

Special Olympics
Healthy Hearing



TRAINING MANUAL



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January 2016

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Special Olympics
Healthy Hearing



Dear Healthy Hearing Volunteer,

We are delighted to know you are interested in the Special Olympics Healthy Hearing Program. The purpose of this manual is to provide you with the necessary information to assist you in planning and running a successful Healthy Hearing event.

This manual provides general information about Special Olympics and the Healthy Athletes Program, followed by a detailed discussion of the Healthy Hearing Program. This manual outlines general guidelines that apply to all volunteers, including protocols that are specific to Healthy Hearing. Please review this manual as you prepare for a Healthy Hearing event.

Kind regards, Melina & Beth

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Special Olympics

Special Olympics (SO) transforms lives through the joy of sport, every day, everywhere. It is the world's largest sports organization for people with intellectual disabilities with 4.4 million athletes in 170 countries, and millions more volunteers and supporters. It also is a global social movement.

The Special Olympics Oath

"Let me win, but if I cannot win, let me be brave in the attempt."

The Mission

The mission of Special Olympics is to provide year-round training and athletic competition in 32 Olympic-style sports for children and adults with intellectual disability. The goal is to provide opportunities to develop physical fitness, demonstrate courage, experience joy and participate in a sharing of gifts, skills and friendship with their families, other SO athletes and the community.

The Benefits

Individuals who compete with Special Olympics develop improved physical fitness and motor skills. It is through the power of sports, that people with intellectual disability discover new strengths, abilities, skills and success. The athletes find joy, confidence and fulfillment, on the playing field and in life. They inspire people in their communities and elsewhere to open their hearts to a wider world of human talents and potential.

The Spirit of Special Olympics

The spirit of Special Olympics exceeds geographical borders, nationality, political opinion, sex, age, race and religion and promotes the talent and courage of athletes

Special Olympics History

Special Olympics began in 1968 when Eunice Kennedy Shriver organized the first SO Games in Chicago, Illinois, USA. The idea was born when Mrs. Shriver held a summer camp for young people with an intellectual disability in her own backyard. She saw what the abilities of these children were in sports and other activities, against all the expectations of different experts. Since then, millions of children and adults with intellectual disability have participated in SO.

Worldwide

There are over 170 countries with recognized SO Programs - and a total of 4.4 million athletes, with as many as 80,000 events and competitions annually. These programs expand continuously. SO is one of only two organizations- authorized by the International Olympic Committee; to use the name "Olympics".

Changing Attitudes

SO is the leading voice in raising awareness about the abilities of people with intellectual disability. SO fights negative stereotypes and misperceptions; educating people young and old about the skills and gifts of our athletes. SO provides educational experiences for coaches, volunteers and teachers to enhance their knowledge and show them how the SO experience can transcend all aspects of their lives.

Healthy Athletes Program

MISSION

The mission of the SO Healthy Athletes Program (HAP) is to improve the health, fitness and general well-being of athletes, so they can not only perform better during training and competitions within SO but also in their daily life.

GOALS

The main goals of the SO Healthy Athletes Program are:

- to improve accessibility to health care for Special Olympics athletes;
- to train health care professionals and students in health care about the special needs of, the communication with, and the care for people with an intellectual disability;
- to collect and analyze health care data on people with an intellectual disability, and to communicate about their health conditions and health needs;
- to increase public and professional awareness about the health problems that occur in individuals with intellectual disability;
- to advise the athletes and coaches about the specific health problems of SO athletes;
- to refer athletes, if needed, to a specialist in their own neighbourhood;
- To advocate improved health policies and programs for person with intellectual disability.

PRESENT PROGRAM

The Healthy Athletes Program is an international program in which the health of SO athletes is screened by professional volunteers in 7 different health disciplines. The athletes can participate in these screenings for free and without any obligation during SO events. The different HAPs are:

- Fit Feet (podiatry)
- FUN Fitness (physical therapy)
- Healthy Hearing (audiology)
- Health Promotion (better health and well-being)
- MedFest (sports physical exam)
- Opening Eyes (vision)
- Special Smiles (dentistry)

Every HAP is coordinated by a Clinical Director who is a trained professional volunteer. The screenings are performed by professional health care providers and students in health care. Some aspects of a HAP can be conducted by non-professional volunteers.



Healthy Hearing Program

What is Healthy Hearing?

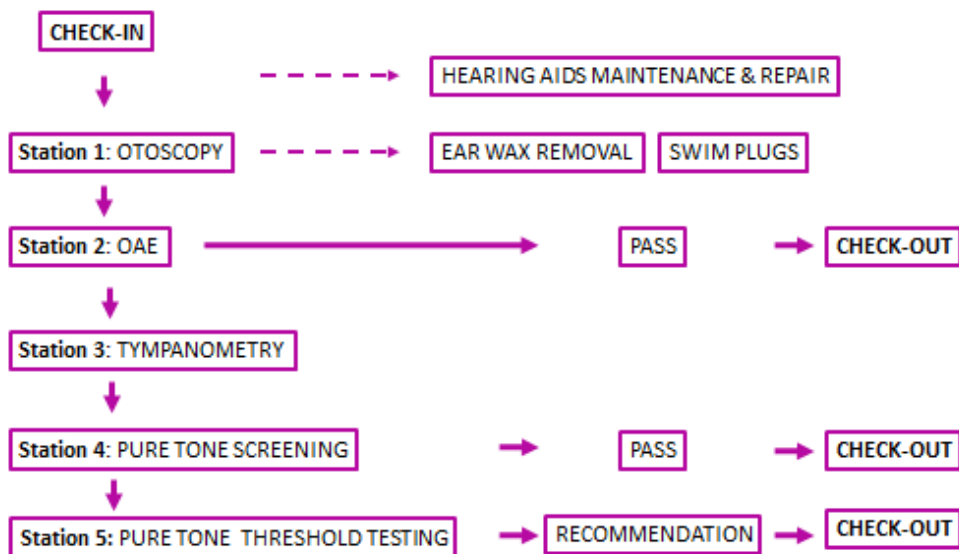
Healthy Hearing (HH) is part of the International SO HAP. SO athletes can have a hearing screen without any cost and without any obligation for further treatment.

The HH-program was founded in 1999 by Dr. Gil Herer, Ph.D., CCC-A. The objectives of the program are:

- to research the prevalence of ear problems and hearing loss in athletes who compete at Special Olympics events;
- to inform the athletes, their parents, their coaches or caregivers about the detection of possible ear and hearing problems and to recommend follow-up as needed;
- to advise the athletes, their parents, their coaches, their caregivers about the necessity of regular ear and hearing screening;
- to offer health care professionals and students in health care the opportunity to work with the athlete group and so learn or improve their practical skills.

Healthy Hearing Screening Protocol

The HH screening protocol is a strict protocol that is used worldwide (see figure below). All athletes will go through registration (check-in), at least two stations and in some cases as many as five screening stations. Check out is the final station for all athletes. At some events, additional services are available depending on the athlete's need and available time. The goals and the specific procedures per station are explained in this manual.



Who screens at Healthy Hearing?

The professional volunteers are audiologists, ENT-specialists, speech language pathologists, teachers of the deaf, and physicians (medical doctors). Students in audiology and speech language pathology, as well as medical students can help under the supervision of a professional volunteer. Non-clinical professionals can volunteer to help at check-in, guide athletes through the stations and input the data into the HAPs database. All HH volunteers are trained and supervised by a Healthy Hearing Clinical Director (HH CD). The HH CD is an audiologist or ENT-specialist that received training at a Special Olympics Train-the-Trainer (TTT).

What information is given to the athlete?

A screening form is used to document the "pass" or "no pass" results at every screening station. There is a section on the form to write the athlete's answers to some ear-related questions, and a space to write down any useful comments. At the check-out desk every athlete receives his screening results and, if necessary, follow-up recommendations. Also, general advice for regular ear and hearing screening is given. The individual findings and the recommendations are written down on a form the athlete takes with them. The results are not only shared with the athlete, but also with the athlete's coach, caregiver or family.

How long does a screening take?

The screening process, from registration to check-out, takes about 10 to 30 minutes per athlete, depending on the number of screening stations the athlete is required to complete. On some occasions when there are waiting lines or when the athlete may need further instruction in order to complete the screening, the process may take longer.



General Guidelines

- ✓ We talk about "intellectual disability", not about mental handicap, mental retardation.
- ✓ We talk about "athletes", not about people with an intellectual disability or handicap.

- ✓ Always talk directly to the athletes, make eye contact, introduce yourself, ask about their name, their sports, their competitions. Establishing rapport is important for the athletes so they feel at ease and are more likely to perform well during screening.
- ✓ Explain to the athlete at every screening station what you will do, so the athlete knows what to expect.
- ✓ If the athlete speaks another language, still talk with the athlete. Use the few words you know in that specific language, otherwise use your own language or English at International events.
- ✓ If something important needs to be explained, and you don't speak the athlete's language, try to make sure a coach, another volunteer or a translator is available to explain this to the athlete.
- ✓ If an athlete doesn't feel well, contact the local first aid service or medical service. The HH CD has the necessary phone number.
- ✓ At international events, athletes like to trade pins or badges. If you have some pins at home, don't forget to bring them with you.

- ✓ Every day, each volunteer must check-in at the "volunteer registration desk".
- ✓ Credentials must be worn during the screening.
- ✓ HAP T-shirt must be worn during the screening, if provided

- ✓ Within SO, everybody is addressed by their first name. No surnames or titles (doctor, professor, mister, ...) are used.
- ✓ Every morning the volunteers are introduced to each other, tasks are divided, supervisors are identified.
- ✓ Breaks and lunch time are scheduled to ensure there are always enough volunteers present for screening.

- ✓ Everybody is required to wear gloves at the first 3 screening stations (otoscopy, otoacoustic emissions and tympanometry), and to change gloves before starting to screen a new athlete. This ensures you protect yourself and the athletes.
- ✓ The plastic ear speculi of the otoscopes and the foam ear tips used for otoacoustic emissions are thrown away after every athlete. The tympanometric ear tips are re-used after disinfection.
- ✓ Disinfect the tympanometric ear tips and the ENT-material regularly as required so that supplies are constantly available for use.
- ✓ Keep the screening area clean and tidy. Don't put cans, lunch boxes etc on the screening tables. Dispose all garbage in one of the many waste baskets spread over the screening area.
- ✓ Change the small garbage bags, that hang on almost every table in the screening area, when necessary. Throw the small bags in a big garbage bag, and hang a new small bag in the same place.
- ✓ If one of the screening devices doesn't work correctly, attach a "defect" note onto the unit, continue screening the athlete with another unit and check the defective unit fully once you have time. If you can't solve the problem yourself, inform the supervisor about the defect.
- ✓ Ask for help if necessary. Some volunteers have a lot of experience with the athletes and/or this specific screening process. Take this opportunity to learn from them.

- ✓ Make sure everything on the screening form is completed at each screening station. Always start by writing down your own first name in the box on the screening form so that any queries about the athlete's screening results can be traced back to you.
- ✓ Write as clearly as possible, use capital letters, this way data-input will run smoother.

- ✓ It's possible that there will be waiting lines for screening. Non-clinical volunteers can keep track of athlete flow - which athlete was first.
- ✓ At times, because of the way athletic events are scheduled, there may be screening down times. Non-clinical volunteers can approach coaches about bringing teams to the HH-venue.
- ✓ Screening is for athletes. Non-athletes, like coaches, family members, other volunteers, are not our target group. We can screen them when there are no athletes to screen.



Check-in



Goal:

- ✓ Take note of some general information on the athlete e.g. name, age, based on their credentials.
- ✓ Ask the athlete some questions regarding their hearing. These answers will be compared with the screening results.

Position: The athlete stands or sits in front of the volunteer on the other side of the table.

Procedure:

- ✓ Copy the information from the "credentials" (= identification badge) of the athlete on the screening form (see page 10). At some larger events, this information will appear automatically on the printed screening form after scanning the athlete's credentials.
- ✓ Ask the athlete (not the coach/parent) the 3 questions on the screening form, in the language of the athlete, if possible.
- ✓ The screening form is given to the athlete. A second volunteer guides the athlete to Station 1.

Firstname	Lastname	HAS ID _____
------------------	-----------------	---------------------

Date	O Male O Female	DoB	Age (years) O Not sure
Event	Location	O Athlete O Unified partner	Sport
Delegation		SO Program	
Cell phone number	Number is O Athlete's O Parent's / Guardian 's		
Providing a phone number is optional. It may be used to call or send reminders if follow up is recommended after screening			

Questions for athlete to answer:

- Hearing? Good Not good Not sure
- Pain in ear? Yes: left / right No Not sure
- Hearing aids? Yes: left / right No Not sure
- IF "Yes", wears hearing aids now at event? Yes No



Comment: If the athlete says they have a hearing aid with them at the screening event, one of the professional volunteers can check and do simple maintenance on the hearing aid during the screening (extra info on Hearing Aid Maintenance and Repair on page 30).

First Name: _____ Last Name: _____ HHS ID: _____

Date of Birth	<input type="radio"/> Male <input type="radio"/> Female	DOB	<input type="radio"/> Aged <input type="radio"/> Unified Partner	Age (years)	<input type="radio"/> Not sure
Event		Location		SD Program	
Call phone number		Number in OSHA/OSHA/OSHA/OSHA		OSHA/OSHA/OSHA/OSHA	

Provide a phone number if possible. It may be used to call or send reminders / follow up if recommended after screening.



Questions for athletes to answer:

Hearing? Good Not good Not sure

Pain in ear? Yes: left / right No Not sure

Hearing aids? Yes: left / right No Not sure

→ If 'Yes', were hearing aids now at event? Yes No

Station 1: Ear Canal Screen / Otoscopy
 Screener's Name: _____ (print)

Right Clear Partially Blocked Blocked

Ear wax removed: Yes Yes, partially No Not possible Ache/ refused

Sub-a otoscopic findings:

Perforation of ear drum Otitis externa

Discharge Acoustic ear

Foreign object in ear canal Erythema in ear canal

Other: _____

→ Medical evaluation of ears needed for extra otoscopic finding (NOT for Ear Wax)

Left Clear Partially Blocked Blocked

Ear wax removed: Yes Yes, partially No Not possible Ache/ refused

Sub-a otoscopic findings:

Perforation of ear drum Otitis externa

Discharge Acoustic ear

Foreign object in ear canal Erythema in ear canal

Other: _____

→ Medical evaluation of ears needed for extra otoscopic finding (NOT for Ear Wax)

Station 2: Otolocoustic Emissions Screen
 Screener's Name: _____ (print)

Right Pass No Pass 'Can't Test', select reason:

Cannot achieve seal

Probe blocked by cerumen

Excessive noise

Athlete refused testing

Can't Test

Left Pass No Pass 'Can't Test', select reason:

Cannot achieve seal

Probe blocked by cerumen

Excessive noise

Athlete refused testing

Can't Test

First Name: _____ Last Name: _____ HHS ID: _____

Station 3: Tympanometry Screen
 Screener's Name: _____ (print)

Right Pass No Pass 'Can't Test', select reason:

(If not possible, do not refer based on Tympanometry)

Cannot achieve seal

Probe blocked by cerumen

Athlete refused testing

Can't Test

Left Pass No Pass 'Can't Test', select reason:

(If not possible, do not refer based on Tympanometry)

Cannot achieve seal

Probe blocked by cerumen

Athlete refused testing

Can't Test

Station 4: Pure Tone Screen at 35dB Hearing Level
 Screener's Name: _____ (print)

Right Pass No Pass 'Can't Test', select reason:

Could not hear

Excessive noise

Athlete refused testing

Can't Test

Left Pass No Pass 'Can't Test', select reason:

Could not hear

Excessive noise

Athlete refused testing

Can't Test

Station 5: Pure Tone Threshold Test
 Tester's Name: _____ (print)

Right Pass No Pass 'Can't Test', select reason:

Could not hear

Excessive noise

Athlete refused testing

Can't Test

Left Pass No Pass 'Can't Test', select reason:

Could not hear

Excessive noise

Athlete refused testing

Can't Test

1000	Right BC	Left BC	Unaided BC	Right BC	Left BC
2000					
3000					
4000					
5000					

Key: NA = No Response at Maximum Level C = Could Not Test

Pure tone threshold test:

Could not hear to respond

Excessive noise

Athlete refused testing

Unreliable

Unreliable

- Sub-a Findings: Provided At This Event
- Urgent Aid Repair/Maintenance
 - Ear Wax for Hearing Aid
 - Hearing Aid Troubleshooting
 - Hearing Aid Fitting
 - Hearing Aid Replacement
 - Hearing Aid Repair/Maintenance
 - Hearing Aid Evaluation and Fitting
 - Ear Protection (Noise Plug)
 - Ear Protection (Noise Plug)
 - Other: _____
- Recommended Follow-up Care
- Urgent Follow-up Needed
 - Cerumen Removal
 - Medical Evaluation of Ear
 - Audiological Evaluation of Hearing
 - Replacement of Ear Mold
 - Hearing Aid Repair/Maintenance
 - Hearing Aid Evaluation and Fitting
 - Ear Protection (Noise Plug)
 - Ear Protection (Noise Plug)

Comments: _____

Print Name of HH Clinical Director: _____ Signature of HH Clinical Director: _____

Station 1: Ear Canal Screen / Otoscopy

Goal:

- ✓ Check the ear canal for excessive ear wax or abnormal findings e.g atresia.
- ✓ Visualize and interpret the ear canal and tympanic membrane appearance.

Materials: Handheld otoscope with plastic ear speculi (2 sizes) or a light source on a headband with metal ear speculi (3 sizes), or, as an extra, a video-otoscope.

Position: The athlete sits down, the volunteer stands up, or sits down on a stool with wheels.



Procedure:

- ✓ Explain the procedure to the athlete. Show the athlete by shining the light on your hand and/or their hand.
- ✓ Perform otoscopy, ear by ear.
- ✓ Take note of the results on the screening form, recording each ear separately.
- ✓ Throw away the plastic ear speculum after every athlete, or keep the metal ear speculum in a separate box so they can be disinfected / sterilized at regular times.
- ✓ Guide the athlete to Station 2 (OAE or OtoAcoustic Emissions) personally, or to a volunteer who will help them.

Note of results:

- ✓ Document if ear wax is present in the ear canal or not:
 - **Clear** = ear drum > 50% visible (= PASS)
 - **Partially blocked** = ear drum < 50% visible (= REFER)
 - **Blocked** = ear drum not visible at all = (REFER)
- ✓ Note: If there are any abnormalities of the pinna, in the ear canal or at the ear drum, the Physician (= Medical Doctor) or Lead Audiologist will decide if it is necessary to refer. If the Physician / Lead Audiologist decides that it is necessary to refer for anything other than ear wax removal, check the box "**Medical evaluation of ears needed for extra otoscopic finding (NOT for ear wax)**" (see screening form page 1, Station 1).

Station 1: Ear Canal Screen / Otoscopy

Screeener's Name (print)

Right Clear Partially Blocked Blocked

Ear wax removed: Yes Yes, partially No Not possible Athlete refused

Clear Partially Blocked Blocked

Extra otoscopic findings:

<input type="checkbox"/> Perforation of ear drum	<input type="checkbox"/> Otitis externa
<input type="checkbox"/> Discharge	<input type="checkbox"/> Atretic ear
<input type="checkbox"/> Foreign object in ear canal	<input type="checkbox"/> Eczema in ear canal
<input type="checkbox"/> Other:	

→ Medical evaluation of ears needed for extra otoscopic finding (NOT for Ear Wax)

Left Clear Partially Blocked Blocked

Ear wax removed: Yes Yes, partially No Not possible Athlete refused

Clear Partially Blocked Blocked

Extra otoscopic findings:

<input type="checkbox"/> Perforation of ear drum	<input type="checkbox"/> Otitis externa
<input type="checkbox"/> Discharge	<input type="checkbox"/> Atretic ear
<input type="checkbox"/> Foreign object in ear canal	<input type="checkbox"/> Eczema in ear canal
<input type="checkbox"/> Other:	

→ Medical evaluation of ears needed for extra otoscopic finding (NOT for Ear Wax)

Comments:

- ✓ Ask the Physician / Lead Audiologist for advice if needed. Make maximum use of this learning opportunity.
- ✓ Let the Physician remove the ear wax if necessary and possible .
- ✓ Let the Physician / Lead Audiologist decide if referral for other than excessive ear wax is necessary or not.
- ✓ Use a video-otoscope, when available, to show the athlete or his coach the reason for referral.
- ✓ Contra-indications for further screening need to be written down clearly on the screening form. Excessive ear wax may not a contra-indication within this screening protocol, even if the ear canal is completely blocked.

Extra Station: Removal of Ear Wax

Goal: Dry removal of ear wax by a Physician (= Medical Doctor) to reduce the influence on the screening results.

Materials: Ear hooks, ear loops or microforceps of different sizes.

Procedure:

- ✓ The Physician tries to remove ear wax at the event, if needed and possible, and after the athlete has been informed and has agreed to this.
- ✓ A second volunteer helps the Physician if needed, reassures the athlete, writes down the findings on the screening form, and makes sure that each line is completed.
- ✓ Keep the used materials in a separate and labelled box so they can be disinfected / sterilized at regular times.
- ✓ Guide ALL athletes to Station 2 (OAE), or find a volunteer to do this. EXCEPTION to proceeding to Station 2 is the presence of significant ear discharge.



explain and show



remove



check



Note of results:

- ✓ Note if the ear wax has been completely or partially removed by ear:
 - **Yes** = ear wax has been completely removed
 - **Yes, partially** = ear wax has been partially removed
 - **No** = ear wax has not been removed because no physician present
 - **Not possible** = ear wax removal has been tried, but was not possible at the event
 - **Athlete refused** = the athlete refuses ear wax removal at the event

✓ Always note what the situation is after ear wax removal (attempt). There are 2 lines per ear with the same options (clear, partially blocked or blocked):

- *First line* is before ear wax removal;
- *Second line* is what has been done if there is a "Partially Blocked" or "Blocked" ear canal;
- *Third line* is after ear wax removal.

Right	<input type="radio"/> Clear	<input type="radio"/> Partially Blocked	<input type="radio"/> Blocked		
Ear wax removed:	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes, partially	<input type="checkbox"/> No	<input type="checkbox"/> Not possible	<input type="checkbox"/> Athlete refused
	<input type="radio"/> Clear	<input type="radio"/> Partially Blocked	<input type="radio"/> Blocked		

The Second and Third line need ALWAYS to be filled in whenever the First line says "Partially Blocked" or "Blocked", NEVER when the First line says "Clear".

Station 2 : Hearing Screening with Otoacoustic Emissions



Goal: Objective hearing screening.

Material: Distortion Product OtoAcoustic Emissions (DPOAE)-screening unit (AuDX I® from Biologic®/Natus®) with foam ear tips in 3 different sizes.

Position: The athlete sits down, the volunteer stands up.

Procedure:

- ✓ Explain the procedure to the athlete. Let the athlete feel the foam ear tip if they want to, by pressing it softly on their hand.
- ✓ Perform the OAE screening in each ear.
- ✓ If hearing screening with OAE is possible, write down the screening results on the screening form ("Pass" or "No Pass").
- ✓ If hearing screening with OAE is not possible, check the box "Can't Test" and also one of the boxes on the right hand side which explains why it was not possible.
- ✓ Throw away the foam ear tip after every athlete.
- ✓ Depending on the screening results, the athlete will be guided to the check-out desk or to Station 3 (tympanometry):
 - "Pass" in both ears = check-out;
 - "No Pass" in one or both ears = proceed to Station 3;
 - "Can't Test" in one or both ears = proceed to Station 3.

Note of results: The result can be read on the screen of the screening unit ("pass" or "refer"). Take note of this result on the screening form ("pass" on the screening unit = "Pass" on the screening form; "refer" on the screening unit = "No Pass" on the screening form).

Station 2: Otoacoustic Emissions Screen			
Screener's Name		<input type="text"/>	(print)
Right	<input type="radio"/> Pass <input type="radio"/> No Pass <input type="radio"/> Can't Test	If 'Can't Test', select reason:	<input type="checkbox"/> Cannot achieve seal <input type="checkbox"/> Probe blocked by cerumen <input type="checkbox"/> Excessive noise <input type="checkbox"/> Athlete refused testing
Left	<input type="radio"/> Pass <input type="radio"/> No Pass <input type="radio"/> Can't Test	If 'Can't Test', select reason:	<input type="checkbox"/> Cannot achieve seal <input type="checkbox"/> Probe blocked by cerumen <input type="checkbox"/> Excessive noise <input type="checkbox"/> Athlete refused testing

Station 3 : Middle Ear Screening with Tympanometry



Goal: Objective middle ear screening

Materials: Tympanometry with re-usable ear tips in different sizes. A screening tympanometer like the Otowave® from Amplivox®, or any diagnostic tympanometer can be used.

Position: The athlete sits down, the volunteer stands up.

Procedure:

- ✓ Explain the procedure to the athlete. Let the athlete feel the ear tip if they want to by pressing it softly on their hand.
- ✓ Perform the tympanometry in each ear.
- ✓ If middle ear screening with tympanometry is possible, write down the screening results on the screening form ("Pass" or "No Pass").
- ✓ If middle ear screening with tympanometry is not possible, check the box "Can't Test" and also one of the boxes on the right hand side which explains why it is not possible.
- ✓ Keep the used ear tip in a separate labelled box so they can be disinfected / sterilized at regular times.
- ✓ Guide the athlete to Station 4 (pure tone audiometry), regardless of the tympanometry results.

Normative data for tympanometry:

For standardization, the following normative data for tympanometry ("The Rule of 2") need to be used:

- ✓ "Pass" =
 - admittance between 0.20 and 2 mmho
 - middle ear pressure between +20 and -200daPa
 - ear canal volume between 0.60 and 2 ml
- ✓ "No Pass" =
 - type B (= flat)
 - type C (= under pressure) with middle ear pressure more positive than +20 daPa or more negative than -200 daPa
 - type As with admittance < 0,20 mmho
 - type A_D with admittance > 2 mmho
 - ear canal volume < 0.60 ml or > 2 ml

Note of results:

Take note of the results on the screening form for each ear. The final result depends on the numeric data compared to the normative data:

- ✓ **"Pass"** = all values are within the values of the normative data;
- ✓ **"No Pass"** = type B-tympanogram or at least one of the numeric results are outside of the normative data;
- ✓ **"Can't Test"** = if middle ear screening with tympanometry is not possible.

Station 3: Tympanometry Screen

Screeener's Name

(print)

Right

Pass No Pass
 Can't Test

If 'Can't Test', select reason:
(If not possible, do not refer based on Tympanometry)

Cannot achieve seal
 Probe blocked by cerumen
 Athlete refused testing

Left

Pass No Pass
 Can't Test

If 'Can't Test', select reason:
(If not possible, do not refer based on Tympanometry)

Cannot achieve seal
 Probe blocked by cerumen
 Athlete refused testing

Comments:

- ✓ If one of the screening tympanometers from Special Olympics are used - the Otowave® from Amplivox® - than a tympanogram shows a **"Pass"** if the peak from the tympanogram is within the adapted normative square on the screen AND ear canal value was within normal limits. If the tympanogram doesn't show a peak (type B), or if the peak is outside of the normative square, then it is a **"No Pass"**.
- ✓ The screener needs to use these adapted tympanometric normative data ("Rule of 2"), but can make a referral based on professional experience. If there are questions about the results, ask the HH CD or the Lead Audiologist.
- ✓ If an athlete has a "No Pass" on tympanometry in one or both ears, but all the other screening results are normal, the athlete may not be referred to a specialist. In this case, referral to a specialist is only necessary if the professional volunteer (audiologist or physician) recommends it (e.g. results on otoscopy + tympanometry show an acute infection).
- ✓ If middle ear screening with tympanometry is not possible (**"Can't Test"**), the athlete will not be referred for middle ear problems based on lack of tympanometry results alone.

Station 4 : Hearing Screening with Pure Tone Audiometry



Goal: Subjective hearing screening

Materials: Pure tone audiometer with noise attenuating head phones. There is not a specific manufacturer of the audiometer that needs to be used. The unit should be calibrated at least once a year, and noise attenuating head phones should be used. Some toys or adapted materials for play audiometry can be helpful if needed to facilitate screening in athletes.

Position: The athlete and the volunteer both sit down at a table. The volunteer needs to see the athlete's face for observation of facial expressions and general body language. The athlete can look at the volunteer as long as they can't see the controls being used on the test panel of the audiometer.

Procedure:

- ✓ Explain the procedure to the athlete, and what response is expected.
- ✓ Wipe down the headphones and headband with medical wipes every time before they are used with a new athlete. Throw away the medical wipes after every single use.
- ✓ Test frequencies: 2000 and 4000Hz
- ✓ Intensity levels of 25dBHL = "Pass"
- ✓ Interrupted (pulsed) pure tones (or warble tones if a more reliable response can be achieved)
- ✓ Screening procedure, for every frequency is: starting level = 50dBHL → if response at 50dBHL, than test 35dBHL → if response at 35dBHL, than test 25dBHL.
If no response at a certain intensity level, repeat the stimulus and/or the procedure. Make sure the athlete knows what is expected from them.
- ✓ The athlete will be asked to raise their hand every time they hear the sound, even when it is very quiet. If the athlete doesn't understand what to do, or if the response is unclear, try to screen using play audiometry.
- ✓ A short training and/or conditioning phase might be necessary to facilitate the screening.
- ✓ Perform hearing screening, ear by ear.
- ✓ If hearing screening with pure tone audiometry is possible, write down the screening results on the screening form for each test frequency ("Pass" or "No Pass").
- ✓ If hearing screening with pure tone audiometry is not possible, check the box "Can't Test" and also one of the boxes on the right hand side which explains why it is not possible.

- ✓ Depending on the screening results, the athlete will be guided to the check-out desk or to Station 5 (Pure Tone Threshold Test):
 - "Pass" in both ears for both frequencies = check-out;
 - "No Pass" in one or both ears at one or both frequencies = proceed to Station 5;
 - "Can't Test" in one or both ears at one or both frequencies = proceed to Station 5.

Note of results:

Note the results on the screening form, ear by ear:

- ✓ "Pass" = reliable response at 25dBHL;
- ✓ "No pass" = no (reliable) response at any frequency at 25dBHL;
- ✓ "Can't Test" = if hearing screening with pure tone audiometry is not possible.

Station 4: Pure Tone Screen at 25dB Hearing Level

Screener's Name (print)

Right	<input type="radio"/> Pass	<input type="radio"/> No Pass	<input type="radio"/> Can't Test	If 'Can't Test' select reason:	<input type="checkbox"/> Could not train to respond
2000Hz	<input type="radio"/> Pass	<input type="radio"/> No Pass	<input type="radio"/> Can't Test		<input type="checkbox"/> Excessive noise
4000Hz	<input type="radio"/> Pass	<input type="radio"/> No Pass	<input type="radio"/> Can't Test		<input type="checkbox"/> Athlete refused testing

Left	<input type="radio"/> Pass	<input type="radio"/> No Pass	<input type="radio"/> Can't Test	If 'Can't Test' select reason:	<input type="checkbox"/> Could not train to respond
2000Hz	<input type="radio"/> Pass	<input type="radio"/> No Pass	<input type="radio"/> Can't Test		<input type="checkbox"/> Excessive noise
4000Hz	<input type="radio"/> Pass	<input type="radio"/> No Pass	<input type="radio"/> Can't Test		<input type="checkbox"/> Athlete refused testing

Comments:

- ✓ Ask for assistance if needed to help condition an athlete or if results are not consistent.
- ✓ Station 4 and Station 5 can be separate stations, but can also be combined. As soon as a "No Pass" on 1 of the 4 test frequencies is obtained, the volunteer can stop screening and start with pure tone threshold testing. If this is the case, the boxes in Station 4 can be completed once the numeric results in Station 5 are known.



Station 5 : Threshold Testing with Pure Tone Audiometry



Goal: Subjective assessment of type and degree of hearing, if hearing screening results with pure tone audiometry showed a "no pass" in one or both ears, at one or more test frequencies.

Materials: Pure tone audiometer with noise attenuating head phones and bone conductor. There is not a specific type of audiometer that needs to be used, as long as the unit has been calibrated at least once a year and noise attenuating head phones are used. Some toys or adapted materials for play audiometry can be helpful to facilitate screening athletes.

Position: The athlete and the volunteer both sit down at a table. The volunteer needs to see the athlete's face for observation of facial expressions and general body language. The athlete can look at the volunteer as long as they can't see the control panel of the audiometer.

Procedure:

- ✓ Explain the procedure to the athlete, and the response that is expected.
- ✓ Wipe down the headphones and headband with medical wipes every time before they are used in a new athlete. Throw away the medical wipes after every single use.
- ✓ Test frequencies air conduction: 1000, 2000, 3000, 4000 and 6000Hz
Test frequencies bone conduction: 1000, 2000 and 4000Hz
- ✓ Masking of the non-test ear if needed and possible.
- ✓ Interrupted (pulsed) pure tones (or warble tones if a more reliable response is achieved)
- ✓ The athlete will be asked to raise their hand every time they hear the sound, even when it is very quiet. If the athlete doesn't understand what to do, or if the response is unclear, try to condition with play audiometry.
- ✓ A short training and/or conditioning phase might be necessary to facilitate the screening.
- ✓ Perform threshold testing, ear by ear.
- ✓ Write down the numeric thresholds on the screening form, and add any useful comments.
- ✓ The athlete will be guided to the check-out desk.

Note of results:

- ✓ Write down the numeric threshold results for air and bone conduction in the grid on on the screening form, ear by ear.
- ✓ Check the box(es) "**Masked**" if threshold testing is done with masking of the non-test ear.
- ✓ Note if results are "**Reliable**" or "**Unreliable**".
- ✓ If threshold testing is not possible, check one of the boxes below the grid to explain the reason.

Station 5: Pure Tone Threshold Test

Tester's Name (print)

	Right AC	Left AC	Unmasked BC	Right BC	Left BC
1000					
2000					
3000			/	/	/
4000					
6000			/	/	/
	O masked	O masked		O masked	O masked

Key: NR = No Response at Maximum Level

C = Could Not Test

Pure tone threshold test:

- Could not train to respond
- Excessive noise
- Athlete refused testing

- Reliable
- Unreliable

Comments:

- ✓ Ask for assistance if needed to help condition an athlete or if results are not consistent.
- ✓ Test as many air and bone conduction thresholds as possible. If the results become unreliable, try to assess the minimum amount of test frequencies necessary for recommendations. If the air conduction threshold is >25dBHL, test at least one bone conduction threshold to determine the type of hearing loss.

Check-out

Goal:

- ✓ Check screening results for follow-up care recommendations.
- ✓ Make individual follow-up care recommendations if necessary.
- ✓ Give general ear and hearing screening advice.
- ✓ Explain screening results, recommendations and general advice to the athlete, their coach, carer or family.
- ✓ Complete screening form: "extra services provided at the event" and "recommended follow-up care".
- ✓ Check if all parts of the screening form are completed (correctly) before data input.

Position: The athlete stands or sits in front of the volunteer, at the other side of the table.



Procedure:

The screening results are explained to the athlete, and if necessary also the recommended follow-up care. Also, every athlete receives advice on regular ear and hearing screening. All information presented is written down on the HH recommendation form and given to the athlete.

About half of the athletes will receive follow-up care recommendations because of possible ear and/or hearing problems. A good recommendation can only be made if the athlete went through all their required screening stations and when all parts of the screening form are completed correctly.

- **Step 1 = every screener:**
 - ✓ Checks if screening form is completed correctly for their station.
- **Step 2 = Healthy Hearing Clinical Director or Supervisor**
 - ✓ Checks screening form before any recommendations are given or before data entry.
 - ✓ Checks if athlete went to all necessary stations.
 - ✓ Checks if screening form is complete; if screening results are unclear then ask the volunteer who performed the screening (name can be found on the screening form) to check and/or complete the results.
 - ✓ Checks the necessity for swim plugs and/or hearing aid repair and maintenance.
 - ✓ Makes individual follow-up care recommendations, based on the screening results.
 - ✓ Completes the final part of the screening form: "extra services provided at the event" and "recommended follow-up care".

Extra Services Provided At The Event

- Hearing Aid Repair/Maintenance
- Ear Mold for Hearing Aid
- Hearing Aid
- Hearing Aid Voucher
- Swim Plugs
- Ear protection (Noise Plugs)
- Education Provided
- Other:

Recommended Follow-up Care

- Urgent Follow-up Needed
- Cerumen Removal
- Medical Evaluation of Ears
- Audiological Evaluation of Hearing
- Replacement of Ear Molds
- Hearing Aid Repair/Maintenance
- Hearing Aid Evaluation and Fitting
- Swim Plugs
- Ear protection (Noise Plugs)

Comments	
Print Name of HH Clinical Director	Signature of HH Clinical Director

➤ **Step 3 = Professional Volunteer at check-out**

- ✓ Completes the "Recommendation form":
 - Individual follow-up care recommendations, based on the HH CD or supervisor's recommendations on the screening form
 - General advice on regular ear and hearing screening, based on the guidelines.
- ✓ Explains the screening results and the individual recommendations to the athlete, their coach, carer and/or family.
- ✓ Explains the necessity of regular ear and hearing screening to the athlete.
- ✓ Gives the recommendation form to the athlete.
- ✓ Gives a thank you present to the athlete for attending the screening, if available.
- ✓ Keep the original HH-screening form at the check-out desk.

Recommendation forms:

Every athlete receives a recommendation form in their own language whenever possible. This form contains the different screening tests done, the individual recommendations for follow-up care, and the general advice for regular ear and hearing screening. The original screening forms must stay at check-out for data entry.

There are 2 different recommendations forms:

- ✓ For athletes with clear ears and hearing screening pass results, who don't need any follow-up care recommendations (see page 24: Recommendation Form "Pass");
- ✓ For athletes with possible ear and/or hearing problems, who receive follow-up care recommendations (see page 25: Recommendation Form "No Pass").

Guidelines for follow-up care recommendations and general advice on regular ear and hearing screening can be found on pages 26 and 28.

Recommendation Form "Pass":
no follow-up needed based on screening results

HEALTHY HEARING PROGRAM
SPECIAL OLYMPICS INTERNATIONAL

SCREENING SUMMARY RESULTS

Athlete's Name (print)

Special Olympics Event (print)

Date

- **CONGRATULATIONS !** You **PASSED** your hearing screening in both ears.

- **It is important to:**
 - have your ears checked by a medical doctor for ear wax 1 / 2* times a year
 - have a hearing evaluation by an audiologist / ENT-specialist every 1 / 3 / 5* year(s)

- **Services provided at the Special Olympics event:**
 - Ear canal inspection
 - Hearing screening
 - Middle ear screening
 - Swim plugs
 - Ear protection (noise plugs)
 - Other:

ENGLISH

**Recommendation Form "No Pass":
follow-up is needed based on the screening results**

**HEALTHY HEARING PROGRAM
SPECIAL OLYMPICS INTERNATIONAL**

SCREENING SUMMARY RESULTS

Athlete's Name (print)

Special Olympics Event (print)

Date

➤ **THANK YOU** for attending Healthy Hearing screening.

You are advised to take further action as you **DID NOT PASS** your hearing screening.

➤ **You need to:**

- | | | |
|---|--------------------------------|-------------------------------|
| <input type="checkbox"/> see your medical doctor for ear wax removal | <input type="checkbox"/> Right | <input type="checkbox"/> Left |
| <input type="checkbox"/> see your medical doctor for possible middle ear problems | <input type="checkbox"/> Right | <input type="checkbox"/> Left |
| <input type="checkbox"/> see an audiologist / ENT-specialist for hearing evaluation | <input type="checkbox"/> Right | <input type="checkbox"/> Left |

Urgent follow-up needed

➤ **It is also important to:**

- have your ears checked by a medical doctor for ear wax 1 / 2* times a year
- have a hearing evaluation by an audiologist / ENT-specialist every 1 / 3 / 5* year(s)

➤ **Services provided at the Special Olympics event:**

- Ear canal inspection
- Hearing screening
- Middle ear screening
- Hearing threshold testing
- Hearing aid repair / maintenance
- Ear mold for hearing aid
- Hearing aid
- Hearing aid voucher
- Swim plugs
- Ear protection (noise plugs)
- Other:

ENGLISH

Guidelines for follow-up care recommendations



- ✓ Otoscopy: "Partially Blocked" or "Blocked" ear canals in one or both ears → referral for ear wax removal = **"Cerumen Removal"**
- ✓ OAE: "No Pass" in one or both ears → no referral → recommendation will depend on results on pure tone audiometry
- ✓ Tympanometry: "No Pass" in one or both ears (no normal type A-tympanogram according to the "rule of 2" OR abnormal small or abnormal big ear canal volume OR type B-tympanogram) → referral for possible middle problems (unless no other referral is necessary) = **"Medical Evaluation of Ears"**
- ✓ Pure tone Audiometry: "No Pass" on pure tone audiometry in one or both ears (response > 25dBHL at 2000 and/or 4000Hz) → referral to rule out hearing loss = **"Audiological Evaluation of Hearing"**
- ✓ Otoscopy: "Medical evaluation of ears needed for extra otoscopic finding" is checked by physician or supervisor in one or both ears (after visualisation of an acute problem in the ear canal or at the ear drum) → referral for possible middle ear problems = **"Medical Evaluation of Ears"**
- ✓ Any other recommendation(s) if the HH CD or Supervisor checked the box(es).

Extra Services Provided At The Event

- Hearing Aid Repair/Maintenance
- Ear Mold for Hearing Aid
- Hearing Aid
- Hearing Aid Voucher
- Swim Plugs
- Ear protection (Noise Plugs)
- Education Provided
- Other:

Recommended Follow-up Care

- Urgent Follow-up Needed
- Cerumen Removal
- Medical Evaluation of Ears
- Audiological Evaluation of Hearing
- Replacement of Ear Molds
- Hearing Aid Repair/Maintenance
- Hearing Aid Evaluation and Fitting
- Swim Plugs
- Ear protection (Noise Plugs)

Comments	
Print Name of HH Clinical Director	Signature of HH Clinical Director

BUT, to avoid over-referral:

- ✓ If the only "No Pass" is on tympanometry, no referral is made, unless the Physician or the Supervisor decides that it is necessary.
- ✓ If there is a "No Pass" on pure tone audiometry for 1 or 2 test frequencies at 30dBHL (instead of 25dBHL), no referral for possible hearing loss is needed, unless the Supervisor decides it is necessary.

Extra recommendations:

Other recommendations depend on the findings during the screening:

- ✓ Recommendations linked to **hearing aids**: "Replacement of Ear Molds", "Hearing Aid Repair/Maintenance", and "Hearing Aid Evaluation and Fitting".
- ✓ Recommendation for athletes that need "**Swim Plugs**"
- ✓ Recommendation for athletes that need "**Ear Protection (Noise Plugs)**"

"Urgent Follow-up Needed":

In the table below, the guidelines for urgent follow-up care are listed. All athletes with one of the conditions and the specific symptoms in the second column of this table, need to know about the urgency of their referral. This needs to be decided by a Physician, the HH CD or the Supervisor. The condition, as well as the need for referral, needs to be explained to the athlete, and to the coach, carer or family.

CONDITION	URGENT REFERRAL IF ...	PREVALENCE
Othematoma = hematoma auris	Visual inspection shows a purplish hard swelling of the external ear. Can result from hit on ear e.g. basketball.	Sporadic
Foreign body in the ear canal	Visual inspection with otoscope shows foreign body, e.g. peanut, hearing aid dome, cotton wool.	Sporadic
Otitis externa	Visual inspection with otoscope shows pink ear canal mucosa, if painful during inspection, or bleeding or moist/fungal spores in dead skin in the ear canal.	More common
Myringitis	Visual inspection with otoscope shows obvious infection (fever, red or bulbous ear drum) or if painful when flying, driving up and down hills.	Sporadic
Acute otitis media	Visual inspection with otoscope shows obvious infection (fever, red or purple ear drum) or if painful when flying, driving up and down hills.	More common, e.g. with a cold /sinus trouble
Draining ear	Visual inspection (with otoscope) shows purulent flow in the ear canal or thin or thicker moisture.	Sporadic with perforation.

General Advice on Regular Ear and Hearing Screening

Every athlete will receive individual recommendations for follow-up care and general advice for a regular check-up of their ears and hearing. The general advice is:

- ✓ Have your ears checked by a medical doctor for ear wax 1 / 2* times a year
- ✓ Have a hearing evaluation by an audiologist / ENT-specialist every 1 / 3 / 5* year(s)
* strike out as appropriate

The professional volunteers at check-out need to circle the frequency that is needed to have an athlete's ears and hearing checked. The other numbers need to be crossed out. The recommendations are made based on the following rules:

- An athlete, without Down syndrome, without hearing aid(s):
 - ✓ Ear wax: once a year
 - ✓ Hearing evaluation: every 5 years
- An athlete with Down syndrome, without hearing aid(s):
 - ✓ Ear wax: twice a year
 - ✓ Hearing evaluation: every 3 years ≤ 35 years of age
every year > 35 years of age
- Athlete with hearing aid(s):
 - ✓ Ear wax: Twice a year
 - ✓ Hearing evaluation: every year

The individual results as well as the specific recommendations need to be explained to the athlete as well as to the coach, carer and/or family.

Extra Station: Swim Plugs

Goal: Free custom made swim plugs for athletes that need them (perforation of the ear drum, tympanic tubes, mastoid cavity).

Materials: Otoscope with plastic ear speculi (2 sizes), cotton/foam balls with thread, pen light, instant swim plug material (2 colours), syringe, cutter knife, box or plastic bag to store swim plugs, hand mirror.

Position: The athlete and the volunteer both sit down, next to a table.

Procedure:

- ✓ Inform the athlete and their coach/family/carer about the need for swim plugs for water sports, when bathing, taking a shower, washing hair.
- ✓ Ask oral permission of the athlete and their coach/family to make free custom swim plugs at the event after informing them that this process will take an extra 15 minutes.
- ✓ Ask oral permission of the athlete and their coach/family to make free custom swim plugs at the event after informing them that this process will take an extra 15 minutes.
- ✓ Explain to the athlete the procedure of how swim plugs are made.
- ✓ Make the swim plugs. Write down the athlete's name on the box or plastic bag in which the swim plugs will be stored.
- ✓ Show the athlete the finished and inserted swim plugs with a hand mirror.
- ✓ Teach the athlete and their coach/family/caregiver how to deal with the swim plugs: when to wear, how to put in the ears, how to take them out, how to clean them, how to store them, difference between right and left swim plug.
- ✓ Check the box "Swim Plugs" on the screening form (page 2 at the bottom "Extra Services Provided at the Event").



Comment:

If no swim plugs can be made at the event, but the athlete would benefit from swim plugs, recommend the athlete and coach/family to obtain swim plugs after the event. Explain the need for swim plugs. Check the box "Swim Plugs" on the screening form (page 2 at the bottom "Recommended Follow-up Care").

Extra Station: Hearing Aid Maintenance and Repair

Goal: To check, for maintenance and repair of hearing aids.

Materials: All necessary materials and supplies for basic maintenance and repair of different types of hearing aids e.g listening tube and cleaning wipes and tools; replacement ear mold tubes and scissors, glue and threading tools or different sized domes, hearing aid hooks and microphone covers - all for common hearing aid models and those models supplied by known hearing aid agencies or SO partners in the region in which athletes at the screening live. Spare hearing aid batteries of different sizes e.g. 13, 312, 675.

Position: The athlete and the volunteer both sit down, next to a table.

Procedure:

- ✓ The volunteer at check in or a screener has informed one of the professional volunteers that an athlete has their hearing aid(s) with them.
- ✓ The professional volunteer asks the athlete, and if possible also his coach/carer, for permission to check the hearing aids during screening.
- ✓ One volunteer will check and carry out necessary maintenance of the hearing aid(s) while a second volunteer will screen the athlete. The volunteer screening the athlete needs to make sure that the athlete gets their hearing aid(s) back at the end of the screening.
- ✓ Check the box "Hearing Aid Repair/Maintenance" on the screening form (page 2 at the bottom "Extra Services Provided at the Event") and write in the comment section on the screening form that the athlete's hearing aids were checked.
- ✓ Take note of the name and identification number of the athlete.
- ✓ Clean the ear molds and the hearing aids.
- ✓ Check the hearing aid visually and with a listening device.
- ✓ Replace flat batteries and tubing, etc. if necessary and possible.
- ✓ If necessary, refer the athlete to their audiologist for maintenance or repair of the hearing aids. If the athlete is referred, check the box "Hearing Aid Repair/Maintenance" on the screening form (page 2 at the bottom "Recommended Follow-up Care").
- ✓ If the athlete needs new ear molds, refer the athlete to his audiologist, and check the box "Replacement of Ear Molds" on the screening form (page 2 at the bottom "Recommended Follow-up Care").
- ✓ Explain to the athlete and his coach/family what you have done and what you advise.

Comment:

If there are no materials and supplies at the event for hearing aids repair or for making new ear molds, refer the athlete to their audiologist. Check the box "Hearing Aid Repair/Maintenance" or "Replacement of Ear Molds" on the screening form (page 2 at the bottom "Recommended Follow-up Care").

Data Entry

All Healthy Hearing data are entered into a global database, owned by Special Olympics International, known as the Healthy Athletes System (HAS). The data are entered into the database at the event or closely after the event by volunteers. Before entering the data, all Healthy Hearing screening forms need to be checked by a trained HH CD. Once the data are entered, the HH CD as well as the National or State SO Program will receive a discipline specific report. The raw data of an event are owned by the State or National SO Program.

As data entry volunteers are usually not clinicians, it is very important to check all necessary boxes and write as clearly and neatly as possible on the HH-screening forms.



Acknowledgement

The Healthy Hearing Program wouldn't be possible without the many volunteers who, for the benefit of our athletes' health, give a part of their valuable time and experience.

Also, screening wouldn't be possible without the generous gifts of our sponsors.

We also want to thank Jeanine Doherty, Healthy Hearing Clinical Director New Zealand and Healthy Hearing Regional Advisor Asia Pacific, who helped proof read the manual.

Last but not least a word of thanks to Dr. Gilbert R. Herer (Ph.D CCC-A), Founder of the Healthy Hearing Program, and Dr. Judy K. Montgomery (Ph.D CCC-SLP) former Healthy Hearing Global Clinical Coordinator.

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January 2016