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Why *Do We Work on Drills, Core Work, and Weights*

Purpose: The purpose of this article is to give ***my*** perspective on the reasons and importance for athletes performing drills, core work, and weight training. ***My*** perspective is far from purely scientific doctrine and I don't get too caught up in using the proper names for all drills and exercises.

This is a live document and I update it whenever I feel like it.

The bullet points in the article are not necessarily organized by importance. Each point is a topic / talking point that I consider with each activity.

As with everything on this site, email any recommendations to correct my thinking to Rob@ColoradoTrackClub.com.

My Definitions

- ***Drills*** are activities such as strides, skips, and jumps. Plyometrics may also be lumped into this category for the general purpose of educating our readers.
    - ***Stretching*** falls into this category as well. Many drills represent the dynamic stretching that we do before an event or practice. We'll discuss static stretching as well.
- ***Core Work*** may cover a wide range of activities. For my definition, it is **bodyweight** work and weighted work / circuits (that can easily be transported to the practice location). Therefore, my definition includes bands, kettlebells, medicine balls, and other similar items. It does not include deadlifts and other

heavy weight-type work that is most efficiently used within the confines of a weight room.

- **Weight Training** consists of more structured activities that are best achieved in a weight room. Examples include deadlifts, bench press, squats, Olympic lifts, etc..

- **Running Strength Work** cannot be excluded as it is the **most important factor** for runners. This type of work consists of nearly all activities. Specifically, hill work and bounding come to mind. But, as you try different workouts and think about it – all running activities play a spiral-type role in building our strength. An 18 mile, strong-paced run is going to build strength in the legs, in addition to the benefits of aerobic conditioning.

Overarching Principles

It may prove helpful if you know a few of my starting points before you jump into the details:

- The CTC website divides the work into:
    - **Standing Exercises and Drills**
    - **Ground Exercises and Drills**
    - The exercises and drills on our website are numbered so athletes can figure out the correct workout and see examples of what we are talking about. A few of the exercises are also used for warm-ups:
        - For example, I may send a workout that says, "complete Standing #1,3,4,5,7 – 5 sets of 20 meters each. Ground #5, 9, 12, and 13 – 3 sets of 30 seconds each."
        - Athletes will have preset warm-ups based on the workout or event being raced at a meet. If our runners are running a 400m sprint, their warm-up routine will be different than preparing for a 10K race.
        - Experienced athletes often know what they need for warm-ups, based on past performance and maybe injuries - we build the plan off from what works for each person.

- Running well is the priority activity! See Christian Cushing-Murray's article on our ***Run Faster*** page. There is no substitute for hard work and the mental capacity to compete aggressively. If you lack those two foundational traits your efforts in the weight room or with core work will not be able to yield winning results.

- As consumers, we have an abundance of fitness and nutritional information at our fingertips and thousands of trainers who want our money to make us more fit. Yet, many people are still unfit and slow, even with access to equipment and education. Self-discipline and time under tension (difficulty and number of workouts actually completed) make the real difference – not information.

- Resourcefulness is the greatest resource – in athletics and business. Great athletes have come from high altitude, low altitude, cold weather areas, hot weather areas, good family environments, bad family environments, city streets, rural areas, frustrating injury history, no injury history, etc…. If performing well athletically is your ***real*** goal, make it happen – period! No excuses. If you really want it, you'll get your best ability.

- Do not get caught up in chasing every single detail / gimmick / product. Perfection is the enemy of progress for the non-professional. Remember, some gimmicks come from well-intentioned folks with decent ideas just trying to make money for themselves and their family.

    - Never lose sight - **Hard work is always #1**, then gradually work toward perfection *once* the hard work part is mastered.

- Many individual, adult sports in America tend to be white-collar activities. We've marketed the hell out of every aspect and sent the subliminal marketing messages that it's expensive to compete – golf fees, bike frames, $400 GPS watches, six pair of expensive shoes, sleeves, recovery shakes, skis, $150 lift tickets with $40 lunches, $50 race entry fees, etc... is not helping to grow sports. Running can be one of the beacon sports that gets the crowds involved at a low start-up cost.

    - That is why just about everything you need to know to run fast is available for free on this website. I want to see kids and adults inspired to build themselves physically. Many weight and health issues will be lessened if we simply commit to finding our best ability for our age and talent levels.

- The information you need for all of this type of work **is available for free**. If you find you are purchasing more than you are actually doing, you likely have a priority issue, not a knowledge issue. I'm speaking on this topic out of personal experience, not judgment toward the reader.

Benefits of Each Category of Exercise

- **Drills**: For me, drills are used to contribute to the following advantages for the athlete:
    - Development of movement patterns within the body's Nervous System – specifically ***neuromuscular coordination*** (NMC).
        - I think we greatly underappreciate the importance of **neuromuscular coordination**. A friend of mine at work developed a degenerative nerve condition that slowly took away his ability to control movements.
            - He was a good intramural athlete in his mid-thirties. As the months progressed, other friends had to meet him in the locker room and help him put on his military uniform before work. He lost the neuromuscular coordination to zip pants, button shirts, and buckle his belt.
            - Have you ever misjudged a small step that you "did not see coming?" The bone jarring experience seems excessive, but when it happens – we get to experience the insecure feeling of an out-of-control neuromuscular coordination problem.
        - As a pretty much unfit older guy I am able to complete more pull-ups than many other adults. I suspect the reason is that I did thousands of pull-ups in the military and my muscle fibers are coordinated to figure out the specific requirements for the activity. I benefit from a muscle memory, or NMC.
            - I've worked with well over 10,000 military recruits and some struggle to do just 1 pull-up. I know these recruits have near-equal / better strength, but there seems to be a **coordination problem** within the muscle fibers and nerves. Just my hunch…I suspect that similar issues impact our ability to run fast as well.
        - **Muscle Memory**: The NMC benefits, hopefully, translate to the track when muscle memory takes over and the athlete can benefit from a mechanical advantage of ***ideal sprinting movements***.

- Please don't overlook that statement. There is actually **a real mechanical advantage** involved when running fast (read *Mechanics of Sprinting and Hurdling*, by Mann). You want high energy into the track, a muscular body to absorb the shock and spring forward faster, and the ability to generate great power with the least amount of ground contact time.

  - If these Drills can net an increase of .2 seconds over a 30m Fly max velocity ability then the athlete will likely be stronger across all events up to 5000m, maybe more.

- Loren Seagrave has a couple good demonstrations and lectures on YouTube. If you are committed to doing drills, you should watch his videos and learn about the poor outcomes associated with "***backside mechanics***." Basically, the fast athlete needs to master the mechanical steps that make for an efficient sprinting stride – you are moving mechanical levers (legs) and there are better ways to do it. Many of the videos on our CTC website show different levels of mastery with drills (one of the athletes is a cyclist, not a runner). In person, I try to teach / emphasize what I see with Loren's lectures.

- **Injury Prediction**: Drills are extended before sprinting workouts. If you watch pure sprinters they often have a 45-70 minute warm-up session. Middle distance or distance runners tend to undervalue the warm-up work, mainly to save time. Working your drills from slow to fast over a 30-minute period can let the coach and sprinter identify hamstring or injury issues before you start to run full speed and do significant damage.

- **Balance**: Many of the standing drills and skips can be done with 1 leg at a time. This isolation will help us to identify specific range of motion issues that may normally be covered up / compensated for, by plain running. For example, an athlete may show a left hip issue when working on "C Skips." That identification may help the medical folks and trainers to work on hip mobility and stretching for that area.

- **Functional Range of Motion (F-ROM)**: Our goal of all work discussed in this article is to be able to apply event-specific force to the muscles to achieve the best results (become the most powerful and fastest runner possible).

  - In athletics, ***Power*** is the relationship between **Speed** and **Strength**, creating ***sport-specific*** success.

- **Barefoot Drills**: Ideally, I try to have athletes doing some ancillary work (drills) 2-3 days per week without shoes. It is a great way to develop the foot and calf

muscles. We'll play games bare foot to get the work in passively, without being uptight about a workout.

- Drills are used for daily warm-ups as well as **stand-alone workouts**. I will have an athlete go to the track or park, run a 2K warm-up, and then do 45 minutes of drills, followed by a 2K cool down. It is a time to focus on mechanical details and to get a deserved break from the daily grind of running 8-20 miles. The athlete will do several 20-30 meter drills with a walking recovery.
  - We use some type of drill 6-7 days per week. We mix and match drills based on the purpose of the workout or goals for the week / month.
  - A drill session may just consist of 10 minutes before heading out for a 15K easy run.

- **Core Work**:
  - Core Work, for me, is maintenance work that contributes to **balance** and proper athletic **posture**. Core Work also adds strength for many athletes, especially younger or inexperienced people. The Law of Diminishing Returns definitely comes into play for experienced folks – the work becomes more *maintenance* and the weight room takes a higher priority.
    - For example, an experienced pro is not going to spend 55 minutes doing (just) planks, 5 days per week, to get the training benefit. We'll need to add something more challenging with weights or we may just run more with the valuable training time that we have. There is a point where the core is "strong enough."
    - The weight and core plan cannot overtake the running program and kill the recovery periods.
    - For less fit folks, I may spend equal time with drills and core work as we do with running. The goal is to develop overall athleticism with these athletes.
  - At high-level performance efforts, ever human will fall victim to the weakest link (most often the mind). If the core is weak, the body's running form will begin to crumble and require more oxygen to hold off the fatigue and imbalance. In a race, we are already maximizing oxygen usage, so the crumbling core structures will inevitably slow the athlete – or the athlete will not be able to respond with 600m to go when the race gets going toward the finish.

- Remember, for 1500 - 5000 meter runners, if your aerobic capacity and aerobic power are subpar, you will fail regardless of the amount of core and strength training you do. The aerobic component cannot be overlooked – ever!

- There are hundreds of core work exercises and thousands of variations. Some people enjoy a predictable routine, others value the variations.

- **How often**: You need to focus on your running. Your core routines are a supplement to the tough training associated with your running. 20-40 minutes of core sessions, 5-6 days per week is likely good enough to prepare you to run fast.

    - Note: I do not include weight training in the term core work. Our athletes work on core and drills, and **also** have a weight room routine.

- The balance and injury identification that I mentioned in the Drills section above also applies to core work.

- Core work is an opportunity for the runner to strategically develop the smaller, supportive muscles that may otherwise fall to injury in a demanding running schedule.

    - With college athletes, we had laminated papers with several different core routines named after our national champions. Each paper / workout had about 10 exercises that we would do for about 3 sets of 30 seconds, sometimes longer.

    - Some sessions were less demanding than others and can be adapted for weeks where we had big races, etc.. Also, several athletes would complete a thorough core session after all races were finished at an early season meet.

    - Some coaches do 10-20 minutes of work at the end of most practices while making announcements and answering questions.

- We use bands, medicine balls, kettle bells, weight plates, box jumps, and similar implements in our core routines. If I can fit it in the car our athletes are going to lift it at the track.

- I like to occasionally combine core stations, or routines, with running to make a 90–150 minute, low heartrate, monster of a workout. We may run easy-moderate paces and add core stations every 3-5 minutes for 2+ hours. None of the work is devastating, but the overall workload becomes respectable. We try to keep the heartrate around 145-155 for the entire session.

- **Weight Training**:
    - Tudor Bompa has a couple books on weight training - one is titled, ***Periodization Training for Sports***.
    - Greg Everett has an excellent book / manual, titled ***Olympic Weightlifting: A Complete Guide for Athletes and Coaches***.
    - If you master the information in both of those books (good luck with that) you will set yourself up for a great start. The rest of the information you need is definitely ancillary details.
    - Weight training, when done correctly, helps us to build sport-specific strength and power that makes us faster while running. We use it at CTC all year, but do not let it redirect our running / practice schedule for the distance folks.
        - For 800m runners and below, I will rearrange training schedules to ensure weight training is prioritized routinely.
        - For 800m runners and above, your aerobic capacity and aerobic power development must be top priority.
    - Weight training can contribute to a more powerful, and longer stride for many athletes. Basically, do your research (read the books I've recommended) and understand your body and your athletes.
    - Weight training may have an impact on racing weight. Endurance athletes will rarely gain excessive weight from lifting. The daily mileage and caloric burn keep muscle and fat down.
        - Some male athletes are going to be most dominant at 125 pounds. Some male runners will run best at 160 pounds of solid muscle. Appreciate the differences and train accordingly.
        - Some female and male athletes - in contrast - may be trying to lose too much weight and hurting their running abilities and health. Be careful trying to copy someone else – it may not be healthy or optimal for **your** body type.
        - Matt Fitzgerald has an excellent book titled, ***Racing Weight***. Continue your education and make adjustments.

- Juli Benson's article on our website, in the ***Run Faster*** section, is a must-read for raising awareness of eating disorders and setting a healthy culture for teams.

- Be careful making ***assumptions*** about implementing what you "hear" about weight training in a specific program. It is similar to running 110 miles per week because you "***know***" a pro who did it. Unless you know what the person's training looks like all year you may be off the mark with your assessment.

- Some athletes, parents, or coaches will say, "****** University does high reps and low weight for their distance training and they are ranked #4 in NCAAs."

  - Like running work and seasonal progressions, weight room activity changes with the time of the season (periodization). Many programs will do General Prep work with lower weights in the early / off season and then progress to heavier / lower rep work during the season.

  - Similarly, a team or athlete may do full squats during the off season and quarter squats in season. There are reasons for both and there are reasons for making the change during the year.

  - Ask questions before building your entire lifting philosophy off from one conversation or visit.

- High school teams are often very diverse in regard to weight room experience and abilities. Then – to complicate things – another coach or parent can enter the scene and muddy the waters quite a bit because they envision the football team's dedicated activity when they think of lifting weights. The seasons are short and the kids don't always have access to a weight room during the rest of the year. It gets a little tricky.

- There are several examples of great runners and programs who had very little focus in the weight room. Others excel from a robust core work and drill routine with plyometrics.

- At CTC, we follow Bompa's Periodization approach with higher reps and low weight in the off season (*about* 3-6 days per week) and we progress to heavy weights and lower reps as the season progresses (*about* 3 times per week).