

## The College at Brockport: State University of New York Digital Commons @Brockport

---

Kinesiology, Sport Studies, and Physical Education  
Master's Theses

Kinesiology, Sport Studies and Physical Education

---


12-2013

# Instructional Preferences in Aquatics for Children with Visual Impairments and Their Instructors

Fabiana Cieslak

*The College at Brockport*, [fcies1@brockport.edu](mailto:fcies1@brockport.edu)

Follow this and additional works at: [http://digitalcommons.brockport.edu/pes\\_theses](http://digitalcommons.brockport.edu/pes_theses)

 Part of the [Education Commons](#), and the [Exercise Science Commons](#)

---

### Repository Citation

Cieslak, Fabiana, "Instructional Preferences in Aquatics for Children with Visual Impairments and Their Instructors" (2013).  
*Kinesiology, Sport Studies, and Physical Education Master's Theses*. 12.  
[http://digitalcommons.brockport.edu/pes\\_theses/12](http://digitalcommons.brockport.edu/pes_theses/12)

This Thesis is brought to you for free and open access by the Kinesiology, Sport Studies and Physical Education at Digital Commons @Brockport. It has been accepted for inclusion in Kinesiology, Sport Studies, and Physical Education Master's Theses by an authorized administrator of Digital Commons @Brockport. For more information, please contact [kmyers@brockport.edu](mailto:kmyers@brockport.edu).

Instructional Preferences in Aquatics for Children with Visual Impairments and  
Their Instructors

By

Fabiana Freitas Cieslak

A thesis submitted to the Department of Kinesiology, Sport Studies and Physical  
Education of the State University of New York College at Brockport in partial  
fulfillment of the requirements for the degree of  
Master of Science in Education (Physical Education)

December, 2013

Instructional Preferences in Aquatics for Children with Visual Impairments and  
Their Instructors

By Fabiana Freitas Cieslak

APPROVED BY:

_____	_____
Thesis Chairperson: Dr. Lauren J. Lieberman	Date

_____	_____
Committee Member: Dr. Cathy Houston-Wilson	Date

_____	_____
Committee Member: Dr. Pamela S. Haibach	Date

_____	_____
Chair, Department of Kinesiology, Sport Studies and Physical Education: Dr. Susan Peterson	Date

## Table of Contents

List of Illustration .....	iii
Abstract .....	iv
Introduction.....	1
Statement of Purpose.....	4
Research Questions .....	4
Operational Definitions .....	4
Assumptions.....	6
Limitations .....	6
Delimitations .....	6
Review of Literature .....	7
Physical Activity and Children with Visual Impairment.....	7
Motor Skills in Children with Visual Impairments.....	9
Barriers for Children with Visual Impairments .....	10
Children with Visual Impairments in Swimming .....	12
Instructional Strategies for Children with Visual Impairment.....	14
Summary .....	17
Methods.....	19
Participants.....	19
Data Collection.....	21
Data Analyses.....	23

Reliability .....	23
Results .....	24
Tactile Modeling .....	29
Teaching Strategies .....	32
Discussion .....	35
Physical Guidance .....	36
Tactile Modeling .....	37
Teaching Strategies .....	38
Conclusions .....	39
Appendix A - Focus Group Questions – Athletes .....	40
Appendix B - Focus Group Questions – Instructors .....	42
Appendix C - Focus Group Transcriptions - Athletes .....	43
Appendix D - Focus Group Transcriptions - Coaches .....	51
References .....	90

## List of Illustration

Table 1. Athletes' demographic data.....	20
Table 2. Instructors' demographic data.....	21
Table 3. Athletes' and instructors' preferences in swimming classes .....	25
Table 4. Athletes' preferred instructional strategies .....	33
Table 5. Athletes' preferences by swimming level .....	34
Table 6. Instructors' preferred instructional strategies.....	34

## **Abstract**

The aim of this study was to determine which instructional strategies athletes with visual impairments and their coaches would prefer during swimming classes. Thirteen athletes with visual impairments and fourteen coaches participated in interviews to reveal their preferences. A thematic analysis was utilized to ensure the analysis was undertaken in a theoretically and methodologically sound manner. Three key themes emerged, each a compilation of a set of subthemes. The first theme, physical guidance, included a quicker learning process and passive and active learning. The second theme, tactile modeling, was comprised of barriers and better instruction. The final theme that emerged from the data was teaching strategies, which encapsulated subthemes it depends of the situation and child feedback. The results revealed an in depth analysis of children with visual impairments' and coaches' preferences in swimming. Additionally, results provided further assistance for teachers and professionals who work in the field of visual impairments and physical education.

## **Introduction**

Blindness and low vision are widely recognized as important causes of impairment among Americans. Based on demographics from the 2010 US Census, about 8.1 million American people aged 15 years and older have a visual impairment, including 2.0 million people with blindness (Brault, 2012). Among children under 15 years, approximately 321,000 Americans have visual impairments, including 118,000 who are blind (Brault, 2012). This number represents children with visual impairments that are in American schools every day.

Children need education in physical fitness, wellness, health, and lifetime sports and recreation to develop into healthy and physically active adults, and prevent diseases such as obesity, coronary heart disease, and diabetes which are quite prevalent in today's society (O'Connell, Lieberman, & Peterson, 2006). However, studies demonstrate that children do not engage in adequate levels of physical activity to promote healthy lifestyles (U.S. Department of Health and Human Services [DHHS], 1996).

Physical inactivity is of special concern in individuals with visual impairments. Fitness in an adequate level is necessary to complete functional tasks (Ayvazoglu, Oh, & Kozub, 2006). The need for fitness might be greater for children with visual impairments because, as found by Buell (1973), they expend more energy to complete daily living activities (as cited in O'Connell et al., 2006, p. 471). However, studies have shown that children with visual impairments are less physically active than recommended and less than their sighted peers (Houwen, Hartman, & Visscher, 2009; Houwen, Hartman, Jonker, & Visscher,



2010; Lieberman, Byrne, Mattern, Watt, & Fernandez-Vivo, 2010; O'Connell et al., 2006).

Positive relationships have been found between motor skills and physical activity in children (Houwen et al., 2009). Physical activity and motor skills can help children with visual impairments to develop several of the areas from the Expanded Core Curriculum (ECC), first formulated by Hatlen, 1996 (Sapp & Hatlen, 2010). ECC is a generally accepted curriculum with nine areas of instruction that children with visual impairments need to be successful in school, the community, and the workplace (Sapp & Hatlen, 2010). Physical activity and motor skills can improve social interaction skills, independent living skills, self-determination skills, recreational and leisure skills, and orientation and mobility skills and concepts.

Children with visual impairments also demonstrate less developed motor skills than their sighted peers (Houwen et al., 2009; Houwen, Visscher, Lemmick, & Harman, 2008; O'Connell et al., 2006; Wagner, Haibach, & Lieberman, 2013). For this population, motor skill proficiency is as important for daily living and sports activities as it is for any child (Houwen et al., 2010). However, this population has shown delays in motor development and mobility, object control and manipulation skills, probably due to a lack of opportunities during their childhood. O'Connell et al. (2006) stated that "children who are visually impaired and have no other disabilities are born with the same physical potential as their sighted peers" (p. 471). Visual impairments may act as a constraint, slowing down motor skills acquisition (Houwen et al., 2010; Houwen et al., 2008), however if a

child with visual impairment has adequate levels of physical activity participation, this may enhance motor skills proficiency (Houwen et al., 2009).

Physical activity and sports, like swimming, can influence positively in orientation and mobility skills and concepts and independent living skills. Thus, helping children with visual impairment understand their own bodies and how to move as safely, efficiently, and independently as possible. For social interaction skills and recreational and leisure skills, sports and physical activity are often primary socialization environments and create an atmosphere of belonging, such as clubs, teams, other groups (Movahedi, Mojtahedi, & Farazyani, 2011; Shapiro, Moffett, Lieberman, & Dummer, 2005). Finally, self-determination skills refer to a person's right to decide freely and without undue influence how he or she wishes to live his or her life (Sapp & Hatlen, 2010). Physical activities and sports encourage students to become stronger at decision making skills, making the child more responsible and autonomous. At the same time that children learn to be more cooperative with others, they learn how to be less dependent on others, perceiving the fact that they are responsible for themselves and for the world in which they live (Movahedi et al., 2011).

A good example of sport for children with visual impairments is swimming, for a variety of reasons. Individuals with visual impairments feel more comfortable and freer in the water because they do not need a lot of equipment or help (Lieberman, 2002). Additionally, swimming provides an opportunity to improve motor performance and physical fitness while increasing group interaction, self-determination, and experiencing success (Lepore, Gayle, & Stevens, 2007; Lieberman, 2011).

A variety of instructional strategies can be used when teaching students with visual impairments, such as demonstration, verbal instruction, and tactile teaching (Lieberman & Cowart, 2011, Lieberman & Haibach, 2012; Lieberman, 2011; O'Connell et al., 2006). For effective and pleasurable learning, teachers have to choose carefully which method to use depending on the student's learning preference and skills being taught (Lepore et al., 2007; Lieberman, 2011; O'Connell et al., 2006). Thus, teachers may promote an exciting and comfortable environment for all students – with or without visual impairments.

### **Statement of Purpose**

The purpose of this study was to determine which instructional strategy students with visual impairments and their instructors would prefer during swimming classes.

### **Research Questions**

1. Did swimming instructors explain to children with visual impairments the different strategies and let them choose which they preferred?
2. What was the preferred instructional strategy for these children?
3. What was the preferred instructional strategy for these instructors?

### **Operational Definitions**

**Level of vision B1.** "Total absence of perception of the light in both eyes, or some perception of the light but with inability to recognize the form of a hand at any distance and in any direction" (International Paralympic Committee, 2011).

**Level of vision B2.** "The ability to recognize the form of a hand to a visual acuity of 2/60 and/or a visual field of less than 5 degrees" (International Paralympic Committee, 2011).

**Level of vision B3.** "A visual acuity of above 2/60 to a visual acuity of 6/60 and/or a visual field of more than 5 degrees and less than 20 degrees" (International Paralympic Committee, 2011).

**Co-active movement.** "It is when the child is positioned so that his or her moving body part touches the instructor's same body part. It is the entire body part that is being manipulated and the child is going through the motion at the same time as the instructor (Lieberman & Haibach, 2012. P. 11).

**Motor skills.** "The changes that occur in our ability to move and our movement in general as we proceed through the lifespan" (Payne & Isaacs, 2002, p. 2).

**Physical activity.** "It is defined as any bodily movement produced by skeletal muscles that require energy expenditure" (WHO, 2010).

**Physical guidance.** "Involves performing a particular movement with an individual to get the feel, rhythm, and motion of the movement being instructed" (O'Connell et al., 2006, p.472)

**Tactile modeling.** "It is the inspection by a student of a demonstrator or an object by touch that can help the student learn and understand" (Lieberman & Cowart, 2011)

**Visual impairment.** "Visual impairments, including blindness, mean an impairment in vision that, even when corrected, adversely affects a child's educational performance. The term includes both partial sight and blindness" (U.S. Department of Education, 2004).

### **Assumptions**

1. Students understood the instructional strategies terminology.
2. Swimming was taught using tactile methods.

### **Limitations**

1. Students may have various levels of experiences in swimming before the study.
2. Students were at different swimming levels.
3. Students had different levels of impairments.
4. Coaches were at different instructional levels or abilities.

### **Delimitations**

1. Children classified with levels B1 and B2 of visual impairment, according to The International Paralympic Committee.
2. Children ages 9 to 14 years old.
3. Boys and girls from the United States of America (USA) who participated in a residential summer sports camp held in northwestern New York State.
4. Thirteen athletes.
5. Fourteen instructors.

## **Review of Literature**

The purpose of this study was to investigate the different preferences of instructional strategies used in swimming for children with visual impairments and their instructors. In this chapter, literature relevant to the study will be reviewed in the following sections: (a) physical activity and children with visual impairments, (b) motor skills development in children with visual impairments, (c) barriers for children with visual impairments, (d) instructional strategies for children with visual impairments, (e) instructional strategies for children with visual impairments in swimming. Finally, a summary of the topics tied to ECC and the importance of swimming skills.

### **Physical Activity and Children with Visual Impairment**

Physical activity is important to achieve and maintain a healthier lifestyle. Physical activity practice for children and adolescents may make them physically active adults, while sedentary lifestyle, obesity, and associated diseases are responsible for increasing the risk of cardiovascular disease in adolescents, young adults and adults (Correia, Lopes, & Vasques, 2011).

Physical activity benefits can be divided into physical and psychosocial levels. First, in the physical level, are motor development, learning sport skills, improving health and fitness, and the prevention diseases such as coronary heart disease, osteoporosis, diabetes, obesity, etc (Gomes, 2011). The psychosocial level relates the exercise to the development of leadership skills and initiative, self-discipline and independence, self-confidence and self-esteem, respect and authority, competitiveness, cooperation and friendship and moral development,

through recognition and acceptance of rules and behaviors on the sport (Gomes, 2011).

Accordingly O'Connell et al. (2006) noted, "children who have visual impairment and no other disability are born with the same physical potential as their sighted peers" (p.471). However, they usually experience a lack of opportunities to reach their potential. They have a lower level of fitness and less developed motor skills than their sighted peers (O'Connell et al., 2006). Students with visual impairments also present delays in reaching developmental milestones in mobility and locomotion-related behaviors, and in object control and manipulation skills (Auxter, Pyfer, & Huettig, 1997; O'Connell et al., 2006).

In a study that examined the physical activity levels of 96 children with visual impairments and without visual impairments, it was reported that children with visual impairment have lower total physical activity levels compared with children without visual impairment (Houwen et al., 2009). Lieberman et al. (2010) examined the passing rates on the five health-related fitness tests of 152 boys and girls with visual impairments using The Brockport Physical Fitness health-related fitness test. The areas of weakness found were cardiovascular endurance, upper-body strength, and body composition among all the participants. In 2001, Lieberman and McHugh tested 46 children with visual impairments on the Fitnessgram health-related fitness test and found that fewer than 20% of the children with visual impairments passed a minimum of four items on the Fitnessgram, compared to 48%-70% of the sighted children.

Kozub, Oh, and Ozturk (2004) examined the physical activity and social engagement in 19 school-age children who attended a mid-western school for the

blind and found that as children's age increased physical activity level scores decreased in physical education class. Positive relationships have been found between physical activity and motor skills in children with visual impairments and children without visual impairments (Fisher et al., 2005; Houwen et al., 2009), which emphasizes the importance to improve these skills in children with visual impairments.

### **Motor Skills in Children with Visual Impairments**

Motor skills play a decisive role in the social and emotional functioning of a child and may impact quality of life and well-being (Houwen et al, 2008). Poor motor skills may lead to poor performance in physical activities, which may reduce a child's sense of competence. This may lead to withdrawal from movement activities that would, in turn, lead to limited opportunities to practice motor skills and participate socially (Skinner & Piek, 2001, Houwen et al, 2008).

Vision is a considerable aspect in motor skill performance as vision guides and controls the achievement, and automatization of motor skills (Brambring, 2001; Houwen et al., 2008). Functions of vision in motor skill acquisition are to give children incentive to move, to provide information about distance and directions of objects, to anticipate risky situations, and to detect errors and correct movements. Moreover, vision enables children to imitate movements and actions made by others (Brambring, 2006; Houwen et al., 2008).

Houwen et al. (2009) examined the physical activity levels of children with visual impairments and without visual impairments, it was reported that children with visual impairments had poorer performance on locomotor and object control tests and spent more time in sedentary activities compared to children without



visual impairments: which indicates that children with visual impairments have lower motor skills than children without visual impairments. In another study Houwen et al. (2008) investigated the motor performance of children with visual impairment on manual dexterity, ball skills, and balance, and reported that children with VI had lower performance on unimanual speed, eye-hand coordination, catching, static balance, and slow dynamic balance compared to children without visual impairments. Children with visual impairments who participated in sports had higher object control skills scores than children who did not (Houwen, Visscher, Hartman, and Lemmink, 2007).

As motor skills and physical activity levels seem to be related, children with visual impairments should be offered more opportunities to engage in sports and physical activities. Unfortunately, there are many barriers for successful inclusion.

### **Barriers for Children with Visual Impairments**

Children with visual impairments face several barriers to engaging in physical activities and sports. Lack of professional preparation, lack of time, appropriate programming and equipment are among environmental barriers for these children (Lieberman, Robinson, & Rollheiser, 2006).

According to the Expanded Core Curriculum (ECC), children with visual impairments need to develop nine main areas of instruction to be successful in school, the community, and the workplace (Sapp & Hatlen, 2010). Socialization, self-determination, independence, recreation and leisure, social interactions, compensatory or functional academic skills, career education, use of assistive technology, and sensory efficiency skills. At least five of these areas represent

barriers for individuals with visual impairments and should be assessed and instructed by instructors in physical education and sports.

Sacks and Wolffe (1998) reported in their study of three adolescents that two of three participants with visual impairments spent more time at home by themselves because they were not allowed to travel on their own due to over-protective parents and teachers. These findings put children with visual impairments at risk for issues related to overdependence as well as physical inactivity. Indeed, in a study that investigated the social development of 107 student-athletes and non-athletes with visual impairments, it was reported that student-athletes with visual impairments have a higher level of socialization than non-athletes (Movahedi et al., 2011).

In a study that investigated the perceptions of physical appearance, athletic competence, and social acceptance of children and youths with visual impairments before and after a one-week developmental summer sports camp, it was reported that physical appearance was rated as the most important (precamp=3.23; postcamp=3.36 up to 4) followed by social acceptance (3.05; 3.19), and athletic competence (2.73; 2.94). These results indicate the lack of meaningful community- and school-based opportunities to engage in athletics for children with visual impairments (Shapiro et al., 2005).

Goodwin, Lieberman, Johnston, & Leo (2011) examined the social meaning of a summer residential sports camp for 13 children and youth with visual impairments. The study found reported improvement in the sense of community, levels of participation in physical activities, acquisition of new skills, test of individual limits, set of new standards and capabilities, socialization,

friendships, and independence. These results indicate the importance of children's engagement in physical activities and sports.

### **Children with Visual Impairments in Swimming**

Swimming provides physical fitness, such as cardiovascular endurance, muscular endurance, strength, and flexibility; motor development like speed, agility, balance, laterality, and spatial relationships; and socialization skills, friendship, independence, and self-determination (Lepore, 2011; The American National Red Cross, 1977).

Adapted aquatics are defined as modifying teaching, skills, equipment, facilities, and strategies for individuals with disabilities (Lepore, 2011). It includes aquatics activities of all types: swimming, diving, scuba diving, and water aerobics.

For individuals with disabilities, aquatics provide a variety of physiological benefits. Biological effects of immersion in warm water (92-96 °F or 33.3 – 35.6 °C) include relief of pain, increased relaxation, lymphatic and venous compression, increased central blood volume and cardiac volume, and increased work of breathing and oxygen delivery. Physical benefits of movement in water are reduced muscle spasms, reeducation of paralyzed muscles, and increased range of motion in joints (Lepore et al., 2007).

Swimming is an excellent activity for individuals with a visual impairment. There are few barriers, and the person can move freely without worrying about obstacles (Lieberman, 2011). Learning to swim is basically the same for individuals who are blind or sighted. The first step is becoming familiar with a completely new environment (Cordellos, 1976). Teachers should use

sighted guide techniques for orientation to the pool and its environment (Lepore et al., 2007). Water rising around the body, changes in body temperature, and water movement are unlike anything experienced on land, which can cause fear, as well as body movements, that are slower and more difficult in water. Children with visual impairments may think that these fears are due to their disability. Instructors and teachers need to encourage and explain that these feelings are normal and shared by many people with little experience in the water (Cordellos, 1976).

Another step in adjusting to the water is for the student to gain enough confidence to place their head below the surface. For beginner swimmers, this is often difficult. Beginners may fear opening their eyes underwater (Cordellos, 1976); or they might not feel comfortable submerging their ears because the water prevents or greatly distorts hearing (Cordellos, 1976; The American National Red Cross, 1977).

When children with visual impairments feel comfortable and well oriented in the water, it is important to develop water safety skills. Students must be able to control their breathing, submerge without drinking water, maintain flotation, and stay on the water surface without help (Carter, Dolan & LeConey, 1994).

Once these skills are learned, children with visual impairments are ready to learn some basic swim strokes. Teachers should encourage students who have residual vision to make full use of the vision they have and wear a black shirt and running tights to draw attention to their actions underwater (Lepore et al., 2007). Teachers can offer commentaries to describe what others are doing and avoid using gestures, such as pointing. Use lanes and auditory signals for direction

orientation, such as radio playing near the deep end (Lepore et al., 2007). These are some examples of adapted physical education techniques that can be used to teach swimming for students with visual impairments.

To improve motor and physical skills, teachers have to use effective pedagogical techniques, matching specific teaching styles and learning strategies for each child (O'Connell et al., 2006). There are different instructional techniques to use when teaching children with visual impairments which are explained below.

### **Instructional Strategies for Children with Visual Impairment**

**Verbal Instruction.** Teachers and instructors use verbal instruction to explain the movement for students. The key to using this method effectively is the use of precise language and simple terms (Lieberman & Haibach, 2012; Lieberman, 2011). There is no place to use nondescriptive words such as “that”, “over there”, or “heads up”, as used in everyday language for people who do not have visual impairments. It is important to use specific teaching vocabulary and the same instructional terms every time, thus avoiding confusion for the child when describing movements and providing appropriate feedback (Lieberman & Haibach, 2012).

More highly functioning students can be given a more complete explanation of the skill, providing a more complete picture of what is requested. If a student seems to be having difficulty comprehending the instructions, teachers can repeat the instructions in a different way, using different words or analogies (Lieberman, 2011; Lieberman & Cowart, 2011).

Once the student has acquired a basic understanding of the motor skill, teachers can gradually reduce or shorten verbal instructions to verbal cues in a precise and clear way, free of additional words, which will help students to maintain his or her movements consistent and on task (Lieberman & Haibach, 2012; Lieberman & Cowart, 2011). Explanation or verbal instruction can and should be used together with demonstrations.

**Demonstration.** Demonstration can be used when the child presents some residual vision and can communicate how a skill should be executed (Lieberman & Cowart, 2011). Teachers or peers show the desired skill or movement for the child within his field of vision. Successful demonstrations should be combined with verbal cues or tactile modeling (Lieberman, 2011; Lieberman & Haibach, 2012). If the student has problems understanding the skill, the teacher can repeat the demonstration and break complex skills into parts and then encourage him or her to integrate the parts into the complete movement (Lieberman & Cowart, 2011).

**Physical guidance.** Physical guidance consists of physically helping the student with visual impairment through the movement. Teachers have to place student's body and/or limbs into the appropriate position and put him or her at the preferred speed. When physical guidance is integrated with verbal explanation or verbal cues, teachers can maximize skill learning (Lieberman & Cowart, 2011; Lieberman & Haibach, 2012; Lieberman, 2011; O'Connell et al., 2006).

Physical guidance can range from totally assisting the student during the movement to a gentle touch aimed at prompting the student to complete a task. It is important to phase out instructor assistance gradually to prevent student

dependence. It is also necessary to forewarn students before touching them (Lieberman & Cowart, 2011; Lieberman, 2011; O'Connell et al., 2006), because some students may be hypersensitive to touch or have an aversion to being touched. Teachers should explain this method for children before using them and ask them if they are comfortable with that (O'Connell et al., 2006).

For legal purposes, teachers should write reports documenting how much assistance was given, when, where, and why it was necessary touching the student, so if asked, there is clarity about the intention of physical touch that is used (Lieberman, 2011; O'Connell et al., 2006).

**Tactile modeling.** Tactile modeling is when a student with visual impairment feels a peer or the instructor executing the movement. This can help the student understand and learn a skill. Using this method, children can explore the model's movements, recognizing body movements speed, direction, and precision (Lieberman & Haibach, 2012; Lieberman, 2011; O'Connell et al., 2006).

“Tactile modeling is beneficial in that it often clarifies the mechanics of the movement more comprehensively than does explanation alone or explanation and physical guidance” (O'Connell et al., 2006, p. 474). Additionally, this method allows the student control of the lesson instead of being manipulated.

Physical guidance and tactile modeling involve close contact between two or more people, so students with visual impairments need to forewarn instructor or peer before touching them, and explain what they are looking for or trying to learn (O'Connell et al., 2006). Teachers should also document and record which

skills need to be taught using tactile modeling, so the intention of the physical touch that is used is clear (Lieberman, 2011; O'Connell et al., 2006).

**Co-active movement.** Coactive movement is when the child is positioned so that his or her moving part touches the instructor's same body part. It is similar to tactile modeling, although it is the entire body part that is being manipulated and the child is going through the motion at the same time as the instructor. Thus, the child can feel the instructor do the movements and understand more complex skills. This method works best when the child is smaller than the instructor (Lieberman & Haibach, 2012).

All these strategies can be used when teaching swimming for children with visual impairments. Teachers should take in consideration children's preferences and forewarn them in advance about following actions.

## **Summary**

As seen in this literature review, there is a significant delay in the acquisition of motor skills and in physical activity levels in children with visual impairments. The development of motor skills is vital for individuals with visual impairments to be able to maintain or progress to their same aged peer's fitness and activity level.

A major component to consider when including children with visual impairments in physical activity and sports is overcoming the many barriers for these students, developing socialization, independence, and self-determination skills. Physical education teachers need to provide the same opportunities for students' with visual impairments to succeed as they do for their students with sight in all areas including swimming. With adequate levels of motor skills and



physical activity taught properly, individuals with visual impairments have the same opportunities and confidence to continue their life as a participant of physical activity.

## **Methods**

In this study, children with visual impairments and their instructors were interviewed about the instructional preferences in swimming. A qualitative approach that is descriptive, reflective, and interpretive in nature, and that uses phenomenological methods, was undertaken to describe underlying (themes) in meanings of swimming instructional experiences (Moustakas, 1994; Creswell, 2006). This study was approved by the College at Brockport Institutional Review Board.

### **Participants**

The participants were recruited from a residential summer sports camp held in northwestern New York State. An invitation letter was given to 21 children who attended the camp and their families. The study was conducted with 13 children from families that confirm their interest by completing informed consent forms and fit in the selection criteria. The youth participants also signed informed consent forms. Thirteen children (4 girls and 9 boys) with visual impairments between 9 and 14 years of age participated in 4 swimming classes during the camp with the duration of 1 hour each. Athletes were divided in 3 groups, accordingly with their swimming levels that were previously assessed. Six athletes were classified in the beginner level, 6 in the intermediate level, and 1 in the advanced level. Nine campers had B1 level of vision and 4 campers had B2 level of vision. The children's vision were described in accordance with International Paralympic Committee (2011) sport standards and divided in B1 and B2 levels of vision. Athletes' demographical data can be found in table 1.

Table 1. Athletes' demographic data

<b>Gender</b>	<b>Age</b>	<b>Level of VI</b>	<b>Congenital Impairment</b>	<b>Progressive Yes or No</b>	<b>Swimming experience Yes or No</b>
Male	9	B2	Yes	Yes	Yes
Male	9	B1	Yes	No	Yes
Male	10	B2	No	No	No
Male	10	B1	Yes	No	No
Female	10	B1	Yes	No	No
Female	10	B1	Yes	No	No
Male	12	B1	Yes	No	Yes
Male	12	B2	Yes	No	No
Female	12	B1	Yes	No	No
Male	12	B1	Yes	No	Yes
Female	13	B1	Yes	No	No
Male	13	B2	Yes	No	Yes
Male	14	B1	Yes	No	Yes

VI = Visual impairments

Additionally, swimming instructors from the camp also participated in this study. A letter of invitation was given to them, and the study was conducted with 14 instructors that confirmed their interest by completing informed consent forms. There were 14 instructors for 13 athletes because one athlete needed two instructors during camp. Instructors ranged in age from 16 to 35 years (9 female and 5 male). They had at least one year of experience working with swimming, or children with visual impairments, and/or teaching swimming for children with visual impairments. Instructors' demographical data can be found in table 2.

Table 2. Coaches' demographic data

<b>Gender</b>	<b>Age</b>	<b>Education Level</b>	<b>Years of experience with swimming</b>	<b>Years of experience with children with VI</b>	<b>Years of experience with children with VI in swimming</b>
Male	16	HS	0	1	0
Female	16	HS	3	0	0
Female	21	BD	0	1	0
Male	21	BD	2	0	0
Male	21	HS	0	1	0
Female	21	BD	0	1	0
Female	22	BD	0	2	0
Female	22	BD	2	2	2
Female	22	BD	3	0	0
Female	22	BD	3	3	1
Female	22	BD	0	1	0
Male	22	BD	0	1	1
Male	23	BD	1	0	0
Female	35	MS	0	9	3

VI = Visual impairments; HS= High School Degree; BD= Bachelor's Degree; MS= Master's Degree

### **Data Collection**

A phenomenological qualitative research design was used to answer the research questions of interest. Data collection included personal data sheets, semi-structured focus group interviews with the children and instructors, interview notes, observations in swimming classes by the researcher, and field notes.

The children's personal data included the child's age, level of visual impairment, and the number of years each child participated in community or school based swimming lessons; the swimming instructors' personal data sheet included information related to their years of experience with children with visual impairments, years of experience with swimming, level of education completed, and knowledge of instructional strategies for individuals with visual impairments.

The focus group questions were reviewed by a panel of experts composed of three professionals in the field of adapted physical education. Before the focus groups were conducted, the purpose of the study was explained to the participants, and any questions or concerns related to the study were addressed. Open-ended and experiential questions were used to increase the breadth of responses, such as "How did your coach teach you – physical guidance, or tactile modeling?", "Did your coach let you choose?", and "Which instructional style was your favorite and why?" The semi-structured focus group with children was divided into two groups being sensitive to ages: (a) 6 children ages 9 and 10 years, and (b) 7 children ages 12 and 13 years. Other 2 focus groups were conducted with instructors. Small groupings provide ample opportunity for each participant to have input, enabling children and instructors to elaborate on ideas generated by others (Vaughn, Schumm, & Sinagub, 1996). Each group met with a focus group moderator for 30-60 minutes and the interviews were audio-taped and transcribed verbatim.

Researchers observed swimming classes for children with visual impairments during camp and took notes. During the observations, researchers looked for instructional strategies being used, the interaction between the child and the instructor, and any improvements in the children's swimming skills.

## **Data Analyses**

Transcription of interviews was completed verbatim. Transcription responses were distributed to the research team members, who individually coded the data. Each member reviewed all of the material in an uninterrupted period to gain a sense of the totality of the data (Taylor & Bogdan, 1998). Braun and Clarke's (2006) guidance on carrying out the thematic analyses was utilized as it ensured analysis was undertaken in a theoretically and methodologically sound manner. Initial codes were then made, identifying interesting features of the data, collating data relevant to each code (Braun & Clarke, 2006). Thus, initial codes were generated, and quotes of interest were highlighted in the transcripts. After initial coding, research team members met to review emerging codes, discuss variations of codes, and review emerging themes. It was decided that there were three potential themes – physical guidance, tactile modeling, and teaching.

## **Reliability**

The researcher used frequent debriefing sessions with her advisor and other researchers to discuss alternative approaches, draw attention to flaws in the proposed course of actions, provide a sounding board for the investigator to test his or her developing ideas and interpretations, and help the researcher to recognize his or her own biases and preferences (Shenton, 2004). Additionally, peer scrutiny of the research project by colleagues, peers and academics were welcomed, as well as feedback offered to the researcher at any presentations (e.g. conferences) that were made over the duration of the project.

## Results

The purpose of this study was to determine (1) if swimming instructors explained to children with visual impairments the different strategies and let them choose which they preferred, (2) what was the preferred instructional strategy for these children, and (3) what was the preferred instructional strategy for these instructors.

This study was conducted during a week-long developmental sports camp for children with visual impairments in western New York State. Thirteen athletes aged 9-14 years ( $M=11.2$  years;  $SD=1.6$  years) and 14 coaches age 16-35 ( $M=21.9$  years;  $SD=4.7$  years) participated in this study. The semi-structured focus groups with children were divided into two groups being sensitive to ages: (a) 6 children ages 9 and 10, and (b) 7 children ages 12 to 14. Another focus group was conducted with instructors. They were divided in two smaller groups to provide ample opportunity for each instructor to participate.

Pseudonyms have been used to present the athletes' and coaches' voices. Athletes levels of vision are indicated the first time their voices are heard. Children's and instructors' preferences can be found in table 3.

Table 3. Athletes' and instructors' preferences in swimming classes

<b>Athlete</b>	<b>Athlete's Preference</b>	<b>Instructor</b>	<b>Instructor's Preference</b>	<b>Agree/Disagree</b>
Aiden	PG	John	Depends	Disagree
Damian	PG	Kelly	PG	Agree
Chloe	TM	Helen	TM	Agree
Noah	Both PG/TM	Carl	Both PG/TM	Agree
Brian	PG	Amy	PG	Agree
Nicole	TM	Emma	TM	Agree
Mary	PG	Erika	Both PG/TM	Disagree
Dave	PG	Bobby	PG	Agree
		Elias	PG	Agree
Nelly	TM	Sara	Depends	Disagree
Louis	PG	Camila	PG	Agree
Alan	TM	Daiane	Depends	Disagree
Nathan	Verbal	Ester	PG	Disagree
James	Both PG/TM	Marc	Verbal	Disagree

PG = Physical Guidance; TM = Tactile Modeling; Both PG/TM = Both physical guidance and tactile modeling; Verbal = verbal instruction; Depends = depends on the skill being taught.

### **Research Questions**

Research question 1 - Did swimming instructors explain to children with visual impairments the different strategies and let them choose which they preferred? Instructors and athletes discussed during the interviews that they were asked what strategy they preferred, however instructors could not use their preferred strategy all the time. Instructor Sara said:



“I was comfortable with whatever she was comfortable with. So I would ask her to explain the skill before she would try it to see if she understood it and she did it and we would try the other. So I really pick whatever she felt would help her more in the skill”.

Coach Ester had a different experience, as her athlete preferred teaching strategy was diverse from what she thought was the better strategy for him: “I would try to basically convince him into the physical guidance but there was sometimes that was difficult to try to win him in the tactile modeling that he liked”.

Interviews showed the importance of teaching students and athletes as many different strategies as possible, so they can understand and choose what works better for them. It also helps with choice making skills and self-determination skills, because they will learn how to choose the best fit for them in each situation, which can be used in other daily life situations.

Research question 2 - what was the preferred instructional strategy for these children? Table 4 shows the results for this question.

Table 4. Athletes’ preferred instructional strategies

<b>Instructional Strategy</b>	<b>Athletes Preferences</b>
Physical Guidance	6 (46.2%)
Tactile Modeling	4 (30.8%)
Verbal Explanation	1 (7.7%)
Both Physical Guidance and Tactile Modeling	2 (15.3%)

The preferred instructional strategy was physical guidance with 6 athletes (46.2%), followed by tactile modeling with 4 athletes (30.8%) and verbal explanation with one athlete (7.7%). Two athletes reported that they preferred

both physical guidance and tactile modeling together. This result can also be divided by athletes' level of swimming, as shown at table 5.

Table 5. Athletes' preferences by swimming level

<b>Swimming level (Number of Athletes)</b>	<b>Physical Guidance</b>	<b>Tactile Modeling</b>	<b>Both</b>	<b>Verbal Explanation</b>
Beginner (6)	2	4		
Intermediate (6)	4		2	
Advanced (1)				1

Table 5 shows that beginner swimmers preferred tactile modeling (4 athletes) during swimming classes and intermediate swimmers preferred physical guidance (4 athletes). The only athlete that preferred verbal explanation in the group was in the advanced level, and it may be explained because he was already a good swimmer, so for any changes or corrections needed during classes, it was easier for him to understand just with verbal explanation from his coach, once he already had the necessary skills to swim.

Research question 3 - what was the preferred instructional strategy for these instructors? Results can be found on table 6.

Table 6. Instructors' preferred instructional strategies

<b>Instructional Strategy</b>	<b>Coaches Preferences</b>
Physical Guidance	6 (42.9%)
Tactile Modeling	2 (14.3%)
Verbal Explanation	1 (7.1%)
Both	2 (14.3%)
Physical Guidance and Tactile Modeling Depends on the skill being taught	3 (21.4%)

Coaches' preferences are similar to athletes' preferences. The most preferred was physical guidance with 6 coaches (42.9%), followed by tactile modeling (2 coaches, 14.3%), verbal explanation (1 coach, 7.1%), both physical guidance and tactile modeling (2 athletes, 14.3%). Three coaches said their preference depends on the skill being taught. This shows the importance of being adaptable and knowing different strategies, so teachers and coaches have options to choose from while teaching. If one strategy did not work as expected for a specific skill, coaches should be able to teach again in a different way, enhancing chances of learning for the student.

The thematic analysis used for data analyses revealed three themes: (a) physical guidance, (b) tactile modeling, and (c) teaching strategies.

### **Physical Guidance**

The theme physical guidance described the instructional strategy preferred by the majority of coaches and athletes. Six coaches (42.9%) and 6 athletes (46.2%) preferred using physical guidance during swimming classes, as Coach Elias stated "I preferred physical guidance because we made more progress using it". Coach Bobby agreed, "My athlete did benefit the most from physical guidance, so I used this strategy more". Athlete Damian (B1) talked about his experience. "My favorite was physical guidance because they are doing it to me and I can feel the movement". Athlete Nelly (B1) also said "my coach helped me get through the motion and then I did it".

Other preferences that arose were tactile modeling: 2 coaches (14.3%) and 4 athletes (30.8%); verbal explanation: 1 coach (7.1%) and 1 athlete (7.7%); both physical guidance and tactile modeling: 2 coaches (14.3%) and 2 athletes (15.3%);

and 3 coaches (21.4%) said their preference depends on the skill being taught.

The theme of physical guidance also included subthemes of *a quicker learning process* and *muscle memory*.

**A quicker learning process.** Physical guidance led to a quicker learning process during classes as stated by instructor Amy: “I definitely thought physical guidance was much better. Using tactile modeling, they can’t remember as well as physical guidance. I found that physical guidance worked better just because he is moving.”

Coach Kelly supported it. “When I was physically guiding him, he was getting it all at once and he was engaged in it because he was doing it”.

**Muscle Memory.** Additionally to making the learning process quicker, physical guidance strategy looks to activate muscle memory. The term muscle memory refers to movement memories that are stored in your brain which are more easily remembered later on. Coach Amy mentioned: “If you do it (physical guidance) with them, it is more like muscle memory. They remember that more than something they just touch”. Coach Kelly concurred with her “When I was moving his body he asked a lot less questions because he was doing it right away and he seemed to catch on faster”.

### **Tactile Modeling**

Tactile modeling was another major theme during focus groups. This instructional strategy requires detailed planning on the part of the instructor and extra time for the student (Downing & Chen, 2003). Coach Erika commented, “With the tactile modeling, I did have to break it down, so it was a lot more work.

We had to go over it in different ways, and I had to point out where to look.” This strategy was preferred by 2 coaches (14.3%) and 4 athletes (30.8%).

Tactile modeling encompasses both positive points and barriers faced when using this instructional strategy to teach swimming. Subthemes were *barriers* and *better instruction*.

**Barriers.** A considerable number of barriers were revealed when teaching using tactile modeling. One barrier described for coaches was the child’s difficulty in understanding the whole movement. Coach Kelly noted, “It’s hard to have them feel all of your body parts while you are doing it – when I was modeling it, I wouldn’t think about what my feet were doing, so he wouldn’t catch that”. Coach Camilla agreed with her. “With the tactile modeling he never really understood where my arm was going”.

Size differences between coaches and athletes were another big issue while using tactile modeling. In this strategy, athletes can explore the model’s body in a given movement, recognizing speed, direction, and precision (Lieberman & Haibach, 2012; Lieberman, 2011; O’Connell et al., 2006). However, if the model is bigger than the athlete, he or she may not see the connection between them, or not be able to reach distant body parts. Coach Amy and Coach Bobby agreed about size difference: “Tactile modeling didn’t work as well because of the size of the kid” and “I think a problem with the tactile modeling was our limbs were longer because our athlete is shorter than us”.

Instructor Sarah mentioned another barrier for tactile modeling while being in the water.

“Sometimes it would be a front float and my face would be in the water, so she would be feeling my arms and my arms would be spread out. She would be asking me questions but I couldn’t answer them”.

At the same time, if the coach did not put her head in the water, she would not be teaching an accurate form of front float and it would not be as effective. Coach Amy commented that “I obviously can’t swim and hold him at the same time, to have him feel me swim”.

**Better instruction.** At the same time that tactile modeling presented higher number of barriers, it showed to help engage athletes in a more active learning process where students are more engaged and paying more attention to what they are learning. In passive learning, the opposite, students don’t usually engage on the learning process, they do not interact or contribute to it. Instructor Erika highlighted this clearly: “She (her athlete) was more engaged, so I found that when I direct (tactile) modeled it, it worked really well. I felt she was more engaged in that learning process than when I physically moved her.”

Coach Helen explained why she prefers tactile modeling:

“I put a kickboard under my stomach so I was able to float and she was able to feel me at the same time. And I moved and I had her feel the different parts, like here put your hand on my wrist. We are going to move that like that, now put your hand on my elbow, we are going to move that like that, okay now feel everything together. I felt more comfortable with her manipulating my body, instead of me manipulating hers where she felt vulnerable and where I could have harmed her by drowning her”.

Coach Erika discussed a different point:

“I felt that tactile modeling was a lot more difficult to teach and it certainly required me to engage in the information I was teaching in a much greater depth, than I otherwise would have done but it felt like there was certainly more teaching and more learning from my point of view anyway”.

Thus, while using tactile modeling, it is necessary to break down the skill in smaller parts, what requires instructors to have more knowledge and familiarity with the skill being taught.

Coach Ester asked her athlete about his preference: “when I asked him how he felt he learned best, and about how he learned in the past he said that tactile modeling was better for him”. Furthermore, other 3 students (30.8%) stated they preferred tactile modeling during swimming.

### **Teaching Strategies**

The final theme, teaching strategies, was a key theme that arose in the interviews. Teaching includes the subthemes *it depends on the situation*, and *child feedback*. Coaches used these subthemes during classes to decide what instructional style they used. Athletes also understood their role in the learning process and helped the coaches to find the best way to proceed.

**It depends on the situation.** Teaching techniques are chosen depending on the situation. One example is the skill being taught. Instructor John varied the technique for each part of the stroke:

“I told him to throw the elbow back and hit something, he liked that. Then I had him feel me, asked him if he felt the elbow going back and how it moved and the shoulder bone popping out. There were moments where that didn’t click for other parts of the stroke. So I used physical guidance with those parts, because it seemed to click better when I would move him through it.”

Athlete Nathan (B2) explained why it is important being adaptable and understanding during classes.

“I would say that in general the best way to be taught for me would be all of them. Because it might not always seem clear when you do it verbally. People could use the same word but you could be thinking an entirely different thing than what your coach is trying to tell you. And it helps to go

through the hands motion with them (physical guidance) and if you still are having trouble, you could feel what they are doing”.

And athlete James (B2) agreed “All of them because it is better to get taught different things in different ways”.

The time of vision loss of the child is another situation that arose during the interviews. Coach Erika said “if they had any vision early in life, there are a lot of basic concepts that are just there from development that make huge difference in your ability to teach physical movement”. O’Connell et al. (2006) stated that children with visual impairments have a lower level of fitness and less well-developed motor skills than their sighted peers because they usually experience a lack of opportunities to reach their potential. Coach Helen exemplified this concept perfectly:

“My athlete kept spreading her fingers apart and I worked on how you can get more soup if your hands are closed more like spoons than like forks. You wouldn’t eat soup with a fork. She didn’t know that there were holes that went all the way down the fork. She just thought that they were at the top and you could pick things up. So we had to go through that and then go through how you scoop your hands like a spoon to push the water. Something like that doesn’t have anything to do with physical education. If she had vision earlier in her life, if she saw a spoon, if she saw a fork, she would have that understanding”.

**Child feedback.** Child feedback was another topic discussed while choosing teaching styles. Athlete James (B1) stated that his coach let him chose “He said that whatever you will be more comfortable or will help you succeed by doing it”. Thus, his feedback was an important part of the teaching/learning process.

Instructor Helen and Diana described how they got feedback from athletes. “When I tried to teach her something and I would grab her, she would shrink and squirm back, and she wasn’t comfortable with that” and “If I was putting him



through physical guidance, I could tell if he did not like it or he literally just tells me to stop”. Coach Camilla completed: “I could tell right off the bat with his facial expressions and his body language that he really was uncomfortable with one way. So I would switch it out for him”.

Coaches and athletes’ preferences may be not the same (See Table 3).

Sometimes it is necessary finding creative and different ways to please both sides and still teach in an effective way. Coach Ester said:

“Unfortunately with my athlete, physical guidance worked a lot better but his preference was tactile modeling. I would try to basically convince him into the physical guidance but there were some times that were difficult to try to win him in the tactile modeling that he liked”.

## **Discussion**

“Children with visual impairments can perform gross motor skills as well as their peers with sight, but they just need to be given the opportunity and time” (Wagner et al, 2013, p. 3250). It is through a high percentage of physical activities engagement that students’ with visual impairments will learn and retain the necessary motor skills to be able to be physically active participants throughout their lifetime (Lieberman, Ponchillia, & Ponchillia, 2013).

The purpose of this study was to determine the instructional strategies preferences for children with visual impairments during swimming classes. This study was conducted in a week-long developmental sports camp for children with visual impairments in western NY State, with thirteen athletes and 14 coaches. They participated in semi-structured focus groups after swimming classes during camp. Throughout interviews and data analyses, the research questions that guided this study were answered.

As can be seen in table 3, coaches and athletes did not often agree in their preferences. Eight pairs of athletes/coaches had the same preferred strategy, while 6 pairs disagreed on it. Personal preferences should always be taken into consideration, but in teaching/learning process, instructors have to look for their students’ preferences first and be able to change their teaching styles and adapting it for each of their students, thus making the learning process enjoyable and meaningful for them.

Throughout interviews, various topics were revealed and encapsulated in three themes: physical guidance, tactile modeling, and teaching strategies. These three themes are worthy of discussion and may have implications for teachers,

parents, professionals in Adapted Physical Education and Visual Impairment fields.

### **Physical Guidance**

Houwen et al. (2009), Houwen et al. (2008); O'Connell et al. (2006), and Wagner et al. (2013) suggested that children with visual impairments demonstrate less developed motor skills than their sighted peers. The findings of this study showed that using physical guidance as an instructional strategy led to a quicker learning process. This supports the findings of O'Connell et al. (2006) who stated that the proprioceptive feedback from the tactile prompt will give the student the information needed to perform the skill correctly, increasing his or her understanding of it, and allowing the student to be aware of the correct form. Thus, physical guidance benefits the development of motor skills for children with visual impairments.

Coaches also commented that physical guidance activated muscle memory, so children remembered the movement easier and better later on, when compared to other instructional strategies. Physical guidance has been shown to increase the success of students who are visually impaired in acquiring skills (O'Connell, 2000; O'Connell et al., 2006). In such a way, experiencing success during swimming classes may be one of the reasons that physical guidance was the instructional strategy preferred for 46% of athletes and 43% of coaches in this study. This strategy benefits students to learn motor skills necessary to participate in physical activity with their peers, to be successful, and to have an active lifestyle.

On the other hand, when physical guidance is done too routinely and exclusively, it conditions the child with visual impairments to be passive, to wait for direction from the hands of another, and to avoid reaching out into the world for information and stimulation (Miles, 2003). Chen and Downing (2006) also cited another problem of using this strategy:

“Teachers and instructors must be aware that it may result in reluctance and resistance of some children to be manipulated. Physical guidance should be used gently, respectfully, and cautiously, given that the child may not actively participate and has little control over the process” (p. 88).

### **Tactile Modeling**

Tactile modeling is the inspection by a student of a demonstrator or an object by touch that can help the student learn and understand a skill (Lieberman & Cowart, 2011). This strategy presented more barriers for athletes and coaches. Some barriers were the difficulty of understanding the movement as a whole including arms, legs, head, and smaller parts as fingers position; size differences between coaches and athletes; and difficulties of being in the water –hold the child and swim at the same time or put the head in the water and answer questions.

Otherwise, tactile modeling seemed to engage athletes in more active and specific learning with a greater range of details of movements in each skill. It also got athletes more engaged and participative in the learning process. This is similar to recommendations by O’Connell et al. (2006), who described that tactile modeling is beneficial because it often clarifies the mechanics of the movement more comprehensively than does explanation alone or explanation and physical guidance. Tactile modeling gives the student control of the learning process by providing a choice of the specific components of a performance to focus on.

Instead of being manipulated, the student can take the lead, feel the movement, and control the information input of the lesson (O'Connell et al., 2006).

### **Teaching Strategies**

The theme teaching strategies reflected the complexity of teaching. At times, instructors and coaches provide instructional support with or without sensitivity to athletes' preferences and feedback. This study presented important topics to help teachers and instructors decide which strategy to use when teaching children with visual impairments.

Instructional strategy choice may be situational, depending on skill being taught, time of the child's loss vision and the child's level of visual impairment. It can depend also on child's feedback and preferences. It is important that students with a visual impairment are given the option to use one or the other method with each new skill, since they may have a preference for one or the other method at all times or for different skills (Lieberman, 2011; Lieberman et al., 2013).

Indeed, students should be provided with the necessary knowledge about different instructional strategies and experience each one of them. They must learn from instructors and teachers which choices are available to them before they decide their preferences. It develops self-determination skills, which refers to a person's right to decide freely and without undue influence how he or she wishes to live his or her life (Sapp & Hatlen, 2010). Self-determination, as well as socialization, independence, and recreation are some areas developed during swimming classes. They are part of the Expanded Core Curriculum (ECC), which children with visual impairments need to develop to be successful in school, the community, and the workplace (Sapp & Hatlen, 2010).

## **Conclusions**

This study provides an in depth analysis of children with visual impairments' and coaches' preferences in swimming. Although the majority of the coaches and athletes preferred physical guidance, the interviews showed many positive and negative aspects about each strategy.

An awareness of the issues raised will allow teachers to consider the views and preferences of students with visual impairments during swimming classes. In fact, the findings can be used in other areas of physical activity, motor skills, and fitness. Of particular significance are the situations and barriers that influence the choices of the better strategies for teaching individual children.

Results provide a background for teachers and professionals who work in the field and demonstrate the necessity to train staff about different methods to teach children with visual impairments. Best practices to support students with visual impairments being successful, improving their performance, and increasing their physical activity can be facilitated by examining the preferences and experiences of the student.

## **Appendix A**

### **Focus Group Questions – Athletes**

1. How were your swimming classes at camp?

- What did you like about it?
- What new things did you learn?

2. How did your coach teach you – verbal instruction, physical guidance, or tactile modeling?

- What is the difference between them?
- Did your coach let you choose?

3. Which instructional style was your favorite?

- Which one did you feel more comfortable with?
- Which did you learn more from?

4. What is the best way to teach you? What style is your favorite during swimming and why?

- What would you change in your classes?

### Survey – Athletes

Age	
Gender	Female ( ) Male ( )
Visual Impairment Level	B1 ( ) B2 ( )
When did it happen?	At Birth ( ) Later ( )
Is it progressive?	Yes ( ) No ( )
School / grade	
Have you ever participated in swimming classes?	Yes ( ) No ( )
If yes, for how long?	
Where?	



## Appendix B

### Focus Group Questions – Instructors

1. What is your experience with swimming for children with visual impairments?
2. How were swimming classes at camp?
3. Which instructional style did you use – verbal instruction, physical guidance, or tactile modeling and why?
  - Which one felt most comfortable to teach and why?
  - Which one did the child learn from the most?
4. How do you explain the differences between them?
5. Did you consider your child’s preferences?
6. What instructional style worked better for you?

### Survey – Coaches

Age	
Gender	Female (    )    Male (    )
Education level	Undergraduate Student (    ) Graduate Student (    ) Bachelor’s Degree (    ) Master’s Degree (    ) Doctor’s Degree (    )
Years of experience teaching	Swimming _____ Children with visual impairments _____ Swimming for children with visual impairment _____

## Appendix C

### Focus Group Transcriptions - Athletes

#### Group 1

**Researcher:** I would like you to think about your swimming classes this week. Do you remember that I told you, when you arrived, that I was going to do a study, and I want to know what you like better and what you prefer.

**Nicole:** Oh, that is interesting.

**Researcher:** So, I want you to think about swimming classes and how your coach taught you during the week. I think your coaches taught you in two different ways, right? Can someone tell me which ways?

**Nicole:** Umm, tactile.

**Researcher:** Yes, tactile modeling. Can you explain this one?

**Nicole:** You feel your coach when they are doing the movements.

**Researcher:** Yes! Aiden, do you know the other one?

**Aiden:** Yes, physical guidance. When your coach moves you.

**Researcher:** Yes, right. Does everyone understand it?

**Everyone:** Yeah!

**Researcher:** Did you enjoy swimming classes?

**Everyone:** Yeeees!

**Researcher:** What new things did you learn?

**Chloe:** I learned the front and back crawls.

**Damien:** Same here, and I perfected my breaststroke.

**Nicole:** My coach taught me how to front glide.

**Mary:** I learned the front crawl, back crawl, and breaststroke and how to float.

**Noah:** I learned a lot of the strokes.

**Brian:** I learned diving.

**Aiden:** I know something that I learned: getting in the pool from the slide.

**Researcher:** When your coach was teaching you, using the two different styles, did he let you choose?

**Damien:** He did both. He didn't really ask each one you wanted, he just did them both.

**Researcher:** About the two different styles, which one did you prefer?

**Aiden:** Physical guidance for me.

**Nicole:** Tactile modeling.

**Damien:** Physical guidance.

**Chloe:** Tactile modeling.

**Mary:** I can't remember the name, what is the one when your coach moves you?

Oh yes, physical guidance.

**Noah:** I don't think I have a favorite. I liked them both.

**Brian:** Diving.

**Researcher:** But do you prefer when your coach help you or you feel her doing it?

**Brian:** When she helped me.

**Researcher:** So, now I want to know which one did you feel more comfortable learning from? Was it the same or the other one?

**Everyone:** Same.

**Nicole:** The other one.

**Researcher:** Now, Which one did you learn most from?

**Damien:** Physical guidance.

**Aiden:** Physical guidance.

**Chloe:** Physical guidance.

**Nicole:** Physical guidance.

**Mary:** Physical guidance.

**Noah:** Physical guidance.

**Brian:** When my coach helped me.

**Researcher:** Good. What is the best way to teach you? Do you have a favorite?

Do you think both are good? There is no wrong answer here, okay?

**Aiden:** I think both.

**Damien:** For me it is physical because they are doing it to me and I can copy the movement but I think it depends on the person.

**Chloe:** Both.

**Mary:** I would say physical guidance.

**Noah:** Both.

**Brian:** When I feel my coach doing it.

**Nicole:** Both.

**Researcher:** What would you change in your swimming classes?

**Aiden:** Changing to just having fun. Or working on what you are terrible at.

**Damien:** I think it is a pretty good swimming class but I think I would make it more complicated as we go, when our abilities get better, but I know we have levels to do that.

**Chloe:** Probably the amount of levels.

**Damien:** Oh, it is a good idea. We should have more levels.

**Chloe:** No, what I mean having more different things for each level and do different things each time instead of the same thing.

**Mary:** I would change to work out in different stroke, so one day one stroke, then the other day another stroke, and then make them more complicated.

**Noah:** Have more things to learn every day.

**Researcher:** So would you like to be more challenged?

**Noah:** Yeah!

**Brian:** Having a water slide.

**Nicole:** I think we should work in a stroke for a few days and then switch units, like science that you work in a lesson for a few weeks and then you change to another lesson.

**Damien:** I agree that there are a lot of lessons and too little time. But in our level what we were doing was assessment, what makes sense. For example in the first day we covered two different strokes. So I think we should work on these strokes for the next three days. But the next three days what we did was assessments and time trials. So I think we should work on time trials only the second to last and the last day.

**Chloe:** Yes, I would prefer less time trials.

**Researcher:** Thank you everyone.

## Focus Group Transcriptions - Athletes

### Group 2

**Researcher:** My first question is how were your swimming classes at camp?

**Alan:** In a scale from 1 to 10 maybe a 6. Because, to be trueful, there was not much free time.

**Nathan:** They were great; I tried my hardest to really go beyond my comfort zone. **Researcher:** Did you like that?

**Nathan:** I love that. I absolutely love swimming.

**Researcher:** Is it your favorite? What new things did you learn?

**Nathan:** It is my second favorite, first is Judo. But I definitely learned the butterfly.

**James:** I guess it was alright, but I would prefer it to be the last thing we did so we could keep cool off and it was really tiring.

**Nelly:** I liked them. I was working on my float, what I almost did. And I worked on my front crawl.

**Louis:** I liked to be in the water. Breaststroke, front crawl.

**Dave:** Front crawl.

**Researcher:** Fantastic! How did your coach teach you? Listen to the examples: did your coach speak to you and give the instructions, or did they use physical guidance – who knows what physical guidance is? Oh, three hands went up!

Nelly!

**Nelly:** When your coach helps you through the motion.

**Researcher:** Good answer. When they take your hands and they move them through the water. And there is one left. Who knows what is left?

**Nathan:** Tactile modeling.

**Researcher:** Is it called tactile modeling?

**James:** It is something when you put your hands in the coach.

**Researcher:** Oh James, ten points! Excellent! So, the question was: how did your coach teach you? Let's go around and you tell me.

**Nelly:** We used all three. When we were swimming she said keep your ice cream scoop or she helped me get through the motion and then I did.

**Louis:** My coach moved my arms and my legs.

**James:** Technically, he used all three.

**Nathan:** She talked to me and helped me go through the motions and if I didn't get it, she let me feel her arms and legs.

**Dave:** They used both.

**Researcher:** What were the differences between them again?

**Alan:** The hand over hand is basically when they are moving you, and tactile is when you are feeling them doing the movement.

**Researcher:** Next question, did your coach let you choose what type of teaching you did?

**James:** Basically he said that whatever you will be more comfortable or will help you succeed by doing it.

**Dave:** Yes.

**Nathan:** I don't remember if she let me choose or not. I just remember doing it.

**Researcher:** Louis, were you allowed to choose?

**Louis:** I don't think so.

**Nelly:** We would do the movement and then I would say “I didn’t really understand” and she would say “Do you want to feel me doing it?, or “Do you want me to show you?”. So yes, kind of.

**Researcher:** Okay guys, thank you. We only got two questions left. Which type of teaching was your favorite?

**Researcher:** Hands up for verbal – 2 hands up – Louis and Nathan.

Hands up for physical guidance – Dave, Louis.

Hands up for tactile modeling – Nelly, Alan.

James how about you? Oh, James likes all three of them

**Researcher:** Which did you learn more from?

**Researcher:** Hands up for verbal - Alan and Louis.

Hands up for physical guidance – Nathan.

Hands up for tactile modeling – James and Nelly.

**Researcher:** The last question now! What is the best way to teach you?

**Dave:** Feeling them moving through the water. Because this is what I like.

**Nathan:** Well, I did pick different things for the previous question, but I would say that in general the best way to be taught for me would be all of them. Because it might not always seem clear when you do it verbally. People could use the same word but you could be thinking an entirely different thing than what your coach is trying to tell you. And it helps to go through the hands motion with them and if you still don’t get it, if you are still having trouble you could feel what they are doing.

**James:** All of them because it is better to get taught different things in different ways.



**Louis:** My coach moving my arm because it feels good.

**Alan:** Talking basically, because I can fix it very fast when told to do an adjustment.

**Researcher:** Very last question now. What would you change in your classes?

**Nathan:** Depending on the person or people that are participating, for me I would do all of them. For example, if I was only doing verbally, that would be the best. I would change, umm let's see... It is hard...

**Researcher:** Okay, do you want to take a break? We will go back to you in a moment, Nathan.

**Alan:** The rules of not going underwater when your instructor is talking.

**James:** Not really anything. It was a little tiring but it is ok.

**Dave:** Not sure.

**Louis:** I would change the kicking.

**Nelly:** I liked what we did but I would like to compete every day. I am very competitive. It makes me push myself harder.

**Nathan:** I would not change anything except I like competition myself. I enjoy feeling competitive. Sometimes I can feel a little bad for myself because I can have friends on the other team, but it doesn't mean I don't enjoy the feeling. Also pressures me harder and I was on it because I was thinking – I got to get to the end. I got to get there!

**Researcher:** Okay, thank you for participating in this study and answering my questions.

## **Appendix D**

### **Focus Group Transcriptions - Coaches**

#### **Group 1**

**Researcher:** Okay so, I have a couple of questions for you? And then just talk about it like as you experienced it. What is your experience with swimming for children with visual impairments?

**John:** This is my first experience with visual impairments in general.

**Researcher:** Okay, Kelly.

**Kelly:** Umm, little bit more difficult because you actually have to like use your arms to show them things because they can't actually see what you are doing. So I found that to be challenging but I enjoyed it.

**Helen:** Is this your first time doing it?

**Kelly:** It was my first time.

**Helen:** Yep mine too.

**Carl:** It was my first time working with anything like this in general so it was very exciting and very interesting.

**Amy:** Umm this is my third time. I find that they don't understand like the shallow end and the deep end. They think that if they can touch the bottom in the shallow end they usually think they can always touch the bottom all the time they don't really get the idea. Because they can't touch the bottom in the deep end so they really don't know like where it is.

**Researcher:** Okay, is it your first time?

**Emma:** No it is actually my third time. Between the two different techniques that we used I think that in certain instances, one of them kind of helps more. You know, it kind of depends on what you are doing.

**Researcher:** Okay, I am going to go there. I have more questions on it. So how are swimming...

**Erika:** Do you want me to answer?

**Researcher:** Oh I'm sorry, yes.

**John:** I'll start the questions.

**Erika:** I have never taught swimming other than at camp, this is my third camp. And I am assuming that is all you want from that question.

**Researcher:** Okay, how are swimming classes at camp?

**John:** How were they in general?

**Researcher:** Yes.

**John:** Umm they were good; I wish we had more space. Just because, there were so many kids in one pool. Probably could have worked with him a lot more but their energy was getting worn out too, so it went well for what it was.

**Kelly:** I agree with John, the space was a little bit confined. Once you worked past the people that were next to you then it was fine.

**Helen:** Yeah I would agree the same thing. I think it would also be beneficial because the strokes and different things that were on the assessments, I really didn't know what they looked like. There wasn't always a coach who knew what we were talking about. So I think there were 5 or 6 athletes in our two lanes and only one coach who really knew everything. So having someone even on the outside who knows what is going on would be helpful.

**Carl:** I felt like the classes were great, except for the lane lines were very restrictive. It was very hard to work in the condensed places especially for a lot of the stuff on the assessments. Like streamline for 35 yards but we didn't have 35 yards. So it was very condensed space but we made it work.

**Amy:** I agree with Carl, they were pretty good besides like space. Don't have a lot of space but they were pretty good.

**Emma:** I think that the classes should have like more, like we have this whole assessment we have to fill out but we didn't even go over half of the skills that were on my assessment. I don't even know what level we were at really, because they didn't tell us. They just told us oh you are going to be in this group they didn't say what level. Even though this is my third time at camp, I really don't know how to I guess differentiate. So I mean I guess it would be more helpful if you know they went by that and to go by our repertoire of skills.

**Erika:** Definitely need more space and I think we need a little more structure and guidance in the general space. We are not all swim specialists, this year I found that there were fewer swim specialists perhaps than there were in previous years. I felt like I was on my own more often than not and trying to make the swim assessment work. Small details, it would have been really helpful if there had been an assessment right at the pool that we could all access rather than us all bringing our own, because we couldn't write in them anyway until we were done at least we could reference until we could use our own if we were going to be left alone. (Group agrees with what Erika is saying)

**Carl:** I made that mistake I brought my assessment with me to the pool but it didn't go very well. All the ink ran down the page. It would have been helpful if they had a whiteboard to post the assessments on.

**John:** They had a white board right in the corner but they didn't use it. They could have put it up there.

**Carl:** More specialists would have been nice; maybe even a floater who knew what was going on.

**John:** In the easier groups I mean, being a PE major I was okay. But it's not just PE majors so you couldn't just expect that. You two aren't PE, you have experience but you don't know. No one said what level you were at no gave us oh this is what we are expecting with this stroke. You only have those few specialists, so you could be working on something for say 30 minutes since you didn't know what was expected.

**Erika:** In my instance, I had a student who had never had structured swim lessons before. The material that was covered within the lesson was relays and competition stuff. She was at a real basic level where she was comfortable in the water but didn't know any strokes. So I was the one teaching strokes, I know how to swim but what do I know about teaching strokes? I don't know if that was necessarily a good fit.

**Helen:** Also I realized on the assessment, there were things my athlete got up to. She swam the front crawl for 50 yards which was in level 5 but then like for other things she couldn't do. The assessment was all over the place.

**Researcher:** That is something I am going to talk to Stacey and Lauren about for next year. I really didn't like this assessment. (Group agrees with her about making changes to the assessment for next year. Also, mentioned that the levels really don't match up)

**John:** There was stuff in level 2 that my kid didn't know in level 3.

**Amy:** I had things marked for level 3, even though we were in level 1. We didn't cover everything in level 1.

**Researcher:** I know I am going to talk to them. I don't know if they are going to change but I am going to give my option. Something I talked to Mary about, in level 3 they have float on your back for 30 seconds, I can't float on back for 30 seconds so I would be stuck in level 3 forever. I would never go forward.

**Researcher:** So let's go now for the instructional styles, I asked you to use physical guidance and tactical modeling. Which one did you feel most comfortable teaching and why. And let's do this again if someone says something and you have something to add just jump in, more conversational.

**Amy:** I definitely thought that physical guidance was much better. I would use tactical modeling and they like might feel it but they can't remember as well as with physical guidance. If you do it with them it is more like muscle memory, they remember that more than something they just touch.

**Erika:** I disagree with that. (Helen agrees with Erika) I found that it didn't work as quickly when I modeled it. I found that she was more engaged, so I found that when I directly modeled it, it worked really well. My student was in the lower levels, I was trying to show her a glide with her arms straight out. My arms were straight out but the first time she didn't catch that my arms were straight out. Then

it was she didn't catch where my head was, that my legs were straight, and that my hands were together. So the three times she tried it I caught that something was incorrect and directed where she should look next. I felt like she was more engaged in that learning process than when I physically moved her. But that wasn't true for everything.

**Helen:** She likes to do it for herself, not like keep her elbow bent. With my athletes she would swim but it would be going from 3 inches above her head to her chin. I would straighten her arms and then pushed down on those days we had to do physical guidance and then on the days we were doing the modeling I put her arm on top of my arm and then pushed down. The other thing I realized, the researcher mentioned that we are all vulnerable in the pool because we are all in our bathing suits and we are not exactly comfortable. When I tried to teach her something and I would grab her, and I would say okay we are going to move this way or that way, she would shrink and squirm back and she wasn't comfortable with it. I would say that we could take a break from it but we would end up having to come back to it later. On those days I think she got more from me explaining rather than me physically moving her.

**Erika:** That could be a personal thing too, I have had 3 students and some of them didn't care at all about it. My current student doesn't care at all about being touched but the one I had 2 years ago was really antsy about it. In every case they were 10 year old girls and it is definitely a personal thing.

**John:** Umm I feel like I did both. Umm my kid kind of took both equally; he already had a strong swim background. He was doing really well in the group he was in. What I was teaching him was more of refinement stuff that he might have

already had in the back of his head and I was just refining it. He already had the majority of his front crawl down. The things I worked on that I had tactile modeling was getting my elbow back. We told him to throw the elbow back and hit someone, he liked that. Then I had him feel me, asked him if he felt the elbow going back and how it moved and the shoulder bone popping out. He liked that and he understood that but then there were moments where that didn't click for other parts of his stroke. So umm I used physical guidance with those parts, because it seemed to click better when I would move him through it. There were ups and downs to both.

**Erika:** Can I ask a point of clarification? Do all of our students have no vision?

**Researcher:** B1 and B2

**Erika:** They are all congenital? They all haven't ever had vision?

**Researcher:** I don't know it is a mix of both. Something else?

**Kelly:** I agree with what she said earlier with the muscle memory thing, when I was moving his body he asked a lot less questions because he was doing it right away. When I was modeling it, like you said, I wouldn't think about what my feet were doing, so he wouldn't catch that. So I would finally go back to doing that, it's hard to have them feel all of your body parts while you are doing it. But I really like the physical guidance part; sometimes we even had to get out of the water to do it. I mean with verbal cues and physical guidance I thought that worked best. He seemed to ask a lot less questions that way and he seemed to catch on faster.



**Erika:** I wouldn't underestimate the role of vision in this, if there is any useable vision that's going to be huge part in which style works better. Both B1 and B2 are pretty low in the world of vision; even B2 is enough vision for modeling to work a lot better. I don't mean in terms of what you are specifically teaching but in terms of how the student learns. Because I work with people who are blind and visually impaired and umm there isn't a lot of. In everything I have tried to teach my student if I guided her into something or verbal cued her or held her hand up for the signals in biking she would not hold that. If I showed her something in a dance anything it was she wouldn't hold it unless she was engaged in the learning in some way. I don't know that everyone learns the same way but that engagement thing is the most important thing.

**Amy:** My athlete, if I did the functional assistance and pick his arm up, he wouldn't hold it up himself. But I found it more useful to do that, like after if I asked him, I would drop his arm and ask him where your hand was or put it where I was just holding it. The modeling, he would feel it but he didn't really, it didn't really click for him. He wasn't doing it so he didn't understand it.

**Helen:** Something I was going to say that bounced off of what Erika was talking about was the role of vision. Even if they had vision and they like had since last vision. My athlete that I was working with kept spreading her fingers apart and I worked on how you can get more soup if your hands are closed more like spoons and like forks. You would eat soup with a fork. She didn't know that there were holes that went all the way down the fork. She just thought that they were at the top and you could pick things up. So we had to go through that and then go through how you scoop your hands like a spoon to push the water. Something like

that doesn't have anything to do with physical education but you know like Carl was saying with his athlete; he had vision earlier in his life. If he saw a spoon, if he saw a fork he would have that understanding.

**Erika:** It's even more basic than that; it comes down to your basic body movements that develop really early in life. So if they had any vision early in life, there are a lot of basic concepts that are just there from development that make a huge difference in your ability to teach physical movement. So in the understanding of space, if you see a kid who has no vision but they have had vision you can tell how free they are in the space around them and how free they are in terms of how they move their bodies. They are willing to point out with a straight arm instead of with a little point with the hand just coming off. Even just extending the hand for a handshake the hand doesn't come all the way up; it just comes off the body a little bit. There is no comfort in that space and that is a big deal when you are trying to teach physical movement. Especially in a pool, which is very 3D. You aren't just running and walking and moving limbs, you are up in the air and moving around.

**Kelly:** You just explained that perfectly. Made me think about it more.

**Carl:** I feel like when we did the physical stuff, like I had my athlete grab me and watch how to do the front crawl, he didn't get it as well as when I would say okay go do the front crawl. Because he wasn't out there doing it himself. For goalball, they had the tactile court and he felt it and was like okay that's what it is. But for court orientation, he really had to take it seriously and get in and understand it. He wasn't retaining it as well as if he would if he was out there experiencing it himself.

**Researcher:** Okay so, I think you kind of answered this already but if you can go through and maybe if you can choose one that's fine, if you can't that's fine. So which one did the child learn the most from do you think?

**Kelly:** Definitely physical guidance, him actually doing it.

**Emma:** I think that my athlete actually did better with the tactile modeling. Because whenever I would say do this, make sure these are straight, until she felt how my legs or my arms or my elbows were straight, I felt she did better and made her limbs straight after she had felt mine. She got what that meant exactly. After I would hold them there and let them go, it was just different.

**Erika:** So does that have something to do with her basic understanding of terms? Like I noticed with my athlete we spent the entire week working on the concept of straight limbs. So I could say put your arms straight and her elbow would still be bent. And she didn't understand that in every sport we worked on, we talked about straight versus bent. I could use that term straight and I could bend and I could straighten I could do anything but I can say the only time she got that was in the pool today when I modeled it. Strange but true, I don't know if I would pick modeling as the one that works better. I don't think I would rule any out, I really wouldn't. I would use all of them.

**John:** And you know the thing is fine motor skills too. Something like that is very fine motor as opposed to gross motor. Fine motor things like straighten the arm. (Group corrects John by telling him it is gross motor). Oh yeah, let me rephrase then. So something as simple as one limb moving, okay I see it is gross motor. I'm considering something as simple as straight arms, something like that they can feel probably and be like okay. With my athlete, the cupped hand thing,

he didn't get it when he felt my hands. He felt it and was yeah okay, and then he would swim like this. He would swim with his fingers open. Until I closed them and he saw that and felt that. When it became a full body movement, like I said I was working with him on bringing his arm higher and over. Until he felt me kind of doing that with him and for him, that helped to get that concept across. So maybe it can be something as simple as, he can focus more on one thing but when it comes to a movement, a coordinated movement like that, maybe ah physical guidance would be, tactile modeling that would be. Oh wait. (Group asks John for clarification) When they feel me moving (researcher says tactile modeling), so tactile modeling (For the whole movement? John answers yes).

**Carl:** I really feel that they can be used in conjunction with each other as well. I think I really good scenario, like here is a good spot to do tactile modeling but another place to do physical guidance. Like the hands, like feeling the hands for when he closed it, he got it. For something else he might learn it better if you have him feel your arm. I think using them in conjunction would really help.

**Researcher:** Don't go to conjunction please, don't together. I really want to know one or the other, I think both work better together.

**Helen:** I think for umm like the concept that my athlete struggled with most was doing the front crawl and stretching her arms all the way out and bringing them all the way down. The way that she mastered that skill was through modeling. I would show her stretching my arm all the way out and bring it down. We were standing close to the other end I would bring it down and push the water so she could feel it on her legs, like going between our legs. She finally realized she had to push all the way down, like I could have used the take the ice cream and push it

down into your stomach. Her arms were in the water but she was just pushing her stomach and she was sinking. For that specific instance, modeling worked best.

**Researcher:** Okay good. So how did you explain the difference between them for your child?

**Carl:** I told my athlete that tactile would be like physical, like you know how we have the tactile goalball court, it's like that but it's on your body. We are doing the motions and we are feeling what's going with our bodies, so we can understand how we can do the strokes better. For physical, I am going to move you and when I let go you are going to keep doing the motion. He retained that very well.

**Amy:** I just told him tactile modeling is like when you feel somebody else do it or feel something else, like the tactile goalball court, actually feeling it not walking around it. For physical guidance was just when I took his hands and moved them or took his legs and moved them, just like moved his body parts for him.

**John:** I would discuss it even before we got into the pool. I know that you were there a couple of times, so I would stop him and be like okay today is physical guidance. I would let him know right there and then, hey I am going to be touching you. I am going to let you know before I touch you, where I am going to touch you and how I am going to move you. And you know we are going to work our way through a movement, so that way before he goes in the pool he isn't freaking out too. He knows I am going to touch him and he knows what is going on. Just if you start physically guiding someone, especially someone with a visual impairment, there is going to be a freak out. As long as they know even prior to going in, as long as they know what they are doing.

**Erika:** I completely agree with that approach but that was not my experience. My athlete could have cared less about whether I touched her. (Group agrees with Erika). She was all over the place and enjoying all sorts of stuff. Cognitively, she understood the difference between the two. One is modeling, I am going to show you what to do and you are going to feel me. The other one is I am going to move you and then you imitate. That was pretty straight forward. I loved that you did it from the beginning; I think that would have been more effective. But I don't know because of her level and engagement with swimming, if she was even in a place to care to be completely honest. We were working on such early basic stuff that it didn't really matter to her. I think our athletes are probably close in age, mine was 10 but she was just so excited to be in the pool. And it didn't really matter, why wouldn't I want to swim.

**Amy:** Same with mine, he really didn't care. I could move his body and he was like cool, she's just teaching.

**John:** I might have thought of it backwards too, because I am thinking that people with visual impairments you know. Like if I had my eyes closed right now and I was touched, I would be freaking out because I don't know what just hit me. But for them they are probably use to it actually and I didn't think of that concept until now. They are probably use to people touching them, so they might be something of benefit of physical guidance.

**Erika:** We may want to watch the generalizations, because I don't know if there is any.

**John:** That's true, that's true.

**Erika:** I don't know that there are any real generalizations there. There is a startle issue but I know that my student could care less about that stuff. (Agreement from the group). That has to do with familiarity with the people around you but her roommate hates being touched. And it's not even like a spectrum thing, that's her personality or it might have something to do with her upbringing.

**Amy:** I definitely think that the home affects it. I think my kid in terms of getting around, he would umm. He knows where he is going but I think at home a lot of people do things for him. And don't think he actually like keeps track of things in his brain, which he does and if you ask him for it, he is fine with it. It's just he isn't use to having to do it; he is use to other people doing it.

**Erika:** This is deeper; the questions you are asking are not surface questions.

**Researcher:** Yeah I know, because a lot of times we like group discussion not questionnaires. Because in questionnaires, it's yes or no and that's not what I want, I want really to try to understand like what's going on and what's happening.

(Group asks for clarification on the original question asked)

**Researcher:** How do you explain the difference between the two?

**Helen:** Umm I taught it throughout the week. I did like the one day modeling and the next day physical guidance. But then like today, the last day. I kind of went through both of them, I said throughout the week I have been doing both of these. Physical guidance is when I would take your arms or your legs and like move them for you. And then for modeling, I would move my arms and legs and let you feel them.

**Kelly:** That is exactly how I said it. I said physical guidance is me physically moving you; I am going to help you do it. Tactile modeling you are going to feel my body do it and you are going to try and mimic me. That's really all I had to say, he is 14 years old and complete understood what I meant so I didn't have to go into any more detail than that really.

**Erika:** I would say it depends on how they learn, it really does. Because they are surrounded by home learning environments and school learning environments and these teachers are whether at home or at school, have all these different ideas of how to teach. And we can only work within their current teaching, learning abilities. Some are really passive, umm and that's a big problem. So if they are passive you have to find a way to engage them.

**Researcher:** Okay so, this question was because in the beginning I talked about on Friday do like children choose the type. But tomorrow we have the swim meet, so you are not going to teach them. But at any point during the week did ask, let them choose or consider your child's preferences?

**Carl:** I asked my athlete, because honestly some days I would honestly forget is it tactile or physical. So I would walk up to him and say hey what are we doing today? So I left it up to him and he always chose tactile. So I would say why don't we try physical once see how that works. So we did tactile for the first two days, then physical and then back to tactile. He was really comfortable with tactile.

**John:** I asked him and again this is for more coordinated movements we were working with. I asked him how he would rather learn, how he would rather have me show him. He said that he wanted to feel me do it. Obviously we didn't use



the lingo, but he wanted to feel me go through the motions. That was his preference for that and that was really the only time I asked his preference, and that's what he chose.

**Amy:** I didn't just because, I found for tactile modeling he didn't pay attention. Like it didn't work, he didn't learn anything from it. So if tactile modeling didn't work I just went back to physical guidance because he wasn't learning anything and it wasn't helpful.

**Kelly:** That's exactly what I found. Oh sorry.

**Emma:** I was going to say that I did ask which my athlete preferred. I asked which one helps you learn, how do you think you learn the most from? You know is it physical guidance where I take your limbs and actually move them and showed you how to move them or is it when I did it and you felt everything in position, that's tactile modeling. She was like yeah I like that way better.

**Researcher:** So the second way, tactile modeling.

**Emma:** Yes, tactile modeling.

**Helen:** I explained which was which, and asked her which one she liked better and she said tactile modeling.

**Kelly:** I basically did what you did. If one wasn't working I would jump to the other one but I really saw so much improvement with the physical guidance.

**Amy:** I definitely think it is like, their home and the way they are brought up has a lot to do with it. Because if they are used to people like picking up their arms and doing it for them automatically, they aren't going to learn as well with tactile modeling. Because they will be like I feel your arm but now what, it's your arm and don't need to do anything.

**Kelly:** It's like out of their perspective. Like when I was in front of him I was having trouble explaining it because I was like left and right and your left and then I would have to turn him around. "We are going to do physical guidance now, because I am messing up." Then it would be more confusing to him sometimes.

**Helen:** When you were modeling, were you in front of him or were you side by side?

**Kelly:** It was both, both ways. Sometimes I was standing next to him and like here's my arm right next to yours, then whenever I was directly in front of him I felt like it never worked. Because my arm was crossing over his arm, he was moving this way and then sometimes side by side it wasn't working out either. So when worked better than the other I would stick with that for a little while. I may not have done it totally correctly of sticking with one, one day.

**Researcher:** No, it's completely fine. I know that's impossible, you cannot. If he is not learning, then you have to change it.

**Amy:** Like some days I would try and he didn't. Like he would feel it and then he was gone to another subject. Like it's your arm, it doesn't matter to me. If he doesn't do it, he's like it's not my body I don't need to pay attention to this.

**Erika:** I feel like my student did, I didn't ask her. She wasn't overly engaged in it. I feel like she did better with tactile modeling but I think she would say that she prefers physical guidance. If we were going to do that game where you have to guess what your partner is going to say. I think she would pick physical guidance but I think that's because she didn't want to learn. In the field of vision impairment, there is a big push for hand under hand. Are you familiar with that? Because that is a big part of what you are describing, hand under hand is where

they are feeling over top of your hand while you are doing it. As opposed to you putting your hand on top of theirs and making it do something.

**Researcher:** It's the difference between physical guidance and tactile modeling.

**Erika:** It's exactly the same; it's typically in the classroom. Where it is just about what you are touching with your hands but gross motor. There are a lot of studies that say hand under hand is much more effective but I think that gets a lot more challenging when you are talking about gross motor movements, whether you are in the pool or anywhere else.

**John:** Student hand under or student hand over?

**Erika:** Over, yes.

**John:** Okay that's how I did it.

**Erika:** Hand under hand teaching would be modeling.

**John:** Okay, cool.

**Amy:** I would try it sometimes and my kid would just let go, he would just not.

**Erika:** Not engaged?

**Amy:** He would just swat it away.

**Erika:** That just means that he is not even that engaged when you are doing the other version.

**Kelly:** Literally just me saying you are going to do it, I am going to help you do it.

He would instantly perk up and be like okay. But me being like I am going to show you, you are going to feel me doing it. He didn't like, maybe sometimes it worked. But definitely me saying you, he was okay and all for it.

**Amy:** That definitely helps; I know my athlete didn't want to. He wanted to move around all the time in the pool, him having to just stand there and like feel my arm as I do it when he wants to jump around instead. I found that physical guidance worked better, just because he is moving.

**Kelly:** He is fully paying attention.

**Amy:** So he is not thinking oh I am going to go swim over here because this bores me.

**John:** When I approached tactile modeling, a lot of the time I had him, I would explain verbally, have him attempt it. A lot of the time it was something I was expecting a problem or an error in his movement and then I would say okay good, come feel how I do it. Come feel the difference that would actually help. That's how I approached it, I always had him try it first then come back refine it with the tactile modeling.

**Researcher:** Okay last question. So what instructional style worked better for you?

**Erika:** Are we talking which one worked better in terms of what we preferred teaching, because from the point of view of a teacher if it's not effective you can't really prefer teaching it.

**Researcher:** What do you think worked better for your teaching, what were you more comfortable with. Which would you choose, okay I am doing this?

**John:** I think it is situational, completely situational.

**Carl:** That's a very deep question. (Group agrees with Carl)

**Erika:** I think it is a difficult question because if we are all in APE and vision impairment, it's about creativity and finding what works. So I would say I prefer teaching as many different ways as I can get at something.

**Researcher:** So let me change the question. What worked better this week, what worked better for you with this athlete, for this swimming class? Not thinking about the whole spectrum of teaching forever.

**John:** I think it was still situational, depending on like I said with the smaller thing, as easy as straight arms, or gross motor things. It depended on what I was teaching and what needed to be refined. I think it was still, going along with what she said, it's whatever works and it was like that this entire week. It was whatever worked and got the job done. Like you said you wanted us to do physical guidance one day but if it doesn't work move on, do whatever it takes. I think that was the other end of it. So we did what worked.

**Amy:** That was definitely, like tactile modeling I would try and then I would be like this isn't working for me either. Because I am trying to teach him and he is not paying attention to it. So like I guess it's more frustrating doing the tactile modeling for me, because he just, like I would constantly have to be like okay pay attention. Don't let go, you have to keep your hand on mine. It was a lot better to take his arms and move them so like he would remember better.

**Emma:** Because I felt like my athlete did better and learned a little bit more from the tactile modeling that was my preference. That was kind of my go to thing if she didn't get it right off. I would always try to do the tactile first.

**Helen:** I felt more comfortable teaching the modeling. Because a lot of the time what I was, a lot of the skills that she needed to improve on where the skills when we were lying on our stomach. And for me to like, either she was standing up in the pool and I was moving her arms for the physical guidance and she would understand it. But once she lay on her stomach and started kicking, whatever I taught her would go out the way. When I was trying to move her while she was swimming, I ended up pushing her under the water and drowning her because I had to go through it slower. But when I was able to, like I put a kickboard under my stomach so I was able to float and she was able to feel me at the same time. And I moved and I had her feel the different parts, like here put your hand on my wrist. We are going to move that like that, now put your hand on my elbow, we are going to move that like that, okay now feel everything together. I felt more comfortable with her manipulating my body, instead of me manipulating hers where she felt vulnerable and where I could have harmed her by drowning her.

**Kelly:** I liked the physical guidance better, like you said you had to do it a bunch of times for one thing, because they can't feel each part of your body. But when I was physically guiding him, he was getting it all at once and he was engaged in it because he was doing it. Like you said, it was situational, if it was working then I was sticking with it. But it seemed like the physical guidance was really working and I was comfortable teaching it.

**Amy:** It would also depend like certain movements, like sometimes you like had him put his hand on your hand, sometimes it would be out of his reach. Like if you moved too far, he wouldn't understand because he couldn't reach that far. Like he couldn't reach as far as you could, so definitely moving his hand because

his reach is shorter than mine. So if you put his hand on mine and you moved it, his arm doesn't reach that far so it would just fall off mine and he wouldn't really get the whole concept. He would get half of it but he wouldn't know how to finish it.

**John:** I do think one of the key things for physical guidance especially with swimming, swimming, you are using arms and legs and you are going. It's so much going on and so many different dimensions, that when you are doing physical guidance you really have to break it down too. I think that is what I ended up having to do a lot of the time, instead of like going over something. Like I want you to, we are going to go through and do this whole thing. You really have to break it down, so I had him floating a lot of the time and like okay that's the arms. Okay I want you to that and I am going to manipulate the legs. Okay what else is going, what else is going on? It's kind of just a break down; you really have to break it down. Then I am comfortable doing it, but then there are situations where it is just situational and that's not possible.

**Carl:** I felt like when I was doing physical guidance and I was doing his arms, like John was saying, it started working. Okay I am going to leave your arms and we are going to do legs, I would start doing his legs and then his arms would start straggling. I didn't really feel like physical was working, but it was in a way. Because he still had that shape but it was shorter. It was hard to like balance him on one knee in the water, with like one foot and one arm. We made it work.

**Erika:** I think that for me anyway, it was much easier to teach physical guidance because I just had to demonstrate it. And really if I can move my arms I can move her arms. I felt that tactile modeling was a lot more difficult to teach and it

certainly required me to engage in the information I was teaching in a much greater depth, than I otherwise would have done. Certainly in my situation with someone who didn't have any previous swimming experience and someone, who was relatively young and didn't have a lot of the concepts, let's put it that way. I could say put your arms straight and it wouldn't go straight because she doesn't completely understand that. I felt like if I didn't do all that work to break that down, she would continue to have gaps in her learning that would translate to other things. So even though she wouldn't necessarily get the full coordinated body movement, there were gaps that were being filled. Because with the tactile modeling, I did have to break it down. So it was a lot more work, we had to go over it in different ways and I had to point out where to look but it felt like there was certainly more teaching and more learning from my point of view anyway.

**John:** Going along with her, the gaps and everything. They can feel what you are doing all you want with tactile modeling, if they have never really I mean seen and explored. Like I said with him doing his stroke, he had his arms back. I didn't only have him feel my arm, I had him feel the shoulder and I told him hey that shoulder bone is sticking out. I even stopped and asked him, I sure you can feel it but have you ever felt that sticking out and he said no. He claimed he had never seen it before and I am just using it as an example but I was okay like feel it. I grabbed his hand and was like this is where yours is.

**Amy:** Physical guidance was easier for me to teach in the pool because my kid was short, he couldn't touch. So like he, if I like tried to move my arm he would have a hard time just feeling my arm move because he was sinking. I would have to sit there and hold him up and like move his arms. It didn't work for me to like,



because you would have to engage your whole body in it. I obviously can't swim and hold him at the same time, to have him feel me swim. Because of his size it was different, like tactile modeling didn't work as well because of the size of the kid.

**Researcher:** Okay, thank you very much everyone. If you want to take a look at the questions for children and tomorrow maybe just ask a little bit about it during the day if you can. So at night if the know kind of what to expect. Thank you.

## Focus Group Transcriptions - Coaches

### Group 2

**Researcher:** Okay so focus group two, 7 people. Okay first question. What is your experience with swimming for children with visual impairments?

**Bobby:** I would like to think that my experience is pretty self-explanatory, in the sense that I have been totally blind for 21 years. I was on a swim team for I would say 3 years and I have been swimming at sports camp for 13 years. Some of that yes overlapped but I would say roughly about 12 or 13 years or so.

**Researcher:** Okay, thank you.

**Sara:** This is my first year working with students with visual impairments. I have learned a lot from the different methods you can use depending on the student and I actually learned a lot from my student, I think we learned from each other.

**Camilla:** This will be my second year working with students with visual impairments, both years at camp. So seeing the difference between my camper last year who actually had some vision and my camper this year, who is completely blind thought me different ways to teach the swimming lesson.

**Diana:** I have had 3 different experiences of sports camp over 2 years. One was in Finland so there was a language barrier besides getting over the visual impairment. And that's, I can't remember the question.

**Researcher:** So what is your experience with swimming for children with visual impairments?

**Diana:** I did 3 weeks of sports camps. (Group tries to correct Diana math). No 2 years of sports camps, but 3 camps because I did 2 this summer.

**Researcher:** Yeah perfect, okay good. It's not that formal.

**Ester:** My turn? This was my absolute first time working with a child with visual impairments swimming. So it was a really great experience, it was actually more difficult than I thought it was going to be because he was completely blind. He would jump in and be completely disorientated in the pool, so I actually had to swim in front of him as a guide. And scream as I am trying to swim backwards, it was exhausting. Yeah but he actually went out of his comfort zone, so it was really cool.

**Marc:** This was my first year working in the pool with a kid who has a visual impairment. I have never done it before; I didn't really know what to expect so. My athlete relies a lot on hearing, so being in the pool, although he may have half his face in the water half his face out. He can still listen to me and I can give him commands as he is swimming, in the process of him taking laps I can give him commands and he can adjust his technique. When it comes to technique, it was a little iffy, he is not the strongest swimmer but he gave it his all, he tried his best. He really did improve. In a lot of the categories we've had, that was the one category of the assessment that he improved the most in.

**Elias:** As far as for me, I have worked with students who have a visual impairment for 2 years now but I have never worked with them in the pool until this point. Dependent on the student it is important to know that my subject also has Autism. He is also totally blind but I believe that the Autism was more of a barrier than the visual impairment.

**Bobby:** I would have to agree with that, as someone who had the privilege of working with the same subject. That Elias, who just spoke did.

**Researcher:** Okay, thank you guys. Question 2, umm how were swimming classes at camp?

**Bobby:** I thought they were a bit too much of a free for all, in the sense that I felt that there was a concern with the time trials. The 25 yard front crawl and back crawl, some athletes did 50 yards with the front crawl and back crawl but I did feel like there was too much of an emphasis on the time trials. As opposed to what we had to assess, because the time trials took a lot away from the assessment. I know the reason there were the time trials is because there is going to be a swim meet tomorrow. But I do feel that umm the assessments were a little bit secondary compared to or less important than the time trials were.

**Researcher:** Okay, thank you.

**Elias:** I guess the biggest issue I had with the swimming classes were, I know that the coaches were fantastic, really good instruction, always able to get assistance if needed however I think one of the biggest cons to it was the time given. Usually, there limitations to who can use the pool when and where. A lot of it wasn't in control of the camp but I would think that the students might benefit from 1 ½ - 2 hours in the pool. That might depend on age group, which younger students might not be able to go as long as the older students. So it is kind of a student to student basis.

**Marc:** As for my athlete, umm I think him and I would agree that the biggest part of swimming that was the hardest, especially at his level, it was very difficult for him to stay engaged before he become completely exhausted. I had to help him up at a couple of points, he is a good swimmer, don't get me wrong. But some of the things we had to do were very difficult and there weren't many breaks given in

between. For example, a 50 yard freestyle followed by a minute break followed by a two minutes tread water. We got a lot done but at the same time it could have been more productive if given more breaks. In the sense, I know it kind of seems like the opposite, I think if he would ha been able to rest a little more he would have been way easier for him. And it would have progressed better.

**Ester:** I think that it would have been a lot easier for my athlete, if he would have had the exact opposite of what Marc just said. He needed more practice time on specific skills. I know in our group, our coach was absolutely phenomenal, we focused on the freestyle pull for one length of the pool and then we would go for the freestyle kick and then we timed trialed. So with my student he needs way more practice than the 3 minutes focusing on the pull or the kick. So it was really really hard for him to get it down and then they jump off the diving board. You just completely lost him. He is not focusing on anything he learned today, he couldn't even tell you what we learned today in swimming. He's like I got to jump off this diving block, so it would have been a little easier if we would have had more time focusing on the specifics and getting way more practice time in.

**Researcher:** Thank you

**Diana:** This is going back to what everyone else was saying about the time constraints. But there was definitely a lot of learning going on and coaches were there and especially I think one of the changes that could be made. With children with visual impairments, learning whole part whole for the skill, it is easier to grasp the whole concept when you can a whole lap at one time. There were a lot of people in a lane all at once, so my camper would start at the end of the lane, which is what happens, on the wall we get down and touch the lane line so he

knows that he made that lap. We go back for like a 50 but since there are so many people swimming next to him, it was hard to figure out. Sometimes we had to stop before the wall to finish the lap. He never got that, you are supposed to hit the wall then go to the other side and hit that and then come back.

**Researcher:** So there was no continuity or something?

**Diana:** Yes. And like to see like the whole picture, it wasn't, what is the word, like game is like or swim meet type situation. And I think that is about it.

**Researcher:** Okay, thank you

**Camilla:** I would agree with Ester, about having more time with the different strokes. My athlete was sick that actual first day of swimming, so he didn't get that first instruction day. Our coach, the first day was instruction day and I feel like that was all the main coach focused on in instruction day. Then it was up to us coaches to teach our athletes how to do the actual strokes. So my child never got to get the one on one attention with the head coach. So that was hard but I think definitely having more time working on, this is how you do the arms. Now do that for at least 10 minutes, now this is how you do the legs and then switching different strokes up. So my athlete is only competent in one stroke, because that was all I had time to actually teach him.

**Researcher:** Okay, thank you

**Sara:** I would agree with Diana, I was in Diana's group. Our campers were together, we had my student being completely blind had a tough time knowing how many laps she was doing. We had a lot of people in our lane, which is understandable we have a lot of kids at camp. She had a hard time knowing how many laps I did today. I had a hard time too, because I didn't know if we were

supposed to go all the way to the wall with the kids. But I feel that we had a good amount of instructional time with the coach and one on one time. I worked a lot one on one with my student with things that she really wanted to learn. I wanted to help her get to the next level of swimming, she was very persistent. So I felt that all in all, she felt that she had time to do what everyone else was doing but we could also have me and her time.

**Researcher:** Okay, perfect. Umm okay question 3. Which instructional style did you use? So I am going to give you the 3 and then give you an example. I know everyone here knows what they are. The first is verbal instruction, physical guidance or tactile modeling. And why, does anyone need any clarifications to what any of those 3 are? Okay perfect, so which instructional style did you use and why? Who wants to start that?

**Elias:** We used all three I guess. There were specific days that we were supposed to focus on tactile modeling or physical guidance and obviously verbal prompt or instruction was present on all the days. Personal, I used more physical guidance then tactile modeling.

**Researcher:** I am just going to catch you before you go away on that one. There are 2 side questions, which one felt more comfortable for you to teach and why.  
And ah

**Elias:** For this particular question, I used all 3 but alternated them based on days.

**Researcher:** Okay, if I was to ask you which one felt most comfortable to teach and why?

**Elias:** Physical guidance.

**Researcher:** Which one did you think that child learned the most from?

**Elias:** Umm I believe physical guidance because we worked, we were actually moving the hands and moving the feet. We made progress. We did tactile modeling a number of times, even when I wasn't completely convinced that he got the same amount. Like I said my subject does have Autism and that might have also been a factor. But he did well with either one.

**Bobby:** Because we worked on the same or we worked with the same subject, so we aren't bouncing around the room waiting till I get to it. I used all 3, rather than changing it up based on the day I would try to what researchers wanted to do in terms of physical guidance or tactile modeling on the day. However, I felt because my athlete is both totally blind and Autistic, I had to change it up on the fly and go away from what she wanted to do at times. There were a lot of verbal prompts, physical guidance and tactile modeling, in terms of what I felt most comfortable with I would have to agree with Elias that physical guidance was more affective. Because we were guiding him through the motions, because our athlete is shorter than us I think a problem with the tactile modeling were our limbs were longer, so he felt like he had to maybe overcompensate in some way shape or form. Did that answer the question well enough?

**Researcher:** Yeah that answered all 3 questions, thank you.

**Sara:** I would have to agree with Bobby and Elias, that I used all 3. And I would have to say that honestly it was day by day and depended on what skill we were doing that she would have a preference. I would continue to ask her, which way do you think you got more out of. Sometimes I used both for her to really grasp the idea, because I obviously used verbal cues the whole time. But sometimes it was hard for me especially when we were doing tactile modeling to have queues



the whole time. Sometimes it would be a front float and my face would be in the water, so she would be feeling my arms and my arms would be spread out. She would be asking me questions but I couldn't answer them. So with that, I liked to do both because I could show her with my own body but I could also put her through the skill and explain it to her. So I would say I used all 3. For comfortable, it really was how I felt the skill was or how comfortable she was going to be with it. If I felt that she wasn't going to be grasping one, I moved to another as long as she was getting the idea of it.

**Researcher:** Okay, thank you

**Camilla:** I definitely used all 3. I would say I used verbal cues the most, because that is what he grasped the most. Physical guidance is what he grasped the most with the movements. Definitely had to come up with kid friendly cues, like big ice cream scopes for him to understand what I am trying to say. With him, with the tactile modeling he never really understood where my arm was going. I feel like it was the same way with Bobby, my limbs are so much longer than his were. So he couldn't feel the full movement of my arm coming up for the front crawl and all the back and then all the way forward reaching all the way out front. He definitely learned from me being in front of him and grabbing his arms and using the physical assistance.

**Researcher:** Okay, thank you

**Diana:** I also did all 3 but I tried to stick to the days that were assigned for tactile modeling or physical guidance but the researcher said that when it wasn't working and another instructional strategy would be best for whatever stroke or whatever you were working on you could change. So I kind of did combos of them. For

diving, my athlete had trouble getting to the bottom of the floor or just standing and diving and touching the bottom. He had never touched the floor with his hands before. So he would like have his upper body in the right position but I would like throw his feet in the air. So that he could feel that when his feet went up, his body went down. He actually touched the ground, so for that physical guidance was best. But then when we went to gliding, the tactile modeling was really good. I tried to explain verbally and have him go through it and have him put his body in the thing. But I couldn't have him push off and put his body in the correct position. So I had him jump on my back, I pushed off and went into the streamline and then into the breast stroke. After, he got off he went and did it perfectly. His head was out of the water and he did his breathing and his arms synchronized much better in the breast stroke after he felt me do it. So that definitely helped him. For the comfortable, as Stef said, if he wasn't comfortable, I would go to the next thing. But if he was, if he didn't really want, if I was like pushing his legs, I could tell if he didn't like it or didn't really want to. I mean I was comfortable doing whatever he was comfortable with.

**Researcher:** Okay, that's great thank you.

**Ester:** I definitely used all 3. Verbal is always, always, always huge. With my athlete, he is completely blind and needs to know everything and anything that is going on at all times. As far as what worked best, it depended on the skill. Usually, umm physical guidance was what we focused on the most, just because my athlete also has Autistic characteristics is the best way to put it I guess. He, you can explain something to him over and over but he isn't going to get it until he does it 25 times. So he, guiding him through it that would work and I was

much more comfortable doing that. But when I asked him how he felt he learned best and about how he learned in the past he said that tactile modeling was better for him. So we worked on a couple of things doing tactile modeling and it actually worked really well. Mostly because, there was a communication there between the two of us and he knew I was doing it because that's what he wanted me to do. He had like connection with it, it was cute he like thanked me after for it. I think that one we used most was physical guidance.

**Marc:** What were the 3?

**Researcher:** Just to give you a reminder of the question, so which instructional strategy did you use? We have tactile modeling, physical guidance and verbal cues. Which one did you feel most comfortable with and why?

**Marc:** I mostly just used verbal because my athlete is able to see. He is just a little worse than legally blind, so I guess in the pool he was able to see me to show him the different techniques for arms or legs. Umm there was a little physical guidance, umm if I noticed that the verbal technique wasn't working. If I didn't go on to the physical guidance, I would always start with the verbal technique. If he couldn't pick up on a concept, while he was swimming or when we were stationary practicing in our spots I always used verbal. I think he picked up more on the verbal than he did on the physical guidance. On harder techniques I did help him physically like I said. When it comes down to it, he really succeeded on the verbal instructions.

**Researcher:** Which one felt most comfortable to teach and why?

**Marc:** Verbal because I am pretty good at explaining and going into detail. I didn't just say do this and then he would try it and then I would have to go no, no,

no do this. I would tell him what he did wrong; obviously say it in a positive way and ways to fix it. I am good at explaining, so I broke it down for him into this and this steps and he took that and applied it to his swimming.

**Researcher:** That's great. Good thing 5, 6, 7 are much shorter, alright so question 5. How do you explain the differences between the 3, the 3 forms of explanation? So Diana will start answering for this one.

**Diana:** How did I explain it to my camper?

**Researcher:** Ah yeah, that's the question. How did you explain the differences between them to the camper?

**Diana:** I said that tactile modeling is when your hand is over mine and I do the motion. He feels what I am doing. For physical guidance, it is me putting him through the motions so it is the opposite. I tried to keep it simple and that's how I explained it to him. The verbal instruction was just talking so he knew what verbal meant and instruction so that was pretty easy for him.

**Researcher:** Okay, perfect.

**Camilla:** My athlete, honestly I never got a chance to talk to him about differences between the two models. So he's not going to know the actual words for them but he will know that. He actually got on my back once and I did the movements and I was holding him and he was doing the movements. So he will know the differences between them, I never just spoke to him about that.

**Researcher:** That's fine.

**Sara:** Actually I asked my kid in the first day if she knew either of them were and she preferred one. She knew exactly what they were. I asked her to give me a definition. I asked what tactile modeling is and she said it is when I feel you going

through the motions. How about physical guidance? When you help me through the motion. I asked: Do you prefer one? Like what I said for the other question – her answer to that have changed almost every day because she said it depends on the skill really and how she feels comfortable in understanding what I need to do.

**Bobby:** The way that I explained to athlete was: I said physical guidance is when I take your arms for a stroke, for example the front crawl and I bring your arm through the water with a high elbow and for your kick having the straight knees. In tactile modeling I said it is when you feel me doing the movements in the water. And for verbal instruction, to be quite honesty, it is a very rhetorical definition.

**Researcher:** Okay, thank you.

**Elias:** Umm I believe we did mention tactile modeling and physical guidance for the student but he was probably not able to identify them. I don't believe. They did participate in each of the different strategies.

**Researcher:** Okay, thank you. So how did you explain the differences between the strategies?

**Marc:** I asked my athlete if he knew what they were and he said yes but he could not remember how to explain them. Basically for tactile modeling was him feeling my motions and for physical guidance was me putting him through the motions. After then he was clearly able to identify the differences between the two. For verbal he knew what that was. I didn't really ask him if he knew what verbal instruction was because it is kind of obviously, so...

**Researcher:** Okay, perfectly. Thank you.

**Ester:** The way I did was I actually asked my camper and I said do you prefer when I move your body through the skill or do you prefer when I break down the skill step by step and you feel which one they are and how it is? And I asked if he knows what that is called. He answered no. Then I told him the names of each of them and we went over – tactile modeling is this, physical guidance is that. Then I was like: so, which one do you prefer again? So he could really connect because you have to repeat things several times for him to get it. He can perform a skill almost perfectly one time and then next time it can be completely different. So definitively I think after he learned it, he preferred tactile modeling better. I would consistently bring what each of them were and remind him – Okay, we are going to use tactile modeling and then I would do it. Or okay, I am physically guiding you through this one and then do that. So he really can tell the difference between the two. And obviously with the verbal instruction, he gets that all the time every day. So he definitively knew what that was.

**Researcher:** Okay, thank you. So question 6 out of 7. Did you consider your child's preferences? I am sorry if you answered it in the last question, but just to clarify – did you consider your child's preferences?

**Elias:** Yes, he did benefit the most from physical assistance, so I tried to use that strategy probably more than tactile.

**Bobby:** Yes. Although in the beginning of the week he did not really had a preference, the preference of physical guidance did eventually figured itself out. Like I said, we tried to go with what the researchers wanted us to do for that particular day, either was physical guidance or tactile modeling. However, I was not afraid to change from that day based on the preferences.

**Researcher:** Okay, thank you.

**Sara:** Like I said before, I was comfortable with whatever she was comfortable with. So I would ask her to explain the skill before she would try it to see if she understood it and she did it and we would try the other. So I really pick whatever she felt would help her more in the skill.

**Camilla:** I will go right along with Sara. I would see which way my athlete would be more comfortable and I could tell right off the bat with his facial expressions and his body language that he really was uncomfortable with one way. So I would switch it out for him.

**Diana:** Mine is along the same lines with the previous two said. I definitively did consider my child's preferences and how he felt. If one thing or something was not working then I tried a different method. If I was putting him through physical guidance, I could tell if he did not like it or he literally just tells me to stop. Or he could do it and I just explained it to him. So, whatever he wanted to do and if it was enhancing his learning, then we did it.

**Ester:** I tried to. Unfortunately with my athlete physical guidance worked a lot better but his preference was tactile modeling. I would try to physically guide him through it and then I would be like: Okay, now I want you to feel how I am doing it. This is exactly how you should feel. Not try to mix it in because I knew that he said he liked tactile modeling better. I definitively tried but there were certainly situations, especially when he was not getting after time and time again with tactile modeling. So I would tell him: okay you need to let me guide you through it because maybe it will help you work a little bit better and he was like Yeah! I

would try to basically convince him into the physical guidance but there was some times that was difficult to try to win him in the tactile modeling that he liked.

**Marc:** 100%. I would ask him what he was comfortable with whether was me just saying how it is or me telling you how to do it verbally and showing you through physical guidance or whether he liked to feel me doing it. He preferred verbal and then he specifically said that any point he was not picking up on my verbal instruction, that I could physically show him how to do it at the same time. He was totally in for verbally, even for all three, but he said basically however you teach is how I can learn.

**Researcher:** Okay, that is good. The last question, I think can be a one phrase answer. What instructional style did work better for you?

**Bobby:** I would definitively say physical guidance

**Elias:** Physical guidance

**Marc:** Verbal

**Ester:** Physical guidance

**Diana:** Tactile modeling

**Camilla:** Verbal instruction

**Sara:** Physical guidance

**Researcher:** Okay, thank you very much.



## References

- Auxter, D., Pyfer, J., & Huettig, C. (1997). *Principles and methods of adapted physical education and recreation*. (8<sup>th</sup> ed.). St. Louis, MO: Mosby.
- Ayvazoglu, N.R., Oh, H., & Kozub, F.M. (2006). Explaining physical activity in children with visual impairments: A family systems approach. *Council for Exceptional Children, 72*(2), 235-248.
- Brambring, M. (2001). Motor activity in children who are blind or partially sighted. *Visual Impairment Research, 3*, 41-51.
- Brambring, M. (2006). Divergent development of gross motor skills in children who are blind or sighted. *Journal of Visual Impairment & Blindness, 100*, 620-634.
- Brault, M.W. U.S. Department of Commerce, U.S. Census Bureau. (2012). *Americans with disabilities: 2010*. Retrieved from website: <http://www.census.gov/prod/2012pubs/p70-131.pdf>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77 - 101.
- Carter, M.J., Dolan, M.A., & LeConey, S.P. (1994). *Designing instructional swim programs for individuals with disabilities*. Reston, VA: AALR/AAHPERD.
- Cordellos, H.C. (1976). *Aquatic recreation for the blind*. Washington, DC: Physical Education and Recreation for the Handicapped.
- Correia, T.I.G., Lopes, V.P. & Vasques, C.V. (2011). Saúde e actividade física em crianças e adolescentes. *Revista Factores de Risco, 20*, 62 – 65.
- Creswell, J.W. (2006). *Qualitative inquiry and research design: Choosing among*

five traditions (2<sup>nd</sup> ed.). Thousand Oaks, CA: Sage.

Chen, D., & Downing, J. E. (2006). *Tactile strategies for children who have visual impairments and multiple disabilities: promoting communication and learning skills*. New York, NY: AFB Press

Downing, J. E., & Chen, D. (2011). Using tactile strategies with students who are blind and have severe disabilities. *Teaching Exceptional Children*, 36(2), 56 - 60.

Fisher, A., Reilly, J.J., Kelly, L.A., Montgomery, C., Williamson, A., Paton, J.Y., & Grant, S. (2005). Fundamental movement skills and habitual physical activity in young children. *Medicine & Science in Sports & Exercise*, 37(4), 684-688.

Goodwin, D. L.; Lieberman, L. J.; Johnston, H.; & Leo, J. (2011). Connecting through summer camp: Youth with visual impairments find a sense of community. *Adapted Physical Activity Quarterly*, 28, 40-55.

Gomes, A.R. (2011). A iniciação e formação desportiva e o desenvolvimento psicológico de crianças e jovens. In A.A. Machado & A.R. Gomes (Eds.), *Psicologia do esporte: Da escola à competição* (pp. 19-48). Várzea Paulista: Editora Fontoura.

Houwen, S., Hartman, E., Jonker, L., & Visscher, C. (2010). Reliability and validity of the tgmd-2 in primary-school-age children with visual impairments. *Adapted Physical Activity Quarterly*, 27, 143-159.

Houwen, S., Hartman, E., & Visscher, C. (2009). Physical activity and motor

- skills in children with and without visual impairments. *Medicine & Science in Sports & Exercise*, 41(1), 103-109. Doi: 10.1249/MSS.0b013e318183389d
- Houwen, S., Visscher, C., Hartman, E., & Lemmink, K.A.P.M. (2007). Gross motor skills and sports participation of children with visual impairments. *Research Quarterly for Exercise and Sport*, 78(1), 16-23.
- Houwen, S., Visscher, C., Lemmink, K.A.P.M., & Hartman, E. (2008). Motor skill performance of school-age children with visual impairments. *Developmental Medicine and Child Neurology*, 50, 139-145. Doi: 10.1111/j.1469.2007.02016.x
- Houwen, S., Visscher, C., Lemmink, K.A.P.M., & Hartman, E. (2009). Motor skill performance of children and adolescents with visual impairments: A review. *Council for Exceptional Children*, 75(4), 464-492.
- International Paralympic Committee. (2011). *IPC athletics classification rules and regulations*. Retrieved from website: <http://www.paralympic.org/Athletics/RulesandRegulations/Classification>
- Kozub, F.M., Oh, H., & Ozturk, M.A. (2004). Physical activity and social engagement patterns during physical education of youth with visual impairments. *RE:view*, 36(1), 39-48. Doi: 10.3200/REVVU.36.1.39-48
- Lepore, M. (2011). Aquatics. In J. Winnick (Ed.), *Adapted physical education and sport* (pp. 435 – 454). Champaign, IL: Human Kinetics.
- Lepore, M., Gayle, G.W., & Stevens, S.F. (2007). *Adapted aquatics programming: A professional guide*. Champaign, IL: Human Kinetics.
- Lieberman, L. (2002). Fitness for individuals who are visually impaired or

- deafblind. *Re:View*, 34(1), 13-23.
- Lieberman, L. (2011). Visual impairments. In J. Winnick (Ed.), *Adapted physical education and sport* (pp. 205 – 219). Champaign, IL: Human Kinetics.
- Lieberman, L.J., Byrne, H., Mattern, C.O., Watt, C.A., & Fernández-Vivó, M. (2010). Health-related fitness of youths with visual impairments. *Journal of Visual Impairment & Blindness*, 104(6), 349-359.
- Lieberman, L.J., & Cowart, J.F. (2011). *Games for people with sensory impairments*. Champaign, IL: Human Kinetics.
- Lieberman, L., & Haibach, P. (2012). Motor development curriculum for children with visual impairments or deafblindness.
- Lieberman, L.J., & McHugh, E. (2001). Health-related fitness of children who are visually impaired. *Journal of Visual Impairment & Blindness*, 95(5), 272-287.
- Lieberman, L. J., Ponchillia, P. E., & Ponchillia, S. V. (2013). *Physical education and sports for people with visual impairments and deafblindness: Foundations of instruction*. New York, NY: AFB Press.
- Lieberman, L. J.; Robinson, B. L.; & Rollheiser, H. (2006). Youth with visual impairments: Experiences in general education. *RE:view*, 38(1), 35-48.
- Miles, B. (2003). Talking the language of the hands to the hands. *The National Information Clearinghouse on Children Who Are Deaf-Blind*, 1 - 12.
- Moustakas, C. (1994). *Phenomenological research methods*. (1st ed.). Thousand Oaks, CA: Sage Publications.
- Movahedi, A.; Mojtahedi, H.; & Farazyani, F. (2011). Differences in socialization

- between visually impaired student-athletes and non-athletes. *Research in Developmental Disabilities*, 32, 58-62. Doi: 10.1016/j.ridd.2010.08.013
- O'Connell, M. E. (2000). *The effect of physical guidance and braille on self-efficacy during goal ball for children who are blind*. (Unpublished master's thesis). State University of New York at Brockport.
- O'Connell, M., Lieberman, L.J., & Peterson, S. (2006). The use of tactile modeling and physical guidance as instructional strategies in physical activity for children who are blind. *Journal of Visual Impairment & Blindness*, 471 – 477.
- Payne, V. G., & Issacs, L. D. (2002). *Human motor development: A lifespan approach*. (4th ed.). Mountain View, CA: Lavoisier S.A.S.
- Sacks, S.Z., & Wolffe, K.E. (1998). Lifestyles of adolescents with visual impairments: An ethnographic analysis. *Journal of Visual Impairment & Blindness*, 92(1), 7-17.
- Sapp, W., & Hatlen, P. (2010). The expanded core curriculum: Where we have been, where we are going, and how we can get there. *Journal of Visual Impairment & Blindness*. 104(6), 338-348.
- Shapiro, D. R., Moffett, A., Lieberman, L., & Dummer, G. M. (2005). Perceived competence of children with visual impairments. *Journal of Visual Impairment & Blindness*, 99(1), 15-25.
- Shenton, A.K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22, 63-75.
- Skinner, R.A., & Piek, J.P (2001). Psychosocial implications of poor motor

coordination in children and adolescents. *Human Movement Science*, 20, 73-94.

Taylor, S.J. & Bogdan, R. (1998). Introduction to qualitative research methods (3<sup>rd</sup> Ed.). New York: John Wiley & Sons, Inc.

The American National Red Cross. (1977). *Adapted aquatics*. Garden City, NY: Doubleday & Company, Inc.

U.S. Department of Education. Office of Special Education Programs. (2004). *The individuals with disabilities education act (idea)*. Retrieved from website: <http://idea.ed.gov>

U.S. Department of Health and Human Services (1996). *Physical activity and health: A report of the surgeon general*. Atlanta, GA: National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention.

Vaughn, S., Schumm, J. S., & Sinagub, J. (1996). *Focus group interviews in education and psychology*. (1st ed.). Thousand Oaks, CA: Sage Publications.

Wagner, M. O., Haibach, P. S., & Lieberman, L. J. (2013). Gross motor skill performance in children with and without visual impairments - research to practice. *Research in Developmental Disabilities*, 34, 3246 - 3252.

World Health Organization. (2010). *Global recommendations on physical activity for health*. Retrieved from website: [‘http://whqlibdoc.who.int/publications/2010/9789241599979\\_eng.pdf’](http://whqlibdoc.who.int/publications/2010/9789241599979_eng.pdf)