Snider High School Boys Track & Field
400 Meter Training
Coach Derek Leininger

Energy Demands for 400 & 800

<table>
<thead>
<tr>
<th></th>
<th>Anaerobic System (Speed)</th>
<th>Aerobic System (Endurance)</th>
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</thead>
<tbody>
<tr>
<td>400 Meters</td>
<td>56%</td>
<td>44%</td>
</tr>
<tr>
<td>800 Meters</td>
<td>40%</td>
<td>60%</td>
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- 1970s- Scientists thought the 400 was only 20% aerobic (endurance).
- Coaches used to really emphasize speed workouts in 400 meter training.
- Modern research tells us that endurance (aerobic) is actually 44% of a 400 race.
- Our 400 training at Snider focus MORE on endurance so you can carry your speed over the entire 400 meters.

Here is how we classify them

Aerobic: Easy Runs, Long Runs, Tempo Runs, Fartleks
Anaerobic: Speed Intervals, Lactic Acid Intervals
Both: VO2 Intervals
Neither: Strides don’t really fit in either category. These are for biomechanics, not conditioning.

Our Training Philosophy

- If leg speed is equal between two athletes, the athlete with stronger endurance will win a 400 meter race.
- You must be in great aerobic condition in order to maximize your leg speed.
- We want to be really good at finishing well in the final 100 meters.
- Improving leg speed is limited by an athlete’s natural ability/talent.
- But you can always improve fitness (endurance).

The 40-Second Rule:

- At maximum speed/effort, lactic acid builds up in your muscles. After 35-40 seconds you have significant accumulation.
- This is why runners lose form & slow down significantly in the homestretch of a 400.
- You can’t get around this 40-second rule, but you can train your bodies to handle it better.

Two Types of 400 Runner

The Sprinter Type

- Very good at 100-200 meters, perhaps a really strong 300 hurdler.
- Strength: Leg Speed & Athleticism
- Weakness: Endurance (usually)
- The MOST IDEAL 400 meter runner is a sprinter who works to improve their endurance.

The Mid-Distance Type

- Very good at 800 meters, probably also is a cross country athlete.
- Weakness: Leg Speed
- Strength: Endurance
- Most of the state-level 4x400 relay teams have been a combination of sprinters and mid-distance runners.

How We Train Each Type

The Sprinter

- Work on their endurance
- Strides serve as season-long speed stimulus
- The winter endurance work allows them to have better workouts in April/May
The Mid-Distance Runner
- Train them like 800 runners from Nov-April
- Strides once/week
- Give them a couple of 400 workouts in May
- We still need them to run fast 800s

Periodization
- Definition: Putting together a training plan to ensure that you “peak” at the right time.
- We have typically kept our guys healthy and have run our best races at the State Meet.
- We don’t skip the conditioning and aerobic workouts at the beginning of the season.

We Split Training in to 3 Phases
- WINTER CONDITIONING PHASE
  - DEC – JAN – FEB
- INDOOR RACING PHASE
  - MARCH – EARLY APRIL
- OUTDOOR RACING PHASE
  - EARLY APRIL – EARLY JUNE

Winter Conditioning Phase
- Work up to running 6 days / week
- 3 of those days are easy runs
- 1 day is either a long run or a tempo run
- 1 day is a set of VO2 intervals (600s or 800s) or Volume 200s
- 1 day is either a Fartlek run or a Race
- Strides once a week after an easy run (6 x 100 meters at 90% all out speed)
- Short strides once a week after an easy run (6 x 50 meters at 100% all out speed)

Weekly Schedule: Dec-Jan-Feb

<table>
<thead>
<tr>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THU</th>
<th>FRI</th>
<th>SAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Run (30-40 minutes) OR Tempo Run (1-3 miles)</td>
<td>Easy Run (15-25 minutes) OR 6x100m Strides at 90% speed</td>
<td>VO2 Intervals (600s or 800s) OR Volume 200s</td>
<td>Easy Run (15-25 minutes) OR 6x50m Strides at 100% speed</td>
<td>Fartlek Run (up to 30 minutes) OR Easy Run (if we’re racing the next day)</td>
<td>Race? OR Easy Run (15-25 minutes)</td>
</tr>
</tbody>
</table>

Long Runs
- We work up to running a “long run” of 30-40 minutes.
- Same pace as our easy runs (conversational).
- These really help develop endurance, which allows the body to handle harder workouts and more volume later in the season.

Tempo Runs
- We work up to 15-20 minute tempo runs (1.5-3 miles total)
- These are run at a specific pace and the goal is to run even pace the entire time.
- Ex: A top 400 guy might run 3 miles at low-6:00 pace (18-19 minutes).
- We always run these on measured loops and have specific goal times.
- We only do tempo runs Dec-Mar – they are part of the early training phases.

Easy Runs
- 15-25 minutes at a conversational pace.
- NOT super slow jogs – we want to get benefits from these runs.
- These runs gradually get faster (with same effort) as we get in better shape.
- We do these throughout entire season.
**Long Intervals (VO2)**
- 2-4 minutes per repeat
  - We typically do 600s & 800s (sometimes we do 1000s).
- Up to 2400 meters of total volume.
  - So 3x800 or 4x600 is where we top out
- We also do ladders: something like 1000-800-600 (total of 2400 meters).
- Between each run we go about 8 minutes of rest.

**Volume 200s**
- This is one of our KEY workouts.
- These are NOT all-out. We give a goal time and number of 200s. For this workout, volume is more important than speed.
- Example: You may be able to run 23 seconds for a 200, but we would rather you run 30-32 seconds and run a lot of them (10 or more).
- Top varsity guys work up to running 14-18 of these, around 29-30 seconds for each one.
- 2:00 rest between each 200

**Fartlek Runs**
- These are 15-30 minute runs where we alternate easy running and hard running.
- There are a LOT of different variations of fartlek runs.
- One example might be: 5 sets of 2:00 hard/3:00 easy (so 25 minutes total).
- The “hard” segments of these runs should be tempo pace or faster.

**Indoor Racing Phase**
- Running 6 days / week
- 3 of those days are easy runs
- 1 day is a strength day: long run, tempo run, or VO2 Intervals
- 1 day is a speed day: either Volume 200s or a speed workout
- 1 day is a Race
- Strides once a week after an easy run (6 x 100 meters at 90% all out speed)
- Short strides once a week after an easy run (6 x 50 meters at 100% all out speed)

**Weekly Schedule: March/Early April**

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<thead>
<tr>
<th>MON</th>
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<th>SAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Run OR Tempo Run OR VO2 Intervals</td>
<td>Easy Run + 6x100m Strides at 90% speed</td>
<td>Volume 200s OR Speed Intervals</td>
<td>Easy Run + 6x50m Strides at 100% speed</td>
<td>Easy Run + Relay Baton Exchanges</td>
<td>Race We race three Saturdays in a row in March</td>
</tr>
</tbody>
</table>

**Speed Intervals**
- We are trying to run faster, but volume is still a big component. We try to get 1500-2000 meters in volume.
- We always go 5:00 rest between each.
- Athletes don’t do these speed intervals until they have several weeks of “conditioning” training.
  - If an athlete comes out Feb. 17, they won’t do speed intervals until after Spring Break.
  - We don’t ever skip the initial base phase.
- **200s**
  - Between 400 & 800 race pace 8-10 x 200 (Varsity guys at 27-28)
- **300s**
  - At 800 race pace 5-7 x 300 (Varsity guys at 45-48)
- **400s**
  - Slightly slower than 800 race pace 4-5 x 400 (Varsity guys at 62-65)
Outdoor Racing Phase

- Running 6 days / week
- 3 of those days are easy runs
- 1 day is a speed day: either Volume 200s or speed intervals or lactic acid intervals
- 1 day would be a strength day (if we’re only racing one time that week)
- 1 - 2 days are Races
- Strides once a week after an easy run (6 x 100 meters at 90% all out speed)

Weekly Schedule: Early April - Early June

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<tr>
<th>MON</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Easy Run</td>
<td>Race</td>
<td>Easy Run</td>
<td>Volume 200s OR Speed Intervals OR Lactic Acid Intervals</td>
<td>Easy Run + Relay Baton Exchanges</td>
<td>Race OR Strength workout (if we don’t race)</td>
</tr>
<tr>
<td>+ 6x100m Strides at 90% speed</td>
<td>(We race almost every Tuesday in April/ May)</td>
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Lactic Acid Intervals

- We do these late in the season (late April, May, early June).
- These workouts really help us get sharp for really fast 400 meter races.
- The goal of these workout are to help us run fast beyond the 40-second mark.
  - 350s, 400s, and 450s are typical workouts because those distances are further than 40 seconds.

350s
- This is our most common lactic acid interval workout. We run 3-4 x 350 all out with 10-15 minutes rest.
- We try to hit about 2 seconds faster than current 400 meter race pace. So a 50 second 400 runner would try to run 3-4 x 350 and average 48 seconds.

400s
- Sometimes very late in the season we will run 2-3 x 400 all out with 10-15 minutes rest in between.
- We try to run within 5-6 seconds of 400 meter race pace. So a 50 second 400 runner would try to run 400s at 55-56 seconds each.

450s
- We only do this workout once or twice at the very end of the season. It is a very difficult workout and we only do 2 of them with complete recovery (15-20 minutes).
- We try to go through 400 within 5 seconds of race pace and then keep going 50 more meters.
- A 50 second 400 runner would come through 400 in 55 seconds + 50 more meters (so about 62-63 seconds total for 450 meters).

50-Second Cone Drill

- Set up cones every 5 or 10 meters, starting at 300 meters.
- Runners go as far as they can in 50 seconds, focusing on the number of cones they pass (beyond 300 meters).
- 2-3 sets with full recovery.

4x400 Meter Relay – The Order

- We really emphasize closing well in the homestretch – “setting up” the next leg.
- 1st Leg – An open 400 runner
  - First leg of 4x4-lanes all the way
- 2nd Leg – A competitor
  - We want to stay up front the whole race
- 3rd Leg – Usually our slowest leg
  - Typically this ends up being an 800 guy
- 4th Leg – Fastest guy last (as do most teams)
  - A “closer” who can handle the pressure.