How Humans Gallop, lessons from the Cheetah

Cheetahs have been the fastest mammal sprinter for three million years. Using Percy Cerutty's idea of studying how our fellow mammals run there is potential to improve how humans run.

Leg Alinement for maximum effectiveness:
Cheetahs are an excellent example of optimal leg alinement. To find a similar alinement for humans start with the extremes of walking out toed and in toed.

1 - Walking as out toed as possible on the heals, toes cannot touch the ground. Feel the stress on the inside of the knees. Then run as out toed as possible and again feel the stress on the inside of the knees.

2 - Walking as in toed as possible, heals cannot touch the ground. Feel the stress on the outside of the knees. Then run as in toed as possible and again feel the stress on the outside of the knees.

Between these two ineffective extremes there is a sweet spot that will generate maximum power.

3 - To find the point of maximum power, stand on one foot and use the other foot to find the most effect leg alinement. Focusing on fully utilizing the gripping force of the arch of the foot, start at the extreme in-toe position and work to the extreme out-toed position. Feel the arch of the foot gaining more power as we move away from the extreme in-toed position. At the point where the big toe moves directly underneath the inside of the knee, the arch and toes of the foot can grip effectively. As the foot turns more out-toed, the arch loses its ability to flex and power is lost.

The Gallop Machine provide an opportunity to obtain an empirical approximation of how a cheetah uses its back legs and measure the amount of force each of the three above leg alinements generate by measuring the distance the Gallop Machine travels.
4 – From a stationary position in the Gallop Machine, push off maximum out toed and measure the distance.
5 – From a stationary position in the Gallop Machine, push off maximum in toed and measure the distance.
6 – From a stationary position in the Gallop Machine, push off using the maximum gripping power of the arch plus toes and measure the distance.

By experimenting using the extremes of leg alinement the individual can determine what it feels like to most effectively align the foot and engage the arch to obtain maximum distance. All leg and core muscles are strengthened thru their whole of range of motion. The resulting improvement in alinement can enhance speed, balance and safety. Since most of the foot's sensors are on the toes and ball of the foot, landing on the ball of the foot provide superior safety information.
7 - High stepping emphasizes landing on the ball of the foot. Start with high step walking focusing on how the arch and toes of the foot are gripping effectively. Then run high stepping and again focus on how the arch and toes of the foot are gripping effectively.

Gallop:
8 – Please study the cheetah gallop videos and highlight the difference between the back legs, the right is the "shock absorber" and the left is the "drive" leg. Focus on how the left back foot dramatically accelerates before it contracts the ground. Like skipping, the first foot in the gallop acts like a shock absorber and the second foot then delivers maximum thrust.
Use this gallop principle to accelerate the "drive" leg before making contact with the ground directly under the body's center of gravity.