A Private vs. Community Aquatic Programming Comparison

Terry Shannon, Ph.D.
Health, Leisure, and Sport Studies
Oral Roberts University

Abstract
The purpose of this study was to investigate if instructors in a private aquatic training program can advance students to the point of optimal readiness to achieve aquatic skills more quickly than instructors from a community aquatic training program. In this study, the Aquatic Readiness Assessment (ARA) was utilized for determining optimal readiness for advancement in aquatic education which potentially may lead to a safer aquatic experience. The students were divided into two groups and scored by five instructors designated by the aquatic training program they attended for lessons. The first sixty students who scored below twenty-seven on the ARA in each facility were assigned to stage one of the aquatic program. This assured that all students began at the same aquatic skill level. A pre-test and post-test were administered, with three weeks between each test. The private program advanced thirty-eight students to level two with an average score change of 6.82, while the community program advanced forty-seven students to level two with a score change of 7.13. The results were not significantly different in scores among advancing students to level two. The results did demonstrate an improvement among the students at both facilities and showed the value of aquatic training.
## Introduction

Children have long been measured by their ability to achieve certain physical milestones based on a developed maturation level. When examining physical ability, Gallahue and Ozmun (1989), stated that a child’s biological age provides a rough guide of developmental level (Brady, 2004). In contrast, Magill’s (1988) Optimal Readiness Theory (ORT) states that a child is ready to learn a skill when maturation, prior experiences and motivation coincide (Smoll, Magill & Ash, 1988). Therefore, a four-year old child may be able to jump on one foot, but actually may have reached the physical milestone earlier yet not given the opportunity to indicate the skill at a younger age (Scurati, Michielon, Longo, & Invernizzi, 2010). There is very little evidence to suggest that the readiness to learn specific motor skills can be identified through biological maturation (Scurati, Michielon, Longo, & Invernizzi, 2010; Smoll, Magill, & Ash, 1988). Applied to this study, the ORT will consider the instructor’s view of the optimal readiness period for children in a private program versus a community program to indicate their aquatic readiness to move from one level of an aquatic training to the next (Blanksby, Parker, Bradley, & Ong, 1995).

Blanksby, et al. (1995) determined that successful achievement of skills is not dependent on the earliness of instruction but on the timeliness of that instruction. Specific indicators such as water orientation, water entry, and/or breath control can be examined to determine a child’s readiness to achieve aquatic skills. Research has suggested that learning is more rapid and more enjoyable when readiness exists (Aicinena, 1992).

In this study, the Aquatic Readiness Assessment (ARA) method was utilized for determining optimal readiness based on instructor’s scores of the students in a private versus community programs. The ARA contains nine components which relate to Magill’s ORT in the following manner: (1) water orientation, (2) water entry and (3) breath control components consider a student’s motivation to approach the water, enter/exit the pool voluntarily, and ability to control their breathing. These correspond to Magill’s (1988) definition of motivation which includes the confidence level of the student. The ARA
components of (4) buoyancy/flotation and (5) body position in a water environment relates to Magill’s category of prior experiences (see Figure 1). Finally, Magill’s (1988) category of maturation umbrellas the final four components of the ARA’s physical categories of (6) arm propulsion, (7) arm recovery, (8) leg action, and (9) combined movement. Magill’s ORT states that maturation, prior experience, and motivation must all be present and are co-dependent upon one another to predict readiness in a student (Scurati, Michielon, Longo, & Invernizzi, 2010; Smoll, Magill, & Ash, 1988). In Costa et al. (2012), instructors scored the instrument based upon their observation of the student’s ability to complete the required aquatic skills to indicate that student’s optimal readiness to advance from one aquatic skill level to another.

![Figure 1. The Relationship of Optimal Readiness Theory (Smoll, Magill and Ash, 1988) = Aquatic Readiness Assessment (Costa et al., 2012; Langendorfer & Bruya, 1995).](image)

Both programs of instruction focus on aquatic skill improvement, yet there are discrepancies in cost, class size, and availability of classes. Private programs are typically higher in cost and will limit class size to small groups of less than four students or provide individual instruction (Miller Swim...
Community programs rarely have groups with less than ten students, and almost no individual training opportunities (YMCA, 2014). Private programs offer classes year round (Miller Swim School, 2014), while community programs are typically seasonal (YMCA, 2014).

**Literature Review**

**Optimal Readiness**

The ORT states that the key to success in development does not lie in how early a participant gets involved in a particular activity, but rather the correct timing that focuses on the period of optimal readiness. What some swimming instructors may interpret as poor skill or lack of future potential may actually be a lack of optimal readiness (Smoll, 1988).

Optimal readiness is heavily dependent upon motivation as a factor. Magill (1988) defines motivation as a state of being energized to engage in an activity. Ausubel (1968) proposed that simply introducing the participant to an activity may increase the motivation to learn the new skill and foster the interest necessary to produce the intrinsic value that promotes motivation. However, Aicinena (1992) indicated that a participant should express a desire to participate in an activity and that expression should be independent of external influence. Pierce, Cameron, Banko, and So (2012) and Abuhamdeh and Csikszentmihalyi (2012) agreed that a participant will be intrinsically motivated by a balance of challenges and skills. Aicinena (1992) further proposed that a participant with a sibling or friend who engages in the activity will demonstrate a higher level of motivation to attempt the activity.

Maturation, also referred to as developmental age, is another important factor in determining readiness in a participant. While developmental age or maturation is significant, it often does not correspond with chronological age. Purcell (2005) discussed that sport readiness involves the evaluation of the participant’s cognitive, social and motor development to determine ability and maturation. In addition, Malina (1988) discussed the connection of maturation and motivation. Malina (1988) stated that “both biological and social factors contribute to the development of athletes beginning very early in life” (Smoll, 1988). Also, Malina (1988) determined that while “training” for a sport can affect bone, tissue
and fat content; there is no influence on stature, skeletal or sexual maturity in a child’s development. Therefore, he concludes that participation should not be determined by biological age rather by maturation displayed. Langendorfer and Bruya (1995) agreed that age is a very poor predictor of when a child can learn to swim or perform any motor skill and maturation should therefore drive the decision regarding a child’s participation in an activity. Rogers, Morris, and Moore (2008) concluded that better learning with less training will result when the child’s maturation level is adequate for the skill to be learned. Choi, Seongkwan and Jinyoung (2013) confirmed this conclusion and stated that evidence indicates that the key to success in a sport lies in the child getting involved when he or she is optimally ready to get involved.

The third element of ORT is prior experiences. Magill (1988) states that evidence exists that early exposure contributes to differences in skills as varied as violin training and infant swim programs. Although neither program encouraged the instruction of either violin or swimming, the research encouraged the introduction of violin music and water play. Equally as important as maturation or motivation, prior experiences may be the easiest element to manipulate. Without engaging in formal education, a child should be exposed to environments or experiences that will foster the knowledge of the desired skill acquisition. Stodden, True, Langendorfer and Gao (2013) found some indication that a child’s knowledge of a sport may have an effect upon their ability to learn motor skills related to those sports. Additionally, Smith, Smoll and Cumming (2007) determined that the knowledge base of children may be an important factor in the execution of motor skills.

**Aquatic readiness**

Langendorfer & Bruya (1995) emphasized the importance of aquatic readiness which is the concept of “optimal readiness” applied to aquatic skills. He advocated that a participant should be taught skills when the participant’s behavior indicates that he or she is ready to learn them. According to Langendorfer & Bruya (1995) aquatic readiness includes foundational skills, attitudes, and understandings that precede the acquisition of more advanced aquatic skills such as swimming strokes.
Aquatic Programming Comparison

and water safety. He calls this process of addressing prerequisite needs as “aquatic readiness”.

Langendorfer & Bruya (1995) identifies basic attitudes as lack of fear, respect for rules, eagerness to participate, and listening to instruction. To indicate aquatic readiness, a participant must also understand class procedures, pool rules, language of instruction, and rules of the games and activities. Lastly, Langendorfer & Bruya (1995) identified fundamental motor skills that indicate aquatic readiness, including: water entry, water buoyancy, breath control, water balance, leg and arm movements.

Aquatic Readiness Assessment

Langendorfer and Bruya (1995) developed the Aquatic Readiness Assessment (ARA) to fill a void they thought existed in the area of aquatic measurements. This instrument has been utilized over the years in numerous studies. For example, Kjendlie and Mendritzki (2012) used this instrument to examine movement patterns in free water play after swimming lessons with flotation aids. Costa et al. (2012) used this instrument to examine the deep and shallow water effects on developing aquatic skills. One specific characteristic that set apart the ARA was that it assessed water orientation and adjustment. Prior to this, researchers had acknowledged the need for water orientation and adjustment but assumed students began the aquatic training program already possessing these components (Langendorfer & Bruya, 1995). The ARA added these components to the formal assessment checklist. Proper administration of the ARA included observing multiple trials and in varying conditions to achieve satisfactory results. In addition, administrators must have established an adequate level of objectivity. Objectivity meant general agreement both with other instructors and within the single instructors on different occasions. Agreement of a score of twenty-seven or higher on the ARA is required for a student to be considered successful on the ARA. In addition, Langendorfer & Bruya (1995) encouraged video documentation of students who are assessed to further validate objectivity and reliability of the instrument.

The instrument was not intended to have age norms. Norms often have been misused to compare students with other students of a same chronological age (Langendorfer & Bruya, 1995). The ARA is meant to be used to assess an individual student’s progress, not to compare students.

Oklahoma AHPERD Vol 54, Issue 2 2017
Community Aquatic Training Programs

The American Red Cross (ARC) has a very popular program for swim lessons that has been widely accessible since 1914 (Vontroba, 2011). The Young Men’s Christian Association (YMCA, 2014) also offers a highly utilized program of swim instruction with numerous facilities available nationwide. In addition, some communities have addressed the need for aquatic skill acquisition by offering free lessons. Programs like the ARC and the YMCA focus on teaching swimming readiness skills whereas other community programs limit instruction to water survival skills. In addition, most community programs include a component that addresses character development of citizenship skills.

Private Aquatic Training Programs

Private facilities that offer aquatic skill acquisition are less numerous than community programs. Swim America (Swim America, 2014) operates learn-to-swim programs globally. While Swim America does offer learn-to-swim instruction, the program additionally trains coaches to look for stroke mechanics and identify participants who indicate a propensity for talent and might benefit from inclusion on swim teams and competition. Infant Swimming Resource (2014) focuses on teaching infants to roll onto their backs and scream for help. This program requires intense training for instructors and boasts a hefty cost thereby limiting students (Vontroba, 2011).

Community vs. Private Aquatic Training Programs

Both programs seek to increase aquatic skill acquisition; however, there are distinct differences in cost of participation, class size, and the availability of classes.

Community programs typically have minimal cost to participate often based on income. New York City Parks offers free lessons, but selection is based upon a lottery system and courses are offered only sporadically throughout the year (NYC Parks, 2014). The YMCA pricing is based upon membership. Membership fees are determined by income level and membership includes swim lessons along with other amenities (YMCA of greater Tulsa, 2014). As a result, there is difficulty in determining cost equivalency to private instruction. Classes are a ten-to-one ratio, focusing on group-, rather than
Aquatic Programming Comparison

individual-instruction. The ARC (Eastern Oklahoma Red Cross, 2014) offers a similar program to the YMCA, but additionally offers certification courses for lifeguards and swim instructors. The YMCA focuses on learn-to-swim courses while the ARC has increased the higher level skill acquisition courses leading to certification of the student. Within the class curriculum, both the YMCA and the ARC include aspects of character development which is another component unique to public aquatic programs.

Community programs often face the challenge of facility availability. Most community pools are outside thereby limiting access to the warmer months. If a facility has an indoor pool, it is often shared with open-swim times and non-aquatic training programs. The YMCA (2014) offers classes based upon five skill levels, moving participants through with no minimum number of hours suggested, but a minimum age range. ARC (2014) indicates six levels of aquatics ranging from introduction to the aquatic setting to swimming and skill proficiency. ARC also suggests a minimum age range, but also provides parent and child aquatics for participants under the minimum age range (American Red Cross, 2014).

By contrast, private programs are contained within their own facility so more control is available. Private facilities boast smaller class ratio. Miller Swim School offers a four-to-one ratio (Miller Swim School, 2014). Infant Swim Resource offers one-on-one instruction in the setting of the student’s choice (Infant Swimming Resource, 2014). Swim America (2014) offers both lessons at their facility and lessons at the facility of the student’s choice: private pool, neighborhood pool, or other facility (TeamUnify, 2014). The student is also allowed to choose the size of the class. In addition, each of these private facilities is self-contained and indoor, so classes are available year round at a variety of times throughout the week. Public access is restricted which can be appealing to more reluctant students. Robertson (2010) found that fifty-nine percent of learn-to-swim programs utilize their own facility, but did not delineate between dedicated (private) and shared (community) facilities.
Methodology

Selection of Participants

A convenience sample of students was utilized from a private program as well as a community program. The data was collected over a three-week period, during the month of June, 2014, in two separate facilities: a private aquatic center and a community aquatic center, in the same city. Facilities were selected because each had the largest number of students attending their aquatic training programs, which made it easy for the researcher to gather data and each facility’s willingness to participate in the study.

The progress of each student for both programs was scored by the ARA checklist (Costa et al., 2012; Langendorfer & Bruya, 1995). Murcia and Perez’s (2008) research demonstrated that male and female motor and cognitive development are similar; they will be combined in the study. The facilities and instructors were asked to sign a consent form to participate in this study. The research design, methodology employed, and the contact with the sample were approved by the Institutional Review Board for protection of human subjects.

Research Design and Variables

A convenience sample pre-post-test between/within students design was utilized for this study. Instructors who met the study criteria and agreed to participate did so by signing a consent form. Instructors were provided the ARA instrument to collect data from the students. A script was provided to the aquatic center directors to discuss and describe the nature of the study as well as what would be required from the instructors’ ARA optimal readiness scores (dependent variable) and facility (independent variable), with instructors (intermediate variable).

Analysis of Data

This study used a non-parametric statistical analysis utilizing the SPSS statistical package, with pre-determined alpha set at p<.05. A convenience sample pre-test between/within participants design was
utilized for this study. The specific data analysis techniques was a Mann-Whitney U for the repeated measures between groups, because it is equivalent to the t-test for two independent samples parametric procedure for utilizing rank order data (Gravetter & Wallnau, 2013) or ordered ratings, and Wilcoxon T for the repeated measure within because it also uses rank order data (Gravetter & Wallnau, 2013). This allowed the data analysis to be consistent. A chi-square analysis was used to see if there was a difference in individual scores over the three weeks.

**Results**

Instructors scored each student in a pre-test format to determine the student’s aquatic readiness level. Students who scored below twenty-seven as evaluated by two or more of the instructors were placed in level one aquatic training. Each student attended six aquatic training lessons over a three-week period. Each aquatic training lesson lasted forty minutes in duration.

Students were again scored on the ARA during a post-test at the end of three-week period. Students who scored twenty-seven or above by at least 80% of the instructors, or four out of five instructors, advanced to level two aquatic training. Students who still scored below twenty-seven remained in level one aquatic training.

**Facility Comparison**

A cross-tabulation and chi-square statistic was utilized to examine and compare the advancing number of students between the private and community programs.

The private program showed thirty-eight students who scored twenty-seven or above, and the community program saw forty-seven students score twenty-seven or above using the ARA.

The chi-square was used to test the difference in the pass rate between the private and community programs. The analysis indicated there was not a significant difference in the pass rate between the private facility vs. community facility at $p \leq .05$ with a result of $p=.071$.

The Mann-Whitney U analysis was used to test the change in instructors’ scores from pre-test to post-test. The analysis indicated a significant difference in the change in instructor’s scores at the private facility vs. community facility at $p \leq .05$ with a result of $p=.071$. 

*Oklahoma AHPERD Vol 54, Issue 2 2017*
facility vs. community facility at $p \leq .05$ with a result of $p = .046$. There was also a significant difference in
the change in instructor’s scores within the facility at $p \leq .05$ with a result of $p = .012$.

**Comparison of Instructor’s Scores**

The Mann-Whitney U test was used to analyze between groups, private vs. community facilities, because it utilizes ordered ratings. The descriptive statistics showed the total mean change from pre-test to
post-test for all five instructors’ scores within the private facility was 6.82 compared to the community
facility’s 7.13.

To examine the descriptive statistics further, the Wilcoxon test was used to analyze within
groups, private vs. community programs instructors’ scores. Instructor one and two in the community
program had change scores significantly different from the other eight instructors: three within the
community and five in the private program. Change in the community program of instructor one’s score
was 8.08 and instructor two’s score was 7.10.

The Kruskal-Wallis test was used to conduct deeper analysis within the groups and calculate the
chi-square. The private program instructor score mean rating range was 143.78 for instructor two to
160.26 for instructor one. The chi-square indicated this was not significant $p \leq .05$ with a result of $p = .836$,
indicating that the instructors in the private program scored the ARA more consistently as a group.

When running the same test on the community program, the instructor’s score mean rating range
was 135.36 for instructor three to 180.54 for instructor one. The chi-square indicated this was a
significant difference $p \leq .05$ with a result of $p = .029$, indicating that the instructors in the community
program did not score the ARA consistently as a group.

**Conclusions**

In conclusion, the results of the study did not show a significant difference in scores among
advancing students to level two aquatic training. The cross-tabulation chi-square analysis indicated there
was not a significant difference in the pass rate between the private program vs. community program at
$p \leq .05$ with a result of $p = .071$. In this study the private program advance students, thirty-eight out of sixty,
and the community program, forty-seven out of sixty. The change in instructors’ score from pre-test to post-test indicated an improvement by the students in both the private, 6.82, and community, 7.13, programs. These positive results should encourage students to attend some type of aquatic training program, private or community.

As stated earlier, eight of the ten instructors in this study were within the mean range of 6.73 to 6.97. The two instructors in the community program that may have skewed the findings had mean change scores of 8.08 for instructor one, and 7.10 for instructor two. This probably can be explained by the fact the two instructors with the outlying scores had a better understanding of the assessment process during the post-test than they did during the pre-test. According to Kjendlie and Mendritzki (2012) aquatic skill acquisition is crucial for water safety. While other prevention strategies can be employed, Kjendlie and Mendritzki (2012) stated that learning a variety of aquatic skills will reduce the risks associated with drowning.

The results between the private facility and the community facility was not what the researcher expected at the beginning of the study. The alternative hypothesis stated that there is a difference in the instructor’s scores of student’s optimal readiness to learn aquatic skill between students from a private program and a community program. The researcher expected the private aquatic training program would advance students at a higher rate. The results indicate no significant difference in the advancement of students to level two aquatic training between the two programs, private vs. community.

The private and community programs, the instructors, and the students expressed appreciation for the opportunity to participate in the study. The programs discovered a method to determine instructors who may need additional training in the evaluation process of student’s aquatic skill levels. Instructors indicated they gained a better understanding in scoring students using the ARA. Students commented that they now understood the importance of each skill instructors were teaching in the aquatic training lessons.
References


*Oklahoma AHPERD Vol 54, Issue 2 2017*
Aquatic Programming Comparison

skills and health-related fitness: Indirect evidence for seefeldt's proficiency barrier in young
adults? Research Quarterly for Exercise and Sport, 84, 397-403.


