**Practice rather than observation allows us to quickly learn to cope with acceleration when intercepting moving objects**

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We effortlessly interact with moving objects despite being hopeless at visually judging acceleration. Moving objects that we encounter often accelerate due to gravity and friction, or to other people’s actions such as handing us the object. How do we deal with these accelerations? Misjudging or ignoring acceleration can be compensated for by continuously adjusting movements on the basis of the latest visual information, but this mechanism is limited by visuomotor delays. Our study was designed to verify that people ignore acceleration, and examine whether it is enough to observe the motion to learn to fully compensate for this, or whether it is essential to interact with the object. We asked subjects to try to tap on targets moving at various randomly interleaved speeds. In alternating blocks of trials, the targets either accelerated or decelerated (at 1m/s2). On the first trial of each block the tapping error was consistent with the new acceleration (or deceleration) being ignored. Within a few taps the error was negligible. Only observing the target’s motion hardly influenced subsequent performance. Thus, people do not learn the object’s acceleration, but they learn how to adjust their movements to compensate for the error that arises from ignoring the acceleration.