Modifications for Students with Broca's Aphasia in Physical Education

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Students with the condition known as aphasia present certain challenges for the physical education teacher. Yet, as is the case for all students, those students with aphasia clearly benefit from active participation in physical education. The paper will identify the definition and characteristics of the most common form of aphasia (Broca's aphasia) and present ways to modify activities for children with this disorder.

Definition and causes of Broca's Aphasia

Aphasia is defined as "an impairment of language, affecting the production or comprehension of speech and the ability to read or write" (National Aphasia Association, 2018). The most common form of aphasia is a subtype known as Broca's aphasia (National Institute on Deafness and Other Communication Disorders, 2017) which was first described by the French physician Pierre Paul Broca in 1861 (Aninda & Wroten, 2023). Broca's aphasia causes difficulty with fluent, spontaneous speech although . . .

> comprehension can be relatively preserved. [People with this condition have] . . . difficulty producing grammatical sentences and their speech is limited mainly to short utterances of less than four words. Producing the right sounds or finding the right words is often a laborious process. Some persons have more difficulty using verbs. This type of aphasia is also known as non-fluent or expressive aphasia. (National Aphasia Association, 2024).

Further, although people with this condition have difficulty repeating phrases spoken to them, their words in their responses are often intelligible and contextually correct and their comprehension is intact. Nonetheless, people with Broca aphasia "are often very upset about their difficulty communicating" (Aninda & Wroten, 2023).

Aphasia is almost always due to injury to the brain, most commonly from a stroke, though aphasia may also arise from head trauma or from infections (National Aphasia Association, 2018). In addition to traumatic brain injury Broca's aphasia can also be caused by tumors (Medical News Today, 2023) or by epilepsy (Medscape, 2017).

Characteristics of Broca's Aphasia

The largest part of the brain, the cerebrum, is divided into the right and left hemispheres with the right hemisphere controlling the left side of the body and vice-versa (SSM Health, 2024). Further, the cerebrum has four distinct lobes (frontal, temporal, parietal and occipital) each of which have different functions. The frontal lobe is involved in, among other things, language and motor function (SSM Health, 2024). "Language function" is considered to be found in the left hemisphere in "96 to 99% of right-handed people and 60% of left-handed people" (Aninda & Wroten, 2023). Since Broca's aphasia primarily affects the frontal lobe of the brain, and since the effect is in the left hemisphere in most people, individuals with Broca's often experience right-sided weakness or paralysis of the arm and leg in addition to their difficulty with speech (National Institute on Deafness and Other Communication Disorders, 2017).

A person with Broca's aphasia may also have other neurological characteristics including apraxia - the loss of ability to perform skilled movements or gestures with the right side of the body and/or weakness on the right side of the body (Medical News Today, 2023). Young children are better off than adults when it comes to dealing with aphasia because in young children specialized areas of the brain have not developed. Thus, if the aphasia is due to trauma, the plasticity of the brain allows tasks to be performed by other areas of the brain (Anderson, et al, 2009).

Modifications in Physical Education for students with Broca's Aphasia

When teaching a student with Broca's aphasia, teachers must address the characteristics of Broca's aphasia, namely, weakness on the right side of the body and apraxia. It is important to understand that the individual characteristics of the student with this disorder may vary. However, some general recommendations are included here.

(1) Tactile, hand-over-hand practice can be beneficial in addressing weaknesses on the right side of the body and apraxia. For example, a teacher can, with their hand, manipulate the hand of the student to assist in performing skills such as catching. Assisting the student in positioning the hand and arm can help improve the kinesthetic awareness of the student.

(2) Equipment choice is important. Because the hand may be weak, grasping can be difficult. Teachers can use items such as velcro pads when teaching catching skills. Also, using lightweight balls are preferred to reduce the force needed to catch the ball. Although we often ask students to progressively increase distances from a partner when throwing and catching, we should allow students with this condition to remain at a "comfortable" distance – one which does not unduly stress the affected limb in either throwing or catching. Different textures in balls will allow a student to choose the ball with which they feel most comfortable and successful.

(3) Teachers can allow the student to use a walking stick when needed. This will help support their weaker right side while allowing them to remain physically active.

(4) If the student is unable to use the right side of the body effectively, then developing skills on the left side of the body can be a next step. Thus, when teaching manipulative skills such as throwing or kicking a ball, the teacher can stress practicing with the left arm or left leg.

(5) When a skilled Physical Educator demonstrates a skill, he/she can be expected to perform at an advanced level. Low-skilled students, particularly those with Broca's, may experience

frustration because they feel they will never be able to achieve a motor performance at that high a level. Thus, it can be useful to allow classmates to demonstrate skills because their performance will be much closer to the capabilities of the student with aphasia.

(6) Due to language difficulties associated with Broca's, visual demonstration of skills and skill practice drills is particularly important for students with this condition. Further, teachers should plan to take extra time to explain movement modifications to the student who has aphasia. When talking with someone with aphasia, it is helpful to "maintain a normal rate and volume. Questions should be simple. It is preferable to ask yes or no questions rather than open-ended ones requiring a lengthy answer" (Aninda & Wroten, 2023). This combination of visual demonstration coupled with extra verbal description should be an intentional part of the teachers' lesson planning.

(7) Students with aphasia will generally be less motorically capable than most, if not all, of their classmates. Their motor learning comes with greater difficulty and a greater amount of time and effort. Due to this, they will not compare well with other students in competitive situations. Therefore, teachers should strive to emphasize cooperation rather than competition as much as possible.

(8) We know that all students need to experience initial success when learning motor tasks, yet the characteristics of aphasia/apraxia make this difficult. Following the lines of thought just expressed, teachers must be cognizant of the level of difficulty inherent in the tasks they teach and modify accordingly. For example, if teaching throwing or doing other "target" tasks, making the target larger or allowing the student to stand closer will increase early success. Since students with Broca's will have comparatively greater difficulty in motor learning than most/all of their

peers, this early success is particularly important to help boost their confidence and motivation to continue practicing the skill.

Summary

Broca's aphasia is characterized by difficulties in speech, language recognition, decreased limb strength on the right side of the body, and generally low motor ability. Yet the benefits of active participation in Physical Education to children, including children with Broca's Aphasia, are noteworthy. It is very possible that any teacher will have the opportunity to work with a student who has Broca's aphasia. Helpful modifications to use in Physical Education classes include:

- Hand-in-hand kinesthetic practice of fine motor skills.
- Allow the use of a variety of sizes and textures of equipment (light-weight balls, velcro pads, etc.).
- Allow use of a walking stick when needed during activities.
- Teach the ability to perform ball skills with the left side of the body.
- Allow peers to demonstrate skills.
- Provide extra visual demonstration of skills and skill drills.
- Stress cooperation, not competition.
- Emphasize early successful motor trials to increase confidence and adherence.

With these modifications in mind, Physical Education teachers can provide greater success and enjoyment for students with Broca's aphasia.

References

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