How acoustics can shape healthy and supportive indoor soundscapes ?
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From the beginning of any project building design is a predominantly visually driven process. We should really also be looking at acoustics from the onset of any project but we are currently not and design considerations for sound come in as an afterthought. It is therefore perhaps no surprise that acoustics attract the lowest overall building satisfaction – with 54% of people dissatisfied here according to a study carried out in 2020 by the Centre of the Built Environment at the University of California and Berkeley.

The adverse effects of noise can be serious ranging from;

Auditory
Tinnitus
hearing loss

Non- auditory
Annoyance
Sleep disturbance
Hypertension
Cognitive impairment
Cardiovascular diseases.

Different environments have different acoustic needs. Classrooms must optimise teaching and learning - requiring the maximisation of speech intelligibility, allowing students to listen easily and at the same time ensuring teachers can speak at a reduced vocal effort. Offices present a harder challenge in their need to promote often conflicting aims of privacy, intelligibility and concentration. Acoustic design on its own will not solve these problems unless it is coupled with an activity -based design approach from day one - for example in offices by delineating quiet areas and group areas.

Traditionally the approach has been to treat sound as noise, just measuring it and using and seeing it really is a waste product. However, sound should instead be seen as a resource and as often being desirable! The maxim “the quieter the better “is not always true and acoustics should not just be a simple question of masking sound - as silence is not always the best option. Standards such as the Living Building Challenge, WELL and Fitwel have brought acoustics much more into focus. The next stage has already begun with indoor soundscape research looking much more to the positive impact of sound on task performance and health promotion as well as just enhancing pleasant surroundings.

The Indoor Soundscape

Indoor soundscape research has involved measuring using feedback from both people and technical instruments. In the indoor environment the key factors were shown to be comfort and content and the research actually combined indoor contexts with outdoor contexts of sound. Positive feedback was received when natural sounds and music were introduced into the indoor sound environment. This proves there is much to explore with acoustics rather than just silence or annoyance.

So what are the right indoor soundscape strategies? It’s not just a question of eliminating or masking unwanted sounds because the addition of sounds may also help. Sometimes bringing in adjacent sounds from the outside can work or we can introduce natural sound features (like fountains). Integrated design here involves consulting everyone and balancing often conflicting aims of say engineers and acousticians.

Looking to the future we could use auralization and vr technology to help us appreciate how a future building will sound. We should also be aiming for sound- based indices covering sound and the quality of sound in much more detail. This is no easy task as there are several factors that determine our acoustic perception such as urban, environmental and situational context and then a person’s age, gender, health and socio- economic status. Yet we do need a broader approach on our perception of sound - which focuses some more on the positive health outcomes - even if this does require more studies to be undertaken.

Summary compiled by WAI member Stephen Marks *www.mindbodybuilding.co.uk*