Perturbation-based balance training, where individuals undergo repeated balance disturbances like slips in a safe environment, is promoted as a way to strengthen ecologically valid, context-specific recovery skills that are challenging to target with exercise alone. Indeed, past research has shown that perturbation-based methods improve compensatory stepping, enhance trunk posture control, and prospectively reduce falls in the community. Inherent constraints of these methods that are not present in real-world slips, however, may hamper the transfer of reinforced recovery skills to prevent real-world falls. This talk will present our efforts to remove these constraints – namely through the development, validation, and use of a wearable slip perturbation device to study slip recovery and fall risk on curved path or sloped environments. Opportunities inspired by this work for comprehensive yet efficient perturbation-based training programs, new measures of perturbation severity, novel balance recovery mechanisms, and applications to populations with balance deficiencies will also be shared.