Elastic energy storage Guinea

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Amazingly, the peak-launch muscle powers that Henry measured and calculated were more than twice the muscle"s possible power output; they must be storing elastic energy and releasing it explosively to launch themselves off the ground. The 1.5 kg guinea fowl seem to be using an elastic energy storage jumping mechanism.

Elastic energy storage and release can enhance performance that would otherwise be limited by the force-velocity constraints of muscle. While functional influence of a biological spring depends on tuning between components of an elastic system (the muscle, spring, driven mass, and lever system), we do not know whether elastic systems ...

Jumping can provide the vertical acceleration necessary for a rapid takeoff, which may be particularly important for ground-dwelling birds such as... | Guinea, Jump and Galliformes | ResearchGate...

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The use of distal joints to power running reflects a limb structure with a greater reliance on elastic energy storage and release. The increased lower limb length in ostriches, in particular the tarsometatarsus, results in very long and slender tendons of the digital flexors that are ideal for elastic energy storage and release [26,27].

The temporal decoupling of energy production from energy delivery permitted by elastic energy storage allows muscles and tendons to produce force effectively over a wider range of shortening or lengthening speeds.

Over the energy range explored (1.4-2.4 GeV), corresponding to an average q2 ranging from 0.8 to 2.4 (GeV/c)2, the yield of wide-angle (60°<?<120°) electron-positron elastic scattering events...

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We hypothesized that by making use of elastic energy storage and release, the leg muscles could provide the large power outputs needed for achieving high velocities after takeoff. We investigated the performance of the leg muscles of the guinea fowl Numida meleagris during jumping using kinematic and force-plate analyses.