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**Pickleball noise: The case for integrating non-acoustic
factors into community assessments**

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Recent research has examined the distinct acoustic characteristics of pickleball noise, including decibel levels, impulsiveness, frequency, and temporal patterns that contribute to high annoyance among nearby residents. Engineers have attempted decibel reductions using barriers and quieter paddles, yet complaints persist. Emerging research linking chronic exposure to pickleball noise with serious self-reported health concerns underscores the need for more comprehensive strategies to evaluate and mitigate the impact of the noise. Decades of research suggest that non-acoustic factors including impact on daily activities, perceived fairness, locus-of-control, trust in authorities, social conflict, and fear may account for a substantial portion of the variance in the annoyance response to noise. To illustrate the impact of non-acoustic factors involving pickleball noise, this paper presents qualitative examples drawn from public sources, including lawsuits, news coverage, and social media. When planning new pickleball courts, conflicts may be preventable by using appropriate setbacks and recommended mitigation while also considering non-acoustic factors. However, where courts are long established, reducing decibels may be too little, too late and relocation or closure may be necessary. Sound experts and local decision makers are urged to consider non-acoustic factors alongside acoustic data when assessing noise annoyance and planning interventions.

1. INTRODUCTION

Pickleball noise is a repetitive impulse noise, subjecting nearby residents to thousands of daily paddle “pops” (1)—a new and intrusive sound in residential environments. Unlike tennis’s softer “thunk” pickleball’s hard paddles and plastic balls create a sharp “pop.” The sport has expanded rapidly, with over 4,000 new locations and 18,445 new courts built in 2024 (2), often by converting a single tennis court into four pickleball courts. The popularity of pickleball, the higher density of players, and the type of equipment used produce much more noise than tennis, and as new courts appear, noise disruptions have sparked widespread conflicts. One Google Map lists over 500 pickleball noise hotspots across North America (3), with the issue drawing coverage in hundreds of news reports, countless social media posts, and an estimated 200 legal claims across the United States (4). Exposure to chronic pickleball noise has been linked to lifestyle disruption and health impacts (5,6). An audio sample of the noise from 4 pickleball courts can be heard at <https://zenodo.org/records/15566001> (7).

A. ACOUSTIC FACTORS OF PICKLEBALL HAVE BEEN INVESTIGATED

Traditional assessments of pickleball noise have generally focused only on decibel levels and vary widely in methodology (1). Psychoacoustic research demonstrates that perception of sound depends not only on sound levels, but other acoustic factors such as sharpness, fluctuation, and tonality (8). Acoustic factors other than sound level that may affect perception of pickleball noise include impulsive-ness, spectral frequency (Hz), number of noise events, and cumulative exposure (9).

B. ACOUSTIC FACTORS ALONE DO NOT PREDICT ANNOYANCE

More than four decades of research have shown that acoustic factors do not fully predict noise annoyance. Loudness (decibels) alone only moderately predicts annoyance (10) and if unpleasant sounds and/or patterns persist, lowering the sound level is not associated with lower annoyance levels (11). Impulse noise (12), spectral frequency (13), number of noise events (14) and total exposure to noise (15) have all been associated with increased noise annoyance. And yet, the total sum of these physical acoustic factors still fall short in fully explaining noise annoyance (16).

C. THE IMPORTANCE OF NON-ACOUSTIC FACTORS

Residents’ ability to silence their homes (17), perceived fairness (18, 19), and trust in authorities (19,20) have all been linked to noise annoyance. One report suggested that lack of trust in authorities was associated with equivalent noise penalties of ten decibels (21). Social conflict with neighbors correlates with higher neighborhood noise annoyance (22). Perceived control over the noise (23, 24) and fear or safety concerns also are associated with increased annoyance levels (17,21,25). The 2018 WHO Environmental Noise Guidelines (26) listed sixteen non-acoustic factors and recommended their consideration in noise policy. The ISO-TS 16755 guidelines conclude that non-acoustic factors can account for up to one-third of the differences in how people experience and react to noise (16).

D. NON-ACOUSTIC FACTORS OF PICKLEBALL NOISE HAVE NOT BEEN INVESTIGATED

Early evidence suggests that decibel reduction with sound barriers or quiet racquets/balls often falls short of providing relief for neighbors (6). A systematic understanding of non-acoustic factors in pickleball noise may help explain why measured acoustic factors often underestimate the community impact.

2. STUDY DESIGN

This study uses a qualitative typological approach to define and describe the role of non-acoustic factors in pickleball noise annoyance. The typology was developed through a review of scientific literature and public reports. First person narratives about the impact of pickleball noise were reviewed from news media, legal filings, websites, social media, and public meetings, including Zoom recordings of

municipal meetings and hearings. The authors identified six recurring patterns of non-acoustic factors associated with pickleball annoyance.

- impacted daily activities
- perceived fairness
- trust in authorities
- social conflict
- perceived control
- fear

3. REPRESENTATIVE DATA ON NON-ACOUSTIC FACTORS IN PICKLEBALL

The following typology categorizes non-acoustic factors based on recurring patterns observed in publicly available sources and provides illustrative examples.

A. IMPACT ON DAILY ACTIVITIES

Residents living near courts frequently note that their regular daily activities are significantly limited by exposure to the noise. Across sources, a recurring theme is that the sound penetrates the home environment, reducing the ability to maintain a private, quiet space. In recent lawsuits, residents describe difficulty “*reading in peace, having conversations with guests, resting during the day*” (27), or being unable to “*make phone calls, engage in conversation, or simply enjoy peace in their home without interruption*” (28). Participants in one recent community survey frequently described repeated daily disruption, with one noting: “*We are retired, so we are forced to leave our house multiple times a day*” (6). One neighbor commented, “*I have spent countless hours hanging around the local public library, thrift shopping, basically loitering...to stay away from home*” (29). The sense of lost refuge at home is a key component of environmental noise annoyance.

The extended duration of exposure to pickleball noise at home is another common theme. Highlighting its persistence throughout the day, individuals report in legal filings “*nearly 70% of ...waking hours are subject to the constant barrage*” (28), with noise “*awakening them in the morning when play commences at 6 a.m*” (30). A representative social media post stated “*The harsh and disturbing noises from pickleball play enters my home, 11 hours per day, 7 days per week, 365 days per year*” (31). These accounts suggest that the total duration of exposure in one’s home may also contribute significantly to perceived burden.

B. PERCEIVED UNFAIRNESS

Perceived unfairness is a recurring theme, with residents expressing concern about a sense of injustice when a smaller number of residents living near courts face the much larger population of users who do not live in the neighborhood. It is common for public meetings to be dominated by avid player testimony as illustrated in Fig.1 (32).



Fig.1 Chapelboro City Council meeting, Photo by City of Chapelboro, via [Chapelboro.com](https://www.chapelboro.com). Oct 7, 2022.

One neighbor asked in a social forum, “How do neighborhood boards and City councils overcome the noisy majority of pickleball fanatics in order to protect the rights of minority homeowners?” (33). Another resident living near courts described feeling like a victim of a “mob” in a video interview (34). (See Fig. 2)



Fig. 2 Screenshot from recorded video conversation with Will and Brittany of Owensboro, KY, July 7, 2024

Official public responses are often perceived as dismissive of community concerns, reinforcing a sense of procedural unfairness among affected residents. This is illustrated by a lawsuit claim: “When presented with this clear evidence of community concern, (Parks and Rec) Director Holloway dismissively stated that the petition with 25 neighborhood signatures ‘didn’t mean anything to him’ ”(28).

C. LOSS OF TRUST IN AUTHORITIES

Residents expect local authorities to protect community welfare, yet they are often perceived as failing to do so. In one representative example, a lawsuit claims “that when the courts were locked (due to regulations)...the Parks and Rec Director “located a key” and personally unlocked the courts” after being called by the city’s pickleball ambassador (35). In another example, one city council twice rescinded their initial decision to close courts, reigniting conflict (36).

Frustration is also directed toward USA Pickleball, the sport’s national governing body, which publicly acknowledges community noise concerns but is widely viewed by neighbors as ineffective in addressing them. In one typical social media comment, a resident posted screenshots from the USA Pickleball “Quiet Category” page and said “I tell you from experience these balls are not quieter...even the manufacturer website doesn’t claim they are quieter” (37). The situation is worsened when the the national governing body responds to neighbors with language that discourages further conversation: “We will not hesitate to file a motion for sanctions and ask the Court award USAP any unnecessary costs and expenses, including reimbursement of USAP’s legal fees, if USAP is drawn into unnecessary and frivolous litigation” (38).

One resident comment illustrates how the loss of trust can contribute to worsening noise annoyance: *“The lack of responsible action by the authorities to enforce the law as well as the ongoing harassment by pickleball fanatics is making it so much worse”* (39).

D. SOCIAL CONFLICT

When residents living near pickleball courts report noise-related concerns, conflict may arise between stakeholders with competing priorities. Players, often highly committed to the sport, may seek to preserve access to courts, while residents appeal to civic leaders for mitigation of perceived harms. Residents frequently report their concerns are minimized. One resident noted, *“I always get the response of ‘move’ (I have been here almost 30 years) or ‘you knew it was a park when you moved in’ (it was tennis courts)”* (40). A journalist similarly observed that public meetings often include suggestions that affected individuals install double-paned windows, wear noise-canceling headphones throughout the day, or move (41).

These disputes can become increasingly polarized and, in some cases, escalate into hostile interactions. In one example, a resident shared a video documenting prolonged daily exposure to pickleball noise to a small support group on Facebook *“this is what I listen to from 7 am-9 pm, 7 days a week”*. It was reposted on a pickleball-focused site, where it received more than 350,000 views and dismissive responses such as *“These people who complain about pickleball need to spend a few weeks living on the streets”* and *“If you lived out in the country, you’d probably complain about the birds and crickets”* (42).

Reports of intimidation and harassment are also emerging. In one case, a lawsuit plaintiff was the target of the statement, *“God help them if they win the lawsuit. They’ll have to move”* (43). Another resident described a neighbor having *“her brand-new tires slashed after speaking with pbatters.... you really can put your safety at risk”* (44). One media account documented ostracization and *“houses being graffitied, physical threats, and even a story of how someone used their car to nudge a woman for complaining”* (41). Such social conflict may contribute to heightened stress responses, including activation of physiologic fight-or-flight mechanisms, thereby amplifying the impact of environmental noise on nearby residents.

E. PERCEIVED CONTROL

Perceived control refers to an individual’s belief that they can influence or manage a noise source, its timing, or its effects. The courts are near homes, highly visible, and public courts may open as early as 6 am and stay busy until as late as 11 pm. However residents have little authority to influence operating hours, court design, or enforcement.

One recent online discussion for neighbor focused on actions within one’s own control including wearing earplugs, sometimes using noise canceling headphones or leaving the house, using a loud music box to play loud music towards the courts, or installing *“top of the line window from Pella”*, though the individual noted *“It does not mitigate the noise”* (45). Legal filings often document a perceived loss of control in interactions with city officials, including attempts *“to contact the City...more than twenty times”* (46) and *“more than 50 documented email exchanges with City officials”* (28).

Learned helplessness occurs when repeated exposure to uncontrollable stressors leads people to feel powerless to change their situation. One reporter for a national pickleball publication described the phenomenon:

“So, these people are suffering through the equivalent of an alarm going off every .8 seconds for 10 of their 16 waking hours. The difference being of course that you can turn off an alarm clock. No one in these neighborhoods can turn off the popping sound of the pickleball courts. And when there’s nothing you can do to stop something, you develop what psychologists call “learned helplessness” (30).

Perceived loss of control and/or the progression to learned helplessness may also contribute to the impact of the noise on neighbors.

F. PERCEIVED FEAR

Perceived fear may arise when neighbors are concerned about harassment for speaking out or health issues they attribute to the noise. One advocate for neighbors commented that when he knocks on doors, neighbors often have their own reasons for staying quiet; *“It’s an elderly person who does not want to disagree with anyone. It’s anyone feeling vulnerable or fearful of the ... picklers (pickleball players). Anyone who is in a position of dependency...Parents protecting their kids...do not want the added burden of attention” (47).*

Fear of medical harm from the noise is also a common theme. Referring to the common phenomenon of hearing phantom pops, a physician spoke to a reporter about her own situation, *“ It’s a serious thing when you hear things which are not real” (48).* Another resident directly alluded to the fear of medical harm, *“Physically, I have been left with many problems: cardiovascular, respiratory, post-traumatic.... And then there is the fear” (49).* These fear-based responses, whether social or health related, may amplify and sustain noise annoyance beyond the acoustic stimulus itself.

4. DISCUSSION: INTEGRATING NON-ACOUSTIC FACTORS

A. A MODEL FOR INTEGRATING NON-ACOUSTIC FACTORS

The findings describe six categories of non-acoustic factors that are present in pickleball noise conflicts. The six categories identified in this paper align with recently published ISO technical specifications on non-acoustic factors, which include situation, social, and personal factors as shown in Table 1.

ISO TS 16755 Category	Examples from pickleball noise
Personal	Perceived fear Perceived loss of control
Social	Perceived unfairness Loss of trust in authorities Conflict over benefits/harms
Situational	Effect on daily activities

Table 1 Adapted from Table A1 , ISO-TS 16755 (28)

The importance of non-acoustic factors in pickleball noise annoyance is further validated with results of a pilot community survey from 264 neighborhoods exposed to pickleball noise. Almost 8 in 10 (79.9%) respondents reported that pickleball noise frequently or always impacted their ability to feel calm at home. Almost 3 in 4 (73.6%) reported they could hear the noise inside their home or workplace. Eight in 10 (81.2%) reported a loss of trust in authorities and more than 7 in 10 (72.4%) reported fear of being harassed for speaking out about the noise (6).

The contribution of both acoustic factors and non-acoustic factors to the human impact from pickleball noise is shown in Figure 1. The relationship between acoustic factors and physiologic responses has

been well documented (50). Non-acoustic factors, including unfairness (51), invasion of personal space (52), social evaluative threat (53), and unpredictable sound stimulus (54) are also known to activate the unconscious fight-or-flight physiologic response, contributing not just to noise annoyance but likely also to the adverse physiologic health effects of noise.

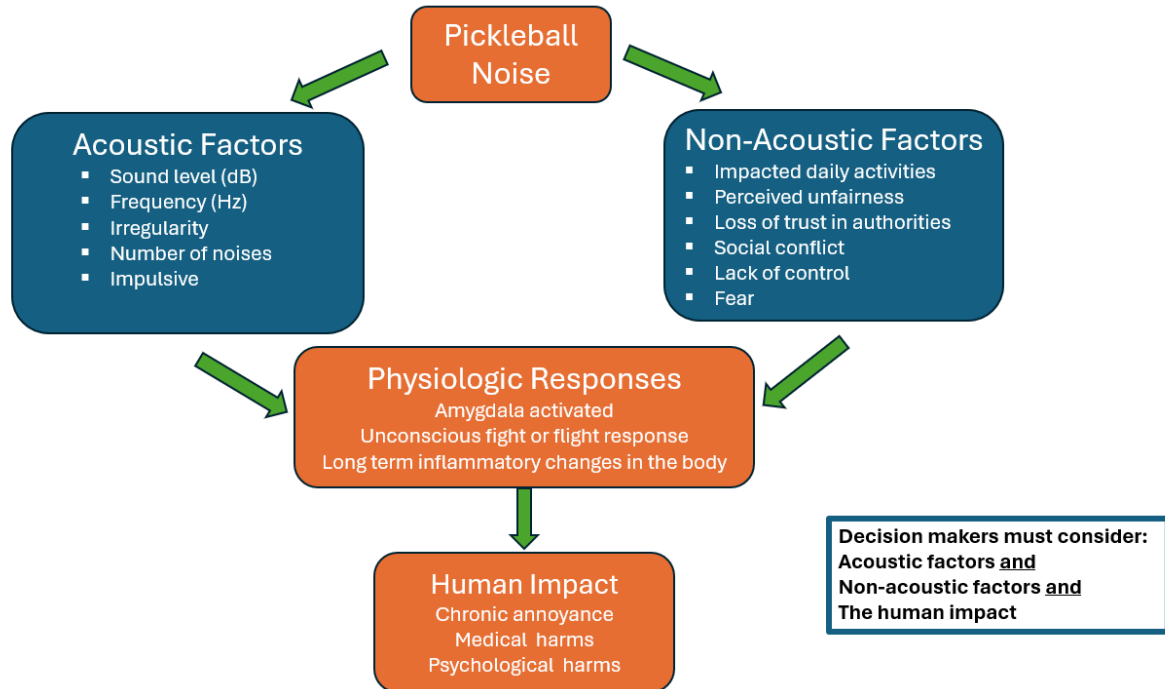


FIGURE 1. AN INTEGRATED MODEL OF PICKLEBALL NOISE AND THE HUMAN IMPACT

Non-acoustic factors may explain up to a third of the variation in noise annoyance (16), but most previous research has focused on impersonal, widespread sources of noise like transportation. Pickleball noise is personal, neighborhood-based, and discretionary, often causing the perception of unfairness and social conflict, with high expectations for accountability of local decision makers. Further study is needed to clarify the relative contribution of non-acoustic factors to pickleball noise annoyance.

5. POLICY IMPLICATIONS AND RECOMMENDATIONS

As pickleball grows, conflicts and community impacts are increasing, creating a need for both immediate measures and more research. The importance of non-acoustic factors highlights the need to address concerns before courts open. Communities often proceed with pickleball development under the assumption that noise concerns can be addressed later if complaints arise. Appreciation of the non-acoustic factors helps explain why this reactive approach is ineffective. Incremental responses implemented after residents have already been exposed are often too little, too late, and in some cases complete court closure becomes the only viable means of restoring community stability. By distinguishing *prevention* from *repair*, policymakers and practitioners can allocate resources more effectively, reduce litigation risk, and protect both community well-being and recreational opportunity. Recommended pathways for leaders to integrate non-acoustic factors in planning are provided.

A. STANDARDS ORGANIZATIONS

ANSI and ISO define the scientific and procedural frameworks that shape global acoustic practice. ISO has made meaningful progress through the ISO 12913 soundscape series and ISO/TS 16755-1, which formally recognize that non-acoustic factors may account for a third or more of the variation in annoyance. ANSI, by contrast, lacks equivalent guidance and lags international developments. Continued joint research and harmonization will ensure that American practitioners and regulators have a complete toolkit for evaluating human response to community noise.

B. ACOUSTIC ENGINEERS

Evaluations of pickleball noise should include systematic assessment of non-acoustic factors alongside traditional acoustic measurements. Reports should inform that the perceptions of fairness, control, social conflict, fear, and trust in authorities are legitimate factors in predicting response of the affected neighborhoods to noise. Consultants should also acknowledge that the conventional mitigation strategies of barriers, quieter paddles, or modified hours may fall short when underlying non-acoustic factors are unresolved. Incorporating psychosocial context into impact statements and recommending communication or mediation strategies can improve the credibility of engineering recommendations.

C. MUNICIPALITIES AND LOCAL GOVERNMENTS

Zoning ordinances and recreation policies should be updated to reflect the full scope of impacts identified in this research. Setback requirements should create substantial separation between courts and nearby homes, recognizing not only the acoustic footprint but also the intensity of social interaction at close range. Traditional practices of neighbor notification, public hearing, and environmental review should be applied to new or converted pickleball courts, treating them as significant land-use changes with measurable quality-of-life implications. Including non-acoustic indicators such as community trust levels or history of complaints in staff reports can help anticipate and prevent conflict before play begins.

D. LEGAL ADVISERS

Attorneys should integrate non-acoustic considerations into their legal strategies. Demonstrating factors such as perceived unfairness, fear, or loss of control can strengthen nuisance and negligence claims by linking emotional and health impacts to recognized consequences of long-term noise exposure. For defendants or court operators, acknowledging these factors can support earlier, more constructive mitigation and settlements and reduce risk of full closure of the courts. Legal advisors can help clients recognize that lasting solutions depend not only on decibel reduction but also on restoring fairness, trust, and safety within the community.

E. USA PICKLEBALL

USA Pickleball, as the national governing body can adopt a stronger policy statement that recognizes non-acoustic factors such as fairness and community trust, signaling a commitment to being a good neighbor and supporting the overall long-term sustainability of the sport. Its 2,200 local ambassadors can help guide responsible court siting, effective mitigation, and conflict prevention.

6. CONCLUSION

Pickleball noise is uniquely problematic because it combines intense impulsive acoustic characteristics with a complex web of non-acoustic psychological and contextual factors. Assessments based only on acoustic factors are not sufficient to explain the community impact of pickleball noise. When planning new courts, a multidimensional approach that considers both acoustic and non-acoustic factors is required. In communities with long-term exposure and courts close to homes, non-acoustic factors may be significant and modest decibel reductions may be insufficient; only full noise elimination may restore peace.

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