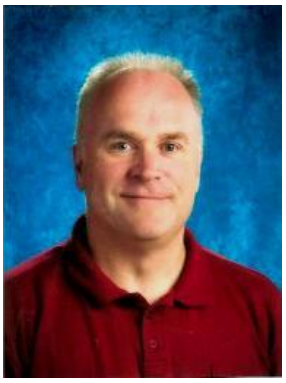
Training the Correct Energy Systems in Track and Field



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It's the end of basketball season. Your high jumper comes out the first meet of the year and booms a 6'6" (men) or a 5'6" (woman) jump. Talk about great coaching! It's the first meet of year of the year and they come out of the chute and hit a big one!! By meet three, the 6'6" jump is now 6'0" and the 5'6" jump is now 5'0". WHY? What happened?

Without knowing it, the wrong energy systems have become a part of the training plan. The high jumper is now actively training for the 400m as well. The capacity to tolerate lactic acid has become a weekly part of the training regiment, without realizing high jump and lactic acid toleration have nothing in common and are actually counterproductive. It's a little like mixing motor oil in pumpkin pie. One tastes good and one is helpful for the car, just not together. It's the same for the high jump energy system requirements and 400 meter energy system requirements, as both are different. In reality, lactic acid is a detriment to *muscle elasticity*, a must in all jumps including the high jump.

So what's the big secret to training track and field athletes across the board? Simply said, it's understanding the energy systems and how to correctly use them. In essence, "*it's the art of coaching*."

If we take a 100m high school runner, that runner will run the 100m in somewhere between 10.5 to 14.0. If we read the chart included, we are nowhere near needing lactate training to be successful. We're in Alactic (without lactic acid) CP system. We can run 300's till the cows come home, but are the 300's really beneficial for the 100m runner?

Another example is the training of a 400m runner. Sixty minute runs address an energy system that isn't compatible with the needs of a 400m meter runner. As many of us know, after running the 400, lactate power and capacity play a huge role in the 400 meters. Nothing will kill foot speed quicker than long sustained runs. Having said that, if you are inside the correct energy system and run over 40 seconds at greater than 95%, you will produce some monster lactate levels.

The difficulty for a multi-event athlete is the cross section of energy system training needed to maximize performance in the various events. I'd recommend staying on the low duration of the energy system chart. The art of coaching is finding the right mix of workouts for a broad range of events. This is something the decathlete and heptathlete must balance in training. All too often the coach will feel like the workout wasn't effective without lactate. The workout can be effective however.

Finally, regardless of the event in track and field, a coach will never go wrong if he or she gives continual focus to the Alactic System, staying below the 15 second duration. Regardless of the event, speed wins.

Along with training the correct energy system, speed is a great recipe for track and field success.

TRAINING ENERGY SYSTEM

DURATION OF SESSION EFFORT	ENERGY SYSTEM(S)	POWER/CAPACITY	TRAINING EFFECT
0 TO 0.2 SEC.	NERVOUS	----------	REACTION
0 TO 0.2 SEC. (PER LEG)	ALACTIC (STORED MUS. ATP)	POWER	INITIAL THRUST
0 TO 0.1 SEC.	ALACTIC (CP SYSTEM)	POWER	SINGLE LEG THRUST AT TOP SPEED
1.0 to 0.1 SEC.	ALACTIC (NERVOUS + STORED ATP + CP)	POWER	STARTS
2 TO 5.0 SEC.	ALACTIC (CP SYSTEM)	POWER	ACCELERATION
5 TO 15.0 SEC.	ALACTIC (CP SYSTEM)	POWER	MAXIMUM SPEED (FLYING START)
15 TO 30.0 SEC.	ALACTIC (EXTENDED CP SYSTEM)	CAPACITY	SPEED (ABILITY TO HOLD >95%)
30 TO 45.0 SEC.	LACTIC	POWER	ABILITY TO PRODUCE ENERGY without 02 OR CP
45 TO 90.O SEC.	LACTIC	CAPACITY	AS ABOVE, PLUS ABILITY TO TOLERATE LACTIC ACID
90 TO 300.O SEC.	LACTIC WITH AEROBIC SUPPORT	AEROBIC POWER LACTIC CAPACITY	ABILITY TO USE 02 TO HOLD UP PACE AS LACTIC ACID ACCUMULATES
5 TO 10.0 MIN.	AEROBIC WITH MINOR LACTIC	AEROBIC POWER	MAX 02 RATE
10 TO 12.0 MIN.	AEROBIC	POWER CAPACITY	RAISE ANAEROBIC THRESHOLD
20 TO 60.0 MIN.	FUEL: GLYCOGEN	CAPACITY	ABILITY TO MAINTAIN STEADY PACE
ABOVE 1 HOUR	AEROBIC FUEL: GLYCOGEN + FAT	CAPACITY	ABILITY TO MAINTAIN STEADY PACE FOR THE MARATHON