

# Strength and Conditioning for the Young Hockey Player

Michael Boyle

Strength and Conditioning Coach

Boston University Hockey

2009 NCAA National Champion

Owner

Mike Boyle Strength and Conditioning

Woburn, North Andover Ma.

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# How Did We Come to Our Viewpoint?

We looked at conventional hockey thinking and then took that information in light of current exercise physiology and, they just didn't match up.



# Basic Concepts

- VO2 versus Vertical Jump
- Which is the better success predictor?
- No question in young people. Test VJ and 10 yd dash. Highest predictors of potential.



# VO2 -A Poor Concept Taken to the Extreme

- “When the only tool you have is a hammer everything starts to look like a nail”
- Do we have exercise physiologists masquerading as strength and conditioning coaches?
- How many players have they actually coached?
- High VO2 may indicate potential for sports other than hockey in younger players



# Is Hockey a Steady State Game?

- Am I missing something?
- Train slow, get slower!



# What Makes Good Players Good?

- The Old Logic- Look at what they don't do well and try to improve it?
- Real Logic- Figure out what makes them good and try to improve that?
- Working on VO2 for hockey is like sharpening the claw of your hammer. ( Rob Rogers, MTSU, St Louis Blues)



# If The Game Is All Sprints, Why Is Everyone So Worried About Aerobic Capacity?

- It takes years to develop speed and power, months to develop aerobic capacity.





# Charlie Francis Info

- Training for Speed
- Power/ speed work to maintain genetic level of fast twitch fiber
- Promote the shift of intermediate fiber to fast twitch characteristics
- Slow gets you slow



# The Right Work

- “Enough power-related work must be done during the early years (ages 13 to 17) to:
  - - Maintain genetically determined levels of white or power related muscle fiber.
  - - Promote the shift of transitional or intermediate fiber to white, power related muscle fiber.’ 1
- Francis further states “endurance work must be carefully limited to light - light/medium volumes to prevent the conversion of transitional or intermediate muscle fiber to red, endurance muscle fiber.’ 2



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# Athlete Selection- The Inverse of NHL Theory

- Francis notes that 'young athletes who do not achieve high levels of oxygen uptake during a treadmill test but who perform well over 10 to 40 meter sprints probably have inherited a high proportion of white power related muscle fiber.'
- An athlete selection system- do a vertical jump then run a mile. The kids you want jump high and die in the mile.



Aerobic Training Will Not Allow You to Compete with Him- if you are already that big, aerobic training is fine.



# We Shouldn't Be Having This Conversation

- Things like VO<sub>2</sub> and lactate are irrelevant. We have know this for 20 years. Jack told us this in the eighties.
- Every time I hear of another college team bringing in Lance Armstrong's coach or some exercise physiologist I celebrate. It's great for BU but, it stinks for hockey in general.



# Gibala Study

- Journal of Physiology, "Short Term Sprint Interval Versus Traditional Endurance Training: Similar Initial Adaptations in Human Skeletal Muscle and Exercise Performance Sept 2006, Vol 575 Issue 3



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# Study Specifics

- Comparison of twenty minutes of interval training ( 30 sec sprint/ 4 min rest) with 90-120 minutes in the "heartrate zone".



# Results

- Same improvement in oxygen utilization.
- 1 hour a week versus 4.5 to 6 hours a week?
- 90-120 minutes in the Target Heart rate zone is highly non-specific. 4x 30 sec is as specific as it gets.
- Players aren't stupid but motivated players will comply and train themselves into slowness.





# Full Reference

- Training and Conditioning Magazine- Bulletin Board Dec 2006 Vol XVI, #9
- Journal of Physiology, "Short Term Sprint Interval Versus Traditional Endurance Training: Similar Initial Adaptations in Human Skeletal Muscle and Exercise Performance Sept 2006, Vol 575 Issue 3
- To view full text go to [jp.physoc.org/cgi/content/full/575/3/901](http://jp.physoc.org/cgi/content/full/575/3/901)



# Training Kids

- Proper Equipment
- Light Bars, 2.5 DB's, 1/14 Plates
- TPI Cyclone
- Fun-fun-fun



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# Deliberate Play- The Cyclone Circuit

- The stations that we recommend in the Cyclone include the following:
  - 1) Striking –hockey slap shot and cricket batting.
  - 2) Agility – includes hurdles, ladders, tag related games and obstacle courses.
  - 3) Throwing – includes all over-hand throwing activities. These include throwing a ball, throwing a foam javelin, bean bag tossing and foamball throws.
  - 4) Balance – includes balance beams, balance obstacle courses, foam discs and Swiss balls.
  - 5) Kicking – includes soccer ball kicks, punting and kick ball.



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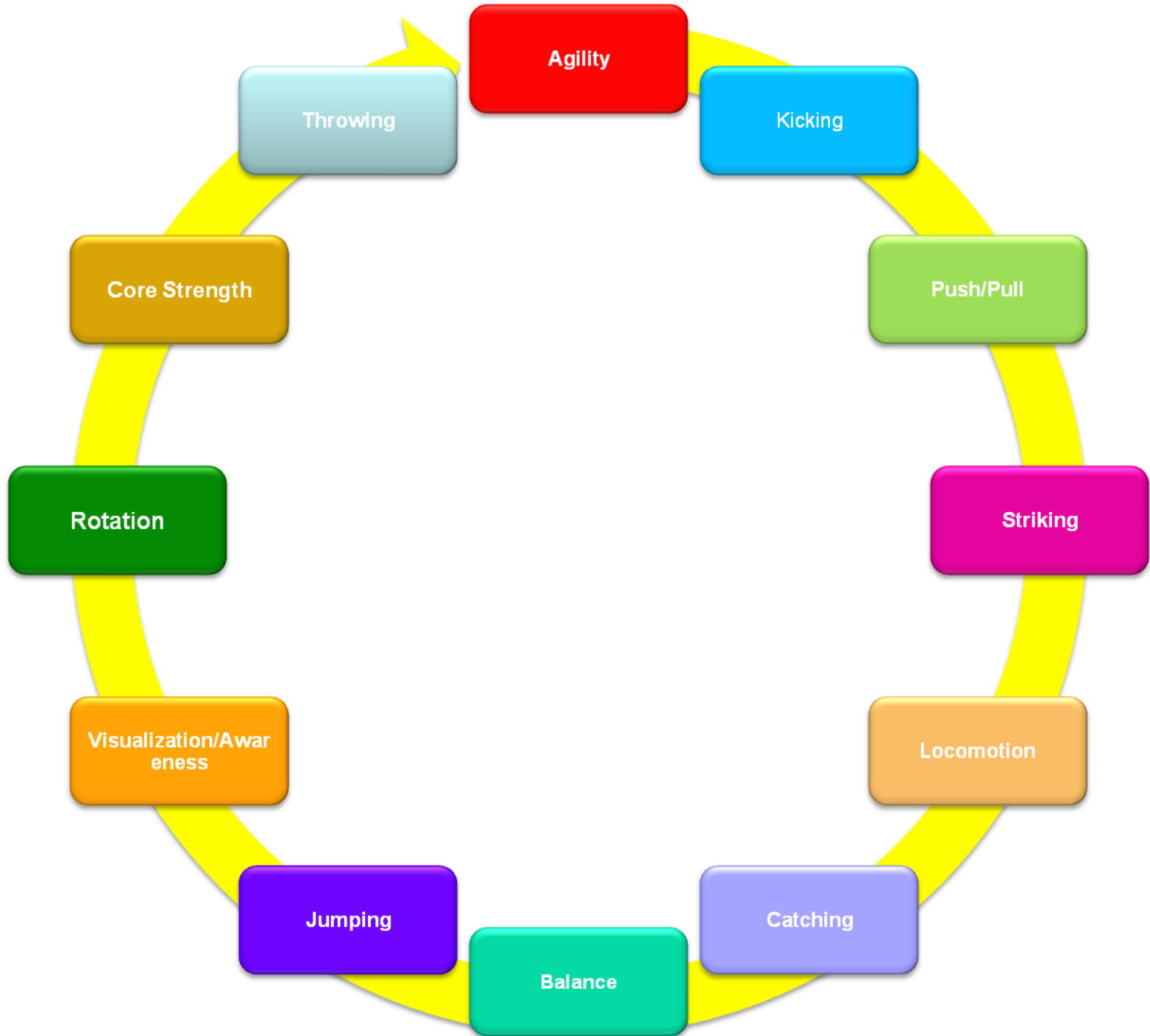
# Cyclone

- 6) Push-Pull – includes monkey bars, pull-up bars and push sleds. ( Most difficult to set up and obtain \$)
- 7) Catching – includes koosh balls, fish tail balls, Frisbees.
- 8) Jumping – includes hurdles, plyo boxes, hop scotch, broad jump and bounding activities.
- 9) Locomotion – includes skipping, hopping, sliding, sprinting, galloping, crawling and carioca.
- 10) Visualization / Awareness –passing skills, stick handling, croquette and tumbling.
- 11) Core Strength – includes Swiss ball, body weight only stability exercises, climbing activities and wrestling activities.
- 12) Rotation – includes medicine balls, rebounder or plyo wall and 360 degree jumping.



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The main advantage of a high horsepower engine is its acceleration: it can get the automobile up to a chosen speed more quickly than a lowered power engine can.-  
Peter Brancazio from Sports Speed, Dintiman + Ward

# Acceleration is the Key

- You can't win at Indy in a Yugo
- Hockey is a game of repeated acceleration and deceleration.
- Top speed is secondary to the ability to get to top speed. ( Amonte ex.)



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# Speed/ Acceleration Improvement

- Acceleration is the key, not speed
- Want to get faster? RUN FAST!
- Speed at least 2x's per week
- Linear vs. Lateral
- Improve Strength/ Force Production- see Sunday
- Improve Power-





# Strength/Power Improvement

- No organized strength work for kids
- Boring
- Lots of jumps and sprints
- Lots of climbing
- Single Leg Strength



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# Testing

- Test what you want them to do!
- Test speed and power. ( 10 Yd. Dash and Vertical) This was key in 80's 90's and produced NHL players.
- We got away from it out of laziness
- If you strength test use tests that are not easily corrupted ( Pullup, pushup etc.) or do them well. Huge area of complaint I.e cheating



# Player Development

- Who is doing the best job? You! Don't copy us and play more games!
- Our system is run by parents
- What prevents a player from playing in the NHL, size or skills?
- Focus on games or training?
- Why are the players from systems emphasizing less games becoming dominant in the NHL?



# Practice or Play?

## How You Impact the Game

Player	Shifts	IceTime	PT	PR	PA	SA	Touch
Sakic,J	27	15:25	1:19	21	21	7	44
Modano	28	19:47	:58	17	22	4	44
Amonte	22	12:51	:46	11	4	5	33
Key							
PT	Possession time						
PR	Passes received						
PA	Pass attempts						
SA	Shots attempted						
Touch	Puck touches						
Game notes							
Canada wins Gold, USA takes silver. Sakic has 2 goals and two assists and was MVP. Amonte had 1 goal on 3 shots on net, Modano had 1 assist.							



Look at the ice times of the worlds best. Sakic averaged 34 seconds of possession. Amonte's average shift was thirty two seconds. Modano's were slightly longer. This was some of the most intense hockey in history. An average of one minute of possession in a sixty minute game?

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# The Backward Model

- The best way to develop average players
- Early specialization- late generalization
- 80 games seasons in youth hockey and then prep school for high school
- When we should be a generalist we are a specialist. When we should be specializing or narrowing focus, we broaden.



# Pyramid or Cross?



Late Specialization



Early Specialization/  
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Late Generalization

# European or Canadian Model

- The number of Canadian Major Junior players in the NHL has decreased by almost 50% in the last twenty years. ( (Current USAH Stats 50% Canadian, 20 American, 25 European) The Major Junior number may be lower based on US College Canadians.
- These players are consistently replaced by Europeans and Collegians ( some American, some Canadian) produced by 40 game seasons and rigorous off-seasons focused on strength and speed.
- Would Coke copy Pepsi if Pepsi had lost half it's market share?





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## Why A Recent European Decrease?

- My theory is that agents began to bring elite younger Europeans over to the Major Junior Leagues in search of more games ( better development?). The net result is that they are killing the goose that laid the golden eggs.
- The key to European development was in the “less is more” theory.
- There is research that supports leaving Europeans in Europe to develop.



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# Where are the skilled players?

- Has the increase in junior hockey or year round hockey in the US ( more games, longer season) corresponded with a decrease in skill?
- Can you improve your score on the test by retaking the test or studying?
- Where did the best American born players come from? Tkachuk, Amonte, Roenick, McEachern.
- Where are the high skill players coming from? Jagr, Forsberg, Kariya, Fedorov, Sundin, Bure, Alfreddson



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# Our Players Born or Made?

- Probably a combination of the two
- Too many games will delay the physical development necessary for all but the gifted few ( Lindros, Jovanoski etc.)



# Take Away Lesson

Your methods are better than ours. We may have the best league but, you are producing the best players

Listen to your strength and conditioning people but, don't add games and or send your young players to North America to "develop".



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