An Adapted Aquatics Assessment Inventory and Curriculum

by R.R. Goyakla Apache, Phil Hisey, and Laura Blanchard

The Lone Star Adapted Aquatics Assessment Inventory and Curriculum (LSAA) was created as a result of attempts to meet varied, unique, and individual needs of students served in a metropolitan school district in Lubbock, Texas. Prior experience utilizing other established aquatic programs such as American Red Cross Learn to Swim, failed at being easily modified and applied to students with disabilities. Students, represented by the majority of recognized disabilities in every age group from 3-21 years, are provided adapted aquatics services. This aquatics program was based on two primary concepts—developmental appropriateness and sequential motor development concepts.

LSAA contains not only a curriculum, but an assessment inventory. In terms of motor development sequencing, the curriculum and assessment inventory are connected through the seven levels of curriculum. Therefore, at each level, an associated curriculum program allows a student to progress to the next level.

Program

LSAA was developed by three graduate-level adapted physical educators and reviewed by six additional graduate-level adapted physical educators for content validity. All of these adapted physical educators had a minimum of two years of experience providing adapted aquatic services.

The purpose of this article is to provide information on a unique aquatics program. The primary characteristic of the program is its adaptability to multiple disability levels and ages. Other aquatics programs expect to instruct students based on ability levels, regardless of age, and have all students progress through the program in specific amounts of time (Bloomquist, 1997; Doremus, 1992; Koury, 1996). The LSAA program, however, provides individualized instruction with student progress determined by each student’s own successes.

Curriculum and Assessment Inventory

The purpose of the assessment component was to assist instructors in determining and developing appropriate goals and objectives for each student (Lepore, Gayle, & Stevens, 1998). There are seven assessment levels, including an initial assessment for placement and a safety assessment. Initial assessment is a quick 10-minute evaluation to place a student at a skill level which can be further assessed and defined. Each assessment level denotes a set collection of activities indicating each student’s current skill level. At a particular level, each student possesses similar skills and movement patterns. However, this is not based on the age of a student. Students of varying ages may test at a particular skill level, with appropriate curriculum provided. Curriculum activities developed for each assessment level were devised to assist students to obtain necessary prerequisite skills needed to advance from one level to another. The curriculum is based on an educational model subse-
quently defined by Lepore, Gayle, and Stevens (1998). Goals derived from the curriculum include enhancing a student’s ability to perform basic swim skills, tread water, change directions, and survive. Assessment items are basically specific skills needed to advance to higher proficiency levels in swimming skills and water survivability. The development of assessment items within the LSAA provide levels of needs within the curriculum and vice versa.

Independent of a student’s age is the assessed skill demonstrated by each student as manifested by unique attributes and disabilities such as cognitive status, physical capabilities, and health. Criteria for advancing from one curriculum level to another include (a) competence with curriculum level activities, (b) mastery of curriculum components denoted by consistent performances, and (c) observable progression, with emphasis on personal water survivability and safety. The following examples illustrate the initial screening assessment and the seven assessment and curriculum levels (see Figures 1-8).

Developmentally-Appropriate Practice

Developmentally-appropriate practice, in keeping with recognized professional standards (Boos, 1993; Bredekamp, 1992; Grineski, 1992; Helion & Fry, 1995; NASPE, 2000a; NASPE, 2000b), consists of four major components—the lesson or program must (1) be age-appropriate; (2) be individually-appropriate; (3) lead to effective learning; and (4) be designed to progress in an orderly progression towards goals.

Age Appropriateness

Age of the student participating in this aquatics curriculum program is an integral part in its overall success. Considerations include (a) understanding variability of motor skill level among same-aged students, (b) recognizing differences of and appropriate uses of teaching cues and language utilized by instructors with students of various ages, (c) selecting an appropriate instructional method suitable for the student’s age, and (d) recognizing maturity and socialization age of each student.

Curriculum activities can be adapted for appropriate ages and abilities. A six-year-old may learn best by exploration, as one example. Therefore, the instructor could offer multiple activities for this student to explore, while also selecting activities based on designated goals. In a sense the instructor is manipulating the environment and play activities to encourage skill development in an area crucial for advancing in swim skills, such as submerging the face in water and breathing. Likewise, it may not be age-appropriate for a 16-year-old student to use kiddie straws to blow bubbles while learning to hold his/her breath. A more age-appropriate teaching scheme might involve structured breathing exercises. Students in mid-range skill levels which require competence in rhythmic breathing may demonstrate wide variances in the skill. Adaptations for each student would need to be made, taking into account the student’s skills and age, while at the same time sequencing activities towards advancement of skills.

Individual Appropriateness

Students come in all variations of shapes and sizes. Differences among individual students encompass not only physical attributes, but cognitive abilities, learning styles, vocabulary usages, temperaments, and background experiences. Same-aged students can vary in these attributes. The curriculum allows for individualized instruction based on assessment findings and student needs. If several fourth grade students were being instructed at the same
time, the instructor has the option of providing individualized instruction, even if all students were working on similar tasks. A class of fourth graders working on the front crawl are demonstrating various proficiencies with respect to placing their faces in the

**LSAA Level 2 Water Adjustment Skills**

<table>
<thead>
<tr>
<th>Criteria</th>
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<tbody>
<tr>
<td>1. Walks into wading pool without assistance.</td>
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<tr>
<td>2. Sits in wading pool or on steps.</td>
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<tr>
<td>3. Splashes water while seated in pool.</td>
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<tr>
<td>4. Kicks water with no assistance while seated.</td>
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<tr>
<td>5. Touches chin to water.</td>
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<tr>
<td>6. Touches ear to water.</td>
</tr>
<tr>
<td>8. Accepts water poured over head.</td>
</tr>
<tr>
<td>9. Walks around in shallow end of pool for 3 minutes.</td>
</tr>
<tr>
<td>10. Walks out of pool unassisted.</td>
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</table>

**Curriculum Activity Level 2**

**Activities (activities progress until criteria are met)**

1. Reaches down for objects in wading pool while standing.
2. Reaches down for objects in shallow end of pool.
3. Sits at edge of pool and propels floating items with forced water by kicking.
4. Sits on edge of pool and alternates flutter kicks and scissor patterns.
5. Uses straws to blow floating items away.
6. Walks in at steps, retrieves objects placed on each step.
7. Stands on steps and throws small balls into a floating basket.

**LSAA Level 3 Beginning Aquatic Skills**

<table>
<thead>
<tr>
<th>Criteria</th>
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<tbody>
<tr>
<td>1. Sits in the wading pool and reaches for objects.</td>
</tr>
<tr>
<td>2. Puts face in water while keeping eyes open.</td>
</tr>
<tr>
<td>3. Lies in a prone position with hands and knees on bottom of wading pool (alligator position).</td>
</tr>
<tr>
<td>4. Places face in water while in alligator position, holding breath for 10 seconds.</td>
</tr>
<tr>
<td>5. Kicks legs while in alligator position.</td>
</tr>
<tr>
<td>6. Reaches for objects while in alligator position.</td>
</tr>
<tr>
<td>7. Moves around the wading pool while in alligator position.</td>
</tr>
<tr>
<td>8. Floats prone with assistance for 2 minutes.</td>
</tr>
<tr>
<td>9. Floats supine with assistance for 2 minutes.</td>
</tr>
<tr>
<td>10. Climbs out of wading pool unassisted.</td>
</tr>
</tbody>
</table>

**Curriculum Activity Level 3**

**Activities (activities progress until criteria are met)**

1. Sits on small innertube in wading pool.
2. Uses innertubes as kickboards in wading pool.
3. Uses noodles for various activities.
4. Plays catch with peers or staff and retrieves dropped balls from bottom of wading pool.
5. Walks around wading pool in crab position.
6. Uses noodles to promote supine float.
7. Uses noodles to promote prone float.
8. Performs exercises in the wading pool area: (i.e., arm circles, arm lifts, arm flutters).
9. Performs flutter kicks and scissor kicks while seated on side of wading pool (shallow end).
10. Performs flutter kicks and scissor kicks while holding onto side of wading pool.
11. Stands in the middle of wading pool and performs upward bobbing thrusts to propel self.

*Figure 3.*

*Figure 4.*
designed to focus on developing one or more of the skills required. Lower levels emphasize introducing breathing while the face is submerged and ability to float. Additionally, lower levels lay ground work for positive interactions with the water environment.

The LSAA curriculum emphasizes fun in the water with advancement of skills and positive emotional experiences. Middle levels emphasize strength development in both arms and legs, as well as in postural controls. Higher levels promote integrating skills into functioning swim patterns through repetition.

Goal Oriented

The main premise of this aquatics program was to create a curriculum and assessment inventory to meet needs of students with disabilities, regardless of disability levels or ages. Goals, in terms of what constitutes a developmentally-appropriate practice, can be defined on an individual basis. While it may be considered the ultimate goal of LSAA to enhance swimming skills, it is not necessarily the goal for every student. Versatility of the program lies within the curriculum and instruction. A student might be involved in the program with the goal of learning to swim, while another student seeks increased physical fitness. Both could be acceptable outcomes of the program. However, on an individual basis, there must be allowance for individual goals and short-term objectives.

Implementation Procedures

An initial screening assessment eases placement decisions, (see Figure 1). A student’s performance on the assessment automatically dictates the appropriate level for the student to begin in the program. For each assessment level progress can be noted in terms of degrees of performances, verbal cues required, amounts of physical assistance needed, and achievement levels. This allows an instructor to gauge progress. Advancing a student from one level to the next need not be considered on an all or none basis. If a student is making appropriate progress but requires greater challenge to maintain motivation, while not completing all components of a level’s assessment, it should be at the discretion of the instructor to decide on advancement issues. LSAA is not a concrete and unchangeable curriculum demanding the same activities for all students in specific levels, but rather encourages individualized accommodations and modifications. The curriculum provided for each assessment denotes a sample of activities designed to assist a student acquire necessary prerequisite skills required for successes in skills outlined in the assessment. Variations of curriculum activities can be made with respect to equipment (Stopka, 2001a, 2001b, 2001c), instructional methodologies, and individual student needs.

An additional safety assessment was included to help introduce students to concepts of water safety and survival (see Figure 9). With increased availability of home pools (above or below ground), access to public pools, lakes, and rivers, families have increased opportunities for aquatics recreation. Teaching students about water safety and survival are necessary components of any aquatics program.

Conclusion

The adapted aquatics program discussed was a result of a commitment from the local school district in providing facilities, resources, and staff to serve students with disabilities. LSAA was initially implemented in the 1996/97 academic school year. During
## LSAA Level 5 Low—Intermediate Aquatics Skills

<table>
<thead>
<tr>
<th>Criteria</th>
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<tbody>
<tr>
<td>1. Floats supine unassisted for 1 minute.</td>
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<tr>
<td>2. Glides prone and flutter kicks a minimum of 40 feet.</td>
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<tr>
<td>3. Glides prone and flutter kicks with front crawl arm strokes for 5 strokes with both arms.</td>
</tr>
<tr>
<td>4. Glides supine and flutter kicks a minimum of 40 feet.</td>
</tr>
<tr>
<td>5. Glides supine and flutter kicks with backstroke arm pull for 40 feet.</td>
</tr>
<tr>
<td>6. Glides underwater for 10 feet.</td>
</tr>
<tr>
<td>7. Holds onto side of pool (or uses a noodle) and flutter kicks alternating face in and out of water (rhythmic breathing) for 1 minute.</td>
</tr>
<tr>
<td>8. Climbs out of pool by pulling self over edge of pool.</td>
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</table>

## Curriculum Activity Level 5

**Activities (activities progress until criteria are met)**

1. Uses a noodle to assist while propelling supine.
2. Uses a kickboard to propel prone with flutter kicks.
3. Uses a kickboard to propel prone and holds with one hand while other hand performs arm strokes.
4. Plays catch with peers or staff and retrieves dropped balls from bottom of 5-6 foot deep end of pool.
5. Walks around 5-6 foot deep end of the pool while using a flotation belt.
6. Uses noodles while performing deep water (5-foot depth) exercises.
7. Uses noodles while in seated position to perform cycling drills.
8. Performs stretching exercises in the 5-6 foot deep end of pool area (arm circles, arm lifts, arm flutterers).
9. Performs flutter kicks and scissor kicks while supported with flotation device.
10. Performs flutter kicks and scissor kicks while holding onto side of pool.
11. Treads water near side of pool in 5-6 foot deep end.

Figure 6.

the first year approximately 445 students with disabilities were served. The initial screening assessment was a direct result of analyzing performance markers of over 1,300 students served during the first three years. Data collection on students matriculating through the program is ongoing.

Modifications to this program can easily be made to accommodate any local facility, regardless of whether it is a therapeutic or regular pool. The main premise of this aquatics program was to create a curriculum and assessment inventory to meet needs of students with disabilities, regardless of disability levels or ages. Program curriculum can be administered on daily or weekly bases, depending on instructional formats and scheduling constraints. With this program, every student with a disability can be provided adapted aquatics services with results based on individual attributes and efforts, and without expectations that all students learn to swim in a specific time period or through the same instruction.

## LSAA Level 6 High—Intermediate Aquatics Skills

<table>
<thead>
<tr>
<th>Criteria</th>
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<tbody>
<tr>
<td>1. Floats supine for 2 minutes.</td>
</tr>
<tr>
<td>2. Floats prone for 2 minutes.</td>
</tr>
<tr>
<td>3. Switches back and forth from supine float to prone float for 2 minutes.</td>
</tr>
<tr>
<td>4. Glides underwater with arm strokes for 15 feet.</td>
</tr>
<tr>
<td>5. Glides underwater with leg kicks for 15 feet.</td>
</tr>
<tr>
<td>6. Performs front crawl with rhythmic breathing for two lengths of the pool.</td>
</tr>
<tr>
<td>7. Performs a backstroke for two lengths of the pool.</td>
</tr>
</tbody>
</table>

## Curriculum Activity Level 6

**Activities (activities progress until criteria are met)**

1. Practices basics of supine float with gentle movements of the arms.
2. Floats prone with gentle movements of the arms.
3. Maneuvers from one end of pool to the other utilizing only floating positions and gentle movements of the arms.
4. Glides underwater using leg kicks to retrieve objects.
5. Glides underwater using arm strokes to retrieve objects.
6. Performs front crawl with rhythmic breathing for progressively extended laps in the pool.
7. Performs backstroke while having legs hanging over outside edge of pool.
8. Performs backstroke for length of pool (progressively increasing number of laps).

Figure 7.

## Selected References


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LSAA Level 7 Advanced Aquatic Skills

Criteria
1. Treads water for 5 minutes.
2. Switches back and forth from supine float to prone float for 3 minutes.
3. Performs front crawl with rhythmic breathing three lengths of pool.
4. Performs backstroke three lengths of the pool.
5. Demonstrates a kneeling dive, off side of pool.
6. Glides underwater with arm strokes/leg kicks for 25 feet.
7. Demonstrates a standing step-off (jump) from the deck of the deep end of pool.

Curriculum Activity Level 7

Activities (activities progress until criteria are met)
1. Practices basics of supine float with gentle movements of the arms for extended time periods (1-2-3-4 minutes).
2. Floats prone with gentle movements of the arms in similar progressive time lengths.
3. Uses a kickboard to propel self for progressively extended lengths of the pool (1 lap, 2 laps, 3 laps).
4. Glides underwater for increasing distances.
5. Glides underwater using arm strokes to retrieve objects.
6. Performs front crawl with rhythmic breathing for progressively extended laps in the pool.
7. Performs backstroke with arms only while having legs hanging over edge of pool for progressively longer time periods.
8. Performs backstroke for progressively extended laps.

Figure 8.

LSAA Level 8 Safety Assessment

Criteria
2. Knows running around pool is not allowed.
3. Understands no one should ever swim alone.
4. Sits in circle or on benches waiting to enter pool.
5. Walks down entry ramp.
6. Exits pool by entry ramp.
7. Sits safely in wading pool.
8. Steps out of pool by way of wading pool.
9. Sits safely on steps.
10. Walks along the pool wall inside the pool.
11. Uses the wall as a safety shield for support.
12. Climbs out of pool by ladder.
13. Locates life preserver ring quickly.
14. Throws life preserver ring out to staff in the pool.
15. Locates lifesaving pole quickly.
16. Takes lifesaving pole off rack and reaches out to staff in the pool.
17. Remains calm and controlled while performing lifesaving practice skills.
18. Knows how to call 911.

Figure 9.