

Acoustic and vibratory characterization of in-room footfall noise: Part 2

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Prior to Phase I of this study [J. Acoust. Soc. Am. **22**], existing footfall literature was primarily focused on transmission between spaces, i.e., IIC. This study measured the sound power and vibratory spectra produced by footfalls using both human subjects and standard tapping machines. One tapper had rubber-tipped drop weights and the other had cored samples of shoe soles used by human participants. Within a reverberation room, 12 floor profiles were tested with the tapping machines. Human subjects were tested with three previously tested floors and a new floor profile. Fourteen male and female subjects walked on the floor surfaces while wearing three different types of footwear: leather-soled shoes (hard), rubber-soled shoes (medium), and sneakers (soft). Sound power spectra and vibratory signatures for each condition were measured using the procedures of ISO 3741. The current study verified repeatability from Phase I to Phase II, produced sound power footfall data for vinyl flooring applied directly to concrete, and developed improved correction curves to model tapping machines as human footfalls. Similarities between the rubber-tipped tapper and women's leather shoes and a comparison of sound power and corresponding vibratory signatures are discussed. [Worked supported by The Paul S. Veneklasen Research Foundation.]

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