

DOMAIN I.

MOVEMENT SKILLS AND KNOWLEDGE

COMPETENCY 1.0 PRINCIPLES OF MOTOR DEVELOPMENT AND MOTOR LEARNING

SKILL 1.1 Demonstrate knowledge of principles and stages of motor development.

The development of motor skills in children is a sequential process. We can classify motor skill competency into stages of development by observing children practicing physical skills. The sequence of development begins with simple reflexes and progresses to the learning of postural elements, locomotor skills, and, finally, fine motor skills. The stages of development consider both innate and learned behaviors.

STAGES OF MOTOR LEARNING

Stage 1 – Children progress from simple reflexes to basic movements such as sitting, crawling, creeping, standing, and walking.

Stage 2 – Children learn more complex motor patterns including running, climbing, jumping, balancing, catching, and throwing.

Stage 3 – During late childhood, children learn more specific movement skills. In addition, the basic motor patterns learned in Stage 2 become more fluid and automatic.

Stage 4 – During adolescence, children continue to develop general and specific motor skills and master specialized movements. At this point, factors including practice, motivation, and talent begin to affect the level of further development.

SKILL 1.2 Know motor learning principles, processes, and concepts and use this knowledge to promote students' acquisition and refinement of motor skills.

In addition to a thorough knowledge of the motor development process, physical education instructors must understand the principles of learning and information transfer to facilitate student progress. Important concepts include practice, feedback, observational learning, and self-assessment.

PRACTICE

Frequent, structured practice of motor skills enhances skill development in children. Without practice and instruction, natural ability and talent dictates the extent of motor skill development.

FEEDBACK

Feedback, or input from the tutor or educator, forms an extremely vital part of any learning process. Just as positive feedback works as a motivator enabling an athlete to improve and surge ahead with renewed interest, negative feedback also helps an athlete recognize and correct his or her mistakes.

When performers learn a skill, the skill goes into their short-term memory and receives positive feedback. The skill may eventually go into their long-term memory, creating memory that is more permanent. That is how positive feedback works to encourage the performer and helps in making the performer remember every aspect of the performance.

Negative feedback helps athletes, whether novice or experienced, become conscious of their mistakes. They can use this negative feedback to improve their shortcomings. Without feedback, an athlete is not likely to improve his or her technique and will lose motivation.

There are different types of feedback and it is always important for the performer to receive the right type. Some examples of feedback include the following:

Intrinsic feedback – information received by the athlete as a direct result of producing a movement through the kinesthetic senses – e.g. feeling from muscles, joints, and balance.

Extrinsic feedback – information not inherent in the movement itself but which improves intrinsic feedback (this is also known as augmented feedback). There are two main categories: knowledge of performance and information about the technique and performance. The coach can provide extrinsic feedback verbally or visually via video. Extrinsic feedback enables the athlete to establish a kinesthetic reference for the correct movement.

Research also indicates that the stage when an athlete receives feedback is as important as the content of the feedback. Negative feedback might be boring for the beginner. However, if a performer is elite, then knowledge of results is very important. In addition, during the cognitive stage, positive feedback is essential to make sure that the athlete learns a skill successfully. Thus, feedback plays an extremely important role in any learning process, as it facilitates learning to a great extent.

SELF-ASSESSMENT

Self-assessment is a powerful tool in motor skill development. Requiring students to assess their own skills and abilities encourages students to reflect upon their current skill level and take control of the development process.

OBSERVATIONAL LEARNING

Many physical education instructors believe that observational learning is the most effective method of learning motor skills. Visual observation of proper skill performance by an instructor or peer is generally more effective in promoting skill development than verbal instructions.

SKILL 1.3 Demonstrate knowledge of principles and components of perceptual-motor development and their relationship to motor performance.

Perceptual-motor development refers to one's ability to receive, interpret, and respond successfully to sensory signals coming from the environment. Because many of the skills acquired in school rely on the child's knowledge of his body and its relationship to the surroundings, good motor development leads directly to perceptual skill development. Development of gross motor skills lead to successful development of fine motor skills, which in turn help with learning, reading, and writing. Adolescents with perceptual-motor coordination problems are at risk for poor school performance, low self-esteem, and inadequate physical activity participation. Without a successful intervention, these adolescents are likely to continue avoiding physical activity and experience frustration and teasing from their peers. Children with weak perceptual-motor skills may be easily distracted or have difficulty with tasks requiring coordination. They spend much of their energy trying to control their bodies, exhausting them so much that they physically cannot concentrate on a teacher-led lesson. Unfortunately, perceptual-motor coordination problems do not just go away and they don't self-repair.

Practice and maturity are necessary for children to develop greater coordination and spatial awareness. Physical education lessons should emphasize activities that children enjoy doing, are sequential, and require seeing, hearing, and/or touching. Discussing with students the actual steps involved in performing a fundamental skill is a great benefit. Activities and skills that can be broken down and taught in incremental steps include running, dribbling, catching or hitting a ball, making a basket in basketball, and setting a volleyball. Recommended strategies include introducing the skill, practicing in a variety of settings with an assortment of equipment, implementing lead-up games modified to ensure practice of the necessary skills, and incorporating students into an actual game situation.

CONCEPT OF BODY AWARENESS APPLIED TO PHYSICAL EDUCATION ACTIVITIES

Body awareness is a person's understanding of his or her own body parts and their capability of movement.

Instructors can assess body awareness by watching students play a game of “Simon Says” and asking the students to touch different body parts. You can also instruct students to make their bodies into various shapes, such as, from straight to round to twisted, to fit into different sized spaces.

In addition, you can instruct children to touch one part of their body to another and to stamp their feet, twist their neck, clap their hands, nod their heads, wiggle their noses, snap their fingers, open their mouths, shrug their shoulders, bend their knees, close their eyes, bend their elbows, or wiggle their toes

CONCEPT OF SPATIAL AWARENESS APPLIED TO PHYSICAL EDUCATION ACTIVITIES

Spatial awareness is the ability to make decisions about an object’s positional changes in space (i.e. awareness of three-dimensional space position changes). Developing spatial awareness requires two sequential phases: 1) identifying the location of objects in relation to one’s own body in space, and 2) locating more than one object in relation to each object and independent of one’s own body. Plan activities using different size balls, boxes, or hoops and have children move towards and away; under and over; in front of and behind; and inside, outside, and beside the objects.

CONCEPTS OF SPACE, DIRECTION, AND SPEED RELATED TO MOVEMENT CONCEPTS

Effort Awareness is the knowledge of balance, time, and force and how they relate to athletic movements and activities. Research shows that space, direction, and speed are interrelated with movement concepts. Students who understand these concepts will move with confidence and avoid collisions.

A student or player incorporates movement concepts such as space, direction, speed and vision to understand and perform a sport. For instance, a player will determine the appropriate personal space while playing soccer or basketball.

For a player, the concepts are all interconnected. The player has to understand how to maintain or change pathways with speed. This means the player has the ability to change motion and perform well in space or the area that the players occupy on the field.

SKILL 1.4 Analyze the impact of various factors on motor development and relate developmental changes to motor performance.

A variety of influences affects a student's physical performance and fitness level:

Societal – We cannot separate students from the societies in which they live. The general perceptions around them about the importance of fitness activities will necessarily have an effect on their own choice regarding physical activity. We should consider the “playground to PlayStation” phenomenon and the rising levels of obesity among Americans negative societal influences on motor development and fitness.

Psychological – Psychological influences on motor development and fitness include a student's mental well-being, perceptions of fitness activities, and level of comfort in a fitness-training environment (both alone and within a group). Students experiencing psychological difficulties, such as depression, will tend to be apathetic and lack both the energy and inclination to participate in fitness activities. As a result, their motor development and fitness levels will suffer. Factors like the student's confidence level and comfort within a group environment, related to both the student's level of popularity within the group and the student's own personal insecurities, are also significant. It is noteworthy, though, that in the case of psychological influences on motor development and fitness levels, there is a more reciprocal relationship than with other influences. While a student's psychology may negatively affect their fitness levels, proper fitness training has the potential to positively affect the student psychologically, thereby reversing a negative cycle.

Economic – The economic situation of students can affect their motor development and fitness because lack of resources can detract from the ability of parents to provide access to extra-curricular activities that promote development, proper fitness training equipment (ranging from complex exercise machines to team sport uniforms to something as simple as a basketball hoop), and even adequate nutrition.

Familial – Familial factors that can influence motor development and fitness relate to the student's home climate concerning physical activity. A student's own feelings toward physical activity often reflect the degree to which caregivers and role models (like older siblings) are athletically inclined and have a positive attitude towards physical activity. It isn't necessary for the parents to be athletically inclined, so much as it is important for them to encourage their child to explore fitness activities that could suit them.

Environmental and Health – Genetic make-up (i.e. age, gender, ethnicity) has a big influence on growth and development. Various physical and environmental factors directly affect one's personal health and fitness. Poor habits, living conditions, and afflictions such as disease or disability can impact a person in a negative manner. A healthy lifestyle with adequate conditions and minimal physical or mental stresses will enable a person to develop towards a positive, healthy existence. A highly agreed upon motor development theory is the relationship between one's own heredity and environmental factors.

RELATIONSHIP OF MOTOR DEVELOPMENT TO PHYSICAL, COGNITIVE, PSYCHOSOCIAL, AND EMOTIONAL DEVELOPMENT

Instructors should place students in rich learning situations, regardless of previous experience or personal factors, which provide plenty of positive opportunities to participate in physical activity. For example, prior to playing a game of softball, have students practice throwing by tossing the ball to themselves, progress to the underhand toss, and later to the overhand toss. Studies show that physical activity leads to improved motor development in children. Physical activity also enables various other progressions that shape the mind and personality of an individual. Such developments, which are the result of physical activity, include cognitive, psychosocial, and emotional growth.

Very often, we ignore the close relationship shared by motor development and the other aspects of development. Motor development, which starts with the proper nutrition, deeply affects the other aspects of development in an individual. Children acquire a vast range of motor development skills such as grasping, crawling, walking, running, and even speaking during the early stages of their lives. Gradually, such motor skills further develop leading to participation in sport and play activities that promote confidence in children and allow them to develop responsibility, deep emotions, and social etiquette. Through participation in sports, children learn to cooperate and develop competitive skills that will aid them in adulthood.

Studies reveal that the different types of play in childhood link motor development with the other aspects of development. Different kinds of play or physical activity such as cognitive play, social play, physical play, and emotional play, help in the overall development of a child.

Simple motor skills such as repeatedly hitting the ground with a shovel or building sand castles help in developing thinking and cognitive skills. Social play helps children to play with their peers cooperatively, to develop their motor skills, and to develop a sense of social togetherness. Motor activities greatly influence physical development as well. They help in providing the foundation for a normal and healthy physical education program suitable for all children. Research also shows that free play among peers leads to significant cognitive developments (such as improvement of reasoning abilities).

The manner in which children hop, jump, skip, run, climb, and play greatly facilitates their motor and physical development and helps to build other aspects of their personality. Children accomplish this development through their constant interaction with surrounding elements, environments, and persons.

Thus, motor skill development, which encompasses all motor movements by children, is strongly related to the physical, social, and emotional development of children.

SKILL 1.5 Apply knowledge of techniques for evaluating motor skills, detecting errors in motor performance, and providing positive corrective feedback.

ERRORS IN SKILL PERFORMANCE

Because performing a skill has several components, determining why a participant is performing poorly may be difficult. Instructors may have to assess several components of a skill to determine the root cause of poor performance and appropriately correct errors. **An instructor should have the ability to identify performance errors by observing a student's mechanical principles of motion during the performance of a skill. Process assessment** is a subjective, observational approach to identifying errors in the form, style, or mechanics of a skill.

APPROPRIATE OBJECTIVE MEASUREMENTS OF FUNDAMENTAL SKILLS

Instructors should use **product assessments**, quantitative measures of a movement's end result, to evaluate objectively fundamental skills. How far, how fast, how high, or how many are the quantitative measures of product assessments.

A **criterion-referenced test** (superior to a standardized test) or a **standardized norm-referenced test** can provide valid and reliable data for objectively measuring fundamental skills.

SKILL ASSESSMENT INFORMATION USED TO CORRECT ERRORS IN SKILL PERFORMANCE

Instructors can use criterion-referenced standards to diagnose weaknesses and correct errors in skill performance because such performance standards define appropriate levels of achievement. However, instructors can also use biomechanical instructional objectives. The following list describes the skill assessment criteria in several representative activities:

- Archery - measuring accuracy in shooting a standardized target from a specified place.

- Bowling - calculating the bowling average attained under standardized conditions.
- Golf - the score after several rounds.
- Swimming - counting the number of breaststrokes needed to swim 25 yards.

After assessing student skill performance, the instructor should design drills or tasks that will develop the weakest component of the student's performance. For example, an instructor notices that a group of students attempting to shoot basketball free throw shots cannot get the ball to the basket because they do not use their legs to add power to the shot. The instructor should use this observation to construct drills that encourage leg use and develop strength.

FEEDBACK

In addition to the information in Skill 1.2, we will also introduce a few key feedback tools and techniques. First, videotape is an invaluable feedback tool. Videotaping a student performing a motor skill allows the student to view, first-hand his or her own performance and recognize errors that are not visible from the performer's perspective. Second, kinesthetic feedback is the physical guidance of a student through a motor skill by an instructor. For example, an instructor might guide a student's arms through the process of swinging a baseball bat. Kinesthetic feedback is particularly effective when teaching young children. Finally, instructors can use verbal and nonverbal cues in teaching sport skills and strategy. For example, "follow through" is a common phrase used by tennis coaches in instructing students. Conversely, if the instructor swings the racket the correct way to demonstrate a proper follow through, he uses a nonverbal cue.

COMPETENCY 2.0

PRINCIPLES AND PRACTICES FOR DEVELOPING, COMBINING, AND INTEGRATING MOTOR SKILLS

SKILL 2.1 Recognize characteristics and elements of locomotor, nonlocomotor, manipulative, and rhythmic skills.

LOCOMOTOR SKILLS

Locomotor skills move an individual from one point to another.

1. **Crawling** - A form of locomotion where the person moves in a prone position with the body resting on or close to the ground or on the hands and knees.
2. **Creeping** - A slightly more advanced form of locomotion in which the person moves on the hands and knees.
3. **Walking** - with one foot contacting the surface at all times, walking shifts one's weight from one foot to the other while legs swing alternately in front of the body.
4. **Running** - an extension of walking that has a phase where the body is propelled with no base of support (speed is faster, stride is longer, and arms add power).
5. **Jumping** - projectile movements that momentarily suspend the body in midair.
6. **Vaulting** - coordinated movements that allow one to spring over an obstacle.
7. **Leaping** - similar to running, but leaping has greater height, flight, and distance.
8. **Hopping** - using the same foot to take off from a surface and land.
9. **Galloping** - forward or backward advanced elongation of walking combined and coordinated with a leap.
10. **Sliding** - sideward stepping pattern that is uneven, long, or short.
11. **Body Rolling** - moving across a surface by rocking back and forth, by turning over and over, or by shaping the body into a revolving mass.
12. **Climbing** - ascending or descending using the hands and feet with the upper body exerting the most control.

NONLOCOMOTOR SKILLS

Nonlocomotor skills are stability skills where the movement requires little or no movement of one's base of support and does not result in change of position.

1. **Bending** - movement around a joint where two body parts meet.
2. **Dodging** - sharp change of direction from original line of movement such as away from a person or object.
3. **Stretching** - extending/hyper-extending joints to make body parts as straight or as long as possible.
4. **Twisting** - rotating body/body parts around an axis with a stationary base.
5. **Turning** - circular moving the body through space releasing the base of support.
6. **Swinging** - circular/pendular movements of the body/body parts below an axis.
7. **Swaying** - same as swinging but movement is above an axis.
8. **Pushing** - applying force against an object or person to move it away from one's body or to move one's body away from the object or person.
9. **Pulling** - executing force to cause objects/people to move toward one's body.

MANIPULATIVE SKILLS

Manipulative skills use body parts to propel or receive an object, controlling objects primarily with the hands and feet. Two types of manipulative skills are receptive (catch + trap) and propulsive (throw, strike, kick).

1. **Bouncing/Dribbling** - projecting a ball downwards.
2. **Catching** - stopping momentum of an object (for control) using the hands.
3. **Kicking** - striking an object with the foot.
4. **Rolling** - initiating force to an object to instill contact with a surface.
5. **Striking** - giving impetus to an object with the use of the hands or an object.
6. **Throwing** - using one or both arms to project an object into midair away from the body.
7. **Trapping** - without the use of the hands, receiving and controlling a ball.

RHYTHMIC SKILLS

Rhythmic skills include responding and moving the body in time with the beat, tempo, or pitch of music. To develop rhythmic skills, instructors can ask students to clap their hands or stomp their feet to the beat of the music. Dancing and gymnastics requires high levels of rhythmic competency. As with all physical skills, development of rhythmic skills is a sequential process.