There's Conditioning ...

and there's Conditioning

The Dual Meaning of 'Conditioning'

(1) Neurological conditioning <=> habits.
Coach Brooks: "Play your game!"
It's preparation, not miracles;

(2) and cardiovascular-metabolic conditioning is a by-product.



The goal? Build wind-up machines
with the stamina to repeat high speed, quality skill, tenacious defense, and gritty toughness every shift of the fastest games

Hockey Conditioning

For decades, 'conditioning' has been defined by academic language: 'cardiovascular-respiratory, aerobic, anaerobic metabolism' etc.' Each concept was taught in its own separate lecture; and this led to naive attempts to separate them in training.

Forget the lecture-language ...

Hockey conditioning
prepares teams to maintain the qualities
needed to win the most intense playoff games.

For children & adolescents ...

slow training is not part of the development plan

So, how do we accomplish this?

HIIT = High Intensity Interval Training

Why do so many athletes train slowly when their goal is to play fast?
We sports scientists – unwisely – advised them to train aerobically,
corralling them into slow academic boxes – and called it 'cardio.'





To young players: Getting faster is among your highest priorities.

Slow 'cardio' endurance training is practicing slowness. It requires time and energy that could be invested in High intensity intervals for speed and skill.
So, what about the health and competitive benefits of aerobic fitness?

The good news …

High intensity intervals for speed can also improve fitness sooner – and to a greater extent than slow cardio

Speed-endurance for Gold Medals & Youth Development

Three USA Teams trained together for more than five months prior to their respective Olympics: the 1980 men and 1998, 2018 women. They emphasized fast conditioning and won Gold, finishing each game executing skills at the same pace as at the beginning.

The 2026 wins by team USA women and men — while highly significant — are not part of this story of preparing a team for months. They were together for only a few days.

Many other factors enter into wins, of course, but speed-endurance is one that can be planned, executed, and improved.

Repetitions result in cellular changes to nerve pathways. If you repeat slow movement (such as jogging) or if you skate while fatigued, the inefficient mechanics become part of your nervous system memory bank.

The unbending law of neuro-science:
You become what you repeat often,
so
Don't train slowly when your goal is to play fast.

To develop speed-endurance, the Gold-Medal teams first asked this question:

Knowing we want to practice skills at an uncomfortably-fast pace, does this also improve aerobic-cardiovascular fitness without slow aerobic training?

Short answer: YES. High Intensity Interval Training (HIIT) increases aerobic-CV fitness, plus explosive qualities required to even think about a gold medal: speed, skill, strength.

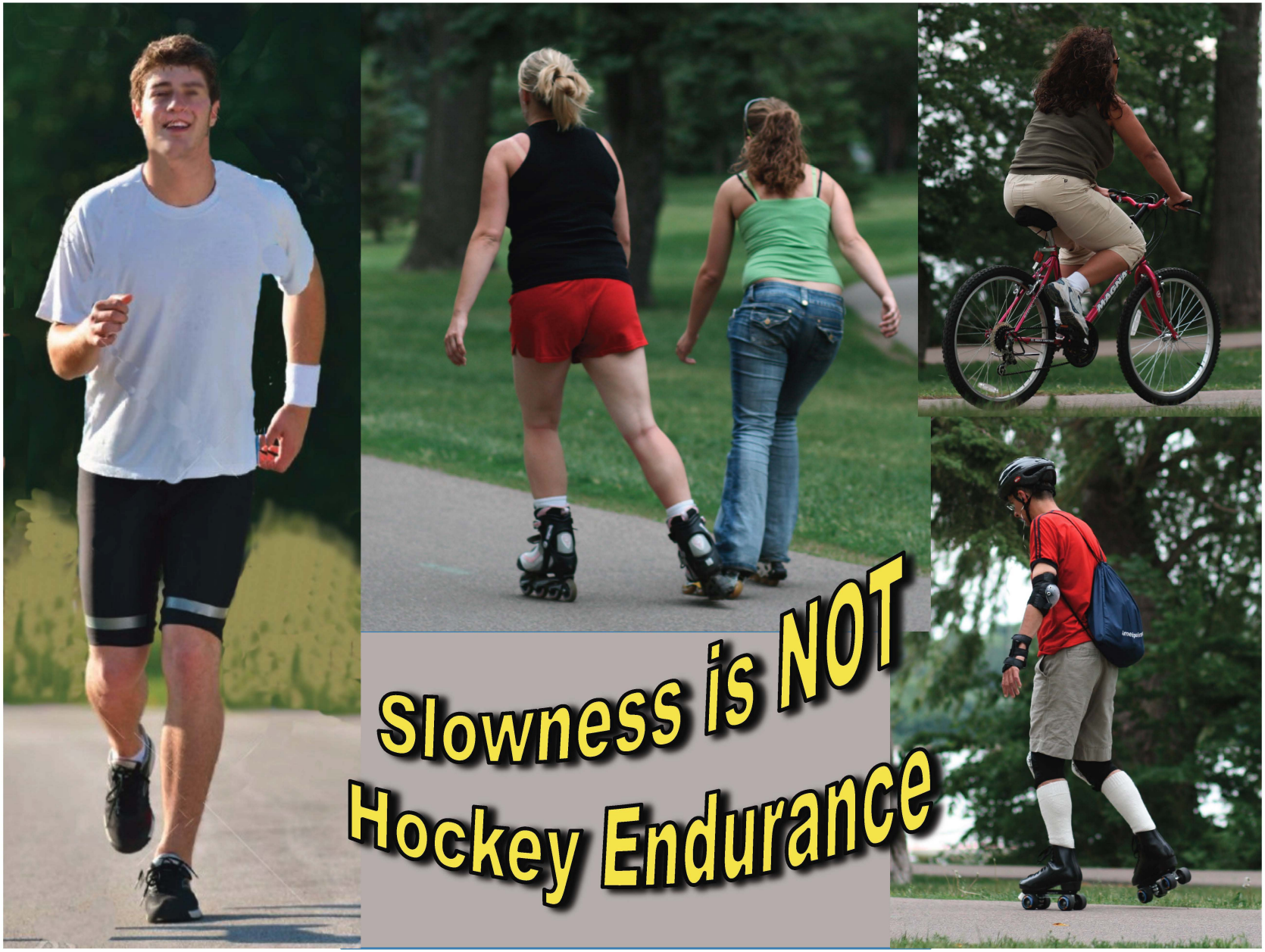
***Speed-skill-endurance** by the 2018 U.S. Women's team was the specific goal of every workout on and off the ice for two+ years. Coaches Robb Stauber, Brett Strot, and Paul Mara kept the pedal to the floor, knowing the Canadian women were big, fast, strong, skillful and competitive. Canada had won Gold four times since Ben Smith's team USA won the inaugural women's Olympic hockey competition in 1998.*

***And the 1980 'Miracle on Ice'** was no miracle at all. It was the result of relentless preparation. Team skills were repeated for two-hour practices at uncomfortably fast pace for six months. Nothing slow, or the wrath of Coach Brooks was unleashed, resulting in the dreaded 'Herbies' – stops-and-starts, skating the lines.*

*note: **Punishment skating is counterproductive at young ages when skating habits are formed!***

Did these USA teams dominate? Of course not. That was never considered a possibility. But in 1980 the speed-skill attack by the Soviets was not allowed to take over the game as it did against other competitors for forty years.

OverSpeed (uncomfortably fast) preparation made these Gold Medalists comfortable (defensively and offensively) with the elevated pace of play against the top teams in the world, every shift of each game.


Slowness is NOT
Hockey Endurance


Hockey
endurance
Have It
Your Way!



Endurance repetitions and CNS memory can NOT be separated …

so the highest priority?

Quality repetitions


Endurance
Intervals
15:45
Practice
Knee bend
and WIDE
strides
Hockey
endurance
Plus Good
Skating habits



Of what value is cardiovascular fitness … if you can't skate with good knee bend near the end of a shift or game?

Rem Pitlick a peewee on the slide board – now a professional in the AHL & NHL

High Intensity Interval Training

HIIT workouts improve both Explosiveness & Endurance

Skating and off-ice Power and Endurance improved significantly in a six-week college pre-season dryland study using HIIT training exclusively.

Similar results were observed in other interval studies *(Fox EL 1974, 1981; McArdle WD 2001; Torma F 2019; Brooks GA 2020).*

Read more: HIIT is the subject of many recent research studies and opinions in peer-reviewed journals and A.I.

It's time to bury the myth that strength, speed, and endurance must be separated, when games require ALL these qualities in the same shift.





High intensity interval Training improves both explosiveness and endurance in the same workout.

Slow Aerobic training does not improve explosiveness.

Data:

Energy expenditure & Heart rates during explosive off-ice interval workout:

(average of 5 professionals)
Total calories burned in 70 minutes: 1250 cal.
(estimate from HR monitor)
Each work interval produced HRs > 94%.

Rest interval HRs did not drop below 75%.

On-ice overspeed interval training:

(same 5 professionals)

Total calories burned in 70 minutes: 1070 cal.
Each interval HRs>92%.
Rest intervals: HRs always >70%

The basis for training the 1980 Olympic Team

Brooks understood what every player knows:

Hockey conditioning must ultimately be done on ice.

Forget Hollywood's mischaracterization of 'Herbies' as *THE* conditioning plan. Yes, players skated the lines when the coach wanted to catch their attention, and that occurred often. The *REAL* plan (laid out on his deck in the summer) called for high tempo/high skill practices each lasting as long as a game.

This was the only way to prepare for the Soviets, whose comfort zone seemed super-human if you hadn't prepared.



Overspeed practice …

is the execution of skills, decisions, and skating at a pace faster than comfortable, so in games this is your new elevated comfort zone.

The puck can be an anchor, because of the difficulty of executing skills and decisions at high speed, so coaches have to PUSH the tempo.

Brooks was a master at this. Skating behind the flow, he prodded incessantly for two hours. He knew, " If players practice skills in their own comfort zone it will not be elevated."

Overspeed meant practicing in Herb Brooks' comfort zone

The origin of "Overspeed training"

Herb knew – as did every player who opposed the Soviets in the decades from the 1950's to the 1990's – how fast the pace was in games against that dreaded machine in their old, faded red uniforms.

"You were never comfortable," Brooks said as we built his deck in the summer of 79 to plan the preparation months before the 1980 Olympics.

"When you start with the 20 best college players in the country, you know they're very comfortable at the pace of a college game … but they would not be comfortable against the Soviets."

Therefore, "conditioning" meant that all skills had to be rehearsed at an uncomfortable (overspeed) pace – over and over for two hours a day, six or seven days a week for six months.



Herb privately hoped people would remember him as an Olympic player, not just a coach. As the last man cut before the 1960 Olympics, it hurt as he sat with his father to watch TV coverage of the Gold Medal performance. As it ended, Herb Sr. said, "Looks like they cut the right people, son. Better bounce back." Brooks was determined it would never happen again, and went on to play in the 1964 and '68 Winter Olympics.

"It's a feeling, Cardiac, not physiology 101. You can't find it in your damn text book."



Overspeed

Conditioning

Building Windup machines

Hockey Conditioning?

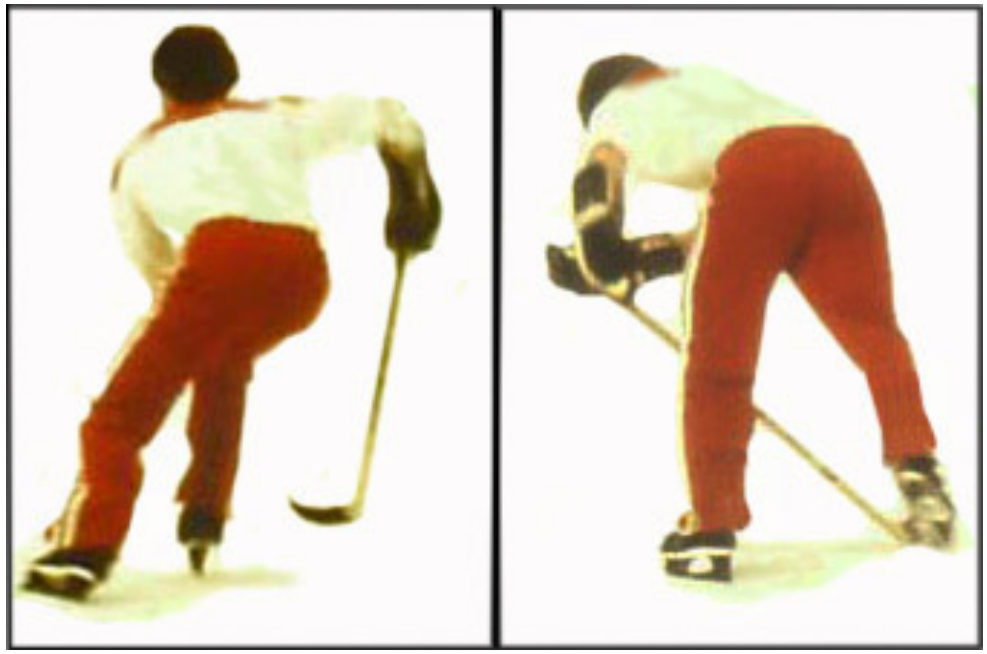
Consider the HABITS you program into the nerves.

Think Quality not Quantity training, especially with young athletes.

The goal is to 'CONDITION' the nervous system as Pavlov would to execute high quality skills – OverSpeed for an entire game.

Skating the lines programs your team to repeat slowness, as shown below.

For children and adolescent hockey players, endurance should always be a by-product of well-planned interval practices.



Perfect skating posture to practicing slowness and inefficient 'pike' position in 15 seconds.

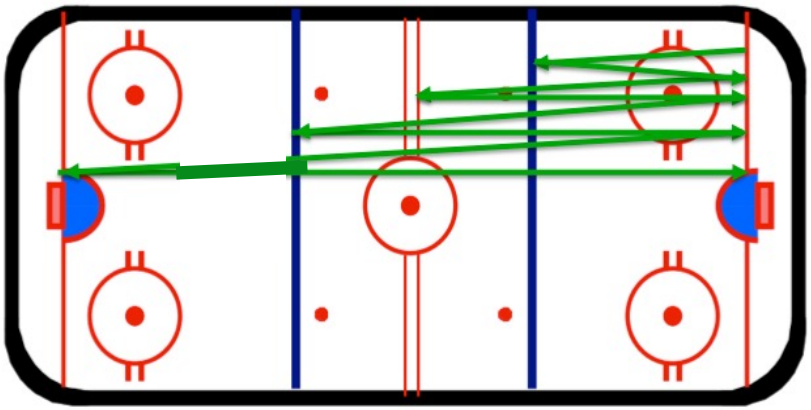
Repetitions don't automatically improve skill, speed, or stamina if that's our stated objective.

In fact, it has nothing to do with our stated objective.

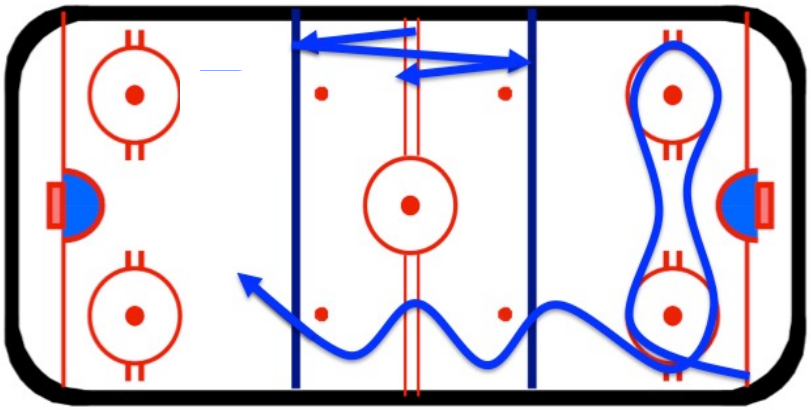
The quality of repetitions is all that matters.

Near the end of practice, you have a choice.

As stick skills, decisions, and concentration deteriorate, if you want to extend speed-endurance training, the choices are one of the two below …



(A) Traditional (counterproductive) choice:
45-second stop-start torture drills that promote slowness and poor skating habits for the last 35 seconds of the 45.



(B) OverSpeed intervals: 6-10 second drills with or without pucks, decisions, and stick skills. It builds endurance, speed, quickness, and agility. These are just samples. More in the appendix.

In an Overspeed practice no single drill develops hockey-endurance. It is the sum of all drills — just like the endurance needed in a game!

Repetitions change the Nervous System

Two photos from video of a player during a stop-start endurance test demonstrate the effects of fatigue in 28 seconds (between these two video frames). On the left he is near the start of the first length; at right, the same position on the ice, starting the fifth length (notice the circle on the ice).

Bottom line? His acceleration (red vector) is 60% slower

Why? Knee bend on the first length, allows him to lean more, producing longer strides.

Also, his entire body is extended in a straight line (SLX, not Pike), so force passes through his center of mass. Therefore, whatever strength he has in his lower body is more efficient before fatigue.

What we can't see in a still photo is that stride rate is much slower.

In a failed attempt to train endurance, he's practicing slow feet and inefficient postural habits.

Don't do this to kids!!!

