Carolynn
Osborn

Coaches ResourceGuide

Supporting Young Athletes Who Are Deaf and Hard of Hearing in a Mainstream Setting

TABLE OF CONTENTS

PREFACE 3
ACKNOWLEDGEMENTS 5
HEARING LOSS 6
COMMUNICATION 15
MEETING LANGUAGE AND SKILL NEEDS 19
CREATING A D/HH-FRIENDLY ENVIRONMENT 21
SPECIFIC SPORT ADAPTATIONS 26
WORKING WITH OFFICIALS 28
PATHWAY FOR MANITOBA'S D/HH ATHLETES IN ELITE DEAF SPORTS 30
OTHER SPORT SPECIFIC RESOURCES 30
BIBLIOGRAPHY 31

PREFACE

People who are deaf and hard of hearing (D/HH) are said to have an “invisible” disability. There is no wheelchair or white cane; no unusual gait or prosthetic. Hearing aids are becoming so small as to be invisible and with the advent of cochlear implants, many deaf and hard of hearing children speak with ease. While it is hard to see, being D/HH has a profound impact on the development of a child and will have a life-long affect as they move through the hearing world.

It is often difficult for the hearing to understand exactly what it is like to not hear all the sounds in the world around us. We can close our eyes and imagine what it would be like to be blind, or ride in a wheelchair and try to navigate curbs on the sidewalk. However, it is tricky for the hearing to replicate what it would be like to live with diminished hearing. The complexity with which sound travels, and the range of frequencies in every word greatly affects how the spoken language is understood. As a result, the average hearing individual will not understand why a D/HH person appears to have heard what was said in one situation and not another. Media portrayals of D/HH speechreading (lip reading) don’t help. Those D/HH characters on TV aren’t speechreading all that dialogue – they memorized the script!

Further, young D/HH athletes in a mainstream hearing setting will do everything in their power to blend in with their hearing peers. They will nod their heads in sync with their hearing counterparts when a Coach explains a drill and may even appear to move off with confidence to execute instructions. If a Coach asks them directly if they understood, they will invariably nod or say “yes”.

Don’t be fooled.

Much of the time, they will have heard (or understood) only a fraction of the Coach’s verbal directions. Why don’t they ask for assistance? They may not want to be seen as “different” by asking for additional assistance. They might be worried that they still won’t hear, even if the instructions are repeated verbally again. They may believe they understood, but misinterpret what was said.

If you were to watch them carefully, you might notice their eyes darting around looking to see what others are doing. They might hesitate as others move forward. They may start the activity and be embarrassed when someone stops them and tells them they are not doing what they were told. Many live in great fear of “doing the wrong thing” - being seen as “dumb” (a derogatory term that has been historically associated with deafness). To avoid what they see as humiliation in front of their hearing peers, they may stop a sport or not participate at all.

Purpose

Coaches’ Resource Guide: Supporting Young Athletes Who Are Deaf and Hard of Hearing in a Mainstream Setting provides basic information to help ensure successful sport experiences in a mainstream hearing setting for athletes who are D/HH. Coaching an athlete who is D/HH can be a rewarding experience. By making some small and simple changes, you can include D/HH athletes on your mainstream team. Many of the suggestions you will find in this resource may be beneficial to all the athletes you work with, not just the D/HH.

While it may be tempting to skip sections – “Do I really need to know about the anatomy of the ear? I’m a hockey Coach!” - it is important to read the entire document. Each section builds from the previous and will provide a better understanding of the D/HH athlete.

Audience
This resource has been developed for coaches working with young athletes (under 21) who are D/HH in a mainstream hearing athletic program. The primary audience is coaches, but others such as officials and volunteers will find the information useful.

Background
Coaches' Resource Guide is based on the *Educators' Resource Guide: Supporting Students who are Deaf and/or Hard of Hearing* by Manitoba Education, Citizenship and Youth, 2009. It has been modified to reflect the needs of athletes.

Document Organization
This document is organized into the following sections:

Hearing Loss: This section describes how the ear works, how hearing loss occurs, and how testing reveals hearing loss. It also outlines the different types of hearing loss, as well as a variety of supports available for the different types of hearing loss.

Communication: This section provides information on additional communication assistance D/HH athletes may need on a regular or periodic basis.

Meeting Language and Skill Needs: This section outlines the background behind language and social skills deficits some D/HH athletes may demonstrate.

Creating a D/HH Friendly Environment: This section gives suggestions on how to make the field of play more accessible to the D/HH athlete.

Specific Sport Adaptations: Provides specific adaptations that may be necessary for particular types of sports.

Working with Officials: Provides suggestions on how and where to engage officials during competition

Pathway to Elite Deaf Competition: Outlines the pathway for D/HH athletes should they wish to compete in elite Deaf Sport.

ACKNOWLEDGEMENTS

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- Brenda Comte, President of the Manitoba Deaf Sports Association, Shawna Joynt, Vice-President of the Manitoba Deaf Sports Association, Joseph Comte, Technical Director of the Manitoba Deaf Sports Association and Kenneth Anderson, Treasurer of the Manitoba Deaf Sports Association for reviewing this document and ensuring the needs of the Deaf athlete are reflected appropriately.
- Members of the Canadian Deaf National Swimming Team and its Head Coach, Judy Baker, for their thoughtful comments.
- My family for supporting me in the development of this document and all my other endeavours.

This Guide is dedicated to all the young deaf and hard of hearing athletes participating in sport, whether at the local level or on the international stage; and to my son, Thomas. It has been a privilege to follow you on your sporting journey.

HEARING LOSS[1]

Introduction

This section contains information about some of the medical aspects of hearing and hearing loss and information about audiology. It explains the following:

- sound
- how the ear works
- audiology and the audiogram
- the types and degrees of hearing loss
- the effects of hearing loss
- how to meet the needs of athletes with hearing loss

Questions about an athlete's hearing loss can be answered by his or her Parents. Parents may be able to refer more complex questions to professionals that work with the athlete such as an audiologist, a speech-language pathologist and/or a teacher of the deaf and hard of hearing.

Hearing

Sound

Sound is an invisible vibration that begins from movement. Sound is measured in both intensity (loudness) and frequency (pitch). Intensity is measured in decibels (dB). Frequency is measured in hertz (Hz). Most sounds are made up of a range of different frequencies. An example of a high frequency, or high-pitched sound, is the noise made by a whistle. An example of a low frequency, or low-pitched sound, is the noise made by a big drum.

Speech is usually a mix of high, middle, and low frequency sounds. Consonant sounds, like /p/, /k/, and /s/, tend to be higher in frequency than some vowel sounds, like /aa/ as in *part*.

The Ear

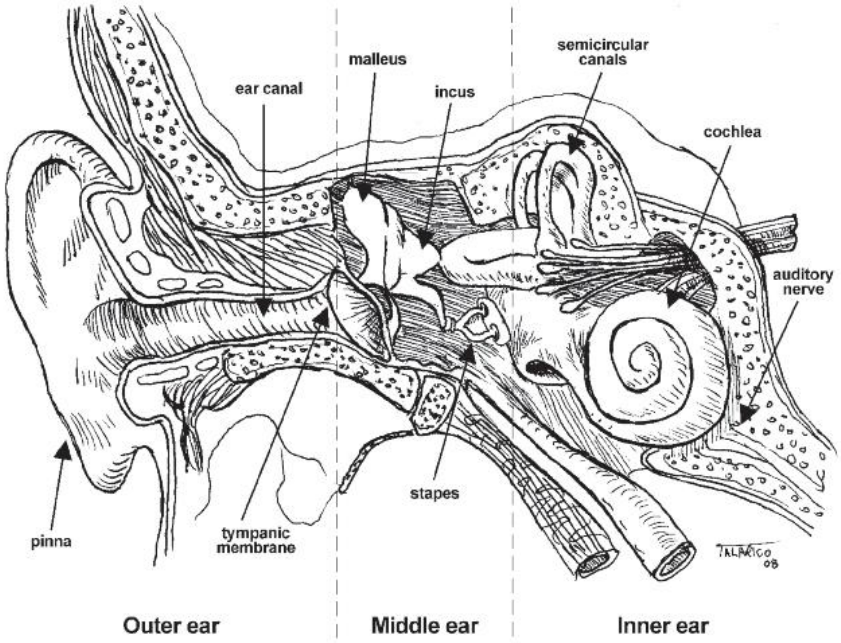
The ear is divided into three main sections:

- the outer ear
- the middle ear
- the inner ear

Sound passes through all three sections of the ear before it goes to the brain. The brain interprets the sound and tells us what we are hearing. It tells us if we are hearing music, noise, a voice, a car horn, a dog, or other sounds.

The ear has two main functions. It receives sound and converts it into signals that the brain can understand. It also helps us to balance. The two functions are closely connected.

[1] Adapted with permission from Manitoba Education, Citizenship and Youth. *Educators' Resource Guide: Supporting Students Who Are Deaf and/or Hard of Hearing.* Winnipeg, MB: Manitoba Education, Citizenship and Youth, 2009. All rights reserved.



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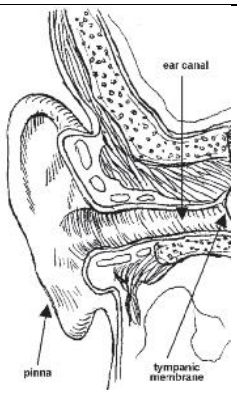
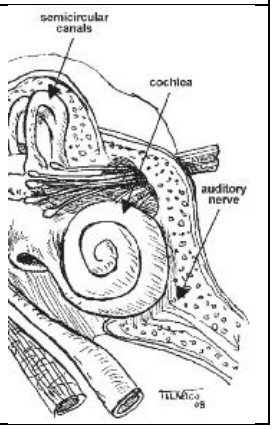
The Outer Ear
Sound goes into the outer ear. The part of the outer ear that we can see is called the pinna. The outer ear picks up sound waves and directs the sound down the ear canal to the eardrum. The eardrum (tympanic membrane) is a thin membrane stretched over the end of the ear canal that separates the outer ear and the middle ear. When sound hits the eardrum, it begins to vibrate much like the membrane of a drum when it is struck with a drumstick.

The Middle Ear
The middle ear contains the three smallest bones in the body, each about the size of a grain of rice. Together these bones are called the ossicles. Individually, they are called the malleus (hammer), the incus (anvil), and the stapes (stirrup).

This chain of bones is attached to the eardrum on one end and the inner ear on the other end. The ossicles form a lever mechanism that conducts sounds from the eardrum to the inner ear.

The Inner Ear
The inner ear is housed in the bone of the skull. This part of the ear contains the semicircular canals, the cochlea, and the auditory (hearing) nerve. The semicircular canals are fluid-filled bony structures that are responsible for balance. When you feel dizzy on a fair ride, this is because the fluid in the semicircular canals has been disturbed.

The outer ear	The middle ear	The inner ear
		

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The cochlea is shaped like a snail and is filled with fluid. It is lined with thousands of tiny nerve endings called hair cells. These hair cells are tuned somewhat like the keys on a piano. Some of the hair cells respond to low-pitched sounds, and some respond to high-pitched sounds. These hair cells are connected to the auditory nerve that connects the cochlea to the brain.

Audiology

Audiology is the medical term for the study and measurement of hearing and hearing loss.

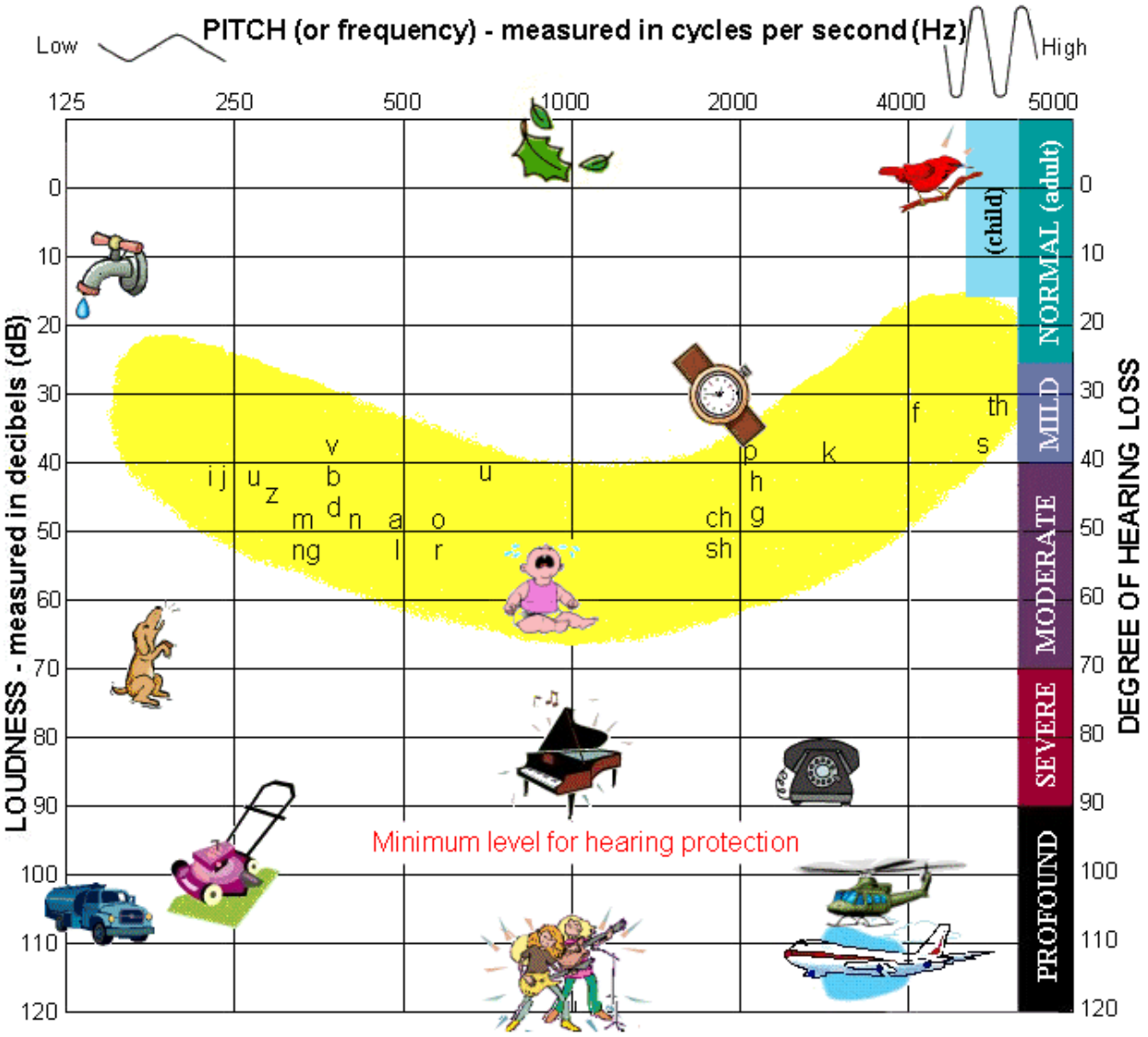
The Audiogram
The audiogram is a graph that represents a person's responses to sound. It is used to document the softest sound a person can detect at a variety of different frequencies (pitches).

Frequency
The frequency or pitch of sound is shown by the numbers across the top of the audiogram. Low pitches are on the left-hand side of the graph and high pitches are on the right, somewhat like the keys of a piano, which range from low pitches on one end of the keyboard to high pitches on the other end. The whistle of a bird usually has a high pitch; the growl of a dog has a low pitch. The frequencies included on an audiogram are chosen because they are important for understanding speech.

> ***Different speech sounds have different pitches, so it is important to know how well a person hears across the frequency range. A good example of different frequencies is the word moose. The /m/ sound is a low-frequency sound, the /oo/ sound is a middle-frequency sound, and the /s/ sound is a high-frequency sound. In order to hear the word completely, a person must have appropriate levels of hearing at low, middle, and high frequencies. Using the moose example, a person with a high frequency hearing loss would hear "moo" not "moose".***

Intensity
The intensity or loudness of sound is shown by the numbers down the side of the audiogram. The small numbers at the top are soft sounds (–10, 0, 10 decibels), and the large numbers at the bottom are loud sounds (90, 100, 110 decibels). With a complete audiogram, an audiologist can determine the type, degree, and configuration (or shape) of the hearing loss.

The figure below shows the pitch and loudness of several environmental sounds as well as typical speech sounds. The shape these speech sounds make on this audiogram is commonly called the *speech banana*. The speech banana represents the area of pitch and loudness in which the majority of speech sounds will occur when a person is talking in a normal conversational voice.



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http://www.agbell.org/SpeechBanana/

Types of Hearing Loss

Conductive Hearing Loss
A conductive hearing loss occurs when one or more of the structures of the outer or middle ear are not working properly. For example, conductive hearing loss may be caused by the following conditions:

- wax buildup in the ear canal
- a hole in the eardrum
- fluid in the middle ear
- problems with the bones of the middle ear

Having a conductive hearing loss is like wearing earplugs: you only hear loud sounds. Most types of conductive hearing loss can be medically corrected.

Otitis Media
Otitis media is a medical term that refers to middle ear infections or inflammation of the middle ear. Some individuals who have permanent, sensorineural hearing loss (see below) also get otitis media, resulting in additional loss of hearing sensitivity.

Sensorineural Hearing Loss
A sensorineural hearing loss may result from problems in the following:

- the cochlea
- the auditory nerve
- the hearing centres of the brain

Damage to the hair cells in the cochlea is the most common reason for sensorineural hearing loss. If damaged, the hair cells cannot detect sounds. Most types of sensorineural hearing loss are permanent and cannot be corrected by surgery or medication.

Mixed Hearing Loss
A hearing loss is classified as mixed when both conductive and sensorineural hearing loss are present. For example, someone with a permanent sensorineural hearing loss with a middle ear infection may have additional hearing loss (called “conductive overlay”). After the ear infection clears, and the conductive overlay disappears, the person would be said to have only a sensorineural hearing loss.

Unilateral Hearing Loss
If only one ear is affected with a hearing loss, it is referred to as a unilateral hearing loss. Those with unilateral hearing loss may have particular difficulty in locating the source of sound.

Bilateral Hearing Loss
When both ears are affected, it is known as bilateral hearing loss.

Residual hearing is the amount of usable hearing.

Progressive Hearing Loss
A progressive hearing loss is one where, over time, the hearing becomes progressively worse in one or both ears.

Degree of Hearing Loss

The level of a person's hearing loss can be described in two ways:

- as a decibel (dB) hearing level
- as mild, moderate, severe, or profound hearing loss

Hearing loss is not described as a percentage (e.g., 60 percent Deaf).

The table below shows the terms used to describe levels, the decibel levels that they refer to and the impact without intervention (i.e. hearing aid or other device):

Degree of Hearing Loss	Hearing Level in dB (Loudness)	Impact without intervention
Normal Hearing Sensitivity	0–15 db	
Minimal or Slight	16–25 dB	Athletes may: • miss some consonants • experience mild difficulty with auditory language learning • experience difficulty listening at a distance or in noisy situations
Mild	26–40 dB	Athletes may: • miss quiet speech sounds • experience difficulty with auditory learning • experience speech/language delays • appear to be inattentive
Moderate	41–70 dB	Athletes may: • hear almost no speech sounds at normal levels • make speech sound errors • experience language delays • experience learning difficulties related to language delays • appear to be inattentive • need to be less than two metres away from speaker for best listening distance
Severe	71–90 dB	Athletes may: • hear no speech sounds at normal levels • speak, but their speech may be difficult to understand • experience language delays • experience learning difficulties related to language delays • appear to be inattentive to verbal communication (may not realize that speaker is speaking)
Profound	91 dB or greater	Athletes may: • hear no speech or other sounds • experience extreme difficulty understanding speech • produce little or no verbal language • experience learning difficulties related to language delays • learn by visual cues or American Sign Language • appear to be inattentive to verbal communication (may not realize that speaker is speaking)

Most individuals with a hearing loss will have some amount of **residual hearing**.

> ***A minimal hearing loss may not be a problem for an adult, but it can seriously affect the overall development of a person who is in the process of learning language, developing communication skills, and acquiring knowledge. In general, the more significant the loss, the greater the difficulty. (Irwin)***

Deaf, Hard of Hearing, and Deafened

Athletes who have a hearing loss are referred to as *deaf, hard of hearing* or *Deaf* according to their communication skills and cultural affiliation. Generally, athletes who use American Sign Language and who have identified culturally with members of the Deaf community are considered *Deaf*. (The word is capitalized to indicate a distinct cultural group similar to the capitalization of English, Spanish, or Hebrew.) Athletes who have a hearing loss but do not have a cultural affiliation with the Deaf community are generally referred to as athletes who are *deaf or hard of hearing*. Those who are deaf or hard of hearing and speak may use the term *oral deaf*. Individuals who had hearing and have subsequently lost their hearing, through illness or accident, are referred to as *deafened*. These individuals choose either deaf or hard of hearing support organizations, based on the degree of their acquired hearing loss. It is very important that a coach establish with which group their D/HH athlete identifies.

Assistive Hearing Devices

Devices such as hearing aids, cochlear implants, and FM systems may help to meet the needs of athletes with hearing loss, depending on the sport. The goal of all hearing technology is to enhance the reception of speech.

> ***It is important to keep in mind that assistive hearing devices do not restore normal hearing.***

Hearing Aids
Hearing aids are electronic devices that amplify sound. Speech and background noise are amplified by a hearing aid. Hearing aids work best in a quiet listening situation where the distance between the person speaking and the athlete is **six feet or less**. As distance and background noise increase, the benefit provided by a hearing aid is greatly decreased.

Bone-Anchored Hearing Aids (BAHA)
Bone conduction hearing aids are often used in cases where someone has a malformed ear with no ear canal, or has chronic ear infections that do not allow for the use of traditional hearing aids with ear molds. The bone-anchored hearing aid, or the BAHA system, is surgically implanted and conducts sound through direct bone vibration. The BAHA consists of a small titanium implant, an abutment, and a sound processor.

Cochlear Implants

A cochlear implant is a device that is surgically implanted into the inner ear and that stimulates the hearing or auditory nerve directly, bypassing the damaged cochlea. It can provide useful hearing for individuals who have a severe to profound sensorineural hearing loss and who receive limited benefit from hearing aids. A cochlear implant will not restore normal hearing, but it will greatly improve access to sound.

Acoustical Issues within the Playing Field

Understanding speech in noisy environments can be difficult for any person, but for an athlete with hearing loss, it is even more challenging. Background noise, distance from the person speaking, and reverberation (echo) are common obstacles that significantly reduce the athlete's access to crucial speech information. Although today's advanced assistive hearing devices can improve the quality, audibility, and clarity of the speech signal, they cannot remove all obstacles to speech understanding.

> ***Athletes with hearing loss, even a mild hearing loss, may not express their inability to understand coaches or officials. They may not even be aware that they missed a question or misunderstood directions. If they are young and still learning language, they may be unable to tell when speech is unclear or buried in background noise. Athletes with hearing loss, and sometimes athletes with normal hearing, demonstrate difficulty in understanding speech when there is background noise, increased distance between the speaker and the athlete, and/or reverberation or echoes.***

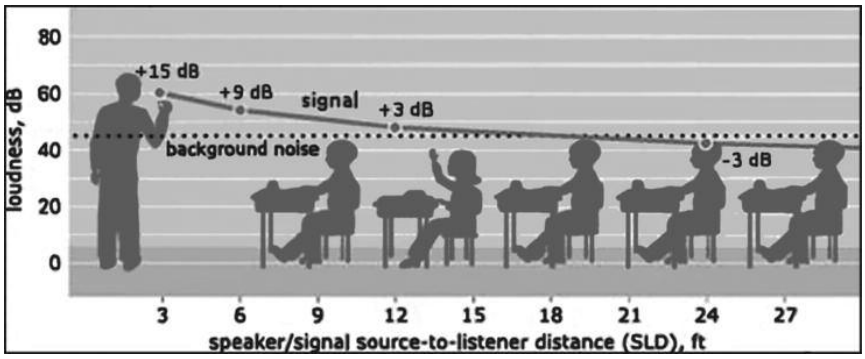
Noise

Ambient noise is present in most listening environments including gyms, outdoor fields, and pools. Assistive hearing devices cannot selectively amplify only the speaker's voice: they also pick up background sounds. In many difficult and noisy situations, assistive hearing devices alone cannot make the speaker's voice clearer or even louder. With background noise present, the loudness level of the speech signal may be barely above, and often may be lower, than the loudness level of the noise.

Distance

An athlete with a hearing loss has a reduced hearing range compared to an athlete with normal hearing. This hearing range can be referred to as a "listening bubble" (Anderson, *ELF*). As distance from the speaker increases (e.g., when listening to someone speaking from across a soccer pitch), loudness decreases. For the athlete with a hearing loss, distance becomes an obstacle to understanding speech. The greater the distance between the speaker and the listener, the less intense the speech signal becomes. This makes it more difficult for the listener to hear properly, since background noise often remains the same.

DISTANCE-LOUDNESS RELATIONSHIP*



* Source: The Institute for Enhanced Classroom Hearing. "Problems: Poor Acoustics." www.classroomhearing.org/acoustics.html (27 Nov. 2008). Reproduced with permission.

Research has shown that a person should be within one to two metres of the speaker for maximum speech understanding. It is not always possible to achieve this in the field of play.

Reverberation

Another obstacle to speech understanding is reverberation or echo. When sound "bounces" off a surface, it can actually mask, or muffle, the main signal. It can reduce the clarity of speech, decrease the signal-to-noise ratio, and make speech more difficult to understand. Reverberation and echo is pronounced in gymnasiums and pools.

FM Systems

As mentioned earlier, distance, background noise, and reverberation make hearing difficult in a gym, field or pool. A personal FM system can be used in addition to the hearing aid(s) or cochlear implant(s) to overcome these factors. A **personal FM system** uses a transmitter, microphone, and receivers to send the athlete`s voice to the athlete's hearing aid(s) or cochlear implant (s) by FM radio wave. The coach wears a microphone and transmitter. The receivers attach to the athlete's hearing aids or cochlear implants directly or through an adapter called an AI boot or audio shoe. The athlete hears the coach as if the coach were standing right next to him or her, overcoming the problems of distance and background noise. In a very noisy setting, athletes may feel the FM provides little benefit as the background noise may overwhelm the technology.

COMMUNICATION[2]

Communication Options

Athletes who are identified with a hearing loss may communicate using a number of different methods.

- spoken (oral) language
- American Sign Language (ASL)
- a combination of both languages (English as an additional language)

In Manitoba, approximately 80% of D/HH children use oral language only. Of the remaining 20%, more than 10% use oral language and ASL and less than 10% use ASL only.

Engaging Parents and D/HH Athletes
Parents of D/HH athletes may be more engaged in their child's sport activity. They will assist coaches in understanding their child's hearing loss, will help in discussing the preferred method of communication and may assist with interpreting, especially for younger athletes.

> ***One of the first conversations a coach should have when they learn they have a D/HH athlete is with the athlete and/or the athlete's parents to determine their preferred communication method. This method should then be used wherever possible.***

Working with Athletes Who Use Oral Language

As noted above, the vast majority of D/HH athletes will use oral language. The athlete's ability to speak and listen will be affected by a number of factors, including age of onset of hearing loss, level of hearing loss, cause of hearing loss, etc. Regardless, athletes who use oral language will still struggle with communication.

In trying to understand what is being said around them, they will invariably rely on speech reading in addition to wearing assistive hearing devices. They may also need the support of a computerized notetaker. Both are discussed below.

Speech Reading
Speech reading was previously known as lip-reading, but now encompasses lip movement and facial expression. Virtually all oral D/HH athletes will speech read to augment their understanding of spoken language. It provides additional information when used in conjunction with residual hearing, hearing devices and other strategies that assist in communication for an athlete with hearing loss.

However, speech reading is not a reliable means of communication when used in isolation, as only 33 percent of speech sounds are visible on the lips (e.g.,/b/, /m/, /l/); the rest are not visible (e.g., /k/, /g/, /ng/). The speech readability of words will vary within the sentence, due to the

[2] Ibid.

words or sounds that come before and after the word. It is also easier to speech read when the context of the conversation is known.

Misunderstandings occur when speech reading. Factors that may affect the athlete's ability to speech read for information include:

- prior knowledge of the content
- predictability of the message
- familiarity with the vocabulary used
- the speaker's rate of speech
- visibility of the speaker's face (hands covering mouth, speaker looking away from D/HH person, face of speaker in shadow)
- distractions such as gum chewing, eating, moustache
- accents

Speech reading for information is a skill that may develop over time, as the individual grows in knowledge, reasoning, and language skills.

Computerized Notetaking

On some occasions, it may be appropriate for a Coach to engage a computerized notetaker. Computerized notetaking (also known as graphic interpreting) provides a visual display of all verbal communication. The computerized notetaker (CN) uses a laptop to type a summary of the information that is being spoken in a meeting or a classroom. Many D/HH students who use oral language have full-time computerized notetakers in every class throughout their entire secondary and post secondary education.

Computerized notetakers would be appropriate in a sport setting if a team is being presented with information in a classroom setting such as presentations from sports psychologists or nutritionists.

Working with Computerized Notetakers

The computerized notetaker usually:

- Paraphrases, summarizes, and modifies the language level of verbal information to meet athlete needs.
- Modifies and summarizes notes; adapts the layout of notes and the content of the subject to meet athlete needs.
- Prepares for graphic notetaking: becomes acquainted with subject specific language and knowledge.

The athlete who is D/HH can access this information in any of the following ways:

- Sit near the notetaker and read the information off the laptop monitor.
- Sit close to the notetaker and read the information off of an external LCD monitor that is connected to the laptop.
- Sit anywhere in the room and read the information off of a projected image. The laptop is connected to a projector and information is projected onto a screen or a whiteboard for all to see.

Computerized notetakers can be beneficial to the entire team, particularly to those who have English as an additional language and those who are visual rather than auditory learners.

Working with Athletes Who Are Deaf and Use ASL

American Sign Language (ASL)
ASL is a visual-gestural language created by people who were Deaf. ASL defines its expression through

- hand shapes and movements
- facial expressions
- body movements
- spatial relationships
- mouth movements

It is used mainly in the United States and Canada by people of all ages who are Deaf. It does not have a universally accepted written code to accompany it.

ASL uses movements and shapes of the hands instead of sounds, and "listeners," or receivers, use their eyes instead of their ears to understand what is being said. ASL can express concrete concepts (such as food, toys, or actions) and abstract ideas (like feelings and jokes)—its range of expression is similar to any spoken language. ASL is a very different language than English, and it has completely different vocabulary and grammar rules. ASL is also different from sign systems that attach signs to words and use English word order (Signed English or Signing Exact English [SEE]). It takes just as long to learn ASL as it would to learn any other language, like French or Spanish.

For athletes whose primary language is ASL, learning a sport using an ASL interpreter is most effective.

ASL-English interpreters are professionals who have successfully completed an ASL-English interpretation program (AEIP). This postsecondary training provides graduates with knowledge of interpreting skills, Deaf culture, and the national code of ethics. For more information on accessing resources for signers and interpreters, see the Manitoba Association of Visual Language Interpreters (MAVLI) at http://www.mavli.com/.

Working with Interpreters:

- The primary function of interpreters is to provide communication access for people who are Deaf and hearing people who do not share a common language.
- Interpreters will interpret everything they can hear, including conversations, sneezes, swearing, and any other audible sounds. Interpreters will also ensure that everything signed in a visible manner is also interpreted into English.
- The interpreter also interprets how things are said or signed (e.g., facial grammar conveys the tone of the message: pleased, disappointed, impatient).
- Interpreters either sit or stand, near the coach so that the athlete has visual access to both at the same time. Discuss with interpreters where a good location might be.
- Speak at a normal pace. If interpreters miss something or need to ask for clarification, they will ask the speaker.
- Speak to the athlete who is D/HH directly in the first person and not "through" the interpreter in the third person.
- Interpreters need to be seen to be effective. Ensure there is adequate lighting during events.
- Interpreters are not participants in the interaction in the sense that they do not express their own opinions or delete information with which they do not agree.

- Interpreters can more accurately convey your message if you prepare them well by providing them with information in advance as much as possible to allow for prep time.
- Interpreters follow a code of ethics that binds them to professional behaviour and conduct. Code of Ethics & Guidelines for Professional Conduct are available at www.avlic.ca/resources.php?coe.
- Interpreters need processing time and are a little behind what is being signed or spoken. To facilitate groups well, keep this in mind and monitor the opportunities that the athlete who is D/HH has to answer questions that are posed or whether the athlete is being allowed to participate fully in group discussions.
- On occasion, some athletes may need translation from written English to ASL.
- Most interpreters work alone. This places them at risk for work-related musculoskeletal injuries (MSI) such as carpal tunnel or repetitive use syndrome. Interpreters need sufficient breaks and rest time in order to avoid MSI.

Canadian Deaf National Swimming Program

MEETING LANGUAGE AND SKILL NEEDS[3]

> ***Hearing children passively absorb essential daily information by overhearing conversations, as much as 90 percent of their learning (Chotiner-Sonalo)***

All young people - those who are hearing and those who are D/HH - need certain knowledge and skills to be successful in sport. These include the following:

- sport vocabulary
- concepts
- critical thinking
- following directions
- social skills to feel included in a team

In addition, D/HH athletes may become more fatigued than their hearing peers due to the level of effort needed to listen during a practice or game (Bricker). This fatigue is similar to what a hearing person might experience listening to a presentation in a newly acquired second language. Increased fatigue levels put D/HH athletes at risk for frustration, inappropriate behavior or even injury.

Vocabulary

It is estimated that the average person hears approximately 30,000 words per day. An athlete who is D/HH may not have access to many of those words. It cannot be assumed that athletes who are D/HH will learn sport vocabulary incidentally. Athletes may need to be taught explicitly and intentionally specific sport language.

As athletes progress, complex terminology related to the sport (e.g. game strategies), the human body (e.g. energy systems) may need to be directly discussed with D/HH athletes. Set up a time to meet with the athlete to discuss. If possible, provide them with reading material in advance of the meeting, so they can begin to learn the topic.

Concepts

Athletes who are D/HH do not necessarily develop concepts in the sequential (developmental) order. They may have mastered higher-level concepts but have gaps in earlier concepts. An assessment of concepts may be necessary, and any gaps in development may need to be directly taught.

> ***For younger children, parents should be engaged to assist in teaching the appropriate sport vocabulary and concepts.***

Following Directions

Following directions in a noisy setting can be very challenging for an athlete who is D/HH. Following a direction involves hearing, understanding, and remembering a set of instructions presented in a specific order or sequence. An athlete who is D/HH may not be able to follow a direction due to a breakdown in any one of the following areas:

[3] Ibid.

- The athlete may not be able to hear the direction or only hear part of it due to the noise level in the field of play or the distance the athlete is from the speaker. Those with unilateral hearing loss may not be able to locate the speaker.
- The athlete may not understand the concepts, vocabulary, or the grammatical structures used in the direction.
- The athlete may not be at the developmental listening level to remember the number or sequence of directions.

Critical Thinking Skills
The development of age-appropriate critical thinking skills for young athletes who are D/HH is complicated because there is often an overlay of language difficulties. Higher-level language abilities are often missing due to lack of experiential language which, in turn, has an impact on reasoning skills.

For example, many D/HH are concrete thinkers who need direct assistance to develop more abstract reasoning skills. Concrete thinkers are focused on the facts in the here and now, physical objects and literal definitions. They can't reflect on how the current facts may apply in a different situation or see the larger overall concept. In the sport context, a Coach may teach a particular offensive strategy. A concrete thinker would have difficulty applying that offensive strategy or elements of it beyond the exact situation as presented by the Coach.

Social Skill Development
Athletes who are D/HH may experience difficulties in the development of appropriate social skills. These difficulties may affect how they relate to their team and interact in the field of play. Younger athletes who are D/HH may have difficulty with paying attention, taking turns, and making eye contact. They may need clear expectations of how they are to behave.

Many social skills are acquired in the hearing population through incidental learning. This means that hearing athletes learn social nuances in their everyday interactions by seeing and hearing others around them. These skills help them navigate the social world. Athletes who are D/HH may have limited access to this incidental learning.

With higher-level social skills, the demand for language skills increases. Issues most often seen with the D/HH population include poor problem solving skills, difficulty with conversational skills, poor self-esteem, and difficulty with the higher-level language skills that go along with the social aspects of interaction.

These deficits may appear in a sport setting in the following ways:
- Isolation and difficulty relating to teammates
- Inappropriate behaviour
- Misinterpreting criticism

CREATING A D/HH-FRIENDLY ENVIRONMENT[4]

Athletes who are Deaf and hard of hearing may benefit from environmental adaptations and strategies for facilitating communication to meet their specific needs.

> ***Athletes with a hearing loss may face many challenges in a sport setting. Fields of play are often large and noisy. Children with mild hearing loss may be able to understand their coach or teammate on a one-on-one basis; they may be able to follow team discussions with the assistance of technology. Still, they cannot reliably access the incidental learning that takes place in every environment. They may miss a response from a team mate across the gym, a comment from the coach about an incorrect action, or a new topic raised by the coach. (adapted from Meyer 20)***

Comments from Athletes Who Are D/HH:
"I hate it when. . .

- *". . . I don't hear something and people say 'never mind,' 'tell you later,' or 'it's not important.' "*
- *". . . I can't hear people during team discussions when it is noisy in the gym. I just tune out!"*
- *"...I have to stop the team during a drill to ask the coach what is going on. I feel so disabled."*

> ***It is <u>vital</u> that the coach develop a strong rapport with the D/HH athlete. D/HH athletes must feel they have the full support of their coach and can approach him/her in any situation.***
>
> ***Coaches need to take the time to include D/HH athletes by rephrasing, repeating, or providing a visual cue.***

<u>Environmental Adaptations</u>

Maximize Speaker's Voice

- Use an FM system if available and helpful to the athlete.
- Encourage peers and other coaches to use the FM microphone.
- Ensure you are closer to the athlete with a hearing loss.

Maximize Visual Access

- Ensure good lighting—keep the space bright enough for athletes to see speaker's face.
- Do not stand in front of a bright window or light when talking, as this will put your face in a shadow.

[4] Ibid.

- Face the D/HH athlete as much as possible, keep hands away from mouth and minimize walking around while speaking.
- Stop talking when turned to demonstrate a drill or write on any type of board.
- Preferential placement in team discussions should be available (time outs or team huddles) —allow athletes who are D/HH to choose where they see and hear best.
- Circular or semicircular arrangements facilitate visual access to information.
- Use visual aids (e.g., act out what you are looking for, draw a picture, write down a work-out)
- Where audio/visuals are used, look for closed-captioned videos, DVDs, and TV programs.
- Use flashing lights to gain the athlete's attention.

> ***My daughter's coach had a few team members demonstrate the drill before the full team ran it. My daughter was never expected to go in the first group.***

Facilitating Communication

Reduce Auditory Fatigue

- Write down your practice plan and go over with D/HH athlete before the start of practice. Make sure the athlete knows the main purpose of the activity.
- Keep instructions short and clear.
- Use simple vocabulary that you are sure the athlete already understands.
- Speak at a normal volume and rate.
- Pause between statements to re-emphasize key concepts.
- Some athletes may require extra processing time.
- Allow downtime privileges if needed (e.g., water breaks).

> ***Before each practice, my Coach would write out the main drills, the reason we were doing them and the main focus. I would read this at the start of practice and ask any questions at that time. It made such a difference. My hearing team mates appreciated seeing the practice written out as well.***

Communicate Clearly

- Get the attention of the D/HH athlete prior to beginning instruction (e.g., wave, flash a light, or touch the athlete's shoulder).
- Ensure that only one person speaks at a time in team discussions and identify the person speaking.
- Encourage all team members to turn and look at the speaker when listening.
- Repeat or rephrase other athletes' comments or questions.
- Athletes who are D/HH may become lost when rapid topic changes occur—draw attention to changes in topic, so that the athlete can contribute.
- When talking about an object, or someone, glance or point in that direction.
- If an athlete is reluctant to ask for clarification, create a "secret signal" for the athlete to use.
- Avoid sarcasm – it may be difficult for D/HH athlete to understand.

- Check athlete comprehension periodically. Ask the D/HH athlete to rephrase or summarize. **Do not use "yes/no" questions to judge if the material is understood.**
- Use technology. Have someone video tape practices or games and play back with commentary to D/HH athlete in a quiet setting.
- Maintain good eye contact, speak clearly, and where possible, write down important information.

> ***My coach would videotape our races and talk to us about them one-on-one after in a quiet setting. It was really helpful.***

Field of Play Management

Long-Term Athlete Development - (LTAD) Model for Deaf Sports - Canadian Deaf Sports Association

Organization

- Establish schedules and routines. Make sure D/HH athletes are aware of any changes either by directly speaking with them in a quiet setting, writing the information down or sending information via email or text.

> ***My coach used to yell out changes in the next day's practice time as we were heading to the locker room. I never heard those instructions and would show up for the next practice at the wrong time.***

- Ensure any team documents are well organized and easy to follow.

> ***My coach had a great website and Facebook page with information on practices, techniques and upcoming events. If I missed something I could often look it up online.***

Enhance Communication

- Use an ASL-English interpreter as needed.

> ***Having an ASL interpreter there for practices and games made such a difference for me. I was able to understand what was going on all the time!***

- Use visual aids and hands-on techniques (after getting permission from athlete and/or parents). Demonstrate what you are explaining.

> ***My coach used her whole body when demonstrating a new swimming stroke. She also got in the water and helped me move my legs in the correct motion for whip kick.***

Community

- Make listening a team issue rather than singling out the athlete who is D/HH. All athletes will benefit.

> ***It was always so much easier for me to hear Coach when everyone was quiet and listening.***

- Develop strategies to promote friendships among team mates—this will help all athletes feel that they are valued members of the team.

> ***One teammate or the Team Captain was assigned to be my hearing buddy. She would wave at me or tap me on the shoulder when the coach was trying to get my attention from the sidelines.***

- Keep the team apprised of progress by making a short comment or two at the end of a practice or game. Be sure the D/HH athlete has heard the comment.

> ***Coach always gave us feedback at the end of practice. First she got the team's attention and then she made sure I could see her face before she talked to us.***

Outreach to the D/HH Athlete

- Take the initiative and reach out to the D/HH athlete on a regular basis with supportive comments and corrections.
- Communication is the D/HH athlete's vulnerability – don't wait for them to approach you.

> ***My coach used to encourage one-on-one debriefs at the end of each practice/session to reflect on how it went and clarify technique corrections. It really helped build my self-esteem to know that the coach was on the same page as me.***

- Suggestions for improvement should always be made in a quiet setting, where the athlete can wear assistive hearing devices.
- Be sensitive to a lack of incidental learning opportunities.

> ***I didn't know I was supposed to count my strokes in each lap I swam or that my stroke rate was supposed to vary based on my race distance. Apparently we were supposed to have learned that at an earlier level.***

- Do not use anger. D/HH athletes may be particularly sensitive to any signs of anger, hostility or criticism as they may not hear what is being said and don't understand the context.
- Be open and candid, and maintain a sense of humour.

> ***When the team finally executed the drill correctly, Coach used to do a cartwheel. He was terrible at cartwheels, but it always made us laugh.***

- Expect participation from athletes who are D/HH in the same manner as from other athletes on the team.

> ***I always knew Coach would approach me if I wasn't doing something properly. She did that with all the athletes.***

Care of Canadian Deaf Sports Association - Team Canada - 2013 Summer Deaflympics, Sofia, Bulgaria

SPECIFIC SPORT ADAPTATIONS[5]

High Contact Sports

In some high contact sports, it may be advisable to remove assistive hearing devices. Auditory communication between the D/HH athlete, team mates and coach will be severely limited when hearing devices are off. Pre and post communication (where the athlete can wear assistive hearing devices), advance planning and pre-arranged hand signals will be critical to D/HH athlete success. Teammates or hearing buddies should be assigned to help signal when there is a change in the field of play or when seeking the attention of the D/HH athlete.

Sports with Helmets

Many sports require the use of protective headgear. Unfortunately this headgear may interfere with a D/HH athlete's hearing equipment. Athletes may find a helmet creates feedback with their hearing aids or presses their cochlear implant coil uncomfortably into their head. Helmets with a face mask pose an additional challenge as the D/HH athlete will not be able to speechread any teammates.

BC Deaf Sports Federation

Helmets should always be worn as required by the rules of your sport and modifications should not be made unless approved by the manufacturer.

It may be possible to find a helmet that allows the D/HH athlete to wear their assistive hearing devices. Some helmet manufacturers are now offering custom designed helmets for those wearing assistive hearing devices. Athletes should check with their assistive hearing device manufacturer to see what is recommended. If a suitable helmet cannot be found that addresses concerns, the D/HH athlete may not be able to wear their assistive hearing devices when wearing the required helmet.

If hearing devices cannot be worn under a helmet, pre and post event communication (where the athlete can wear assistive hearing devices and clearly see the speakers face), detailed game planning and pre-arranged hand signals will be critical to athlete success. Teammates or hearing buddies should be assigned to help signal when there is a change in the field of play or when the coach is seeking the attention of the D/HH athlete.

Sports with Team Play

Sports with complex game strategies can cause a challenge for D/HH athletes. When teaching such strategies, the use of illustrations will be beneficial to all members of the team, not just the

[5] Adapted with permission from Palmer, Catherine V., Stacy L. Butts, George A. Lindley, Susan E. Snyder. *Time Out! I didn't hear you.* Sports Support Syndicate Inc, 1996.

D/HH athlete. Frequent demonstrations allow all players to view exactly what it is the coach wants the team to do.

Wherever possible, hand signals should be developed for all rehearsed plays. Verbal calls may not be heard by the D/HH (or hearing) athlete in the noisy field of play. If any information has to be relayed verbally, a teammate or hearing buddy needs to inform the D/HH athlete directly of the changes, preferably during a pause in play. Teammates must be told that shouting may not be an effective way of getting the attention of a D/HH player and that hand/arm gestures are more appropriate.

Care of Canadian Deaf Sports Association - Team Canada - 2013 Summer Deaflympics, Sofia, Bulgaria

In sports where athletes call for a free ball, team mates should be instructed to let the D/HH athlete take the play when they call for it, as they may not hear other players call out. Alternatively, a large hand gesture may be used to call for the ball. This should be experimented with in practice to see if it works consistently.

During time-outs, the coach should use illustrations on paper or a board to depict plays and strategies to be used by the team. If verbal communication is necessary, the coach should face the D/HH athlete when talking and should not talk rapidly even though the time out is short.

Sports with Music

D/HH athletes may have some difficulty hearing music. Turning up the music or moving the speaker closer to the field of play (even face down on it) may be helpful. The D/HH athlete may be able to feel the music if the speaker is closer to the area of performance. Selecting music with a deep bass is suggested as bass tones have a stronger vibration.

Sports in Water

Despite advances in technology, assistive hearing devices are still not designed for long periods of immersion in water. As such, D/HH athletes will generally have to practice and compete without them. If the D/HH athlete does not use ASL, coaches will need to employ all the visual strategies available to communicate with their D/HH athlete. Reliance on verbal instructions should be limited to pre and post event when hearing devices can be used. The importance of illustrations and demonstrations cannot be overstated. In or out of the pool, these techniques can be used in teaching strokes or game strategies. Training procedures and work outs can be fully described in a written format and illustrations. Videotaping training or competition and then discussing in a quiet setting after the event is also useful.

WORKING WITH OFFICIALS[6]

Officials need to be informed and aware of any D/HH athletes and the strategies being employed to communicate with them during competition. Officials also need to understand what impact a hearing loss will have on the D/HH player's ability to hear and understand a ruling. The official must understand his/her responsibility to implement and/or permit the required accommodations for the D/HH athlete.

Some provincial sport governing bodies will already be aware of and have adopted modifications for D/HH athletes. Coaches with a D/HH athlete on their team should contact their provincial sport body and ask them if there is a process to inform officials of the D/HH athlete and what accommodations are possible.

If your sport has not developed a process to address the needs of D/HH athletes, the coach should approach officials and inform them that a D/HH athlete is participating (and their uniform number, if appropriate). Once informed, the official should ask the coach and player for suggestions on how to effectively communicate with the athlete throughout the course of the game or event. The official should be informed of what strategies will be used by the teammates and coaches for communication so he or she can determine if these strategies are within the spirit of the rules. The responsibility for informing the opposing team of any procedural changes needed to accommodate the D/HH athlete lies with the official. Any communication strategies should be explained to the opposing team in order to allay any suspicion of unfair play. For example, the use of an FM transmitter by a coach may cause some confusion for the opposing team.

The D/HH athlete's ability to understand the official may be limited, especially in the noisy environments associated with sporting events. Many important acoustic signals (e.g. whistle blows) will not be heard by some D/HH athletes, even with use of a hearing aid or cochlear implant. The official needs to understand this and allow some accommodation for the D/HH athlete.

Accommodations may include the following:

- Use of arm signals or light flashes in place of verbal commands or sounds at a start.
- Allow some leeway if D/HH athlete continues play after whistle has blown.
- Repetition of calls at request of D/HH athlete.
- Request appropriate hand/arm gestures with verbal explanation of foul or infraction.
- Use of visible timing systems.

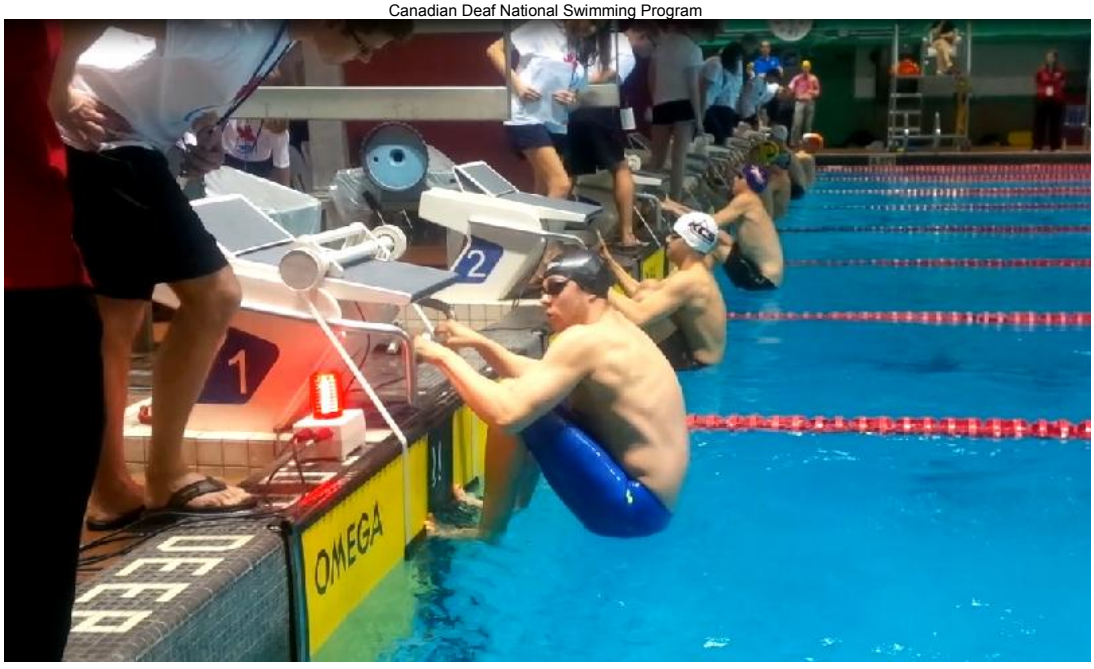
[6] Ibid.

Competitive Swimming – Deaf Start Protocols

On the block

Take your Mark

Canadian Deaf National Swimming Program



Canadian Deaf National Swimming Program
http://deafswimmingcanada.wix.com/deafswimmingcanada

Individual Strobe Light for Start

PATHWAY FOR MANITOBA'S D/HH ATHLETES IN ELITE DEAF SPORTS

Local:

- Manitoba School for the Deaf
- Manitoba Deaf Sports Association http://www.mdsaassoc.com/

National

- Canada Deaf Games
- Canadian Deaf Sports Association www.assc-cdsa.com

International

- World Deaf Championships
- Deaf Pan Am Games
- Deaflympics

OTHER SPORT SPECIFIC RESOURCES

Swimming:
http://deafswimmingcanada.wix.com/deafswimmingcanada
http://media.wix.com/ugd/59fc33_de356b3029e54f61aeac082b5d3a3eee.pdf

Hockey:
http://www.usadeafhockey.org/teams/default.asp?u=AHIHA&s=hockey&p=custom&pagename=Coaching+Tips
http://cdihf.deafhockey.com/

Basketball:
http://www.foxsportspulse.com/assoc_page.cgi?c=1-5096-0-0-0&sID=228401

Athletics:
http://www.englandathletics.org/shared/get-file.ashx?id=11307&itemtype=document

Tennis:
http://www.tennis.com.au/play/players-with-a-disability/coaching-players-with-a-disability/deaf-players

Curling:
http://www.deafcurlcanada.org/

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