

WHAT DO MUSICIANS THINK OF HEARING PROTECTION?

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INTRODUCTION



- Music and entertainment industry unique – high levels of noise often regarded as an essential element for enjoyment
- Concern raised over potential hearing damage for musicians
- A possible solution - appropriate hearing protection?

PURPOSE OF WORK



- To identify types of hearing protection available for musicians
- Collect information from professional musicians on:
 - Type of hearing protection (if any) they use
 - Their attitudes to hearing protection
 - Factors they consider important when choosing hearing protection

HEARING PROTECTORS



- Musicians need to hear their own music and that of other musicians – following factors important to musicians:
 - *Noise attenuation* – conventional protectors often provide too much protection
 - *Frequency response* – tonal balance of music changed by conventional protectors
 - *Occlusion effect* – covering the ear with a muff or plug may boost low frequency sounds

MUSICIANS' PROTECTORS



- Custom-moulded flat response musicians' earplugs
- Premoulded musicians' earplugs
- Custom-moulded vented earplugs
- In-ear monitors
- Conventional ear-muffs and earplugs also available

TELEPHONE INTERVIEWS



- Semi-structured interviews with professional musicians
- Topics covered:
 - Work history
 - Noise exposure
 - Hearing protection
 - Factors that may influence hearing protector use/choice
- Thematic analysis

WORK HISTORY

- Nineteen professional musicians interviewed:
 - Employed (16), self-employed (3)
- Small but representative sample:
 - Classical musicians playing in large orchestras (14)
 - Freelance percussionists (3)
 - Military band players (2)

WORK HISTORY



- Played professionally 4 – 40 yrs
- Current work experience:
 - Orchestra, freelance, teach, examine, military band
- Instruments played:
 - Woodwind (4), brass (3), percussion (7), string (5)
- Work environments:
 - Orchestra pit, concert hall, studio, practice room, parade

NOISE EXPOSURE

- Difficult to estimate exposure times
- Current noise exposure rated as:
 - Significant (5), regularly exposed to loud noise but very high levels not sustained for long periods (12), varied (2)
- Sources of noise exposure:
 - Own instrument, other musicians, type of music, seating position, venue, crowd noise, parade

EXPOSURE ASSESSMENTS



- Noise assessments carried out or in progress for eleven musicians
- Feedback varied – no feedback for half of the musicians
- No assessments for half the musicians despite noise legislation for 20 yrs
- Lack of information and support for freelance musicians

MUSICIANS' HEARING



- Most musicians had had their hearing assessed privately or through employer
- No diagnosed hearing loss reported
- Other hearing problems reported:
 - Reduced hearing sensitivity (5)
 - Temporary deafness (5)
 - Temporary ringing in the ears (11)
 - Tinnitus (1)
 - Hyperacusis (2)

HEARING PROTECTION



- Six musicians did not use hearing protection – WHY?
 - Impossible to play properly
 - Uncomfortable
 - Noise exposure is not high enough – protection therefore unnecessary

“With earplugs, I can hear the vibrations in my head rather than the sound coming out of the bell so I don’t get an accurate representation of the sound I’m making” (French horn)

“I don’t think there is a noise problem...my exposure was assessed over a 6 month period and the results were completely inconclusive” (Tuba)

HEARING PROTECTION



- Thirteen musicians did use hearing protection when they felt they needed it, ie when the music was unbearably loud
- BUT – most would not use hearing protection when play solo or exposed pieces of music - principal musicians, and woodwind and brass musicians, are likely to be the most resistant

“ I worry about playing in tune when wearing plugs and I will not wear them when playing solo” (Flute)

ADVANTAGES

- The advantages of wearing hearing protectors included:
 - Protect hearing
 - Reduce or block out loud music generated by other musicians
 - Reduce the incidence of pain in the ears, temporary deafness, ringing in the ears
 - Improve sound quality

ADVANTAGES



“The earplugs take out high frequencies so that the music sounds less tinny and therefore warmer” Percussion

“My plugs take out the harshness from the cymbals positioned behind me – this helps enormously” Timpani

DISADVANTAGES

- The disadvantages of wearing hearing protectors included:
 - Compromise performance
 - Difficult to fit during a performance
 - Difficult to communicate with the conductor
 - Uncomfortable
 - Visually distracting for the audience
 - Unable to fully enjoy your own sound
 - Occlusion effect (woodwind/brass players)

DISADVANTAGES



“I can adjust my playing when wearing earplugs by knowing how hard I should blow, but I lose the fine adjustment”

(Contrabassoon)

“Using hearing protection compromises my performance and I worry the resultant sound is not good enough – this is demoralising and depressing for a professional musician” *(Clarinet)*

TYPES OF PROTECTOR

- Ear-muffs (2)
- Sound restoration ear-muffs (1)
- User formable (foam) earplugs (10)
- Premoulded (flange and domed) earplugs (5)
- Custom-moulded flat response musicians' earplugs (15)
- Non-custom moulded flat response musicians' earplugs (2)

CONVENTIONAL PROTECTORS



- Muffs rarely worn
- Majority of musicians had worn or were using standard foam/premoulded plugs
- Disadvantages:
 - Distort musician's own sound
- Advantages:
 - Easy to fit during performance
 - Variable protection can be achieved*
 - Readily available

MUSICIANS' EARPLUGS

- Majority of musicians had custom-moulded musicians' plugs – about half used them regularly
- Disadvantages:
 - Difficult to fit
 - Fitted with unsuitable filters
 - Poor moulds
 - Uncomfortable
 - Expensive

MUSICIANS' EARPLUGS



- Advantages:
 - Preserve more natural sound quality compared with standard earplugs
 - Unobtrusive
 - Comfortable

FREELANCE MUSICIANS



- Freelance musicians reported using:
 - Premoulded musicians' earplugs which preserve/improve sound quality at relatively low cost
 - In-ear monitors with personal mixing desk – enables them to control level of incoming sound and earpiece provides some isolation
 - Very little information available on in-ear monitors, eg what they can do, use with other equipment, suppliers, cost, etc

INFORMATION & TRAINING



- Approximately half of the musicians had received training on how to fit and maintain hearing protectors
- Self-employed musicians relied on manufacturers' information
- Training for custom-moulded earplugs generally poor – getting used to playing in plugs, fit, checking ear-moulds, etc

CONCLUSIONS

- So what do musicians think about hearing protection?
 - Mixed response:
 - Unnecessary, can't play properly with it, uncomfortable
- vs
- Necessary to protect/preserve hearing despite some of the difficulties associated with its use

CONCLUSIONS

- Most important factors:
 - Easy to use and quick to fit
 - Preserve sound quality and enable effective playing
 - Reduce (painfully) loud music
 - Comfortable
 - Unobtrusive
 - Provide variable attenuation
- Least important factor:
 - Cost

RECOMMENDATIONS



- A good education programme for musicians is needed
- It is essential that suitably qualified professionals take and manufacture all ear-moulds
- Consider other noise control methods when designing or refurbishing venues so that musicians do not have to rely on hearing protectors

THE END



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