

# Training distance runners

By Todd Thorson  
Ipswich School

You don't know what  
feeling good is until you  
really feel good.

Teaching athletes to work hard  
to achieve and feel good about  
the work aspect is the ultimate  
goal.

**All Aspects of what it takes to feel good should be covered every day.**

- 1. Be a good human being.**
- 2. Work hard in school and do your best in all aspects of your life.**
- 3. Diet and Sleep are just as important as running and being healthy for the rest of your life.**
- 4. Learn to love yourself and surround yourself with good positive people.**
- 5. The team environment should always be positive and keep negative thoughts to yourself.**

# Train the Brain!

Every day the hardest part for me is to try to think of a way to pump them up and make them excited about and believing in what they are doing.

Try to get them mentally engaged and to understand the process of consistent hard work makes you stronger physically and more important mentally..

# **Mental Side of Racing**

“Good race or bad race, first place or last place, the goal is exactly the same: try to get better every day. And if that’s your focus, you’re going to be a winner.”

How did that feel. What did you do well  
in that race?

What can we improve on?

How can we make the next race better?

Focus on Start, Middle or Finish. Don't  
focus on the whole race. That is way to  
hard for high school athletes.

# Purpose of athletics

- *Athletics and distance running have the power to help you feel good about yourself, physically and mentally.*
- *If you set up your program so your athletes truly feel good about themselves, they will enjoy what they are doing and will accomplish great things.*



# Team atmosphere

*Every day is a good day  
if you want it to be! 😊😊*

# Be Positive and have fun



# Building a successful Program

I would say the most important aspect of any program is recruiting. Ask every kid in school, ask again. Recruit the kids in elementary. Get t-shirts made up, put accomplishments in the school announcements, etc. Do everything you can to promote your program.

1. Find a way to pump up your athletes every day for practice.
2. Be positive as often as you can - laugh and have fun!
3. Truly care about your athletes.
  - Find strengths and weaknesses
  - Learn likes and dislikes.
4. Explain the purpose of each workout and what you hope to accomplish.
  - Slow Mileage (recovery/increase endurance/stroke volume)
  - Speed work out (develop speed and economy)
5. Never allow your kids to fail in practice. If expectations are not met, change the workout. Never underestimate the importance of confidence!
6. Evaluate every aspect of a workout or performance to find improvement.
  - Distance; intensity; running form; weight training; start, middle, and end of race; mile time; course records; muscle tone etc.

# Training principles

## **TRAINING PRINCIPLES**

### **Specificity rule.**

Running is the best way to train your system to run. If you want to be a better basketball player, you have to play basketball; if you want to be better at reading, you have to read. This is a great lesson to learn in life. If you want to be good at something, you have to work hard for it.

### **Stress = response**

Every time you impose stress to the body, there will be immediate reaction to multiple parts of the body. (Heart, lungs, muscles, joints, etc.)

Every time you impose the same stress, you will have the same reaction, but you will handle it differently. In other words, your body is getting stronger.

When your body adapts to a particular stress, the percent of increase of physical gain will lessen. The first time, there will be maximum increase; the second, decent but less increase; and the third time, less yet.

Your body adapts to stress rather quickly, so you need to change what you are doing on a regular basis. Don't repeatedly train the same system. Alternate between workouts and change and/or add stress every 3 to 5 weeks.

# Energy Systems

- Aerobic (With Oxygen)
- Anaerobic (Without Oxygen)
  - Alactic (6-7 seconds in duration)
  - Glycolitic (7-90 seconds in duration)

# Event Specifics

## Energy Contributions of the Aerobic and Anaerobic Energy Systems to Track Running Events

	Males		Females	
Event	Aerobic Energy Contribution	Anaerobic Energy Contribution	Aerobic Energy Contribution	Anaerobic Energy Contribution
100 m	21%	79%	25%	75%
200 m	28%	72%	33%	67%
400 m	41%	59%	45%	55%
800 m	60%	40%	70%	30%
1500 m	77%	23%	86%	14%
3000 m	86%	14%	94%	6%
5000 M	90%	10%	95%	5%

# Vo2 Max

- What is VO2 Max?
  - It is a measure of aerobic fitness level. This is your body's capacity for consuming oxygen.
- Timed 2 mile run is a good way to measure fitness level.
- Date Paced Workouts (train at the level you are currently at not last years fitness or desired fitness level)
- Grouped Workouts
  - Based on event, ability level, and date pace or VO2 Max level.
  - Ensures each athlete gets a quality workout.

# 6 types of training

1. Easy Distance Running
2. Moderate Distance Running
3. Threshold Running
4. Interval Training
5. Repetition Training  
(first 5 defined by Dr. Jack Daniels)
6. Alactic Training (without oxygen and without the presence of lactic acid)



# Easy Runs

## *E = EASY RUN PACE*

*59%-74% of Vo2 max or 65% to 79% of your max heart rate;  
Recommended training of 35% -40% of weekly miles*

## *Benefits of Easy Runs*

*Good way to develop base and strengthen the heart.*

- To increase stroke volume (the amount of blood your heart pumps per beat): work muscles/joints associated with running; build up resistance to injury.*
- Vascularization - opening up the tiny blood vessels that feed exercising muscles.*
- Development and shaping muscles involved in running.*
- Use for medium to long runs, warm ups, and warm downs.*
- Focus on good running mechanics - minimizes chance of injury; reinforces efficient running mechanics.*
- Pace= 2 to 3 min slower than timed 1 mile.*
- Long Run – I like to have one long run a week during the entire season except the last 7 days. It should be 15 to 25% of your weekly total mileage. So at 40 miles a week, your long run should be 6 to 10 miles in length for your long run.*

# Moderate Run/Marathon Pace

*M= MEDIUM OR MODERATE RUN PACE*

*75%-84% of Vo2 max or 80 to 89 % of your max heart rate;  
Recommended Training 20 -35% of weekly miles*

## *Benefits of Moderate paced running*

- Similar effects to E running .*
- Encourages proper technique; builds confidence that the athlete can maintain a faster pace and can mentally keep pressing.*
- Uses a lot of fuel in the form of carbohydrates.*
- Teaches the body to conserve stored muscle glycogen and rely more on fat metabolism.*

# Threshold Runs

*T= THRESHOLD OR TEMPO RUN PACE*

*R83%-88% of Vo2 max or 88 to 92% of your max heart rate*

*20 min max or 5-20 min; 5:1 W/R;*

*Recommended Training of 15% of weekly miles.*

- *Steady run for about 20 min at Threshold Pace or a run at T pace with intervals of slower running (Cruise Intervals)*

*Benefits of Threshold Running*

- *Allows body to improve its ability to clear blood lactate and keep it below a manageable level - improves endurance!!*  
*Blood Lactate is a by-product of intense exercise, indicating that insufficient oxygen is available to fuel that exercise and leading to muscular fatigue*
- *I love Threshold Runs because they improve your endurance with minimal stress, they feel good, and they can be used for freshening up and/or building confidence.*

# Interval Training

*I= INTERVAL TRAINING PACE*

*95%-100% of Vo2 max or 97% to 100% of your max heart rate*

*– 5 min max; 1:1 W/R*

*Recommended Training Lesser of 10K and 8% of weekly miles*

## Benefits of Interval Training

*Main purpose is to maximize aerobic power (V02 max); best way to maximize this is to run 3 to 5 min in duration. When using shorter work bouts than 2 to 3 min, you can use less rest to achieve work at your V02max.*

*1. Increase lactic threshold levels. It improves your ability to run harder and longer without going into oxygen debt.*

*2. Increases endurance which means that the runner can continue at a certain pace for a longer period of time.*

*3. Builds muscle strength*

# Interval training examples

*Using the rest shorter than the time spent at 1 pace, you can achieve a good V02max workout.*

*-10x400 at 1 pace with 45 second rest.*

*-10-20x200s at 40 seconds or faster with 20 seconds rest. If they run them in 35 they get 25 seconds rest. Each 200 including rest should only take 1 min. Slower runners -just give them a set resting time.*

*-4-6 800s or 1000s at Interval pace with 2 min. jog recovery or a 400 meter jog recovery.*

*- 3-4x4min hard with 3 min jog recovery in -between .*

*- 4-5 x 3 min hard with 2 min jog recovery. Hard means you should be able to run this pace for 10 to 12 min fresh one time!!*

## ***DO NOT GO OUT TOO HARD EARLY IN INTERVAL TRAINING***

Example: During 400 meter Intervals, you don't get to V02max on the first one; but using 45 second rests, you will be in the V02max range for the majority of the workout.

It is important for you to not go too fast too early in these workouts because you will be worn out and will not be able to hit your max aerobic power (V02max) for

# Repetition Training

*R=REPETITION TRAINING*

*105-120% of VO2 max*

*2 min max; 1:2-3 W/R*

*Recommended Training 5% weekly miles*

Benefits of Repetition Training

*-Improve Anaerobic Glycolytic System*

*-Try to improve power, speed and economy*

*Need more rest as the season progresses and be careful early season.*

*Early or Pre Season – Track use races or 8-10x200+R w/200 jg*

*Mid Season - 4x200 R w/200jg + 2x600 R w/600jg + 4x200 R w/200 jg recover. You can do standing recovery as well.*

*Late Season – 2x600 R w/1kjg + 2x400 R w 400 jg + 4x200 R w/200jg recovery You can do standing recovery as well.*

# Alactic runs (Without Oxygen)

The ATP-CP system neither uses oxygen nor produces lactic acid if oxygen is unavailable and is thus said to be alactic anaerobic. This is the primary system behind very short, powerful movements like a golf swing, a 100 m sprint or powerlifting. This system is used only for very short durations of up to 10 seconds.

- 1-2 times per week (after a good warm up, before a recovery run or a threshold run)
- Trains running efficiency, foot strength, and speed. Remember the specificity rule: If you want to get faster, you have to train at full speed.
- 30-50 meter sprints
- Spiked up on the track
- 6-12 reps w/ 3-4 minutes rest (**MUST BE @ LEAST 3 MINUTES!!**)
- 24 hour recovery

# Grade Level Chart

7<sup>th</sup> grade 15 to 20 miles a week

8<sup>th</sup> grade 20-25 miles a week

9<sup>th</sup> grade 25-30 miles a week

10<sup>th</sup> grade 30-35 miles a week

11<sup>th</sup> grade 35-40 miles a week

12<sup>th</sup> grade 40-45 miles a week

Some seniors are still only running 25 miles a week. It all depends on how they react to training physically and what their interest and desire is to train in the off season. Remember that enjoyment, confidence, and improvement during the year are the most important in decision making.



# 4 variables that you can increase to help improvement of your fitness level

**1. Workload** - number of reps  
*Example 3 x 1000k to 4 x 1000k*

**2. Intensity** - how fast you run  
*Example 8 min miles, 7 min miles etc. or 8x200s @ 40 seconds next time 8x200s @ 38 seconds*

**3. Recovery** – how long and how fast  
*Example – 1 min standing or 2 min standing or 8x200 walk your recovery for 60 seconds next time walk your recovery for 50 seconds or jog your recovery slow and next time jog your recovery faster*

**4. Frequency** – 1 time a week, 2 times a week, everyday

# Season Training

**Phase 1 or PreSeason**- Building a base and preventing injury's

**Phase 2 or Beginning of the Season** – Initial Quality – I like to use R training here so I only add one stress. I like to use the light, fast running first so that when moving forward with the Interval training they are used to the speed because the R training is faster.

Make sure you use date paced training and not last year's best race.

I also like to use Threshold training because it is less stressful, it helps your body learn how to clear lactate, and in turn it increases your endurance.

**Phase 3 or Middle of the Season** - Most demanding and lots of quality training – the focus of this phase is interval training.

**Phase 4 or End of the Season**– Final Quality and fine tuning! (Last 2 to 3 weeks)

Less intervals with some Threshold training to decrease stress. Races that last 5 to 20 minutes are stressing the aerobic system to its fullest so it is easy to back off of I training at the end of the season. I like to do up tempo feel –good runs mixed in with R training at the end of the work out. I think it is very important to fine tune your expected pace. We work on goal pace all year and now it is time to reinforce it with

# Sample Weekly Plan

- Sunday Long run (count as quality)  
Monday Easy Day  
Tuesday Easy Day @M Pace  
Wednesday Quality Day  
Thursday Easy  
Friday Easy  
Saturday Quality Day or Race Day

- Sunday Medium Long Run  
Monday Easy Day  
Tuesday Quality Run (usually the harder of the back to back days)  
Wednesday (Quality Run)  
Thursday Easy Day

Friday Easy Day  
Saturday Quality Day or Race Day

Any quality day can be a race day but don't add another quality day to your schedule. Try to not have more than 3 Q days per week.

- Sunday Rest  
Monday Long Run or Q Day  
Tuesday Quality Day or L Day  
Wednesday Easy Day  
Thursday Quality Day  
Friday Easy Day  
Saturday Quality Day or Race Day
- Sunday Rest Day  
Monday Long Day  
Tuesday Easy Day  
Wednesday Quality Day  
Thursday Easy Day @M Pace  
Friday Easy Day  
Saturday Quality Day Race Day

# Realistic training that Ipswich uses 6 day program (most used week)

**Sunday** - Off or cross train

**Monday** - Morning workout 20 min Threshold or Tempo intervals

Afternoon workout 3 to 4 mile E run + 4 -6 200 R pace with jog recovery

**Tuesday**- Morning 4 miles E + 8 Alactic

Afternoon run 4 miles M pace (if tired or sore E pace)

**Wednesday** - Morning Run 15 min E Warm up + 6x800 @ I pace with 400 jog recovery + 15 min Warm Down

**Thursday** - 4 to 8 mile L run @ E pace

**Friday** - 3-4 miles E plus 4x200s @ cc race pace + 4 Alactic Runs

**Saturday** – Race Day

(If it is not an important race make your long run closer to 8 miles on Thursday. If it is important, closer to 4 miles)

# Ideal Week of training for a 7 day program

*This is done after several weeks of training and slowly introducing each stress to the body* . If you can do this for 2 to 3 weeks towards the end of your season, you will maximize your training for that season. (42.15 miles this week)

## Mid to Late season goal workout

**Sunday** – 8 mile L run @ E pace 19% of weekly miles @ E pace

**Monday** – 4 miles E + 8 Alactic Runs

**Tuesday** – Morning run 10min E Warm up + 6x800 @ I pace with 400 jog recovery + 10 E Warm down

Afternoon run 4 miles M pace

**Wednesday** - 10 min warm up 5 x 1000 @ T with 2 min rest or jog recovery with 4x300 R pace + 10 min warm down

**Thursday** - 4 miles M Pace ( If really tired and sore E Pace or importance race Sat. E pace)

**Friday** - 3 miles E plus 4x200s @ cc race pace with 1/2min standing rest + 4 Alactic Runs (feel good form sprinting)

**Saturday** - 15 min jog warm up, Race day, 15 min jog warm down.

42.15 miles during this week

55% @ E pace 23 miles,

19% @ M pace = 8 miles,

8% @ T pace =3.2 miles,

16% @ I pace = 6.7 miles

2% @ R pace = .75

If we have a longer long run on Sunday I would subtract the 5 x 1000 on Wednesday.

# How do I find Paces

I use an estimated V02max chart made by Dr. Jack Daniels

The easiest way is go to the internet. Look up Daniels Formula and it calculates it for you.

<http://www.runbayou.com/jackd.htm>

Buy the book; it is a great read. Daniels Running Formula (Third Edition)

You could also go by heart rate if you use heart rate monitors. This is actually more accurate because the weather can change the workout tremendously. (We don't use them)

I like to start a little on the slow side and add to their workouts from there. If the workout is way too easy you can increase stress as you go or the next time out. This is a good way to build confidence as well.

Record everything so you can figure out how they react to different types of training and what distances and paces they should be running. Compare training from 1 year to the next to evaluate improvement or lack there of.

# Summary

I think the main secret to maximizing the potential of each runner in your program is to pay attention to what they respond to best in their training. Typically, slow twitch runners tend to respond to more mileage and longer intervals and fast twitch runners tend to respond to shorter intervals with less miles but more quality.

In general, I prefer going from E running to R workouts to T training to I sessions and finally back to T and R training. It might be simplest to think of each phase as including a primary type of training plus secondary training to maintain what was accomplished in the previous phase.

(Jack Daniels, PhD)

# Racing Strategy

Experiment with different starts.

Focus on the three main phases: start, middle, and finish.

Try to run with good posture as long as you can.

Most runners respond better to trying to stay together as long as they can.

Try to reset goals and stay positive constantly throughout the race. “I am going to stay with this person until the next turn or tree.” “I am going to slowly catch this person by the next turn.”

Run smart. Always run on the inside of the line, don't go out too hard, and if it is windy try to run with someone that has beat you before and use them as long as you can. Every second counts!!!!

Have backup plans for everything. What are you going to do if you fall? What happens if everyone gets out way too hard? What do you do if you get out to slow?



# Comments on training

*-Consistency is the single most important thing that leads to success. That consistency comes from focusing on the task at hand -neither dwelling on the past or looking to far into the future.*

*-You should always be able to answer this question: what is the purpose of this workout?*

*-It is not a good idea to add more than one stress during a 3 week cycle. I like to back off every 4<sup>th</sup> week 10 to 20% of mileage to help minimize stress (Got this from Fitzsimmons).*

*-Be ready to change your workout if the athlete has had an increase in stress. Lack of sleep, nutrition, family crises, school schedule, etc. Stress can cause an athlete to have to hold back on taking the next step in training or may cause you to back off and give them some feel good runs. Sometimes less is more!!*

*-If you race twice a week there is little or no need to do interval training. Those races will stress those systems to almost the max or any race 5 to 20 min will give you optimal physiological stress or intensity.*

# Comments Continued

- Weight training should be on Quality days so your rest day is truly a rest day. Not only does your body need time to recover, but so does your mind.
- Running journals or calendars are great. It helps an athlete and a coach keep track of work for confidence and what type of training you respond to best.
- Be flexible to training. Bad weather can ruin a workout if you try to force it no matter what. You can change it to run fast with the wind or only focus on the time spent during the workout. I don't like to have them run a certain distance in a certain time in bad weather. If your athlete is not feeling well or having a bad day, switch to a feel good run or give them the day off!!

# Weight Training, PLYOS and cross training

**Weight training** is very important part of our program.

- Strength equals speed.
- It helps increase balance.
- It helps prevent injury.
- Promotes flexibility if done correctly.
- You can increase your mileage with stronger athletes.

**Plyometrics** is a great way to improve strength and agility. Agility will improve your running economy which is crucial to conserving energy and maximizing speed.

## **Cross Training**

I love to have kids ride the bike when they get done running because it adds cardio. If you are looking for volume without adding a lot of stress, there is nothing better than swimming.

Doing other sports helps athletes work other muscles that they don't work while running. This will help balance their muscular/skeletal systems.

# Additional training aids and tips

We use GPS watches. This is a great way for the athlete to monitor pace and time spent. I think it helps you evaluate their progress and it can help them concentrate longer during a run.

## Counting Steps

180 steps per minute for distance training / including threshold runs / 200+ steps for 800 or faster. I don't use this, but some people talk about it and use it especially to reduce stress.

## Breathing (inhale to exhale)

Easy Running 3 to 3.

Training paces including threshold, interval and reps would be best at 2 to 2.

End of races more like 2 to 1 or 1 to 2 / an easy way to tell if they went out to hard is if they can't breath 2 to 2 for 2/3 of the race.

Heart Rate Training – the temperatures outside can affect your heart rate because you are going to expend more energy to try and cool the skin. The same thing could be said about running against the wind or on hilly terrain. The desired speed might not be there but the desired workload will be. The point I am trying to make is you can't measure speed, but you can measure how your body is feeling or handling stress and or pace with heart rate training. I really think heart rate training is an excellent way to train each system but you cannot use it to work on specific speed training! (example: working on max V02max stuff unless it is for recovery purposes)

# overstress

## Overstress

*There is a fine line between adding a stress to obtain a certain beneficiary reaction and actually breaking down the body and making it weaker.*

*Sometimes doing a workout with less stress is more beneficial to the runner than a hard workout.*

## Ice baths

*I like to use ice baths for recovery.*

*A great time to do an ice bath is after the first day of the State Track Meet. My athletes absolutely love them.*

*9 to 11 min (never more than 11 min. or else they can be counterproductive)*

# Stretching and warm up

We use very little static stretching before we run. We like to use dynamic stretches that include form drills and other running specific drills and bending.

I do like to have our kids work on their flexibility after practice and do some static stretching after we are done running.

# Questions?

# Additional Hand outs

10 commandments of cross country

Positive Quotes or motivational Quotes