

## HEART RATE TECHNOLOGY & E.S.D. PROGRAMMING

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## TRYING TO ADD IN MATH CLASS



## ADDING UP PLATES IN THE GYM



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## A FAVORITE QUOTE

*“Anyone can make an athlete stronger. Anyone can make an athlete tired. Not everyone can make an athlete better.”*



Coach Roy Benson  
Exercise Scientist  
High School Cross Country Coach 1993-2008  
Marist High School, GA  
16 State Championships  
21 Individual State Titles

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## INTERNAL VS EXTERNAL LOAD

- Utilize Polar Team Pro EVERY training session and games.
- Capable of looking at heart rate, distance, acceleration/deceleration data, hours of recovery.
- Spend 95% of time looking at heart rate and recovery; most experience and researched to date.



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## WHAT HEART RATE REVEALS

1. Correct intensity for aerobic system development.
2. Correct intensity for anaerobic system development.
3. Correct durations for time spent in appropriate heart rate training zones.
4. Appropriate recovery periods during interval training.



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## AVOID POSSIBLE INJURY

- Individualizing workouts using HR data helps keep skill development sessions from turning into efforts that much harder than necessary.
- An arbitrary standard in a time trial may force athletes to work harder than necessary and, in the process, risk injury or burnout.



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## YEAR ROUND PERIODIZATION

1. We utilize TeamPro in the basketball offseason for fitness classification assessment and sport-specific energy system development.
2. In the pre-season, we use TeamPro to periodize training intensity, load and duration so they mimic in-season play.
3. In-season play, we use TeamPro to gauge individual, position, and team-specific loads to optimize training efficiency and recovery for peak game-time performance.



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## ATHLETE PROFILE: FITNESS TEST

- Begin with dynamic warmup followed by 5-minute warmup to start test.
- Grade is set and speed is increased every 2 minutes.
- Record hear rate every two minutes; beginning of each stage.
- Test ends when athlete stops.
- 1-minute recovery rate is recorded followed by cool down.



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## TREADMILL FITNESS TEST

| Stage | Duration (min) | Speed (mph) | Grade (%) | V02 max (ml/kg/min) |
|-------|----------------|-------------|-----------|---------------------|
| 0     | 2:00           | 6.0         | 2         | 38.54               |
| 1     | 2:00           | 6.5         | 2         | 41.46               |
| 2     | 2:00           | 7.0         | 2         | 44.38               |
| 3     | 2:00           | 7.5         | 2         | 47.30               |
| 4     | 2:00           | 8.0         | 2         | 50.22               |
| 5     | 2:00           | 8.5         | 2         | 53.14               |
| 6     | 2:00           | 9.0         | 2         | 56.06               |
| 7     | 2:00           | 9.5         | 2         | 58.98               |
| 8     | 2:00           | 10.0        | 2         | 61.90               |
| 9     | 2:00           | 10.5        | 2         | 64.82               |
| 10    | 2:00           | 11.0        | 2         | 67.70               |
| 11    | 2:00           | 11.5        | 2         | 70.60               |

Chart adapted from Benson, R, et al (2011). *Heart Rate Training* [Adobe Digital Editions]. Retrieved from <http://www.HumanKinetics.com>

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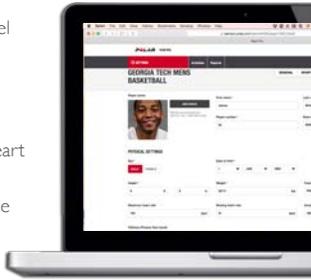
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# POST TEST ANALYSIS

- Assign an athlete a Fitness Level based 1-minute HR recovery (anaerobic/power athletes; not  $VO_2$ max).
- Record athlete's resting heart rate (Sleep Cycle app), max heart rate and recovery heart rate.
- Enter all the above values in the Polar athlete profile.




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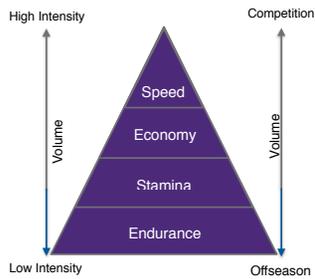
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# E.S.D. TRAINING COMPONENTS

- The ability to stay fast for the entire game (endurance).
- The ability to sprint back and forth for several plays in a row (stamina).
- The ability to go at race pace while using the least amount of oxygen and energy (economy).
- The leg speed to be the first to get to the ball or ball carrier (speed).




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# E.S.D. MACROCYCLE

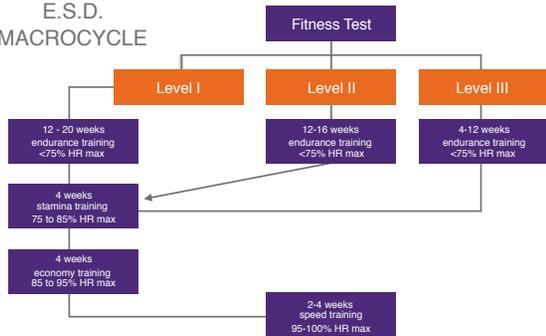


Chart adapted from Benson, R, et al (2011). *Heart Rate Training* [Adobe Digital Editions]. Retrieved from <http://www.HumanKinetics.com>

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## PRESEASON HR NOTES

- During preseason, the goal is to bring the athlete close to, but not necessarily at, peak condition.
- Think of this phase by adding more horsepower to your engine through workouts such as interval training, hill sprints, and fartlek running.



Display team/individual heart rates in practice so everyone [players/coaches] know how hard they're working — create culture of toughness, accountability and responsibility. No where to hide in practice.

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## INSEASON HR NOTES

- Use easy jogging workouts at endurance maintenance levels of 60 to 65 percent MHR to fully rest up for a game.
- The day after the game, easy jogging in the 65 to 70 percent MHR zone will aid recovery.
- For an exercise session to provide enough stimulus to elicit a conditioning effect, it must last a minimum of 20 minutes.



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## POLAR M400 DATA TRACKING



- Use M400 as a daily fitness tracker (much like a FitBit).
- BONUS: Measures sleep quality and quantity.
- Provides Heart Rate Zone guidance for athlete.
- Works with Polar Beat App.
- Syncs with TeamPro account.

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# MONITOR NUTRITION

- Enables coaches at all levels to deliver individualized sports nutrition plans to one athlete or hundreds, anywhere, at any time.
- Gives access to over 35 sport and season specific nutrition programs.
- Give athlete & coach targeted nutritional guidance so they can compete at their highest level.



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# KEEPING DATA IN PERSPECTIVE

*"Gathering numbers & mounds of data is the easy part. Knowing what to do with the data is another. I am seeing profound conclusions being drawn regarding performance with absolutely no understanding of the context of how the numbers were generated. We need to be able to use technology & meaningful data to expand our capabilities not limit them. Numbers are one dimensional. Performance is multi-dimensional."*



Vern Gambetta  
Gambetta Sports Training Systems

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# THANK YOU!

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