MTCCCA 400m Talk
Issues in Contemporary 400m Training

1. *Introduction*
    a. This talk deals with major trends in advanced 400m training
    b. A lot of it is my own personal philosophy
    c. Some of what is presented here are things I've heard from elite coaches
    d. While some of it is my interpretation of current trends
    e. Not going into too much specific programming but more talking about ideas/trends/issues/thoughts or just topics as it pertains to more current 400m training
2. *Principles over Workouts*
    a. Thinking more about the adaptations and bigger concepts that are being addressed rather than the specific workouts
    b. Too often coaches ask for workouts but it's not about that, it's about the fundamental concepts that underly the workouts
    c. Any training program is a coaches answer to the question of how to make 'so and so' faster in the 400m
        i. Ask yourself this question and what is required for the event and for specific individuals
    d. Focusing on organizing principles and concepts that seem to be gaining sway in contemporary circles in 400m development
    e. Topics
        i. What happens in a sprint stride?
        ii. Balanced approach
        iii. Polarized microcycle design
        iv. Progression > Periodization
        v. Speed is primary and simplified uses of tempo
        vi. Speed extensification
        vii. Bias towards early stages of the race
        viii. Stiffness/reactivity
        ix. Force production – force closure – force transmission
        x. Recovery/restoration
3. *What Happens in a Sprint Stride?*
    a. Focusing on elasticity, not necessarily energy system
    b. Overcoming inertia
    c. Reactivity/Stretch Shortening Cycle
    d. Hip-Knee-Ankle chain of events
        i. Whip from the hip
        ii. With the ankle stiff
    e. Joint coupling
    f. Swing leg retraction
    g. Ground reaction forces, transmit in minimal time
    h. Coordination as foundational
    i. How many times bodyweight?
    j. Focusing on these elements orients how I program and think about training

4. *Balanced Approach*
    a. Current trends are favoring extremes
    b. Balanced approach still wins out but how it's administered may have slight differences today
    c. Balanced as in equaling out neural, general, and extensive training days through the week
        i. With some exceptions, especially in-season
    d. One of the best ways to keep an athlete healthy and progressing but progressiong more so methodically
5. *Polarized Microcycle Design?*
    a. Clean theme for the training day or session
        i. Stick to the theme!
    b. Varying it, differentiating it day to day
    c. Common mistake to mix themes on each day
        i. I hear a lot of coaches throwing tempo in on speed days as a 'finisher'
    d. Common mistake to train only 1-2 ways, body craves variety and progressions in different ways
6. *Progression > Periodization*
    a. Program one week at a time instead of one mesocycle/phase at a time
    b. Just keep progressing one week at a time and always have 'methods' at your disposal to keep progressing
    c. Common mistake to progress to slowly and stick to 'phases' of training
    d. Don't believe in peaking, only in progressing
    e. Think of the ways in which you can progress all kinds of activities and add specificity over time
        i. Ask yourself how you can get this activity to transfer to the event or closer to the event
        ii. Range of motion, speed, force, extensification, volumes, time under tension….etc
7. *Speed is Primary and Simplified Uses of Tempo*
    a. Specificity is speed/power based, tempo is just not specific enough
    b. However, exclusively doing speed is a fault
        i. I asked a close friend of mine who I consider an elite 400m coach about current trends and he said that there are extreme schools of thought developing in America and both are limited in their potential
    c. 'Extensification' of speed is really the key driver
        i. Build acceleration into absolute speed into speed endurance
            1. Profound psychological effect on the athlete too
        ii. Takes a long time and a lot of consistency to build speed, power, strength, reactivity, etc
    d. Paired progressions
        i. Speed and Multijumps
    e. To get faster over 400m you have to train a faster race model
        i. Less obvious than it sounds for some reason

1. But coaches in difficult facility/weather conditions have constraints

ii. Very literal, very straightforward concept

iii. Density patterns play a vital role here

1. Indoor season example

f. Tempo is not the main thing

i. In my experience coaches attribute too much time and significance to tempo work

g. It's complimentary only

h. Should be utilized to execute sound mechanics as well

i. Can't sprint everyday so useful to utilize submaximal speeds as a change of pace

j. Also useful as a bridge to progress into speed endurance work

i. I like to think of training in terms of opposing ends then gradually wedding them together, ie progressing them into one another

k. Great backup option as well

l. Useful in the sense of 'time under tension'

i. Without longer tempo reps, 400m sprinters may be intimidated to sprint for long durations

ii. The furthest I'll go on a tempo rep is 45s-50s for grass run, and 350m on the track

m. Duration runs

i. Short to long is effective

1. And effective in just about everything

ii. Timed grass runs are a nice piece

1. Softer surface, timed runs nice polar opposite to spiked up speed training on the track

a. Alterity is a critical aspect of sound microcycle design

i. Tempo heavy programs violate this

ii. Speed exclusive programs violate this

iii. Sound programming is balanced

n. Keeping tempo as tempo (Polarized Training)

i. Make sure the tempo reps are long enough where they aren't sprinting and they are staying in a tempo-based zone

8. Speed Extensification

a. Simple and enormously effective approach

b. Short to long makes sense to me logically in just about everything

i. Long to short programs have certainly been successful but doesn't compute for me

c. I like the idea of constructing a 45 second 400m 10m at a time and it gives the sprinters huge confidence

d. Building, constructing, piecing together a huge personal best through the whole season

9. Bias Towards Early Stages of the Race

a. Majority of the race is not under extreme lactic duress

b. As opposed to the more common bias towards latter stages of the race

i. Which relies almost exclusively on improving the final 100m of the 400m

c. Training for a specific race model
    i. Makes faster early portions of the race less demanding by virtue of training for it
        1. Normalizing
        2. Therefore, pushing energy system usage further into the race ie hyper-specific ‘conditioning’ but adds up the more you do it
    ii. Lactic shock dependent on the speeds in which it occurs?
        1. Obviously yes, but this has implications on how you train for the 400m and what’s going to be most effective
    iii. Psychological factors
d. Energy system development could be more effective in an ‘indirect’ way
    i. Reactive Strength

10.Stiffness/Reactivity

a. Reactive Strength
    i. Stretch shortening cycle
    ii. Ability to rapidly shift from eccentric to concentric contraction
    iii. Ability to transfer internal forces externally (Production-Closure-Transmission)
        1. Strength is multi-faceted
        2. In my experience I think coaches have no problem increasing absolute strength but largely neglect reactive strength
        3. Ratios are critical
b. Becoming a bigger topic today
c. Better ankle stiffness means more bounce on each step
    i. Better rebounding ability can add 1cm-2cm per step
    ii. MSF better delivery time
        1. Mass specific force or amount of force expressed in relation to bodyweight
d. Better co-contractions equals better force channeling
    i. Eliminate energy leaks
e. Better reactivity means less energy system usage
    i. Strength/energy utilized later in the race can be due to loss of leverage or mischanneled foot strikes
    ii. Less elasticity means more muscle fiber recruitment
    iii. Channeling
        1. Muscle recruitment required to a greater degree with misaligned contacts
        2. Standing jump example
        3. Garden hose versus pressure washer
f. 400m is a long duration reactive event
g. Multijumps microdosed over an entire season can have a profound effect
    i. Big neural drivers don’t need heavy doses, it’s the consistency that’s lethal (in a good way)

11.Force Production – Force Closure – Force Transmission

a. Effective way to think about neural training

b. Can combine this with force-power-speed paradigm and/or concentric-isometric-eccentric structure of training as well
c. Think of making the body's ability to produce force, then the body's ability to channel or direct forces optimally, and transmit it reactively
d. This is largely how I think of neural training as a whole and come up with progression of training for each individual
e. Force production
    i. Static lifts, Olympic lifts, active jumps, multithrows for example
f. Force closure
    i. Technical execution, coordination based strength, special strength for example
g. Force transmission
    i. Sprinting of course, but also reactive strength training or ballisitic lifts, and definitely multijumps or reactive jumping activities

12.Recovery/Restoration

a. Variety > Progression
    i. Pool, games, mobility
    ii. General strength, bodybuilding/plate circuits
    iii. Massage, manual therapy, name a 3-letter acronym 😊
    iv. Include lots of backward, lateral, and rotational movements
b. Stacking recovery days
    i. Useful method to ensure multiple quality speed days within a week
    ii. Great for more advanced athletes but can certainly work well for beginners
c. Keep your recovery days a recovery day
    i. Make sure the theme is 'general' and 'not specific'
    ii. In my experience a common mistake is to have large volumes of tempo running on recovery days
d. But you can still work hard on 'recovery days'
    i. Make sure the theme holds
    ii. Can still execute very high levels of general strength or conditioning with no injury risk and great health benefits
    iii. Useful methods for high injury prone and developmental athletes

New Mexico TF Men's Long Sprints *This is just an example of a week of training from earlier this fall solely for providing context on programming and training organization*

Mesocycle 3 – Week 2

1. **Monday, October 24:** *Neural* *The multijumps at the start of practice was based on individual needs and progressions. I write the ranges and series of activities because each athlete will have individual prescriptions. Weights on the sleds are individualized as well along with starting positions, intensity, and volumes. In the weight room power cleans will be prescribed as either derivates or full OL's based on developmental level. I think copious reps of block starts are extremely effective. I feel like programs general don't do enough. I like keeping horizontal jumps in the program the entire year since there's so little huge horizontal force activities one can do.*
    a. *Warm Up 1b*
    b. *Multijumps*
        i. Standing LJ (WV), or Single Leg Standing LJ, or Standing TJ
    c. *Technical Execution*
        i. Blocks to 10m
    d. *Resisted Runs (Acceleration Development)*
        i. 5-10 x (1 x 20m Sled, 1 x 30m Tape Acceleration)

e. *Coordination*
    i. 1/1-2/2 x 6 Hip Hinge off Box into Plate Punch
f. *Multijumps*
    i. 15-20 x Hip Hinge NCM Vertical Box Jumps and/or Hurdle Hops
g. *Multithrows*
    i. 10 x UHF (Heavy)
h. *Special Strength*
    i. 1/1 x 50s Ankle Spring ISO (Ball of Foot, Low Position, Knee Past Toe)
i. *Weightlifting*
    i. Power Cleans
    ii. Hip Lift + Single Leg Vertical Box Jumps
    iii. Ancillary Lifts
    iv. Multithrow Complimentary

2. **Tuesday, October 25:** *Extensive This was our final intensive tempo session in grass prior to moving onto the track. I like pairing longer duration isometrics with tempo to compliment the time under tension. I like easing them into the workout so they may start at 70% then 75… and work up to 80% to ensure the intensities are appropriate and the volume is secured.*
    a. *Warm Up 1b*
    b. *Intensive Tempo (Grass)*
        i. 45s-40s-40s-40s-35s (5 mins) (80%)
    c. *Special Strength*
        i. 60s/60s x Bench Core Holds (Front, Back)
        ii. 40s/40s x Hamstring ISO
        iii. 40s/40s x Copenhagens ISO
        iv. 60s/60s x SL Glute Bridge ISO
    d. *Hurdle Mobility*
        i. 3/3 x Walking Over-Under Sideways
    e. *Cool Down*

3. **Wednesday, October 26:** *General Lots of variety in here with core stability, med ball, mobility, and endocrine fitness work. Variety is crucial. Other things we do on Wednesdays are hurdle mobility, general strength circuits, plate circuits, games/relays, and we cycle through a multitude of different med ball, GS, Plate, HM, Coordination, special strength, Mobility, etc etc type activities so training never gets stale. On general days variety is more important than progression.*
    a. *Warm Up 2b*
    b. *Med Ball*
        i. Single Leg Toss and Catch Forward
        ii. Hut-Hut-Hike
        iii. Back Hyper Toss
        iv. Ankle Toss
        v. Hamstring Toss
        vi. Adductor Toss
        vii. Abductor Toss

c. *Coordination*
    i. SL Snatch
    ii. Good Morning Variations
    iii. Kneeling Hip Lock
    iv. Quad Nordics
d. *Special Strength*
    i. 60s/60s x Bench Core Holds (Both Sides)
e. *Coordination*
    i. Hanging Leg Raise
    ii. Deadfishes
f. *Weightlifting*
    i. Circuit
    ii. Mobility
    iii. Endocrine Fitness

4. **Thursday, October 27:** *General Note that we stacked two general days in a row Wednesday and Thursday with plenty of variety. We typically keep the pool workout on Thursdays all fall and cycle through a series of different workouts and occasionally do relay races for fun. We have a separate document with all our pool workouts, bike workouts, and all various forms of circuits.*
    a. *Pool Workout*

5. **Friday, October 28:** *Neural Either 24" or 30" on the depth jumps depending on the athlete. Prefer to time the ground contacts if possible. Note that the absolute speed work was not fly's but complete 50m sprints. Unfortunately, we don't have timing gates and I wanted to work on transitioning from acceleration into absolute speed, an often overlooked aspect of speed training. From this session we progressed into 70m's and then into race modeling. Note the vertical emphasis on the throws and jumps that compliment the upright sprinting.*
    a. *Warm Up 1b*
    b. *Technical Execution*
        i. Wickets
        ii. Blocks
    c. *Absolute Speed Development*
        i. 4-8 x 50m
    d. *Multijumps*
        i. 15-20 x Depth Jumps
    e. *Multithrows*
        i. 3 x 5 NCM Vertical
    f. *Coordination*
        i. 1/1-2/2 x 10 MV Switches
    g. *Weightlifting*
        i. Hang Cleans
        ii. TBDL Jumps + Pogos
        iii. Ancillary Lifts
        iv. Multithrow Complimentary

6. **Saturday, October 29:** *Extensive Long steady 180m-190m hill that we utilize throughout the fall. Tempo uphill is a really nice way to play tempo training, by virtue of it being uphill they can't hit huge speeds, it's in grass, and they can just have fun competing. This is a consistent workhorse session we do on Saturdays in the fall. We have leader boards for fastest reps and fastest complete workouts for motivation.*
    a. *Warm Up 1b*
    b. *Resisted Runs (Intensive Tempo)*
        i. 4 x Netherwood Park (80%) (6 mins)
    c. *Cool Down*