Pickleball Noise: Physiologic and psychologic effects of impulse noise on neighbors

"It's like having a pistol range in your backyard"

J. Mancini, New York Times 6/30/23

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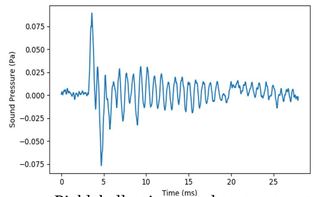
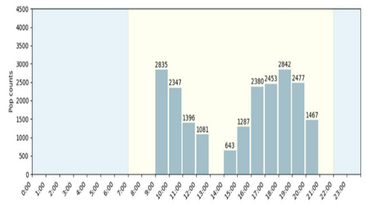
Introduction

Pickleball noise is repetitive, impulsive noise. It is an entirely new type of noise exposure for the public in the last 5-7 years. There are hundreds of communities reporting conflicts (1).

- **Impulsive Sound**: Each pop lasts <20 milliseconds with a sharp impulse that echoes and reverberates densely. A 5–12 dB penalty is recommended for impulsive noise, including pickleball. (2,3)
- **1200 Hz:** Comparable to backup alarms on vehicles.
- **>90 hrs/week**: Noise often lasts dawn to dusk, 7 days/week.
- **>20,000 pops/day**: The hourly distribution of total daily pops at one park (4 courts) is shown.
- **Human Impact**: Residents report feeling trapped, unable to open windows or escape the noise in their homes. Speaking out can lead to harassment, threats, and gaslighting.



Pickleball noise sound pressure trace



Hourly distribution of 21,086 pops in one day

Prolonged noise exposure triggers an unconscious physiologic stress response and is linked to serious health problems including:

- Heart disease
- Anxiety and sleep disturbances
- Increased risk of stroke and memory problems
- Learning problems in children
- Problems concentrating (4,5,6,7,8)

Objective

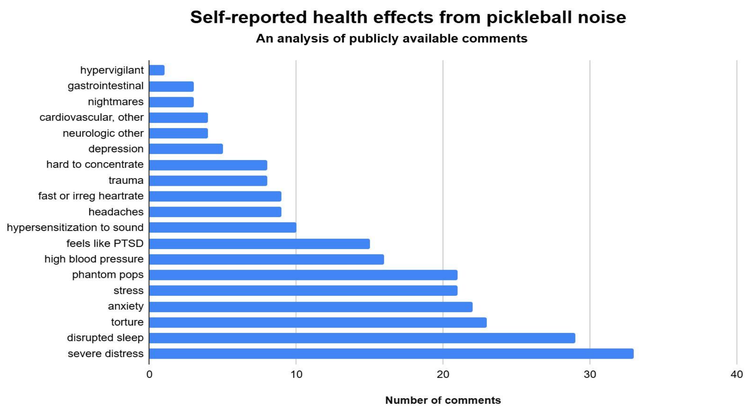
To assess self-reported adverse health effects associated with chronic exposure to impulse pickleball noise.

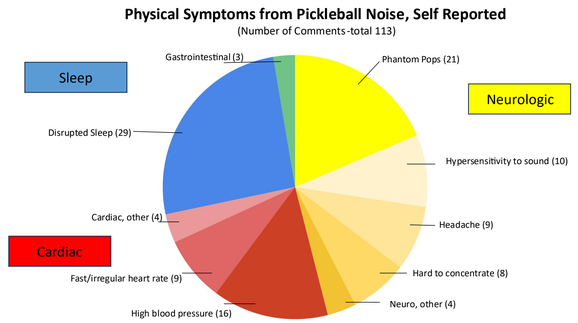
Methods

Publicly available comments about pickleball noise from Facebook, Reddit, news reports, legal filings, and public websites were evaluated with a content analysis. The comments were categorized by two health professionals. Inter-rater reliability was excellent 89.4%. (Ideal >80%).

Results

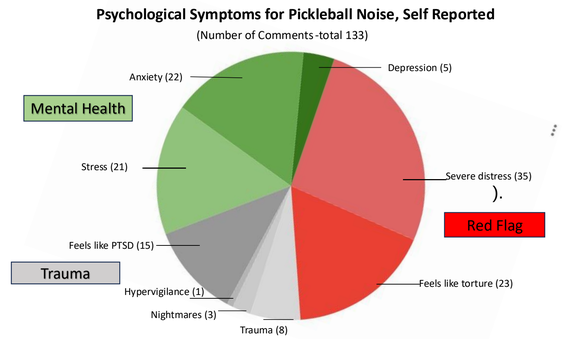
- 246 unique adverse health effects were reported.
- 75% of comments came from people living within 100 feet of courts.
- An additional 11% of comments came from people living within 300 feet of courts. (where distance information was available)





Physical symptoms were noted almost as frequently as psychological health effects.

- Phantom pickleball pops can last up to 6 months after moving away.



Psychological health effects represented just over half of all comments.

- The term "torture" was used more than the term "stress" .
- PTSD-like symptoms were not uncommon.
- Severe distress. Many commenters reported serious emotional impacts.
- Suicidal thoughts were cited by 2% of comments.
- Medication use to cope with health effects was mentioned repeatedly.
- Having to move due to the noise was commonly noted, but not analyzed in this study.

Sample of Comments categorized as Severe Distress

"Pickleball noise is worse than dying of cancer" (cancer patient, now deceased)
"I was told to kill myself or move"
"Suicidal thoughts"
"Extreme anguish"
"It makes me want to splatter my own brains all over the screaming yelling payers 20 feet from my bedroom"
"The pain, suffering and mental anguish is unbearable. Someday the perpetrators of this nightmare will pay."
"The slow un-aliving of a person"
"Beyond distressing"
"This dangerous, involuntary noise torture experiment ran its full course. Now please stop it"
"I cannot live a normal life...for me, it's hell."
"You feel as if someone is constantly punching your head". Went on a hunger strike.
"I am not sure what I can do other than move from my home of 24 years because this play is seriously affecting my mental health"
"No one would choose to live this way. It is physically and emotionally debilitating"

Conclusions

This study links chronic exposure to pickleball noise to self-reported adverse health effects in nearby residents. The results suggest that the impact of this noise goes far deeper than anyone imagined.

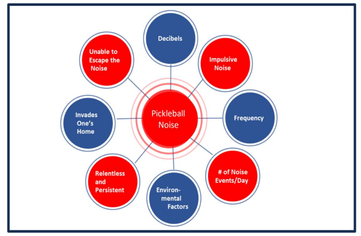
- 30% of the human perception of sound is determined by the sound level (decibels).
- 70% of the human response is due to other factors (9).

Three components should be considered when assessing the impact of noise:

- The source of the noise (characteristics of the sound)
- The path of the noise (distance, barriers)
- The receiver---the human whose brain processes the noise

Decision makers responsible for the location of pickleball courts must consider all of these factors, not just the decibel readings.

Comprehensive sound studies that include both the acoustic and human factors are strongly recommended prior to court placement.



We suggest the following, based on our findings and expert recommendations from professionals with experience in over 150 pickleball court sound evaluations (10):

- Increased setbacks between courts and homes.
- Courts <100 feet from homes should be moved or enclosed (with rare exceptions).
- Courts <400 feet from homes will likely require multiple forms of noise mitigation (e.g. sound barriers and quiet paddles/balls and enforced regulations).
- Comprehensive sound evaluation of all courts placed within 1000 feet of homes.

Cross-disciplinary research is urgently needed to further study:

- The complex acoustical properties of pickleball noise.
- The effectiveness of various noise mitigation strategies,including sound barriers and quiet paddles/balls.
- The health impacts of prolonged impulse noise in residential settings.

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Pickleball sound trace, reused with permission from Spenderian and Willis
Hourly tracing of pickleball pops, reused with permission from NoiseNet, US operations.

A data file—including links to public sources—will be provided upon request to journalists or researchers at accredited institutions who agree to adhere to standard privacy protocols.

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