

THE ABCS OF LONG-TERM ATHLETIC DEVELOPMENT

RICK HOWARD, MED, CSCS,*D, USAW

NOT AS EASY AS ABC

Many long-term athletic development (LTAD) models include movement “ABCs” that promote athleticism (1,6). These ABCs of athleticism are intended to be initiated in the early stages of LTAD. These ABCs are basic athletic abilities, namely agility, balance, and coordination (1,11). These categories, however, often involve combinations of fundamental motor skills (which are not fundamental) in order to perform the ABCs proficiently. In other words, youngsters who have not yet developed fundamental movement proficiency in one fundamental movement pattern are being asked to combine fundamental movements instead of focusing on one at a time.

For emerging athletes to move properly and develop athletic skills, they must first develop proficiency in fundamental motor skills (8,10). Seefeldt and Ewing describes the motor skill proficiency barrier as a limitation to developing proficiency in sports and other activities if fundamental motor skill proficiency is not established by age eight (8). While many LTAD models suggest that the ABCs of athleticism be developed by incorporating fundamental motor skill into athletic development, a more explicit approach ensures that youth coaches understand that the fundamental motor skills underpin athletic skills. The ABCs, therefore, must reflect the development of fundamental motor skills first, and specific athletic skills second.

CATEGORIZING FUNDAMENTAL MOTOR SKILLS TO ESTABLISH THE ABCS

To ensure that fundamental motor skills are developed, it is helpful for coaches of youngsters to be able to identify the fundamental motor skills. While there are different ways of identifying and categorizing fundamental motor skills, one of the most common

ways to differentiate the 27 fundamental skills is by placing them into the following three categories: body management (which is part of the LTAD ABCs), locomotor skills, and object control (2,9). Table 1 delineates which motor skill corresponds to which category.

THE ABCS OF FUNDAMENTAL MOTOR SKILLS

A novel approach for coaches to be able to link the 27 fundamental motor skills with basic ABCs of movement is through the following ABCs: athletic stance, body management, and cardinal planes of motion.

A IS FOR ATHLETIC STANCE

The ABCs of movement begin with the athletic stance. The athletic stance allows coaches to help young athletes establish the correct fundamental starting position. It also helps children and adolescents understand and recognize where their body segments are in relation to other body parts and in space, which is body management. The basic position for the athletic stance is for athletes to stand with feet hip-width to shoulder-width apart in a quarter squat position. The athlete’s bodyweight should be evenly distributed through both feet so that the center of gravity is directly above the base of support. The shoulders should be level (i.e., horizontal) and anterior to the knees, with the torso flat and at a 75 degree incline. The eyes should be focused straight ahead and the chest should be “proud,” meaning that a tall (i.e., axial) posture is maintained without hyperextending the lumbar spine.

After getting beginning athletes to understand the athletic stance and how it looks in a variety of sports and activities, the hip hinge pattern can be applied to kettlebell swings, squat patterns, and deadlift patterns. For example, one way to reinforce the athletic

TABLE 1. THE 27 FUNDAMENTAL MOTOR SKILLS DIVIDED INTO THREE CATEGORIES

Balance (dynamic)	Crawling	Bouncing
Balance (static)	Dodging	Catching
Bending	Galloping	Dribbling (feet/hands)
Climbing	Hopping	Kicking
Landing	Jumping (distance/height)	Striking
Rolling	Leaping	Throwing
Stopping	Running	
Stretching	Skipping	
Swinging	Swimming	
Turning	Walking	
Twisting		

stance as the ready position is by having the athletes assume the athletic stance as the “listening stance.” To do this, the athlete is instructed to get in the athletic stance while the strength and conditioning coach explains the next exercise or while they are busy working with other athletes if it is a group training setting.

B IS FOR BODY MANAGEMENT

To begin to teach young athletes where their body segments are in relation to each other and in relation to other participants, strength and conditioning coaches can start by having young athletes assume the athletic stance and then ask them to raise their right hand. When doing so, the strength and conditioning coach should have them take note of how that changes their center of gravity (e.g., did their belly button stay centered between their feet?). As examples of body awareness exercises, the strength and conditioning coaches can then ask the athletes: “How can you adjust to keep your balance between the feet?” “How did that affect your center of gravity?,” “How much effort does it take to sit and stand?,” and “How do you swing your arms without coming into contact with anyone else in the room?”

Body management is one of the three categories of fundamental movement skills (locomotor and object control being the other two) (2). There are three types of movement awareness (9):

1. *Effort Awareness*: How much muscular effort is needed to initiate, sustain, and stop movement? Examples include climbing, lifting relative (bodyweight) and absolute (external load) weight, stopping, and balancing.
2. *Space Awareness*: How much personal or shared space is needed for successful movement? Examples include turning, spinning, and moving with others in a confined space without making contact.

3. *Body Awareness*: How the athlete’s body movements relate to other movements around them. Examples include following the leader, raising the arms overhead, and dodging.

Body management skills can be promoted by applying balance, postural control, and equilibrium in a variety of settings using various implements under several different conditions, matching the tenets of physical literacy. Physical literacy is the mastering of fundamental movement skills and fundamental sport skills that permit a child to read his or her environment and make appropriate decisions, allowing him or her to move confidently and with control in a wide range of physical activity situations (12). The concept of physical literacy is very pertinent to LTAD, as physical literacy encourages continued engagement in physical activity throughout the life course (i.e., long term) (5).

C IS FOR CARDINAL PLANES OF MOVEMENT

The “C” in the ABCs of movement is the cardinal planes of movement, which helps strength and conditioning coaches identify in which direction(s) young athletes are moving, what joint(s) of the body are being used, the muscles responsible for the joint actions, and the awareness that strength and conditioning coaches need to program movements in all three planes of motion. Table 2 provides the three cardinal planes of motion, how they are defined in relation to the body, primary joint actions used, and sample movements in that plane.

Movement programming would be easy if athletes moved in only one plane always, but that is most often not the case (3,4). The task for strength and conditioning coaches is to understand how to instruct young athletes on the fundamental movement skills and how to properly progress their movement to include combinations of fundamental motor skills in one and then multiple planes.

TABLE 2. THE CARDINAL PLANES OF MOVEMENT AND MOVEMENT IN EACH PLANE

CARDINAL PLANE OF MOVEMENT	HOW THE PLANE IS DEFINED	PRIMARY JOINT ACTION(S)	SAMPLE MOVEMENTS IN THE PLANE
Sagittal	Divides body in left and right halves Movement occurs primarily forward and back	Flexion (two joints getting closer together) Extension (the return from flexion)	Walking Running Squatting Nodding
Frontal (coronal)	Divides body in front and back halves Movement occurs primarily side-to-side or to the side	Abduction of limb(s) away from the midline of the body Adduction to return from abduction Lateral flexion of head or trunk to one side or the other	Side bends Side steps Arm flapping (airplanes) Putting in golf Pitching a baseball Yoga tree pose
Transverse (horizontal)	Divides body in top and bottom halves Movement occurs primarily across the horizon	Rotation of the trunk, hips, or shoulders	Swinging a bat Twisting Flies Cable rotation

IT IS AS EASY AS ABC

An example of how strength and conditioning coaches can incorporate these skills regularly into sports practice and strength and conditioning programs is to incorporate fundamental motor skills that match or complement the planned sport activities for that day into the warm-up activities. This method is part of an integrative neuromuscular facilitation approach, which incorporates health fitness and skills fitness activities, as well as progressive and/or remedial motor skill activities (7).

Initially, strength and conditioning coaches should focus on having young athletes demonstrate the athletic stance. Once this reference position is well-established, strength and conditioning coaches can progress youngsters to perform single-plane movements that start from the athletic stance. Once the athletes have mastered single-plane movements, strength and conditioning coaches can gradually progress to introducing movements in two planes, and then any combination of planes. The goal for strength and conditioning coaches is to teach movement mastery, which includes physical, cognitive, and proprioceptive components. The goal for young athletes is to demonstrate movement mastery. Strength and conditioning coaches can program balance, both static and dynamic, during single-plane movements using movements that appeal to children's interest in sports and in strength-based exercises. The strength and conditioning coach can build a solid foundation of movement skills through play, exercise, and sports participation. The definition of LTAD should, therefore, be extended as an evidence-based approach to increasing physical literacy throughout the life course by emphasizing the interconnectivity of muscle strength and motor skills in play, sports, physical activity, and physical education. Pre-planned, developmentally-appropriate, and sequential development of fundamental movement skills supports movement mastery (1,2,6,7,8).

REFERENCES

1. Balyi, I, Way, R, and Higgs, C. Long-Term Athlete Development. Chicago, IL: Human Kinetics; 2013.
2. Council for the Curriculum, Examinations, and Assessment. Physical Development and Movement. Retrieved March 31, 2017 from http://ccea.org.uk/curriculum/foundation_stage/areas_learning/physical_development_movement.
3. Faigenbaum, A, Kraemer, W, Blimkie, C, Jeffreys, I, Micheli, L, Nitka, M, et al. Youth resistance training: Updated position statement paper from the National Strength and Conditioning Association. *The Journal of Strength and Conditioning Research* 23(suppl 5): S60-S79. 2009.
4. Haff, G, and Triplett, T. *Essentials of Strength Training and Conditioning*. (4th ed.) Champagne, IL: Human Kinetics; 2015.
5. Lloyd, R, Cronin, J, Faigenbaum, A, Haff, G, Howard, R, Kraemer, W, et al. National Strength and Conditioning Association position statement on long-term athletic development. Official position stand of the National Strength and Conditioning Association. *The Journal of Strength and Conditioning Research* 30(6): 1491-1509, 2016.
6. Lubans, DR, Morgan, PJ, Cliff, DP, Barnett, LM, and Okely, AD. Fundamental movement skills in children and adolescents: Review of associated health benefits. *Sports Medicine* 40(12): 1019-1035, 2010.
7. Myer, G, Faigenbaum, A, Ford, K, Best, T, Bergeron, M, and Hewitt, T. When to initiate integrative neuromuscular training to reduce sports-related injuries in youth? *Current Sports Medicine Reports* 10(3): 155-166, 2011.
8. Seefeldt, VD, and Ewing, ME. Patterns of participation in American agency-sponsored youth sports. In: Smoll, FL, and Smith, RE (Eds), *Children and Youth in Sport: A Biopsychosocial Perspective*. (2nd ed.) Dubuque, IA: Kendall/Hunt; 39-56, 2002.
9. Sport New Zealand. Developing fundamental movement skills. Retrieved April 1, 2017 from www.sportnz.org.nz/managing-sport/search-for-a-resource/fundamental-movement-skills.
10. Stodden, D, and Brooks, T. Promoting musculoskeletal fitness in youth: Performance and healthy implications from a development perspective. *Strength and Conditioning Journal* 35(3): 54-62, 2013.
11. USA Hockey. American Development Model. Retrieved April 1, 2017 from <http://www.usahockey.com/page/show/1592529-american-development-model>.
12. Whitehead, M. *Physical Literacy: Throughout the Lifecourse*. London, England: Routledge; 2010.

ABOUT THE AUTHOR

Rick Howard helped start the National Strength and Conditioning Association (NSCA) Youth Special Interest Group (SIG) and served this year as Immediate Past Chair. In addition, Howard serves on the NSCA Membership Committee and is the NSCA State/Provincial Program Regional Coordinator for the Mid-Atlantic Region. Howard is involved in many pursuits that advance knowledge, skills, and coaching education to help all children enjoy lifelong physical activity and sports participation.



MONITORING THAT GOES BEYOND MOVEMENT.

Zephyr™ Performance Systems

Speed and distance. Mechanical loads and intensities. These are important factors in an athlete's performance. But they're not the only ones.

That's why we developed Zephyr™ Performance Systems. GPS devices effectively monitor biomechanical factors. But our system is a single solution that measures both the biomechanical and the physiological. It:

- Measures cardiovascular impact
- Offers the most metrics in the industry
- Assesses teams or individual athletes — up to 100 at a time

So you can monitor the total athlete, from inside to out — and help achieve optimal performance.

Learn more at [ZephyrAnywhere.com](https://www.zephyranywhere.com)