Developing the Volleyball Spike Using Gentile's Taxonomy of Tasks

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Often the classification of sport skills has been described with a single dimensional continuum ranging from one extreme to another. The most cited classification system used for developing sport skills deal with the stability of the environmental context ranging from closed to open skills. (Magill, 2007, p. 11) In closed sport skills the environment is stable and the performer acts upon or initiates the movement. In volleyball, the serve is a good example of a closed sport skill. At the other end of the continuum, are open sport skills where there is variability in the unstable environment. With open skills, variability of movement can be based on the movement of the performer, an object, or both. The spike is an excellent example of an open sport skills since there are so many variables involved with the performance of the skill. When teaching volleyball skills, one should consider the open/closed dimension when setting up instructional and practice conditions. However, because of the complex nature of most motor skills, Gentile (2000) proposed a two-dimensional classification system for teaching motor skills. Since motor skills are range from simple to complex, Gentile expanded the popular one dimensional classification system to include the environmental context of closed and open skills along with, the function of the action of the skill. **The purpose of this article is to present Gentile's taxonomy of motor tasks, and to specifically illustrate the taxonomy for developing the complex skill of spiking.**

Gentile's taxonomy consists of two general categories called the environmental context and the function of action. These two general characteristics are further broken down into four other characteristics to comprise sixteen different skill categories. When first considering the

environmental context of volleyball skills, one must determine the relevant features that determine the type of movement necessary for the skill to be performed. According to Gentile (2000) these relevant features or "regulatory conditions" can include objects and/or other people in the environment. Regulatory conditions have a direct effect on one's movement. For an example of how regulatory conditions affect one's movement, consider the flight of a served volleyball and how that "regulates" how the serve receiver must move to pass the ball successfully. Regulatory conditions in the environment may be either stationary, "closed sport skills" or in motion, open sport skills. The server would be an example of performing a closed skill whereas the serve receiver would be an example of performing an open skill. Regulatory conditions may change from trial to trial or be constant. For example, a served ball from a serving machine could produce the same type of serve each time, thus no intertrial variability for the serve receiver. However, if a teammate was told to serve different types of serves each time, this would provide intertrial variability providing a more difficult movement requirement.

The second part of Gentile's taxonomy deals with the function of the action which includes body orientation and object manipulation. Body orientation includes body stability or body transport while manipulation of an object is present or absent. Skills that require body transport and object manipulation are more complex than no body transport and no object manipulation since more variables are involved for a successful skill attempt. "When the learner must manipulate an object, the skill increases in complexity because the person must do two things at once. The learner must manipulate the object correctly, and adjust the body posture to fit the efficient movement of the object" (Adams, 199, p.35). If body transport is involved, it makes the skill even more difficult. Jump serving is a good example of a complex skill requiring both body transport and object manipulation.

Table 1 provides an overview with the combination of the four possible environmental features along with the four possible function of the actions to create 16 different movement categories. The complexity of the skills becomes more difficult as a performer moves from the top left box (the simplest skill) to the lower right-handed box (the most complex skill). Since spiking is one of the most complex skills of volleyball, that skill will be broken down to the sixteen different categories to illustrate how the taxonomy can be used for teaching skill progression from simple to complex.

TABLE 1

Action Function	Body Stability		Body Transport	
	No Manipulation	Manipulation	No Manipulation	Manipulation
Environmental Context				
Stationary No Intertrial Variability	1. Standing on a stand in one place, practicing the arm swing without a ball.	2. Standing on a stand in one place, practicing the arm swing hitting a ball out of coach's hand.	3. Practice the entire spiking approach without a ball	4. Practice the entire spiking approach, hitting a ball out of the coach's hand.
Stationary Intertrial Variability	5. Standing on a stand in one place, practicing different types of arm swings for different types of outside hits, without a ball.	6. Standing on a stand in one place, practicing different types of arm swings for different types of hits with a ball.	7. Practicing the entire spiking approach, practice different types of arm swings for different types of hits without a ball	8. Practicing the entire spiking approach, practice different types of arm swings for different types of hits, hitting a ball out of the coach's hand

In Motion No Intertrial Variability	9. Hitter placed on a stand at the net in the outside hitting area, practicing cross court shot without the ball against a stationary block.	10. Hitter placed on a stand at the net in outside hitting area, practicing cross court shot hitting the ball against a stationary block.	11. Hitter mock approaches from the outside hitting area, practicing cross court shot against a stationary block.	12. Hitter approaches from the outside hitting area, practicing a cross court shot against a stationary block.
In Motion Intertrial Variability	13. Hitter is placed on stand in various positions along the net, due to various types of sets, practicing the arm swing w/o ball against live blockers	14. Hitter is placed on stand in various positions along the net, due to different type of sets, practicing the arm swings hitting the ball against live blockers	15. From serve receive, the hitter practices various mock hitting approaches against live blockers.	16. From serve receive, the hitter passes the ball and then comes in for various types of hits against live blockers.

Gentile's Taxonomy of Motor Tasks has proven to be effective in the teaching setting, and has definite advantages for coaching young players in volleyball skill development. Applying Gentile's taxonomy provides a basis for performance evaluations to determine where players are at developmentally. The taxonomy also provides a systematic progression of functionally appropriate activities. And it also allows for charting individual progress of players as they work towards specific performance goals. (Magill, 2007, p.30) This article explains and illustrates the two areas formed from Gentile's taxonomy; the environmental context and the function of action. These two dimensions include four separate conditions, creating 16 different categories. Since spiking is such a complex skill, it is used to illustrate how the taxonomy works. Spiking is broken down into the 16 possible progressions for learning the skill in a practice

setting ranging from simple to complex. This same development of progressions could be created for other volleyball skills such as the forearm pass, the set, the serve, the dig and the block. Proper progression for the development of all the basic skills of volleyball will help insure proper teaching, learning, and practice conditions for players.

References

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