【中興大學生物力學實驗室研究成果】
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計畫名稱	新渡戶歪白蟻的高速大顎彈擊運動
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摘要	The asymmetric mandibles of termites are hypothetically more efficient, rapid, and powerful than the symmetric mandibles of snap-jaw ants or termites. We investigated the velocity, force, precision, and defensive performance of the asymmetric mandibular snaps of a termite species, *Pericapritermes nitobei*. Ultrahigh-speed recordings of termites revealed a new record in biological movement, with a peak linear velocity of 89.7–132.4 m/s within 8.68 μs after snapping, which caused an impact force of 105.8–156.2 mN. High-speed video recordings of ball-strike experiments on termites were analysed using the principle of energy conservation; the left mandibles precisely hit metal balls at the left-to-front side with a maximum linear velocity of 80.3 ± 15.9 m/s (44.0–107.7 m/s) and an impact force of 94.7 ± 18.8 mN (51.9–127.1 mN). In experimental fights between termites and ant predators, *Pe. nitobei* killed 90–100% of the generalist ants with a single snap and was less likely to harm specialist ponerine ants. Compared with other forms, the asymmetric snapping mandibles of *Pe. nitobei* required less elastic energy to achieve high velocity. Moreover, the ability of *P. nitobei* to strike its target at the front side is advantageous for defence in tunnels.