Abstract: The effectiveness of a direct fire penetrator projectile equipped with an actively controlled ram air actuation mechanism is investigated through dynamic simulation. The ram air control mechanism consists of a rotary sleeve valve which directs air flow from an inlet in the center of the nose to side ports. The coupled dynamics of the projectile, inertial measurement unit, and flight control system are included in the system model. This work shows that a ram air control mechanism provides sufficient control authority to significantly reduce dispersion of a direct fire penetrator, even in the presence of moderate levels of sensor bias and noise.