



Literature study

Insights that are valuable to PE teachers

I used Google to search for research papers and articles that could provide useful information for PE teachers. I also went through the documents provided by Sorama to find valuable insights for PE teachers. After listing them down and summarizing them, I reached a conclusion.

Literature research:

Key words used: Noise levels in gymnasiums, Health effects of high sound levels in gym halls, Impact of noise in sports halls

<https://customhearing.net/blog/dangerous-decibels-gym/#:~:text=Sounds that exceed 85 decibels,no more than 45 minutes.>

1. Music played during spin classes in fitness centers can reach 100 to 110 decibels, exceeding the recommended threshold for safety. Prolonged exposure to sounds exceeding 85 decibels can cause permanent noise-induced hearing loss.
2. The US Department of Labor's Occupational Safety and Health Administration (OSHA) recommends a sound threshold of 85 decibels for no more than 45 minutes. Higher decibel levels decrease the safe exposure time significantly.
3. Physical education (PE) teachers working in gyms should be aware of the potential for noise-induced hearing loss. Carrying and using earplugs when exposed to loud sounds is recommended. Taking breaks and giving the ears rest after exposure to extremely loud sounds is also important.
4. Using earbuds, especially during individual workouts, can be harmful to hearing. Placing earbuds close to the eardrum can create conditions louder than the perceived volume. It is advisable to control the volume on devices and use apps to measure decibel levels to protect hearing.

Summary:

Overall, it is crucial to be mindful of noise levels, take necessary precautions such as using ear protection, and give the ears adequate rest to prevent noise-induced hearing loss.

<https://hearinghealthfoundation.org/blogs/research-calls-attention-to-dangerous-noise-levels-in-gym>

1. Previous research indicates that sound levels in group fitness classes, particularly spinning classes, often exceed recommended thresholds. Average sound levels frequently surpass 90 decibels and can even reach 100 decibels, which is comparable to the noise of a power lawn mower.
2. A study found that more than one in four participants experienced auditory symptoms, such as ringing in the ears or muffled hearing, after attending spinning classes. Surprisingly, only a few participants reported using hearing protection, such as earplugs, during the study. This highlights the importance of raising awareness about the need for hearing protection among both instructors and participants in fitness classes.

Summary:

In summary, group fitness classes, particularly spinning classes, often have high sound levels that can lead to auditory symptoms. The study emphasizes the importance of promoting hearing protection and increasing awareness among instructors and participants to prevent potential hearing damage.

http://www.sportmont.ucg.ac.me/clanci/SM_February_2020_Popovic.pdf

1. Noise in sports halls has a negative impact on the teaching and learning process. It can distract students, reduce attention, and hinder the understanding of spoken information.
2. Clear communication between teachers and students is crucial for academic excellence. Poor acoustic conditions in sports halls lead to discomfort, negative behavior, and decreased participation.
3. Physical education (PE) teachers are particularly affected by noise-related health issues, including voice and hearing problems. Frequent exposure to noise can result in fatigue, psychological tension, concentration problems, and voice disorders.
4. Sports halls, constructed with hard materials that cause sound to bounce, often have poor acoustics. This leads to increased reverberation time (echoes) and higher noise levels within the space.

In summary, noise in sports halls has detrimental effects on the teaching and learning process, impacting students' attention and comprehension. PE teachers are especially susceptible to noise-related health issues. The construction of sports halls with hard materials contributes to poor acoustics, characterized by longer reverberation times and increased noise levels.

https://www.researchgate.net/publication/260116067_Noise_Levels_in_Fitness_Classes_Are_Still_Too_High_Evidence_From_1997-1998_and_2009-2011

1. Noise levels in fitness classes, particularly high-intensity classes, often exceed 90 dB(A), which can be detrimental to the hearing health of both instructors and clients.
2. Even though the duration of a fitness class is typically around an hour, studies suggest that exposure to loud music in these classes can still contribute to noise-induced hearing loss (NIHL) and temporary shifts in hearing thresholds.
3. To ensure the protection of both instructors and clients, it is important to consider occupational health and safety limits for noise exposure. These limits, such as the workplace noise standard of 85 dB continuous equivalent A-weighted noise level over 8 hours, should be taken into account.

Summary:

In summary, noise levels in fitness classes, particularly high-intensity ones, can pose a risk to hearing health. Despite the relatively short duration of these classes, exposure to loud music can still lead to hearing issues. Adhering to occupational health and safety guidelines regarding noise exposure is essential to safeguard the well-being of instructors and clients.

Document analysis:

Noise control focus groups summary

- Acoustics in sports facilities plays a significant role in the noise levels experienced
- Participants reported experiencing headaches, overstimulation, difficulty concentrating, voice complaints, fatigue, irritability, and tinnitus.
- The severity of complaints varied depending on the acoustics of the sports facility.
- Voice complaints were common due to the need to talk over the noise
- Not all participants used hearing protection equipment, but those who did found it necessary.
- Hearing protection was considered effective in reducing noise, but it affected communication with children.
- Some participants experienced skin irritation from prolonged use of hearing protection

- Collaborative coordination and planning among teachers were important to minimize noise and maintain control in the classroom

Student Ervaring Gehoorbescherming

- Gym halls built before 2000 tend to have the worst acoustics and cause the most noise pollution.
- High noise levels in combination with the acoustic characteristics of sports facilities can lead to perceived noise pollution and complaints from PE teachers.
- A study showed that 56% of subject teachers experienced noise pollution, with the year of construction of the gym influencing the assessment.
- Exposure to high noise levels can result in hearing problems that may increase over time.
- Importance of using hearing protection: Many participants consistently use hearing protection during gym class and find it essential, with some indicating that they cannot live without it.

Student Klachten

- Other complaints related to noise pollution were more prevalent, including fatigue, headaches, dizziness, voice complaints, sensitivity to stimuli, and reduced concentration.
- Fatigue was the most common complaint, with sixteen out of nineteen participants experiencing it after a day's work. Noise and stimuli processing required significant mental effort, leading to fatigue.
- The participants acknowledge that there is a significant amount of noise during a gym class, which is different from a regular classroom setting.
- The effects of high noise levels on gym teachers include pain in their own voice, feeling tired, mental fatigue, headaches, dizziness, and sensitivity to stimuli.
- Some participants mention that they experience ringing in their ears or beeping sounds, which can persist throughout the day for some individuals.
- The noise levels have an impact on the children as well, with some displaying signs of fear or becoming more disruptive when the noise levels are high.
- The noise levels in different gym halls can vary, with some rooms having more sound-absorbing features than others.
- PE teachers may become accustomed to the noise and not pay much attention to it, but students may find it disruptive.
- Exposure to high noise levels during gym class can lead to hearing damage and tinnitus.
- PE teachers may experience fatigue, frustration, and a sore throat due to constant exposure to noise.
- The use of hearing protection equipment may be necessary when noise levels exceed 85 decibels.

Conclusion

In conclusion, PE teachers can benefit from the following valuable insights which are Awareness of noise-induced hearing loss risks, promoting the use of hearing protection in fitness classes, recognizing the impact of poor acoustics in sports halls, adhering to occupational health and safety guidelines. By implementing these insights, PE teachers can prioritize the well-being of themselves and their students, creating a safer and more conducive learning environment.