper Saddle River, NJ: Prentice Hall Publishing.
- Magill, R.A. (2001). Motor Learning Concepts and Applications 6th edition, McGraw Hill Publishers
- National Association for Sport and Physical Education. (2004). Minimum Competencies in Undergraduate Motor Development. Approved by the Motor Development Academy and The National Association for Sport and Physical Education. Reston, VA.
- Nichols, B. (2001). Moving and Learning: The Elementary School Physical Education Experience, Boston: McGraw Hill Publishing.
- Wolfe, P. (2001). Brain Matters. Translating Research into Classroom Practice. Association for Supervision and Curriculum Development, Alexandria, VA.

**Indiana University of Pennsylvania
Distance Education Syllabus**

Course Title

HPED 209 – Motor Behavior

Section 001

3 credit hours

Course Times

To be determined

Course Location

To be determined

Course Instructor

Dr. David Wachob, D.Ed

Office Location: 233 Zink Hall

Office Phone: 724-357-3194

Email: d.wachob@iup.edu

Office Hours:

Textbooks

Haibach, P, Reid G., Collier, D., (2011). Motor Learning and Development. Champaign, IL: Human Kinetics.

Additional Materials

In addition to the required textbook reading, students will also have pertinent material covered in power point format posted on the web each week. After doing the assigned textbook and power point readings each week, students will be expected to complete the required assignments by the weekly due dates. On specified weeks, students will also read additional articles, watch videos, engage in discussions with classmates, complete worksheets, and do other learning activities that will help them better understand the course content.

Recommendation

This course is designed for all HPED majors (athletic training, exercise science, health and physical education, and sport administration). It is recommended that this course be taken during the sophomore year as it is a prerequisite for other higher level courses.

Course Description

Study of the process of human motor behavior across the lifespan, specifically examining how development of mental and motor abilities affect human movement.

Course Objectives

Upon completion of this course, the students will be able to:

- 1. identify and define the subfields of motor behavior.**
- 2. demonstrate an understanding of research in the area of motor behavior through discussion of theoretical perspectives.**
- 3. apply motor behavior concepts to the instructional setting through assessment of performance and identifying level of readiness and individual progression.**
- 4. demonstrate an understanding of movement patterns and motor behavior factors that influence change in movement patterns.**

5. discuss lifespan changes in movement skill patterns and selected movement dimensions.
6. identify and discuss physical growth, physiological development, and aging characteristics across the lifespan.
7. define genetic and environmental factors and identify what impact they have on motor behavior.
8. assess and evaluate growth, skill, and movement development using growth factors, movement sequences, and screening tests/scales.
9. apply motor learning content to design developmentally and theoretically appropriate practice/ instructional/ lesson plans.

Specific Evaluation

Exam #1	50 points
Exam #1 Study Guide	15 points
Exam #2	50 points
Exam #2 Study Guide	15 points
Exam #3	50 points
Exam #3 Study Guide	15 points
Exam #4	50 points
Exam #4 Study Guide	15 points
Final Exam	50 points
Final Exam Study Guide	15 points
Internet Assignment	10 points
Discussion Posts	15 points
Lab #1	10 points
Lab #2	10 points
Lab #3	10 points
Lab #4	10 points
<u>Lab #5</u>	<u>10 points</u>
Total	= 400 points

Grade Scale

A = 360-400	D = 240-279
B = 320-359	F = 239 - 0
C = 280-319	

Description of Assessments

Examinations: A total of five examinations will be given during the course of the semester. Each exam will generally consist of multiple choice, true/false, sentence completion, and short-answer types of questions. Exam material will come from assigned textbook readings, handouts, notes, and power point lectures. Examinations will usually include some bonus questions.

Examination Study Guides: For each of the five examinations, there will be a study guide that students must complete and upload to dropbox prior to taking the corresponding exam. These study guides will include essay based questions that will assist students in studying for the exams by helping them organize their thoughts and study materials. The study guides will be evaluated primarily on completion and correctness of the assigned topics. Points will be deducted for incomplete or inaccurate responses to the questions.

Internet Assignment: Students will be asked to search the internet for three different motor development

websites including, a website that sells motor development products, related to infancy and motor development, and a professional organization focused on motor behavior or development. Students must provide a four sentence description of the type of information found each of the selected websites.

Labs: There will be a total of (5) laboratory activities assigned to the students. The labs are designed to provide students with a practice experience related to the course content covered through lecture and the assigned textbook readings. Each lab consists of varying themes that apply to different motor behavior concepts. Labs will include students assessing their own performance in specific motor activities; analyzing video clips of individuals engaged in several motor-related movements; and researching potential influences on motor develop as it is relevant to designing instruction or lesson plans. Points will be deducted for incomplete or inaccurate responses to the lab activities.

Discussion Posts: There will be a total of (3) graded discussion posts. These posts will require students to answer questions around a particular topic. Additional discussion posts may be added throughout the semester if the instructor deems it necessary and beneficial to the students.

Class Policies

Assignments Due Dates: All assignments are due by the 11:59pm on the specified date. All assignments turned in past the due date will be deducted five-points for each day late. Plan ahead and budget your time wisely to keep up with the weekly assignments. Mark the due dates of the assignments on a calendar. The course shell in D2L has a schedule menu and a checklist menu that will be extremely helpful for meeting the assignment deadlines.

Missed Examination Policy: students have a scheduled amount of time to complete the exams. A missed examination may only be made up if prior arrangements are made before the scheduled test. **Examinations will not be permitted to be made up after the scheduled exam date.** Note: A test or quiz can only be opened once and each has a specified amount of time allotted for you to take it. Do not open a test or quiz until you have the time to finish it.

Academic Honesty Policy: Shall be in accordance with the Indiana University of Pennsylvania Honesty Policy (IUP Student Handbook – Academic Integrity Policy and Procedures, see <http://www.iup.edu/registrar/catalog/acapolicy>).

Violations of academic integrity will not be tolerated. Violations include cheating on exams, plagiarizing, submitting another person’s work as your own, signing in or attempting to represent another person, and destroying library or other institutional property. For further information or clarification on the University’s policies, please refer to the Academic Honesty section of the Indiana University Student Handbook. It is **your responsibility** to know what constitutes a violation of academic integrity.

Provisions for Students with Special Needs: Students requiring accommodations for special needs should inform the instructor immediately. Please do not wait until difficulty is encountered to communicate such requests. Disability support services available to eligible IUP students, see <http://www.iup.edu/advisingtesting/dss.html>).

***Tentative Course Outline**

Module#1 Introduction to Course: Syllabus/Policies/Textbook/

Discussion Board Post (student introduction)

- Module#2** **Chapter #1 Perspectives in Motor Behavior**
Internet Assignment
Discussion Board Post
- Module#3** **Chapter #2 Classifying Motor Skills**
Lab #1: Perception and Action in Development
Exam #1 Study Guide
- Module#4** **Exam 1 (Chapters 1 and 2)**
- Module#5** **Chapter #3 Stages of Skill Acquisition**
Chapter #4 Methodological Considerations
Lab #2: Throwing and Catching Performance
Exam #1 Study Guide
- Module#6** **Exam #2 (Chapters 3 and 4)**
Discussion Board Post
- Module#7** **Chapter #5 Fundamental Movement in Skills**
Chapter #6 Structural Constraints in Childhood and Adolescence
Lab #3: Locomotor Skill Development
Exam #2 Study Guide
- Module#8** **Exam #3 (Chapters 5 and 6)**
- Module#9** **Chapter #7 Functional Constraints of Thinking, Knowing, and Processing**
Chapter #8 Functional Constraints of Psychosocial-Affective Development
Lab#4: The Juggling Lab
Exam #3 Study Guide
- Module#10** **Exam #4 (Chapter 7 and 8)**
- Module#11** **Chapter #9 Movement in Adulthood**
Chapter #10 Structural Constraints in Adulthood
Chapter #11 Functional Constraints in Adulthood
Exam #4 Study Guide
- Module#12** **Exam #5 (Chapters 9, 10, 11)**
- Module#13** **Chapter #12 Physical, Affective, and Instructional Factors**

Chapter #13 Pre-practice Considerations

Chapter #14 Practice

Lab #5: Cognitive and Motor Deficits

Final Exam Study Guide

Module#14 Final Exam (Chapter 12, 13, 14)

***Note:** Every attempt will be made to adhere to the course outline. However, the instructor does have the right to make any changes, additions, or deletions to the course content as deemed necessary.

Bibliography

Cech, D., & Martins, S.T. (2010). *Functional movement development across the lifespan*. Philadelphia, PA: Saunders Publishing Company.

Clark, J. E. (2007). Alliance Scholar Lecture: On the problem of motor skill development. *Journal of Physical Education, Recreation, and Dance*, 78(5), 39-44.

Coker, C.A. (2004). *Motor learning and motor control for practitioners*. New York, NY: McGraw-Hill.

Gabbard, C.P. (2004). *Lifelong motor development* (4th Ed.). San Francisco, CA: Benjamin Cummings.

Grissom, J. (2005). Physical fitness and academic achievement. *Journal of Exercise Physiology*, 8(1), 11-25.

Landy, J.M., & Burrige, K.R. (2010). *Ready-to-use motor skills and movement station lesson plans for young children: Teaching, remediation, and assessment*. Upper Saddle River, NJ: Prentice Hall.

Magill, R.A. (2011). *Motor learning concepts and applications* (6th Ed.). New York, NY: McGraw-Hill.

National Association for Sport and Physical Education. (2004). *Minimum competencies in undergraduate motor development*. Approved by the Motor Development Academy and the National Association for Sport and Physical Education, Reston, VA.

Sample Lesson One

Lesson Sample: Module#1

Materials:

Chapter #1 Perspectives in Motor Behavior Power Point

Assignments

Text reading of Chapter 1

Internet Assignment

Discussion Board Post

Course Objective 2: The student will be able to demonstrate an understanding of research in the area of motor behavior through discussion of theoretical perspectives.

Chapter #1 Perspectives in Motor Behavior Lecture

Perspectives in Motor Behavior

"There is an adult in every child and a child in every adult."
-Jean Piaget-

What is it???

TABLE 1.1 Summary of the fields of Motor Behavior

Field	Key points
Motor development	<ul style="list-style-type: none"> Focus on performance product measurement Focus on process (underlying mechanisms) Development is retrospective following to retrospective method Development is assessed using frequency procedures Development is subject to test-retest reliability, test-retest reliability
Motor learning	<ul style="list-style-type: none"> Process of acquiring a capability for producing skilled actions Occurs as a direct result of practice and is not due to maturation or development of the age Occurs in laboratory situations Learning performance changes in the capability for skilled behavior
Motor control	<ul style="list-style-type: none"> Underlying processes of movement Key issues include the following: <ul style="list-style-type: none"> Integration of motor plans (motor program) how the system is able to maintain the number of degrees of freedom to produce a coordinated movement pattern Goal of the problem—contains the sequencing and timing of movement elements How performance integration problem—includes how perception and action are integrated

Motor Development

- Examines the products and processes of motor behavior changes across a life span.
 - Product vs. Process
 - Phylogeny vs. Ontogeny
 - Physical Growth vs. Maturation vs. Aging

Development, Growth and Maturation

- Development refers to the progressions and regressions that occur throughout the lifespan.
- Growth refers to the structural aspects of development.
- Maturation refers to the functional changes of development.

Age Classifications

TABLE 1.2 Age Classifications

Development	Age of transition marker
Newborn	Birth to 4 weeks
Infant	Six weeks to age of walking
Toddler	Age of walking to 3 years
Preschooler	Age 3 to age at onset of school
Young child	Age at onset of school to 7 years
Child	Eight to 10 years
Prepubescent	Onset of puberty to onset of puberty
Adolescent	Onset of puberty to 20 years
Young adult	Age 21 to 40 years
Middle-aged adult	Age 41 to 60 years
Young-old adult	Age 61 to 74 years
Old adult	Age 75 to 99 years
Centenarian	Age 100+ years

Motor Learning

- Processes involved in the acquisition of a motor skill and the variables that enhance or inhibit the capability to perform the skill.
 - A process to induce a change in an individual's capability to perform skillfully.
 - Capability
 - Practice and Experience
 - Cannot be Observed

Motor Control

- › *Motor control*: the neural, physical, and behavioral aspects of movement.
 - › How It Is all coordinated.

Motor Control

- Degrees of Freedom Problem
 - Coordination
 - Control
- Serial Order Problem
 - Action Slip
 - Coarticulations
- Perceptual-Motor Integration
 - Continuous
 - Mirror Neurons

Defining Motor Development

Specify similarities and differences between motor development and the following phenomena....

- Motor learning
- Motor control
- Physical growth and maturation

Provide research examples of each

Evolution of Motor Development

- › Precursor Period
 - › Nature vs. Nurture
- › Maturational Period
 - › Cephalocaudal
 - › Proximodistal
 - › Maturation of different systems (especially the nervous system) drives motor development.
 - › Environment has little influence.
 - › Markers of motor development are qualitative and discontinuous events.
 - › There is an invariable, genetically determined sequence of development, but an individual can have unique timing.

Developmental Directions

- › *Proximodistal*
 - › From those points close to the body center to those points close to the periphery
 - › Growth - E.g. Prenatal growth
 - › Movement Ability - E.g. Infant acquiring motor skill



General Motor Developmental Terms

- › *Cephalocaudal*
 - › From head to tail (i.e. head to feet)
 - › Growth - E.g. Head size of infant relative to body
 - › Movement Ability - E.g. Toddler learning to walk



The Evolution of Motor Development

- › Normative Period
 - Shift from process to product
 - Anthropometric measures (growth measures)
 - When simple motor movements began
- › Process Oriented
 - Information Processing
 - Ecological Psychology Perspective
 - Dynamic Systems Theory

Information Processing

- **Basic tenet: the brain is like a complex computer.**
 - The passive human responds to stimuli in the environment
 - Stimulus–response links, feedback, and knowledge of results are investigated.

Information Processing

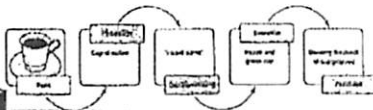
- Generalized Motor Program (GMP)
 - Invariant features
 - Sequence of actions
 - Relative timing
 - Relative force
 - Parameters
 - Muscle selection
 - Overall Duration
 - Overall Force

Ecological Theories

- **Basic tenet: interrelationship of individual, environment, and task drives development**
 - Importance of multiple systems
- **Decisions of the higher brain centers are reduced because perception of the environment is direct and muscle can self-assemble into functional groups.**

Ecological Theories

- **Affordances: Action possibilities of the environment and task in relation to the perceiver's own capabilities (Gibson 1979, 1977).**
- **Rejects the idea of memory stores.**



Dynamic Systems Theory

- **Theory advocated in the early 1980s by Peter Kugler, Scott Kelso, and Michael Turvey, among others.**
- **Body systems spontaneously self-organize.**
- **Body systems, performer's environment, and task demands interact.**

Dynamic Systems Theory

- Some systems may develop more slowly than others in the young or degrade more rapidly in the old and thus control the rate of development or change.
- Qualitative and discontinuous change is characteristic of development.
- Change occurs across the life span.

Dynamic Systems Theory

Attractor

- Stable states
- Ex. Bench pressing with good form

Control Parameters

- The cause of the change
- Ex. Increasing weight

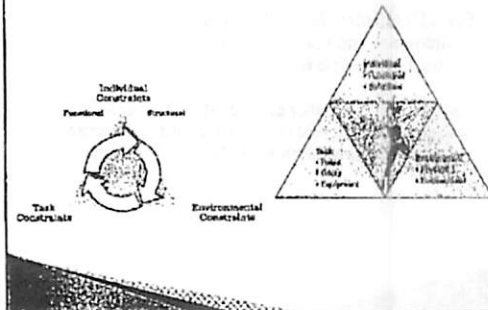
Rate Limiters

- The cause of a negative change
- Ex. Increasing weight beyond capability

Phase Shifts

- The change
- Ex. Too much weight can lead to a change in control form

Newell's Model of Constraints



Internet Assignment

Students will be asked to search the internet for three different motor development websites including, a website that sells motor development products, related to infancy and motor development, and a professional organization focused on motor behavior or development. Students must provide a four sentence description of the type of information found each of the selected websites.

Procedures: Type your responses to the questions below. Be sure to answer all parts of each question.

Value: 10 points

Questions

1. Using any Internet browser you choose, enter the term *Motor Development* into a search engine (ex. Yahoo, Google). How many hits did you receive? Do any of the websites surprise you? Click on three different websites, list the web address (ex. www.motordevelopment.com) and provide a three sentence description of the type of information found on the website.

2. Locate a website that sells motor development products. What is the product(s) and what is the purpose(s) for the product(s)? Why is the product “developmental” according to the advertiser? Based on what you have learned, do you think the product(s) is *really* developmental?

3. Perform and new Internet search related to infancy and motor development. Select three different types of websites related to infancy and motor development (ex. Academic, sales, medical). Try to select websites that seem different or interesting. List the three website addresses and, if you were a parent searching for information, describe what you could learn from these websites.

Discussion Board Post

After reading Chapter#1 and reviewing the power point under Module#2, you will complete a two part discussion on the content under the Module 2 discussion board titled “Perspectives in Motor Behavior”.

Part 1

Choose one perspective mentioned in the chapter and answer the following questions:

- 1. What is the perspective? What motor topic does it involve?**
- 2. Name one interesting point about the perspective.**
- 3. Give one example of how this perspective can be useful when working in your field**
- 4. What about this perspective do you feel is missing or do you disagree with? Is there another perspective mentioned in the text that you think could strengthen the perspective that you chose to discuss?**

Part 2

After reading other students’ posts on the different perspectives, reply to at least two other students in regards to their responses to the four questions from part 1 above. Some ideas that may help you build substance when you reply include;

- 1. What about their chosen perspective is interesting to you?**
- 2. Can you relate to the example that they gave in regards to being useful in their chosen field? If so how?**
- 3. What do you think about their assessment on what the perspective is missing, or what other perspective it could be combined with to strengthen the perspective?**

Criteria:

Your initial post must address the 4 points listed under Part 1 of this assignment in order to receive the full amount of points. (2.5 points)

Your reply to two other students must address at least one of the three suggested responses listed under Part 2. (2.5 points)

Sample Lesson #2

Lesson Sample: Module#7

Materials:

Chapter #5 Fundamental Movement in Skills

Chapter #6 Structural Constraints in Childhood and Adolescence

Assignments

Text reading of chapters 5 & 6

Lab #3: Locomotor Skill Development

Exam #2 Study Guide

Course Objective 4: The student will be able to demonstrate an understanding of movement patterns and motor behavior factors that influence change in movement patterns.

Course Objective 8: Assess and evaluate growth, skill, and movement development using growth factors, movement sequences, and screening tests/scales.

Chapter #5 Fundamental Movement in Skills Lecture

Fundamental Skills in Childhood

Chapter #5

Chapter Objectives

- Understand the term fundamental movement skills
- Identify different levels of competency in selected fundamental movement skills
- Understand what factors facilitate the acquisition of high-level fundamental movement skills

Chapter Objectives

- Understand what factors interfere with the development of skilled fundamental movements
- Understand the important interactions between motor development, cognitive development, and affective development
- Appreciate how researchers study the emergence of fundamental movement skills

FUNDAMENTAL MOVEMENT SKILLS

Development of Fundamental Movement Skills

- Infants (Birth to 2)
 - Reflexive behaviors
 - Primitive reflexes
 - Postural reactions
 - Locomotor reflexes



Development of Fundamental Movement Skills

- Infants (Birth to 2)
 - Spontaneous movements
 - Rhythmical stereotypes
 - Building blocks of voluntary movements
 - Voluntary movements
 - Motor milestones



Table 8.2 - Selected Motor Milestones

Age (yr)	Age range (yr)	Skill (Primary Skill or Motor Development)	Skill (Policy Implication)
01		Roll over on back of stomach	
01		Low arch development	
02	03-06	Arch development	
03	03-06	Low arch development	Developing level of arch
04	03-06	Arch development	
05	03-06	Arch development	
06	03-06	Arch development	
07	03-06	Arch development	
08	03-06	Arch development	
09	03-06	Arch development	
10	03-06	Arch development	
11	03-06	Arch development	
12	03-06	Arch development	
13	03-06	Arch development	
14	03-06	Arch development	
15	03-06	Arch development	
16	03-06	Arch development	
17	03-06	Arch development	
18	03-06	Arch development	
19	03-06	Arch development	
20	03-06	Arch development	
21	03-06	Arch development	
22	03-06	Arch development	
23	03-06	Arch development	
24	03-06	Arch development	
25	03-06	Arch development	
26	03-06	Arch development	
27	03-06	Arch development	
28	03-06	Arch development	
29	03-06	Arch development	
30	03-06	Arch development	
31	03-06	Arch development	
32	03-06	Arch development	
33	03-06	Arch development	
34	03-06	Arch development	
35	03-06	Arch development	
36	03-06	Arch development	
37	03-06	Arch development	
38	03-06	Arch development	
39	03-06	Arch development	
40	03-06	Arch development	
41	03-06	Arch development	
42	03-06	Arch development	
43	03-06	Arch development	
44	03-06	Arch development	
45	03-06	Arch development	
46	03-06	Arch development	
47	03-06	Arch development	
48	03-06	Arch development	
49	03-06	Arch development	
50	03-06	Arch development	
51	03-06	Arch development	
52	03-06	Arch development	
53	03-06	Arch development	
54	03-06	Arch development	
55	03-06	Arch development	
56	03-06	Arch development	
57	03-06	Arch development	
58	03-06	Arch development	
59	03-06	Arch development	
60	03-06	Arch development	
61	03-06	Arch development	
62	03-06	Arch development	
63	03-06	Arch development	
64	03-06	Arch development	
65	03-06	Arch development	
66	03-06	Arch development	
67	03-06	Arch development	
68	03-06	Arch development	
69	03-06	Arch development	
70	03-06	Arch development	
71	03-06	Arch development	
72	03-06	Arch development	
73	03-06	Arch development	
74	03-06	Arch development	
75	03-06	Arch development	
76	03-06	Arch development	
77	03-06	Arch development	
78	03-06	Arch development	
79	03-06	Arch development	
80	03-06	Arch development	
81	03-06	Arch development	
82	03-06	Arch development	
83	03-06	Arch development	
84	03-06	Arch development	
85	03-06	Arch development	
86	03-06	Arch development	
87	03-06	Arch development	
88	03-06	Arch development	
89	03-06	Arch development	
90	03-06	Arch development	
91	03-06	Arch development	
92	03-06	Arch development	
93	03-06	Arch development	
94	03-06	Arch development	
95	03-06	Arch development	
96	03-06	Arch development	
97	03-06	Arch development	
98	03-06	Arch development	
99	03-06	Arch development	
100	03-06	Arch development	

Table 8.2 - Selected Motor Milestones

Age (yr)	Age range (yr)	Skill (Primary Skill or Motor Development)	Skill (Policy Implication)
01	00-04	Complete hand-to-hand transfer	
02	00-04	Complete hand-to-hand transfer	
03	00-04	Complete hand-to-hand transfer	
04	00-04	Complete hand-to-hand transfer	
05	00-04	Complete hand-to-hand transfer	
06	00-04	Complete hand-to-hand transfer	
07	00-04	Complete hand-to-hand transfer	
08	00-04	Complete hand-to-hand transfer	
09	00-04	Complete hand-to-hand transfer	
10	00-04	Complete hand-to-hand transfer	
11	00-04	Complete hand-to-hand transfer	
12	00-04	Complete hand-to-hand transfer	
13	00-04	Complete hand-to-hand transfer	
14	00-04	Complete hand-to-hand transfer	
15	00-04	Complete hand-to-hand transfer	
16	00-04	Complete hand-to-hand transfer	
17	00-04	Complete hand-to-hand transfer	
18	00-04	Complete hand-to-hand transfer	
19	00-04	Complete hand-to-hand transfer	
20	00-04	Complete hand-to-hand transfer	
21	00-04	Complete hand-to-hand transfer	
22	00-04	Complete hand-to-hand transfer	
23	00-04	Complete hand-to-hand transfer	
24	00-04	Complete hand-to-hand transfer	
25	00-04	Complete hand-to-hand transfer	
26	00-04	Complete hand-to-hand transfer	
27	00-04	Complete hand-to-hand transfer	
28	00-04	Complete hand-to-hand transfer	
29	00-04	Complete hand-to-hand transfer	
30	00-04	Complete hand-to-hand transfer	
31	00-04	Complete hand-to-hand transfer	
32	00-04	Complete hand-to-hand transfer	
33	00-04	Complete hand-to-hand transfer	
34	00-04	Complete hand-to-hand transfer	
35	00-04	Complete hand-to-hand transfer	
36	00-04	Complete hand-to-hand transfer	
37	00-04	Complete hand-to-hand transfer	
38	00-04	Complete hand-to-hand transfer	
39	00-04	Complete hand-to-hand transfer	
40	00-04	Complete hand-to-hand transfer	
41	00-04	Complete hand-to-hand transfer	
42	00-04	Complete hand-to-hand transfer	
43	00-04	Complete hand-to-hand transfer	
44	00-04	Complete hand-to-hand transfer	
45	00-04	Complete hand-to-hand transfer	
46	00-04	Complete hand-to-hand transfer	
47	00-04	Complete hand-to-hand transfer	
48	00-04	Complete hand-to-hand transfer	
49	00-04	Complete hand-to-hand transfer	
50	00-04	Complete hand-to-hand transfer	
51	00-04	Complete hand-to-hand transfer	
52	00-04	Complete hand-to-hand transfer	
53	00-04	Complete hand-to-hand transfer	
54	00-04	Complete hand-to-hand transfer	
55	00-04	Complete hand-to-hand transfer	
56	00-04	Complete hand-to-hand transfer	
57	00-04	Complete hand-to-hand transfer	
58	00-04	Complete hand-to-hand transfer	
59	00-04	Complete hand-to-hand transfer	
60	00-04	Complete hand-to-hand transfer	
61	00-04	Complete hand-to-hand transfer	
62	00-04	Complete hand-to-hand transfer	
63	00-04	Complete hand-to-hand transfer	
64	00-04	Complete hand-to-hand transfer	
65	00-04	Complete hand-to-hand transfer	
66	00-04	Complete hand-to-hand transfer	
67	00-04	Complete hand-to-hand transfer	
68	00-04	Complete hand-to-hand transfer	
69	00-04	Complete hand-to-hand transfer	
70	00-04	Complete hand-to-hand transfer	
71	00-04	Complete hand-to-hand transfer	
72	00-04	Complete hand-to-hand transfer	
73	00-04	Complete hand-to-hand transfer	
74	00-04	Complete hand-to-hand transfer	
75	00-04	Complete hand-to-hand transfer	
76	00-04	Complete hand-to-hand transfer	
77	00-04	Complete hand-to-hand transfer	
78	00-04	Complete hand-to-hand transfer	
79	00-04	Complete hand-to-hand transfer	
80	00-04	Complete hand-to-hand transfer	
81	00-04	Complete hand-to-hand transfer	
82	00-04	Complete hand-to-hand transfer	
83	00-04	Complete hand-to-hand transfer	
84	00-04	Complete hand-to-hand transfer	
85	00-04	Complete hand-to-hand transfer	
86	00-04	Complete hand-to-hand transfer	
87	00-04	Complete hand-to-hand transfer	
88	00-04	Complete hand-to-hand transfer	
89	00-04	Complete hand-to-hand transfer	
90	00-04	Complete hand-to-hand transfer	
91	00-04	Complete hand-to-hand transfer	
92	00-04	Complete hand-to-hand transfer	
93	00-04	Complete hand-to-hand transfer	
94	00-04	Complete hand-to-hand transfer	
95	00-04	Complete hand-to-hand transfer	
96	00-04	Complete hand-to-hand transfer	
97	00-04	Complete hand-to-hand transfer	
98	00-04	Complete hand-to-hand transfer	
99	00-04	Complete hand-to-hand transfer	
100	00-04	Complete hand-to-hand transfer	

Developing Fundamental Movement Skills

- **Childhood (2 to 6)**
 - Goal has changed from acquiring movement skills to becoming an adept or proficient mover
- **Into and During Adulthood**
 - Goal is to maintain skills and adapt to effects of aging

The Fundamental Movement Skills

- **Stability Skills**
 - Movements around the axis of body
 - Bending, stretching, swinging, swaying, pushing, pulling, turning, twisting
- **Locomotor Skills**
 - Move from one place to the next
 - Walking, running, jumping, hopping, galloping, skipping
- **Manipulative Skills**
 - Object control skills
 - Throwing, rolling, striking, heading, kicking, punting, catching, trapping

Importance of Understanding Fundamental Movement Skills

- **Motor skillfulness offers insight into a child's perceptual, cognitive and affective development**
- **Identifying movement skill level early can allow for appropriate intervention to assist child**
- **Competence in early skills important for promoting life-long activity participation**

Importance of Understanding Fundamental Movement Skills

- **Shift in how movement skills are evaluated from quantitative to qualitative**
 - Quantitative (product perspective)
 - How fast, how far, how high
 - Qualitative (process-related)
 - Focus on form or mechanics
- **As qualitative measures improve, so will quantitative**

Whole Body Approach vs. Component Approach

- Whole Body Approach
 - As one component of a skill improves, others will progress with it
 - Throwing – if arm movement is at an initial stage, so will stepping and trunk rotation
- Component Approach
 - Different components can improve at different times

TABLE 6.2 Whole Body Approach for Running

- Whole Body**
- Exaggerated movement of legs and feet
 - Minimal hip flexion
 - Flat footed landing, gradually flat through stance. Heel strike not required
 - Wide base of support
 - Arms held in either a middle or high guard position
 - Arms active to the sides as opposed to back and forth



continued

Component Approach

Table 7.1 Hypothesized Developmental Sequence for Running

Leg action	
Step 1	Minimal flight. The running step is small and hunched. On the recovery swing forward, the leg is raised high.
Step 2	Longer swing. The arm is long, and the knee of the recovery leg flexes to at least a right angle. The leg is bent, though, but lateral movements, whereas the legs swing out and in during the recovery.
Step 3	Direct projection. The stride is long, and the recovery leg knee is swing forward. The legs project directly backward on takeoff and swing directly forward for the touchdown.
Arm action	
Step 1	High or middle guard. The arms are both held up between waist and shoulder level and move very little as the legs stride forward and back.
Step 2	Begin of arm swing. The arms swing but are locked, moving forward and backward together.
Step 3	Opposite, oblique. The arms are no longer to the opposite sides, swinging forward and backward with the opposite leg, so that one arm is moving forward when the other is moving backward. The arms, though, swing across the chest or out to the side, or a combination of both in the plane of movement.
Step 4	Direction, separate. The arms swing forward and back in the coronal plane and stay nearly in the sagittal for forward-backward plane of movement.

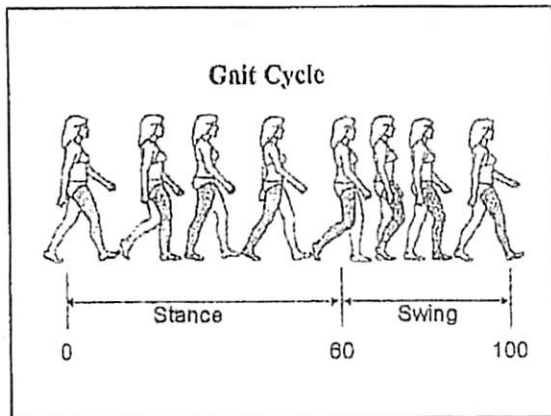
FUNDAMENTAL LOCOMOTOR AND MANIPULATIVE SKILLS

Locomotor Skills

- Efficiently moving through space is a complex process
- Requires the control of multiple body systems that may be going through developmental changes (individual constraints)
- Also have to account for a changing environment (environmental constraints)

Walking

- Walking Cycle
 - Support (stance) phase – foot in contact with ground
 - Swing phase – from toe up to heel down
 - Double support – both feet on ground
 - At least one foot in contact with ground during walking
- 50% phasing
 - Initial contact of the foot occurs halfway through gait cycle



Obstacles to Early Walking

- Balance
- Strength

- Common Traits
 - Start with short steps and wide base with toes out
 - Arms in “high guard” position
 - Little trunk rotation

**Proficient Walking:
Trading Stability for Mobility**

- Stride length increases.
- Base of support is reduced.
- Pelvis is rotated.
- Opposition (arms to legs) occurs.

**Later Walking:
Maximizing Stability**

- Out-toeing increases.
- Stride length decreases.
- Pelvic rotation decreases.
- Speed decreases.
- Objects are used as balance aids.

TABLE 5.1 Whole Body Approach for Walking

Initial Stage

- Wide base of support
- Flat rounded contact
- Toe pointed outward
- Short steps
- Quick, rigid step
- No trunk rotation
- Single knee tick position
- Heel to toe at contact followed by rapid knee extension
- Significant hip flexion
- Slight forward pelvic tilt
- Arms held in high guard position
- Arms held rigidly with little or no movement

(continued)

TABLE 5.1 (continued)

Emerging Stage

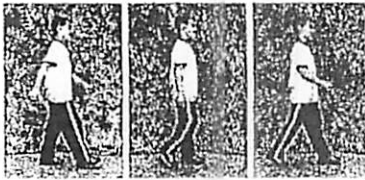
- Narrowing of the base of support
- Out-toeing occurs with less frequency
- Increase in pelvic rotation
- Heel strike becomes apparent
- Increase in stride length
- Reduction in hip flexion
- Reduction in forward pelvic tilt

(continued)

TABLE 6.1 (continued)

Initial stage

- Significantly narrowed base of support
- Foot contact becomes lock-like as opposed to flat footed
- Single knee lock pattern is replaced by double knee lock pattern
- Increased step and stride length
- Increased walking speed and step frequency
- Oppositional arm swing apparent



Running

Early Running

- Stability over mobility; return of "old behaviors"
- Arms in high guard, limited range of motion, short stride length, little rotation

Proficient Running: Less Stability, More Mobility

- Increased stride length
- Planar movement
- Narrow base of support
- Trunk rotation
- Opposition


Later Running

- Patterns help increase stability and balance.
- Decreases appear in
 - stride length
 - range of motion
 - number of strides
 - speed
- Rate controllers are balance and strength.
- Exercise can allow seniors to run for years!

TABLE 5.2 Whole Body Approach for Running

Initial stage

- Exaggerated movements of legs and feet
- Minimal flight period
- Flat footed contact, generally (although some children run on tiptoes)
- Wide base of support
- Arms held in either a middle or high guard position
- Arms move in the side as opposed to back and forth



© 1994, ACS

TABLE 5.2 (continued)

- Elementary stage**
- Hip, knee, and ankle extension is increased at takeoff
 - Increased height of the forward knee at takeoff
 - Length of running stride is increased
 - Speed of running is increased
 - Flight period is increased
 - Horizontal arm swing is increased



(continued)

TABLE 5.2 (continued)

- Takeoff stage**
- Narrowed base of support
 - Length of running stride increased further
 - Greater application of force
 - Slight forward lean of trunk
 - Arms more in a large arc, in opposition to the leg movements
 - Arms are level at the elbows at approximately 90°
 - Recovery knee is raised high and swings forward quickly
 - Support leg bends slightly at contact and subsequently extends quickly and completely



Jumping and Jump-like Activities

- **Jump:** Individual propels self off ground with one or two feet, lands on two feet.
- **Hop:** Individual propels self off ground with one foot, lands on same foot.
- **Leap:** Individual propels self off ground with one foot, extends flight period, lands on opposite foot.

Jumping

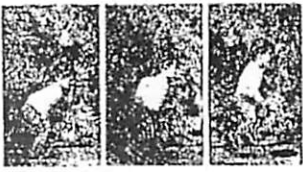
- Children often begin simple jumping before age 2.
- Individuals can perform either vertical or horizontal (standing long) jump.
- Early characteristics of jumping include
 - Only jumping vertically
 - one-foot takeoff or landing
 - no or limited preparatory movements

Proficient Jumping

- Preparatory crouch maximizes takeoff force.
- Both feet leave ground at same time.
- Arm swing utilized during jump.
- For vertical jump, force is directed downward; body is extended.
- For horizontal jump, force is directed down and backward; knees are flexed during flight.

TABLE 5.4 Whole Body Approach for the Standing Long Jump

- Initial steps**
- Limited and inconsistent preparatory crouch
 - Trunk lean is less than 20°
 - Minimal extension of the hips and knees at takeoff and during flight
 - Minimal and ineffective arm swing (arms held rigidly at the sides with elbows flexed or arms held in a rigid position)
 - Legs are positioned asymmetrically during flight
 - Vertical force is generally greater than horizontal force leading to an upward rather than a forward jump
 - An inability to flex the hips and knees during the jump leads to an abrupt landing

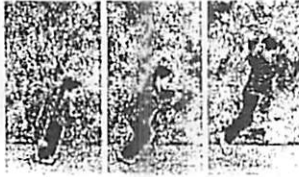


(continued)

TABLE 5.4 (continued)

Elementary stage

- Preparatory crouch becomes deeper and more consistent
- Extension of leg and knee is increased
- Forward swing of arms by the anteroposterior plane is increased
- Trunk leans at least 45° forward
- Increase in thigh flexion during flight



(continued)

TABLE 5.4 (continued)

Mature stage

- Deep preparatory crouch with flexion of the hip, knee, and ankle
- Trunk lean is at least 30°
- Arms are swung backward simultaneously in a smooth fashion
- Heels come off of the ground before knee extension
- Rapid and vigorous extension, as takeoff, of the legs and knees in the direction of flight
- Arms vigorously swing forward and upward
- Both knees are flexed with the thighs brought forward, parallel to the ground during flight
- Lower legs swing forward for a two-footed landing



TABLE 5.5 Whole Body Approach for Vertical Jumping

Initial stage

- Form is variable and ungraceful
- Limited and inconsistent preparatory crouch
- Legs are not fully extended at takeoff
- Very quick flexion of hips and knees (the legs are pulled under the body)
- Slightly extension of the arms and shoulders
- Forward flexion of the head



(continued)

TABLE 5.5 (continued)

Elementary stage

- Form becomes less variable and more predictable
- Preparatory crouch becomes deeper (ankle extended knee bent)
- A two-foot takeoff takes place
- Arms are used to aid in flight and balance, but often ineffectively
- Body does not extend completely during flight

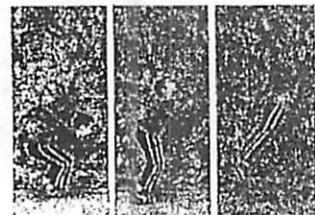


(continued)

TABLE 5.5 (continued)

Mature stage

- Deep preparatory crouch with flexion of the hip, knee, and ankle
- Hip, knee, and ankle extend completely upon takeoff
- Very quick flexion of hips and knees (the legs are tucked under the body)
- Arms are swung forward and up
- One hand comes up while the other comes down resulting in an effective flipping of the shoulder girdle near the peak of the jump
- Backward flexion of the head
- Extension of the trunk at the crest of the reach
- Landing is on the balls of the feet with the feet and knees flexed



Hopping

- Hopping starts later than jumping.
- Early characteristics include the following.
 - Support leg is lifted rather than used to project body.
 - Arms are inactive.
 - Swing leg is held rigidly in front of body.

Proficient Hopping

- Swing leg leads hip and moves through full range of motion.
- Support leg extends fully at hip.
- Oppositional arm movement generates force.
- Support leg is flexed on landing.

TABLE 6.6 Whole Body Approach for Hopping

Initial stage

- Little forward movement
- Little elevation
- Move hand as early
- Support leg is lifted by flexion rather than by full extension
- Non-support (swing) leg is generally held high and is largely inactive
- Minimal arm action; any action is minimal or inconsistent
- Arms are held in a high guard position and to the sides for balance
- Flex knees if low legs



(continued)

TABLE 6.6 (continued)

Elementary stage

- Increased forward movement
- Increased elevation
- Support leg is lifted by minimal knee and ankle extension because of short foot lean
- Non-support (swing) leg moves forward and upward
- Arms begin to be used (bilaterally) for thrust rather than for balance



(continued)

TABLE 6.6 (continued)

Mature stage

- Weight is transferred smoothly upon landing to the ball of the foot of the support leg before the ankle and knee extend
- The support leg reaches almost full extension upon takeoff
- Swing leg leads movement, pumping upward and downward
- The pumping action of the swing leg increases such that, when raised from the side, it passes behind the support leg
- Arm opposite the swing leg moves in an upward and forward direction in synchrony with the upward and forward movement of the swing leg
- The other arm moves in a direction opposite to that of the swing leg
- A vigorous swinging action may not be present unless there are speed or force demands



Manipulative Skills

- Placing a force on an object and moving it through the environment

Overarm Throwing

- Many forms
 - Underhand (one- or two-hand)
 - Sidearm
 - Overarm (one- or two-hand)
- Most common in sport: one-hand overarm

Early Overarm Throwing

- Mostly arm action
- Elbow pointed up
- Throw executed by elbow extension alone



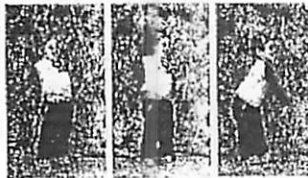
Proficient Overarm Throwing for Force

- Thrower uses preparatory windup (weight shifts and trunk rotates back; arm swings).
- Thrower uses opposite leg, long step, and differentiated trunk rotation.
- Upper arm and forearm lag.
- Movements are sequential to transfer momentum.

TABLE 5.7 Whole Body Approach for the Overarm Throw for Distance

Initial stage

- Thrower tends to react from arm action only
- No preparatory backswing or rather, the hand is brought back with the elbow up
- Throw is completed by extending the ball following elbow extension
- Follow through or start in a forward direction, if present
- There is either little or no trunk rotation, if trunk action takes place, it does so in a forward backward direction
- Body weight may shift slightly to the rear in order to maintain balance
- There is no step taken



(continued)

TABLE 5.7 (continued)

Elementary stage

- Head and shoulders rotate toward throwing side to prepare for the throw
- A backward and backward swing of the arm then brings the ball to a position behind the head with the elbow flexed
- The arm is swung forward, high over the shoulder
- The forearm extends before the ball is released
- A forward shift in body weight is evident
- A small (or a step) (same side step) is taken during the throw



(continued)

TABLE 5.7 (continued)

Mature stage

- Body pivots to the throwing side with the weight on the front of the throwing side
- Throwing arm swings back in a circular downward direction
- Elbow of nonthrowing arm is raised for balance
- Elbow of the throwing arm is bent at approximately a right angle
- A long contralateral (opposite side) step is taken in the direction of the target
- There is differentiated trunk rotation; that is, the pelvis begins to rotate before the upper spine in the initiation of trunk rotation
- Throwing elbow moves forward horizontally as it extends
- The forearm lags behind at the moment the shoulder and foot kick
- The ball is released just forward of the head, at this point, the arm is extended at the elbow
- The arm follows through across the body after ball release



Kicking

- Performer strikes ball with foot.
- Kicker must have perceptual abilities and eye-foot coordination to make contact (kicking a moving ball is difficult for children).

Characteristics of Early Kicking

- No step is taken with nonkicking leg.
- Kicking leg pushes forward.



© 1997 by the American Physical Therapy Association

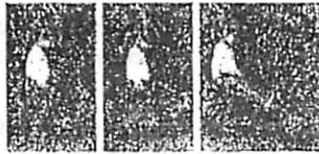
Proficient Kicking

- Preparatory windup is used (trunk is rotated back, kicking leg cocked, knee bent).
- Trunk rotates forward.
- Movement is sequential: thigh rotates forward, then lower leg extends.
- Arms move in opposition to legs.

TABLE 6.8 Whole Body Approach for Place Kicking

Initial Stage

- A simple pushing of the ball with the foot
- Straight perpendicular motion of kicking leg
- Very limited range of motion; minimal backswing and follow through
- No step forward with the nonkicking leg
- Trunk remains upright with no rotation present; there is very limited movement of the upper body
- The knee of the kicking leg is often bent at contact
- Arms are held out to the sides to aid in the maintenance of balance



(continued)

TABLE 6.8 (continued)

Elementary Stage

- The range of motion of the kicking leg (backswing and follow through) increases at the hip and knee
- The kicker takes one or more deliberate steps while approaching the ball
- The kicker tends to start farther behind the ball and move his or her body forward into the kick
- The support leg is placed slightly to the side of the ball
- Kicking leg is in a cocked position and tends to remain bent throughout the kick
- The kicking leg often rotates also; completing the kick, that is, there is minimal follow through
- There is an increase in compulsory trunk lean and arm opposition



(continued)

TABLE 6.8 (continued)

Mature Stage

- Following one or more deliberate steps, the kicker becomes airborne immediately before contacting the ball allowing appropriate hyperextension of the hip and flexion of the knee
- The trunk is rotated to the side and the knee of the kicking leg is flexed
- The knee of the kicking leg extends rapidly just prior to contacting the ball
- The arms are used in opposition to the legs during the kick
- The trunk bends at the waist during follow-through
- If there is sufficient forward momentum, the kicker will either hop on the support leg or scissor the legs while in the air; this allows for a landing on the kicking foot



Punting

- The ball is dropped from the hands.
- Punting is more difficult than kicking for children.

Characteristics of Early Punting

- Ball is loosed up rather than dropped.
- Punter often contacts ball with toes rather than instep.



Proficient Punting

- Arms are extended to drop ball before final stride.
- Arms then drop to sides and move into opposition to legs.
- Punter leaps onto supporting leg, swings punting leg vigorously up to make contact.
- Punting leg is kept straight; toes are pointed.

Sidearm Striking

- Various body parts can be used.
- Implements can be used.
- Mechanical principles are similar for all striking tasks.

Characteristics of Early Sidearm Striking

- Chopping motion (elbow extension)
- Little leg and trunk movement



Proficient Sidearm Striking

- Sideways preparatory stance and long step
- Differentiated trunk rotation
- Horizontal swing through large range of motion (arm extended before contact)
- Sequential movements



Developmental Changes in Sidearm Striking (continued)

- Grip changes from power grip to "shake-hands" grip.
- Elbows are held away from body and extended before contact.

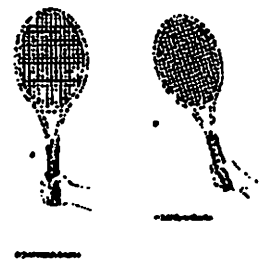


TABLE 5.10 Whole Body Approach for Sidearm Striking
Initial stage

- Early attempts to strike are similar to the overarm throwing motion with the racket being swung in a vertical (chopping) motion
- Motion is from back to front with a slight bend at the waist
- The racket faces and extends its forearm to chop at the ball while the trunk directly faces the direction of the lateral ball
- There is minimal twistment of the trunk and legs and the feet are generally stationary
- There is a forward or on straight trunk
- Arms are held rigidly with little or no wrist action



© 2000 Pearson Education, Inc.

TABLE 5.10 (continued)
Elementary stage

- Striker stands sideways to the ball
- Striker transfers his weight from the rear foot to the front foot by taking a step forward
- Differentiated hip turn about distal rotation is apparent
- The plane of the swing changes from the vertical chop to an oblique plane to a horizontal plane
- The elbows are held away from the sides allowing for extension of the arms below contact resulting in increased force production

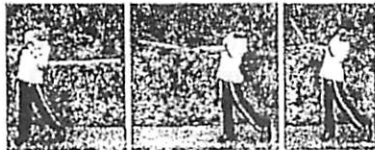


© 2000 Pearson Education, Inc.

TABLE 5.10 (continued)

Initial stage

- Trunk is turned to the side in anticipation of a thrown ball
- Weight is shifted to the back foot with the trunk and hips, subsequently, reaching before ball contact
- The racket uses a full range of motion and strikes the ball in the horizontal plane
- Weight shifts to forward foot at contact
- The racket's arm is relaxed

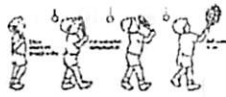


Overarm Striking

- Without an implement (e.g., volleyball serve)
- With an implement (e.g., tennis serve)

Characteristics of Early Overarm Striking

- Limited trunk rotation
- Swing with collapsed elbow
- Little or no lag with swing forward
- Much like early throwing in appearance



Proficient Overarm Striking

- Lower and upper trunk are rotated more than 90 degrees.
- Elbow is held between 90 and 119 degrees at start of forward movement.
- Racket lags behind arm in forward swing.
- Movement is sequential.



Chapter #6 Structural Constraints in Childhood and Adolescence Lecture

Structural Constraints in Childhood and Adolescence

Chapter 6

Nature versus Nurture

- Research attempts to explain differences in relation to genetics, extrinsic factors, or both.
- Twin studies: monozygotic vs. dizygotic
- Heritability – Influence of genetics
- Combination of genetics and environmental influences
- Explained by the Dynamic Systems Theory

Physical Growth

- First year of life period of most rapid growth and development.
- Sigmoid curve
- Distance curve
- Velocity curve
- Peak height velocity – explains gender differences related to height
- Body proportions

Limitations to Growth Curves

- Distance and velocity curves describe average patterns of change, but individuals have unique timing in these events.
- Peak strength velocity follows within a year of peak height velocity.
- Early maturer vs. late maturer

Body System Constraints

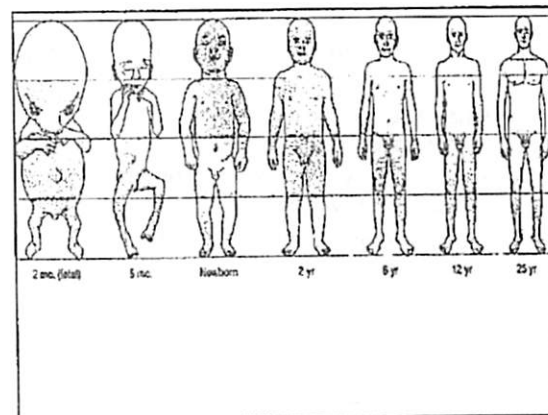
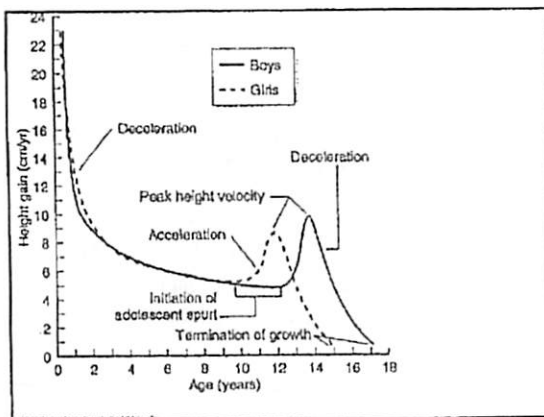
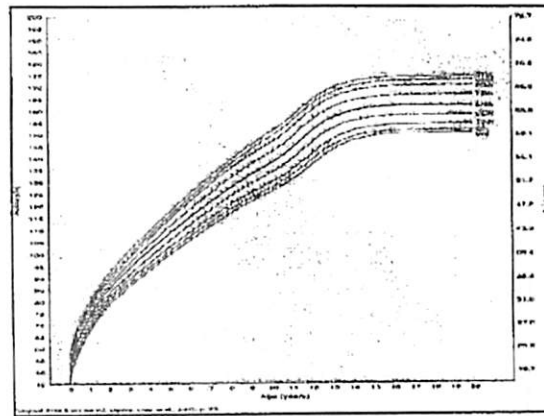
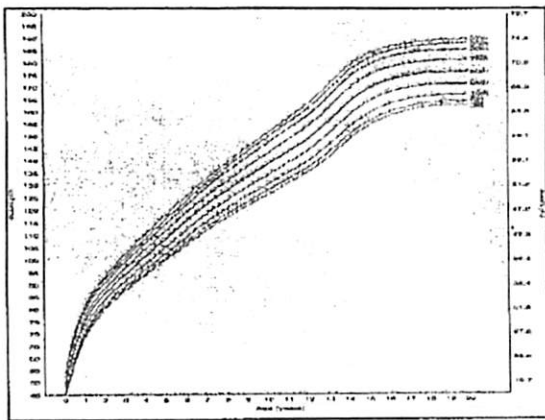
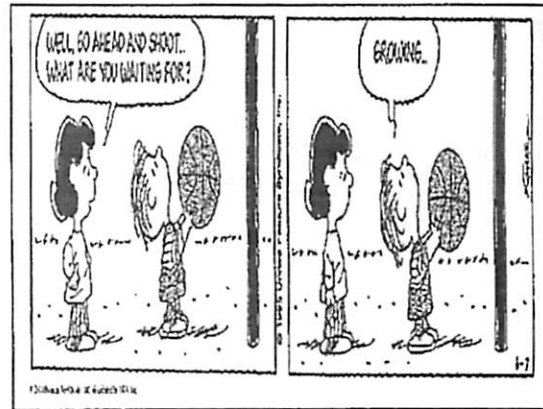
- Motor learning and development can be constrained by the body systems associated with movements and performance:
 - Skeletal system
 - Muscular system
 - Nervous system
 - Respiratory system
 - Endocrine system
 - Adipose system
 - Sensory system

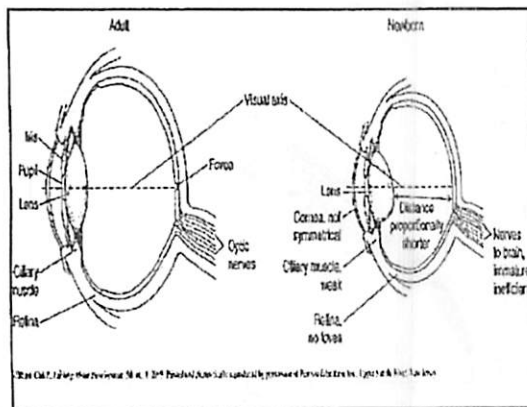
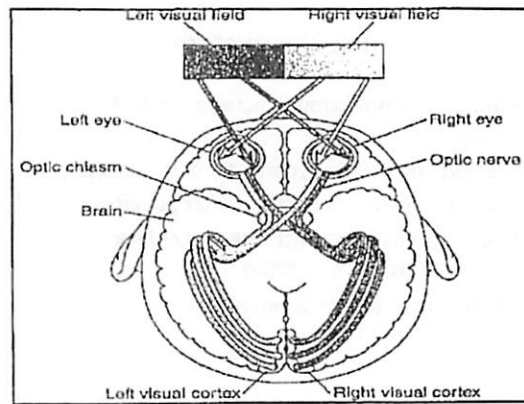
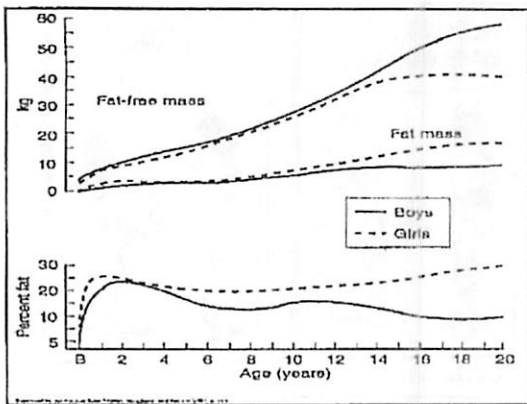
Skeletal System

- Skeleton provides support for the body and a lever system for muscles enabling movement
- Bone is a living and growing tissue
- Remodeling – entire skeletal system replaced every 10 years
- Problems with skeletal growth:
 - Osgood-Schlatter disease
 - Legg-Calve-Perthes

Muscular System

- Follows sigmoid growth pattern similar to weight
- Growth occurs via hyperplasia or hypertrophy
- Gender differences present after puberty
- After reaching maturity, changes only occur via hypertrophy or atrophy
- Flexibility – gender differences





Cardiovascular System

- Heart rate – indicates both cardiac output and maximal oxygen consumption
- On average, resting heart rate increases with age
- VO_2 max – maximum amount of oxygen that can be transported and used during exercise
- Gender differences exist

Nervous System

- Rapid development early in life of # of neurons and synapses
- Learning new motor skills creates hundreds of thousands new synapses
- Neuromotor problems often result in reduced coordination (ex. cerebral palsy)

Endocrine System

- Controls hormones in body tissues
- Skeletal growth involves both pituitary growth hormones and thyroid hormones
- Hormones from testicles, ovaries, and adrenal glands are responsible for growth spurt and epiphyseal fusion of long bones
- Growth and development problems can be linked to hormonal abnormalities

Adipose Tissue

- **Absolute amount of adipose tissue increases during childhood and adolescence due to increased growth and development**
- **Gender differences present during puberty into adulthood**
- **Obesity is an individual structural constraint and can lead to poor motor skills**
- **Most cases of obesity are related to lifestyle**

Lab #3: Locomotor Skill Development

Directions: Read Chapter #5: *Fundamental Movement in Skills* in the textbook and answer questions #1 and #2. Save this file as lastname_lab3.doc (example. wachob_lab3.doc) and type your responses under each question. When complete, upload your file to the dropbox titled "Lab#3".

1. In order to observe and analyze locomotor skills, what do you need to know?

2. When observing and analyzing locomotor skills, specifically, what are you going to be looking at during each skill observation?

Directions: On the course content page under Module#7, there are two different video clips related to the locomotor skill running. Watch the videos and answer the following questions.

Video Clip #1: Female Child Running

Initial stage

- Exaggerated movements of legs and feet
- Minimal flight period
- Flat footed contact, generally (although some children run on tiptoes)
- Wide base of support
- Arms held in either a middle or high guard position
- Arms move to the sides as opposed to back and forth



	YES	NO
Is there a period of flight between steps?		
Does the knee of the recovering (swing) leg flex to at least a 90 degree, right angle, on its swing forward?		
Does the swing leg remain primarily in the forward-backward plane?		
Are the arms active?		
Do the arms move in true opposition to the legs?		
Do the arms drive forward and back?		

Video Clip #2: Male Teenager Running

Mature stage

- Narrowed base of support
- Length of running stride increased further
- Greater application of force
- Slight forward lean of trunk
- Arms move in a large arc, in opposition to the leg movements
- Arms are bent at the elbows at approximately 90°
- Recovery knee is raised high and swings forward quickly
- Support leg bends slightly at contact and subsequently extends quickly and completely



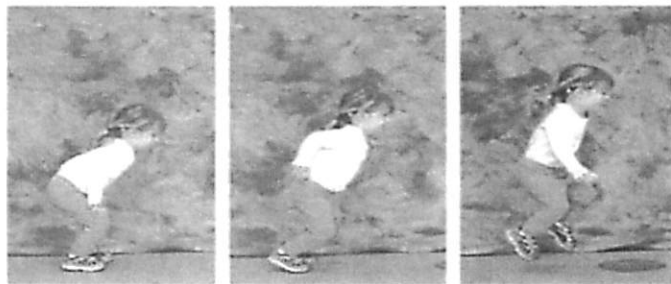
	YES	NO
Is there a period of flight between steps?		
Does the knee of the recovering (swing) leg flex to at least a 90 degree, right angle, on its swing forward?		
Does the swing leg remain primarily in the forward-backward plane?		
Are the arms active?		
Do the arms move in true opposition to the legs?		
Do the arms drive forward and back?		

Directions: On the course content page under Module#7, there are two different video clips related to the locomotor skill jumping. Watch the videos and answer the following questions.

Video Clip #3: Female Child Jumping

Initial stage

- Limited and inconsistent preparatory crouch
- Trunk lean is less than 30°
- Minimal extension of the hips and knees at takeoff and during flight
- Minimal and ineffective arm swing (arms held rigidly at the sides with elbows flexed or arms held in winged position)
- Legs are positioned asymmetrically during flight
- Vertical force is generally greater than horizontal force leading to an upward rather than a forward jump
- An inability to flex the hips and knees during the jump leads to an abrupt landing



	YES	NO
Do both feet leave the ground at the same time?		
Do the knees extend before the heels come off the ground?		

Do the arms swing at take-off?		
Do the arms swing back before they swing forward at take-off?		

Video Clip #4: Male Teenager Jumping

Mature stage

- Deep preparatory crouch with flexion of the hips, knees, and ankles
- Trunk lean is at least 30°
- Arms are swung backwards simultaneously in a smooth fashion
- Heels come off of the ground before knee extension
- Rapid and vigorous extension, at takeoff, of the hips and knees in the direction of travel
- Arms vigorously swing forward and upwards
- Both knees are flexed with the thighs brought forward, parallel to the ground during flight
- Lower legs swing forward for a two footed landing



	YES	NO
Do both feet leave the ground at the same time?		
Do the knees extend before the heels come off the ground?		
Do the heels come off the ground before the knees extend with the trunk appearing to tip forward?		
Do the arms swing at take-off?		
Do the arms swing back before they swing forward at take-off?		
After swinging back, do the arms swing forward to a position overhead at take-off?		

HPED 209 – Motor Behavior
Exam #2 Study Guide
(15 points)

Directions: After reading Chapter #5 and #6 in the textbook, select **FIVE** out of six questions total to answer. Save this file as lastname_sg2.doc (example. wachob_sg2.doc) and type your responses under each question. You will answer a total of 5 questions. Each question is worth three points. When complete, upload your file to the dropbox titled "Study Guide #2".

Chapter #5: Fundamental Skills in Childhood

1. Outline three methods used to measure improvement in motor skills.

2. In analyzing motor skills. Distinguish between the whole body approach versus the component approach.

3. Identify specific characteristics that would indicate that an individual was at the initial stage of striking.

Chapter #6: Structural Constraints in Childhood and Adolescence

4. Describe changes in adipose tissue during childhood and adolescence from absolute and relative dimensions.

5. Describe the changes that occur in terms of body awareness during childhood.

6. Select either static or dynamic visual acuity and outline the changes that occur during development.