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Preventative Design: Understanding and Designing for Possible Hearing Loss from Personal Media Player Use

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Abstract

Almost all of us now carry devices capable of playing music, most of which are capable of delivering volumes over the safe levels of 85 decibels recommended by the International Health and Safety regulators. Governments are starting to pass laws regulating output levels of personal media players (European Commission 2008). However, a number of variables influencing output levels are very challenging to regulate. Researchers found different headphone types as well as different combinations of devices and headphone put out different levels of sound ranging from 91 to 130 dB. Researchers also found that the variations in combinations are influenced by factors such as voltage of the device, recording levels and headphone design (Keppler, 2010: 538-548).

Moreover, the extent to which this damage is occurring is currently under debate. On one hand, research has shown that listening to music at unsafe volumes with these devices can cause irreversible hearing loss (Keppler, 2010: 538-548); on the other, fewer argued that the short history of PMPs does not provide enough time to fully understand their impact, and that limited sample size in recent studies undermines the legitimacy of the results (Mostafapour, 1998: 1832-1839). While results of these previous short-term studies may have shortcomings, contemporary methods of hearing loss evaluation are putting questions around legitimacy to rest.

On another level, few researchers argue that the extent to which users are listening to music at dangerous levels are dismissible (Epstein 2010), however, contrary findings are mounting as new trials are conducted (Levey, 2011) (Kähäri, 2011). These studies aim to evaluate not only dangerous listening volumes but also reasons behind this behaviour. Current literature suggests background noise is the single most important factor and when background noise is reduced through noise proofing so are listening volumes (Shimokura, 2012).

Currently available methods of noise proofing are either expensive, hard to setup or disposable in nature. This research aims to create an affordable, accessible and durable noise proofing method



that would be universally adaptable to media players. In conclusion, this research aims to find how music induced hearing loss (MIHL) can be prevented through better design and design that promotes responsible listening behaviour.

Keywords: Hearing Protection, Music Induced Hearing Loss, Self-Induced Hearing Loss, Noise Cancellation, Listening Behaviour

Please contact the author for more information on this project