Hockey Athleticism

For Teenagers



Train like a Cheetah while you're growing



Jack Blatherwick, PhD

Dedication: to my friend, Jack Jablonski and others who have suffered catastrophic sports injuries

- ***<u>This project has three goals</u>:***

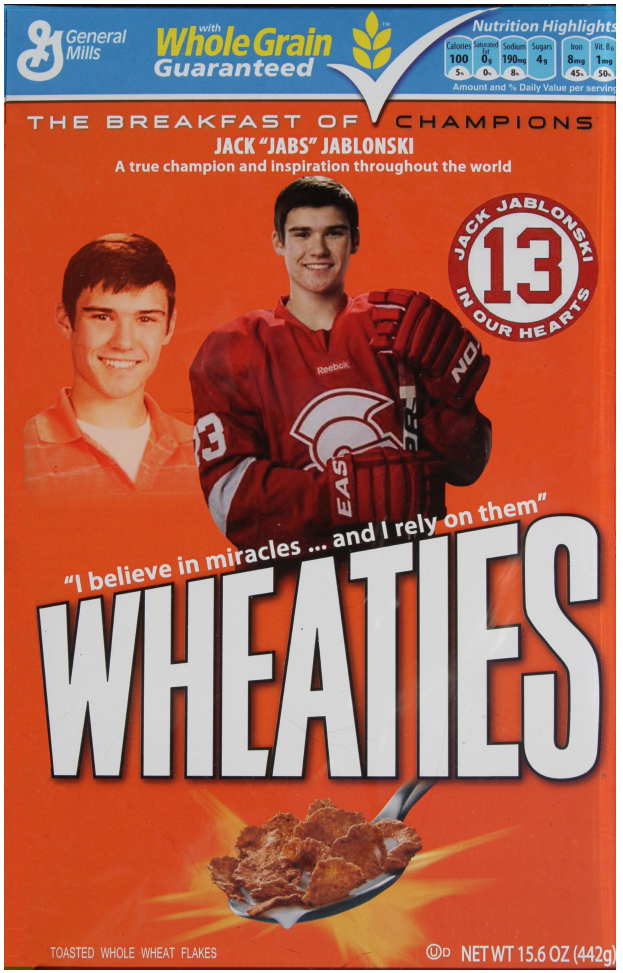
- ***To expose the unwarranted mathematical manipulation of research data, which is carelessly (or purposely) ignored in the published title & abstract. The net result is to misinform players and coaches who are training for speed or hockey endurance. This error is so common that peer-reviewers allow it to continue after 50-years of incorrect interpretation.***

- ***To provide proven training solutions based on fact, not manipulated data.***

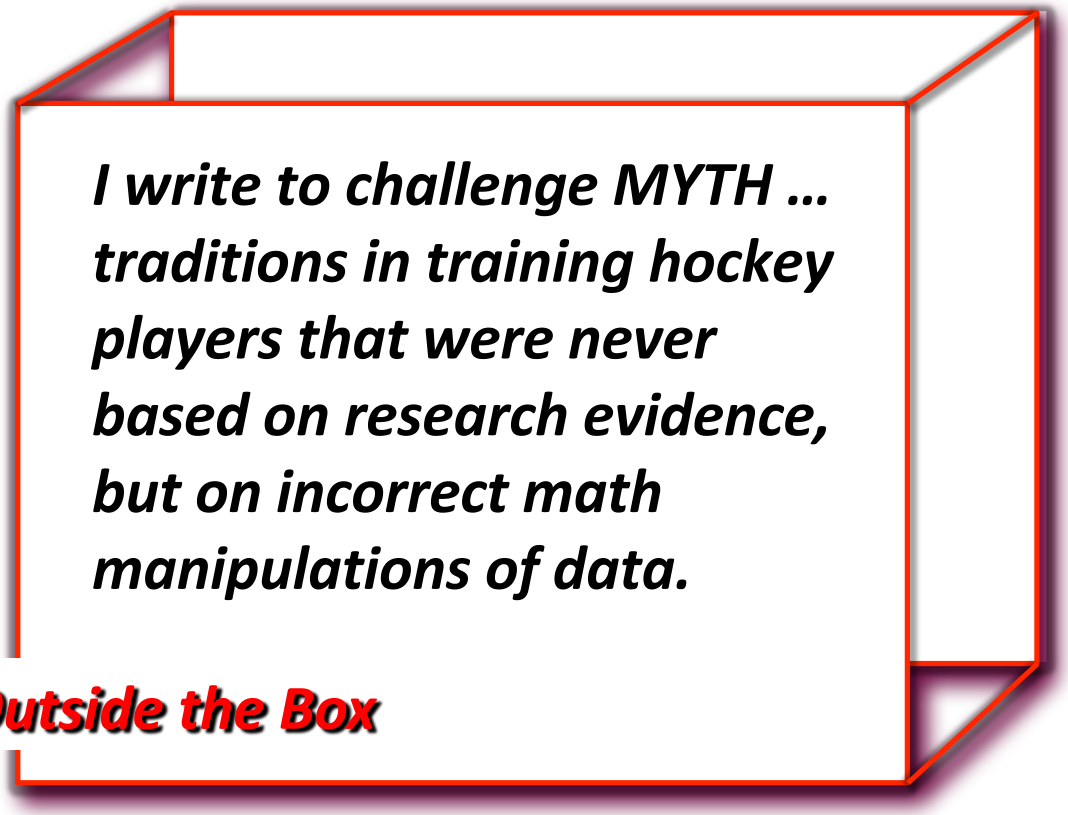
- ***To encourage donations for research and rehabilitation related to spinal cord injuries. The author, editors, and cheetahs will not get a penny for sharing information – just fun.***

- ***www.JablonskiFoundation.org***

  Gifts go to research, not to the Jablonski family.



The photo of the cheetah in full stride was donated by photographer
Phillip Wright: Lebanon, Ohio


I write to challenge MYTH … traditions in training hockey players that were never based on research evidence, but on incorrect math manipulations of data.
Think Outside the Box

Think outside the Box(es)

Hockey is unique ...

Research math manipulations don't fit.

Isolated strength training doesn't fit.

Skater's legs and arms don't fit.

Weight room design doesn't fit.

Academic language doesn't fit as productively as natural play - cheetah's or human's.



"Cardiac, if everyone agrees with everything you say, you've contributed nothing.

If no one agrees ... maybe you're wrong."

– Herb Brooks

Introduction

For decades I've studied neuro-physiology, coached, and tested thousands of male and female athletes on the ice and off, in a search for training information to assist young players. Whether we're reviewing test data – or watching an intense playoff game, it is clear:

You must play faster to compete at higher levels.

Quick decisions and other mental factors are super-important – but the questions for this book are:

- ***Training to skate & execute skills faster & more efficiently?***
- ***Consensus opinions – like AI – can they be trusted?***

Not all published research conclusions are valid. Common mistakes are discussed in succeeding Chapters and Appendix, beginning with an improper mis-statement of elementary arithmetic. When the title claims something not established by the reported data, many athletes and coaches are misled *

This has happened with research conclusions relating squat strength to skating speed. Squats are certainly a constructive lift for the strength and stability required in hockey competition. But to contribute to skating speed, squats must be combined with jumps and sprints, as shown in this book.

Furthermore, research and training advice have seemingly missed the major difference between skating and sprinting: that is explosive hip abduction – thrusting to the side, Can we realistically ignore the chemical and anatomical improvements in the nerves & muscles that abduct the leg at the hip, improvements that increase both explosive power and endurance?

Skating is a whole-body movement, not just lower body. And like sprinting and jumping, the arms and core muscles play a major role in the power of each skating stride. Therefore, testing and training must incorporate natural arm movement, rather than impose restraints, especially at a young age when reflex coordination between upper and lower body is being learned for a lifetime.

****A mistake with fractions has distorted research conclusions for 50 years. If coaches, players or AI read just the title and abstract – or trust the faulty math – the mis-statement becomes universal policy.***

Ever since the Broad Street Bullies of Philadelphia, mangled the rulebook to win, scouting and advising young players has been dominated by the thought that 'bigger is better.'

But, many young superstars in the NHL are not big. Furthermore, our research data with college and professional players shows that taller and heavier are statistically related to slower on skating tests of acceleration and speed. There are many big, tall FAST skaters, of course, but this is true on average.

Neuroscience tells us we become what we repeat most often.

Given this fundamental concept from neuroscience, how could we imagine that specificity of training refers to just the range of motion, not speed? It doesn't matter how fast or slow we train? These questions will be addressed by data, photos, video and discussion throughout the book.

I certainly don't claim to have all the answers – just some. I write about pseudoscience because some training advice is misleading. When I started testing I wanted to prove some things I believed about the weight room. Starting with a bias was a mistake, but it is common for research today to conclude that stronger individual muscles will automatically make us faster skaters. No. We're not faster until the muscles are integrated into a beautiful symphony of movement – just like expert musicians.

Strength, of course, is part of the plan to skate faster, but there are many excellent ways to gain explosive functional strength – some in the weightroom, some outside. Young cheetahs do it pretty well on their way to sprinting 70-80 miles per hour!!!

Overview

- *Skating faster requires whole-body training – not just lower body.*
- *Let arms move naturally; reflexes will help you skate faster.*
- *Sprinting & jumping are highly related to skating speed at every age.*

- *For development of Speed and 'Hockey Endurance'...*
  growth and refinement of the nervous system is the critical factor.
  Therefore, quality training is more important than quantity.

- *Hockey Endurance requires HIIT (High Intensity Interval Training).*
  It must prepare players for the most intense playoff series.
  Slow continuous 'Cardio' cannot do that.

- *The central theme throughout the book:*
  Our nervous system assures that we become what we repeat.

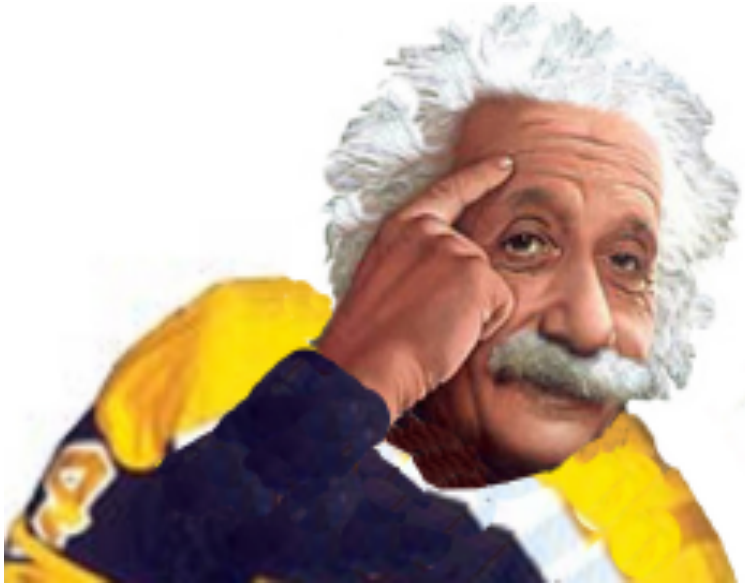
- *We will discuss appropriate developmental training for teenagers, not professionals. In this regard many weight rooms fail, by antiquated architectural design and by traditional philosophy, to be 'Speed gyms.'*

- *Teenage males are easily sold by inaccurate reporting – that building bigger, stronger muscles will make them faster. Weight training can contribute only when combined with whole-body, arms-free, dynamic exercises like sprinting, jumping and skating .... FAST.*

Post-grad lesson from Bobby Orr

I just sat down for lunch after doing a presentation for a group of Massachusetts coaches. The chair next to me moved and I heard: "It's just a bunch of academic BS."

Bobby Orr sat down and continued, "Kids gain strength and agility, putting it together in sports: running, jumping, dodging, skating – scrimmaging. And, by the way, your endurance training off ice doesn't compare to all day hockey games on the pond."



I listen when you're the greatest skater in history. It also helps that you're right.

Recent research in plasticity of the nervous system shows that play activities when you're very young lead to greater growth of athleticism through your teens.

My presentation had been overly technical, as in downright boring. I had just spent my last dime on grad school, and the university was saying I had stayed too long. "Here's a degree. Move on."

Then my idol says I'm thinking in an academic box. Heck, that's what I paid for – some academic facts. I'd soon learn while working with an NHL team that physiology might be good background information, but it has little value in the real world until it wins games and sells tickets.

Orr's point is critical: during adolescent training, the more you put it all together – like a cheetah – the more likely the outcome will help you move faster – see & analyze faster – create solutions faster.

Athletic movement should not be slowed down by sending information from muscles, joints, and tendons all the way up to the brain and back – thinking about how to skate, rather than moving reflexly. Conscious thoughts invite paralysis during a golf swing, baseball pitch, basketball 3-pointer … or a skating stride.

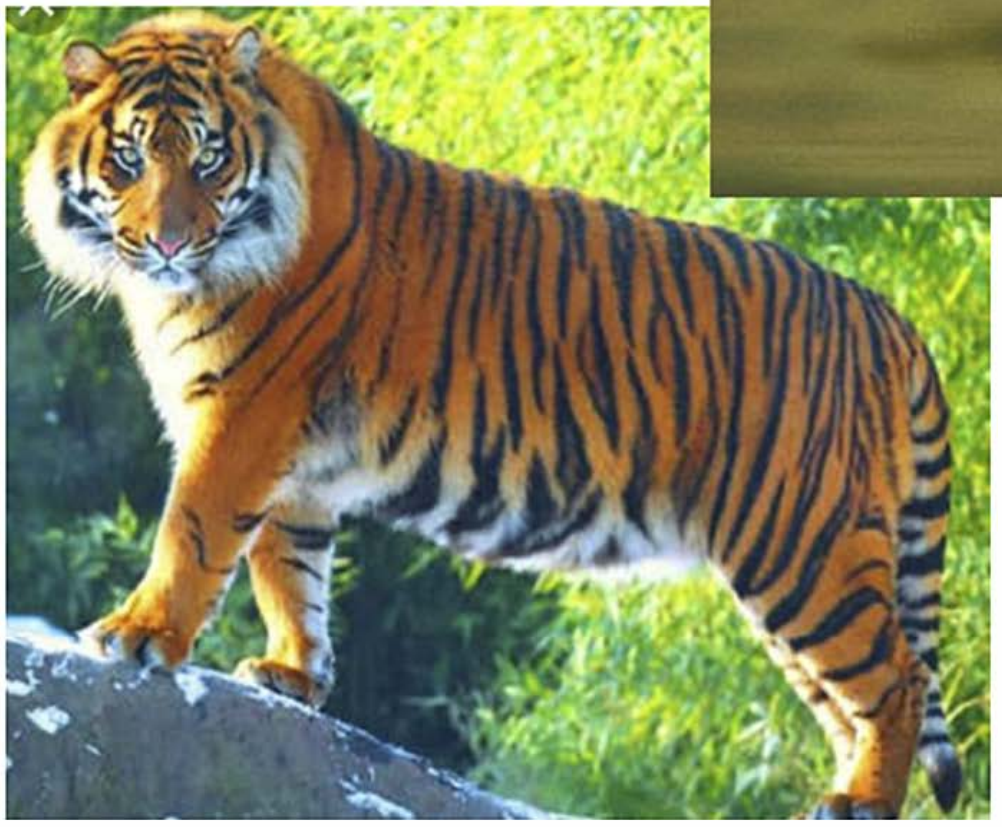
Adolescent development must train the nerves to coordinate the lightning-quick reflexes from your entire body. This is controlled at/near your spinal cord, and it happens when you train like a cheetah: whole-body training without thinking about movement. Cheetahs are fast partly because they don't read discussions like this, about speed. They just play.



If a young Cheetah lifts weights to get 'Big and strong' instead of chasing and dodging siblings ...

would it become faster than siblings 70-80 mph?





Or ... Would it be built like a Tiger, and max out at 35 mph?

Learn from Cheetahs.

Train for speed and agility while your nervous system is expanding, refining, learning for a lifetime. If you want to get 'big,' wait until growth plates have closed.

Overview of 4 major topics in this book.

* **Skating speed** requires young nervous systems to develop like a Cheetah's not a bodybuilder's

Speed development in a young Cheetah includes whole-body, explosive sprinting, dodging, wrestling, jumping. But for young humans, popular weight training is slow and isolates body parts. Lesson from Cheetah-world: promote whole-body athleticsm.

A body full of strong muscles is not capable of dynamic athletic movements until those movements have been repeated hundreds of times using the entire body – explosively – naturally – and without restriction. Skating is a whole-body movement, not just lower body.

* **Teen-age Development:** building synergy in the neuromuscular system at a critical stage.

Sprinting, jumping, skating all require that nerves & muscles of the entire body work together, just as an orchestra integrates its parts for a beautiful symphony. Train for synergy, so the whole-body becomes greater than the sum of the parts.

Prioritize neurological development in teen years. Muscular hypertrophy can develop after 20 years old if you believe it's essential.

* **Power Skating** is anything but powerful if it fails to develop the two elements:

Power = Speed x Acceleration of your body mass.

A mythical rule has limited skating speed improvement for half a century: "Don't swing your arms across your body when you accelerate to top speed." Actually, the science is just the opposite. Arms, Shoulders & Core Muscles are Force Multipliers to increase skating speed & acceleration. So, dryland training should promote unrestricted arm movement while sprinting. jumping, slide board, etc.

* **Hockey Endurance** cannot be measured on a treadmill or bike.

Attempting to separate aerobic from anaerobic metabolism is a discussion for the classroom, not for hockey games where they are inseparable. Forget what you might have heard about Max Vo_2. It mis-characterizes hockey stamina if tested on a bike or treadmill, or if the test ignores HIIT (high intensity interval training) which is the true basis for Hockey Endurance.

Hockey Endurance in practical language is the maintenance of speed, skill, toughness, and rapid decision-making for a whole game.

Great skating strides begin with dryland repetitions



A visitor watches a team dryland workout for five minutes and sees each station — if the visitor can't tell what sport the team is training for — and what physical qualities are important in the sport — coaches better re-think their training.

Squats

It may seem I'm against squats, because I discuss limitations. I love squats (reasonable weight) as part of the program, but to my knowledge, no one has published data to show that squat strength is related to skating speed. We have not found that relationship in 50 years of testing 5000 athletes.

But, all dryland exercises have <u>some</u> inadequacies.

Seven factors in training the neuromuscular system for elite Hockey Athleticism during teen-age years



- *Move in dynamic, complex ways: sprinting, jumping, tumbling, dodging, hill-sprinting, wrestling, climbing, throwing, catching, competing in dynamic sports ... playing like a cheetah.*

- *Move your body – FAST – in ALL strength and endurance workouts. Add supersets.*

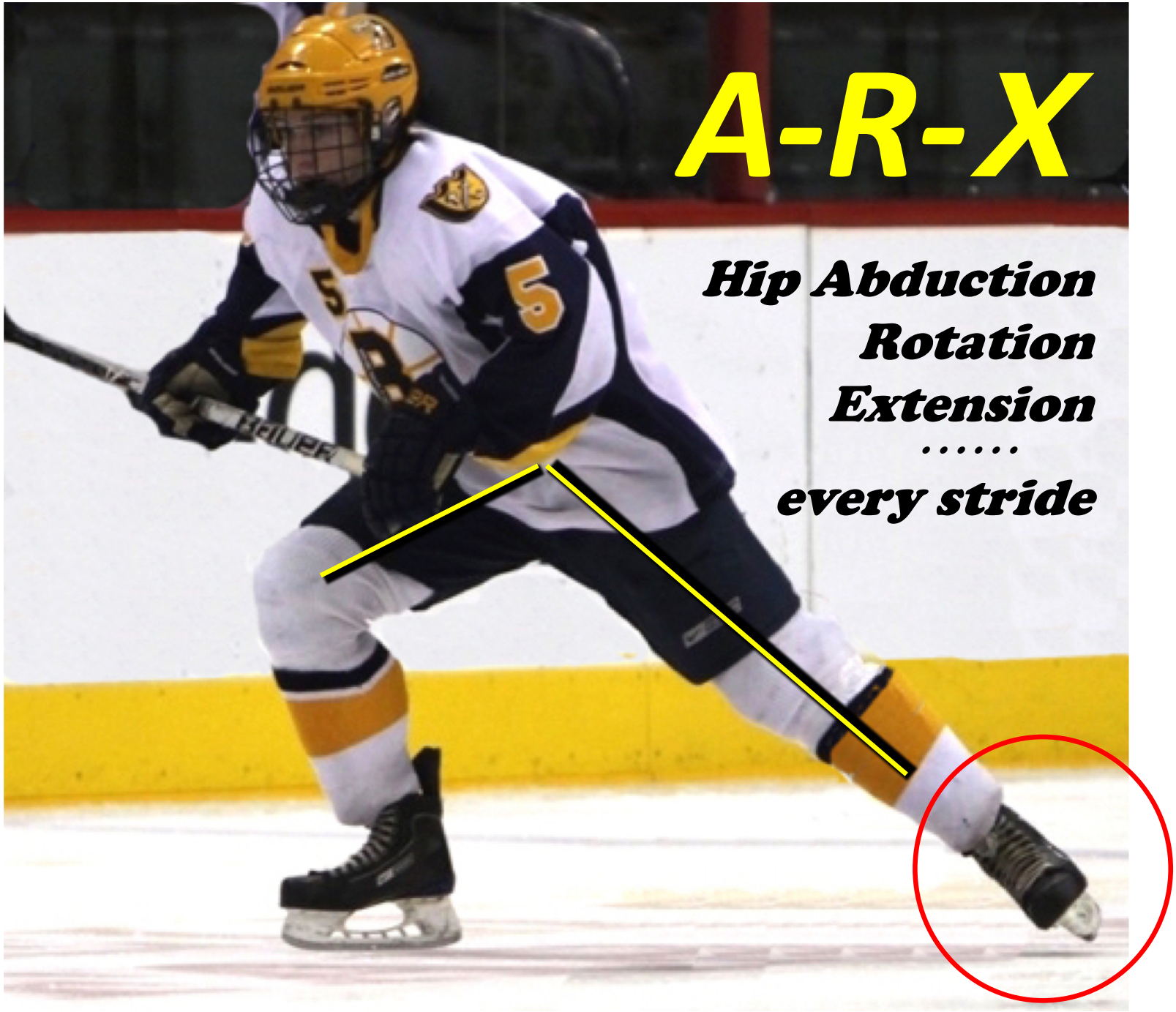
- *Do not train the way pros do. Their goal is to maintain what they have. Instead, study what they DID when they were young to develop elite athleticism.*

- *Two common mistakes are (1) weight training by itself – moving barbells. not the body; and (2) aerobic training called 'cardio,' featuring SLOW repetitions built into the nervous system permanently.*

- *Skating-specific' drills feature: Hip Abduction-Rotation-Extension (A-R-X) – coordinated with knee & ankle extension plus upper body and core support. {Note: Abduction is the thrust to the side from the hip, that transfers your force into speed on the ice}.*

- *At the moment of final push-off, whether jumping, sprinting, or skating, your force is most efficient if your body and drive-leg reach Straight-Line-Extension (S-L-X).*

- *Arms swing vigorously opposite the legs, crossing the body as the leg abducts. So squats are not the best dryland skating exercise, because arms are immobile holding the bar, but when they are part of a superset with jumps, the nervous system learns speed + strength.*


A-R-X
Hip Abduction
Rotation
Extension
.....
every stride

Hip Abduction- Rotation-Xtension

The center of power in every forward skating stride is <u>hip abduction</u> – maximum force to the side.

A-R-X is therefore, a major priority in dryland skating practice. Use your arms vigorously.

For some reason ARX doesn t exist in many hockey weight rooms.




Hip Abduction Rotation Xtension

Arms are force multipliers

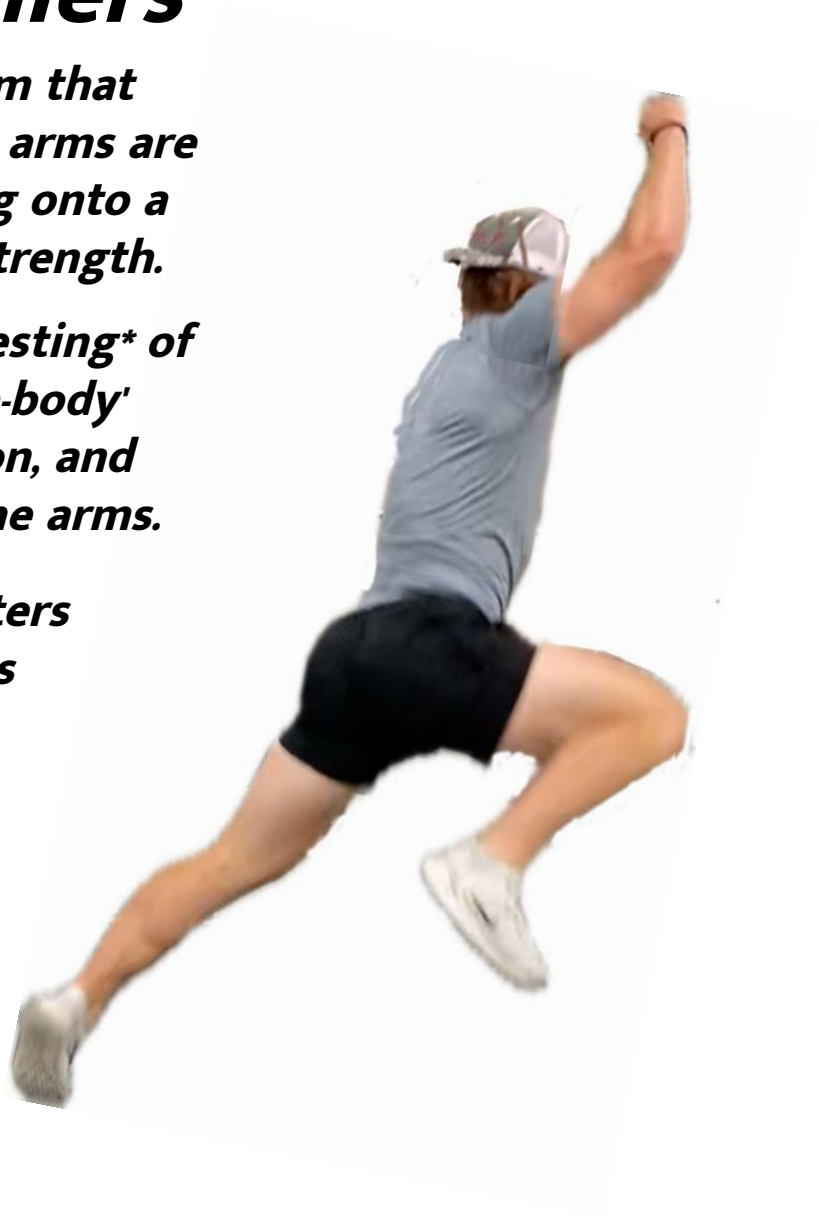
One of the weaknesses in a training program that over-emphasizes weight training is that the arms are not used naturally, because they are holding onto a barbell or dumb-bells. It's NOT lower body strength.

It's 'Whole body power.' Both training and testing* of hockey players have not emphasized 'whole-body' enough. Research testing, skating instruction, and strength programs have unwisely limited the arms.

Track coaches, would never do this to sprinters or Jumpers, because the power production is substantially less without natural, free use of arms.

The coordination and reflexes between upper and lower body must be learned at young ages when the nervous system is growing and refining faster than ever again in the future.

Unrestricted play is the cheetah secret.



**The idea/habit of testing vertical jump while arms are restricted makes no sense for athletes who's sport requires arm movement for maximum speed. It'd be like contesting sprint speed with the hands restricted to the hips. We want to test athleticism.*

Russian box jumps

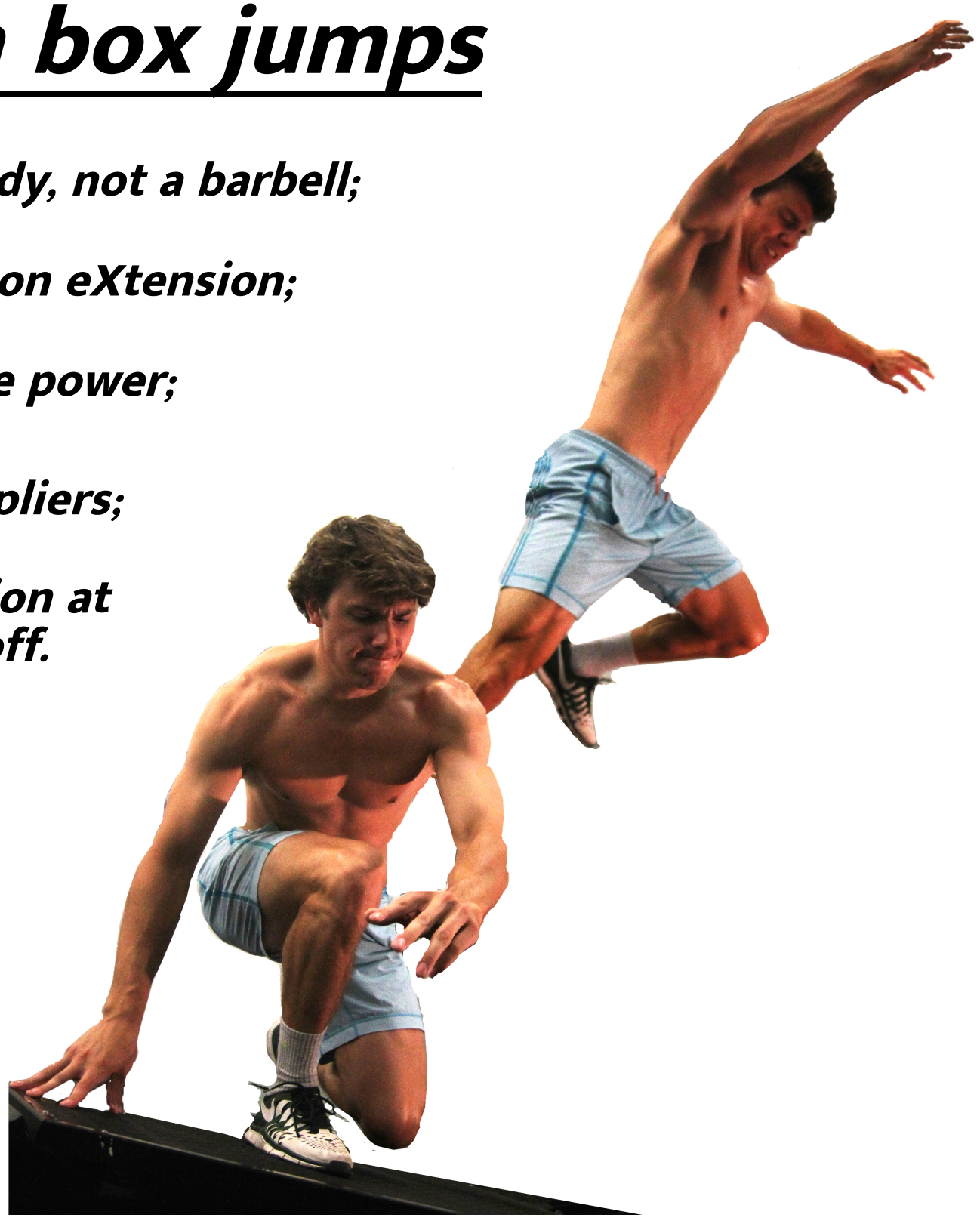
Accelerating your body, not a barbell;

Hip Abduction Rotation eXtension;

Whole-body explosive power;

Arms are force multipliers;

Straight Line eXtension at the moment of takeoff.



We had a great model to build from, but failed to capitalize

60 years ago, Anatoli Tarasov was the force behind the (almost) unbeatable Soviet teams. He emphasized creative training on the ice and off.

Tarasov built players from the ground up …

so,we should have learned when he came to the U.S to show coaches.

For Example==>

This is the basic center of skating power: explosive hip abduction combined with extension in other lower body joints. Yet, it's hard to find in hockey weight rooms.





Lifelong skating habits while you're growing

Slide board –> powerful, efficient strides, knee bend + supportive use of arms, shoulders



In adolescent years
Train for agility while nerves are refining

As you page through, it will become apparent I am not a professional photographer, and photos were shot spontaneously during workouts. Nothing posed. In some dark arenas or weight rooms, the iPhone wasn't perfect in combining information (in a millisecond) about the light source, the speed of athlete movement, and the random jiggling of my hands.

I will use every trick in the book to hold your attention: changing font size and color, etc. I was a boring lecturer in math class, so I will try not to bore you in writing. There is a lot of repetition, however. That's another habit of old math teachers.

Given that many readers are players and coaches, I will refrain, where possible, from using technocrat-academic language. It is an insult to readers to fill the book with insider Latin or Greek words. So, I use every-day, common-sense explanations instead.

You will see that 288 photos are the strength of this information … not any text I add.

Jack Blatherwick, PhD, University of Minnesota: Author
Shepherd Iverson, PhD, University of Florida: Editor
Steven Pliam, Massachussets Institute of Technology: Design


You'd like to be a Hall-of-Famer?
Better get to work.



Congratulations Natalie and Krissy – well done!