



**ON-ICE STUDY:**

# Smaller Ice Surfaces and Skating Development

In partnership with:



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# ON-ICE STUDY: SMALLER ICE SURFACES AND SKATING DEVELOPMENT

## INTRODUCTION

Hockey Alberta has adopted program guidelines and resources to support and provide direction for our Local Minor Hockey Associations to implement and operate a skill development program for players six years of age and younger -- the Initiation Program.

Based on Hockey Canada's Long Term Player Development (LTPD) model, players who are six years old and younger should be focusing on having fun, learning skills and developing physical literacy. The ultimate goal of this level of hockey is to make the first impression of hockey a positive one for all players and parents.

A key element of the Initiation Program is developing individual and team skills through the use of a smaller ice surface – achieved by dividing the ice into station locations, or into half-ice, third-ice, or cross-ice sizes.

Parents feel great pride when their child races down the boards, outskates all the opposing players, gets a breakaway, and scores. Unfortunately, this play does not translate well to higher levels of hockey. Instead, as the competition level increases, this type of play happens less often. If a player has not added a full array of skills to his/her “toolbox”, it can lead to adversity when the competition is stronger, and affect the player's overall enjoyment of the game.

A player who can control and protect the puck in small areas, skating with his/her head up, under pressure will generally be more successful over the long term than a player who has relied on the “breakaway goal”.

Hockey Alberta has worked with Minor Hockey Association Development Directors over the past couple of years to implement the Initiation guidelines. As part of that process, Hockey Alberta has received feedback that asks whether the smaller surface limits skating development, rather than enhancing it.

In August 2016, Hockey Alberta partnered with Powerscout Hockey and St. Albert Minor Hockey to conduct a study on the effectiveness of smaller ice surfaces in skill development. The study featured 40 Initiation-aged players (five- and six-year-olds) who participated in a series of tests to collect data on a number of game and practice scenarios.

With regard to skating development, specific data for skating speed and acceleration was collected from the following scenarios:

- 200-foot sprints
- cross-ice games
- half-ice games, and
- a full ice game.

Overall, an analysis of the data and observation of the on-ice sessions reinforce that using a smaller ice surface at the Initiation level helps in the overall positive development of skating skills and skating acceleration for our youngest players, thereby better preparing them for when they are old enough to move to higher levels of hockey.

Specifically, Powerscout Hockey noted four significant trends that emerged:



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## WHAT WE LEARNED

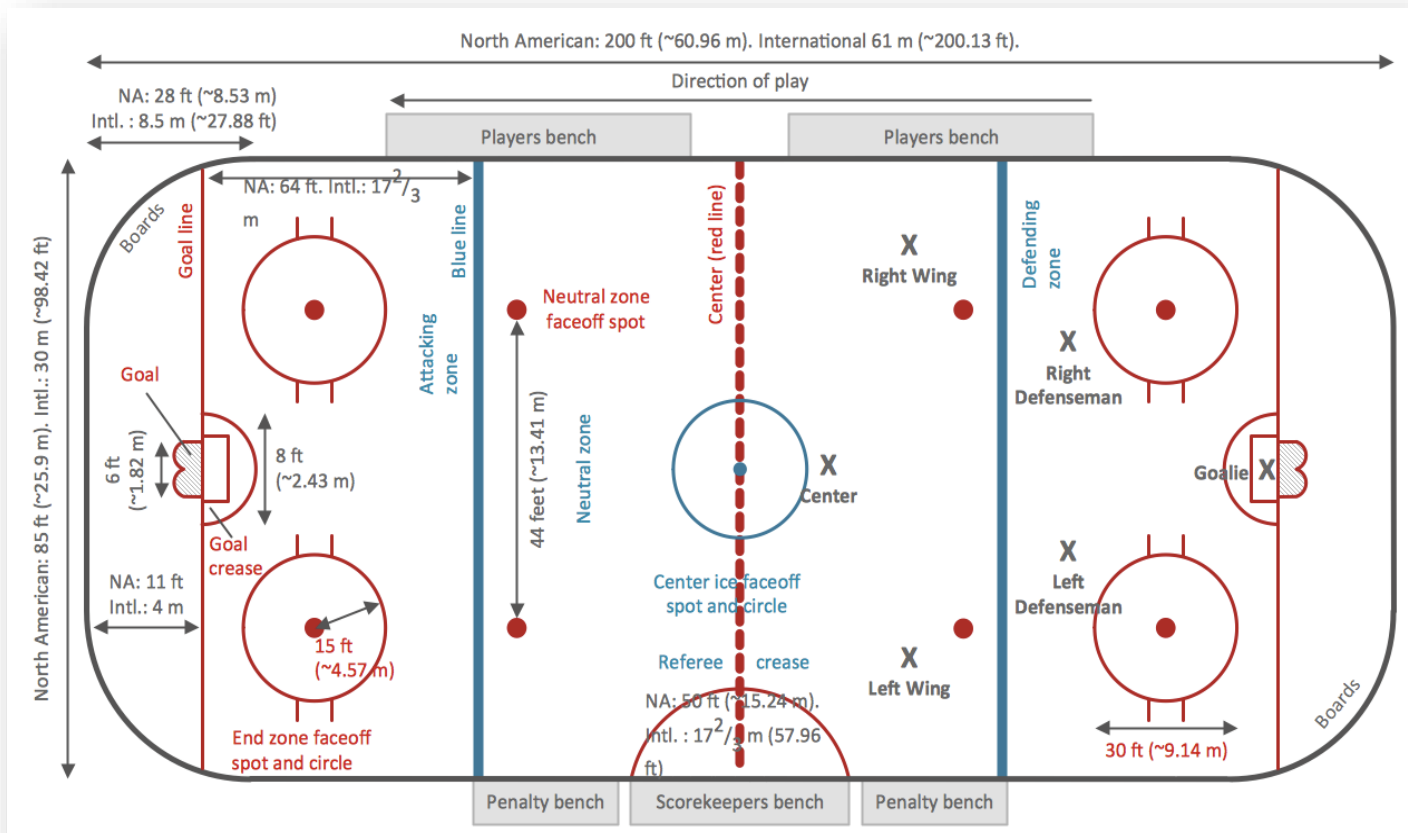
1. The average distance for the 5-6 year old players to reach top speed was **65 feet**.

Sequence	Average Top Speed	Average Distance to Reach Top Speed
<b>Sprints</b>	<b>17.5 km/h</b>	<b>65 feet</b>

### Why is this significant?

The distance 65 feet is exactly the distance from goal line to the nearest blue line (one zone) on a regulation-sized ice surface. A regulation ice surface is 200 feet x 85 feet. That means an average player CAN reach top speed in the cross-ice scenario and CAN EASILY reach top speed in a half-ice scenario. (See graphic for dimensions of regulation-sized ice surface.)

SPECIAL NOTE: The strongest skater needed only 60 feet to reach top speed, confirming the importance of acceleration.





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## WHAT WE LEARNED

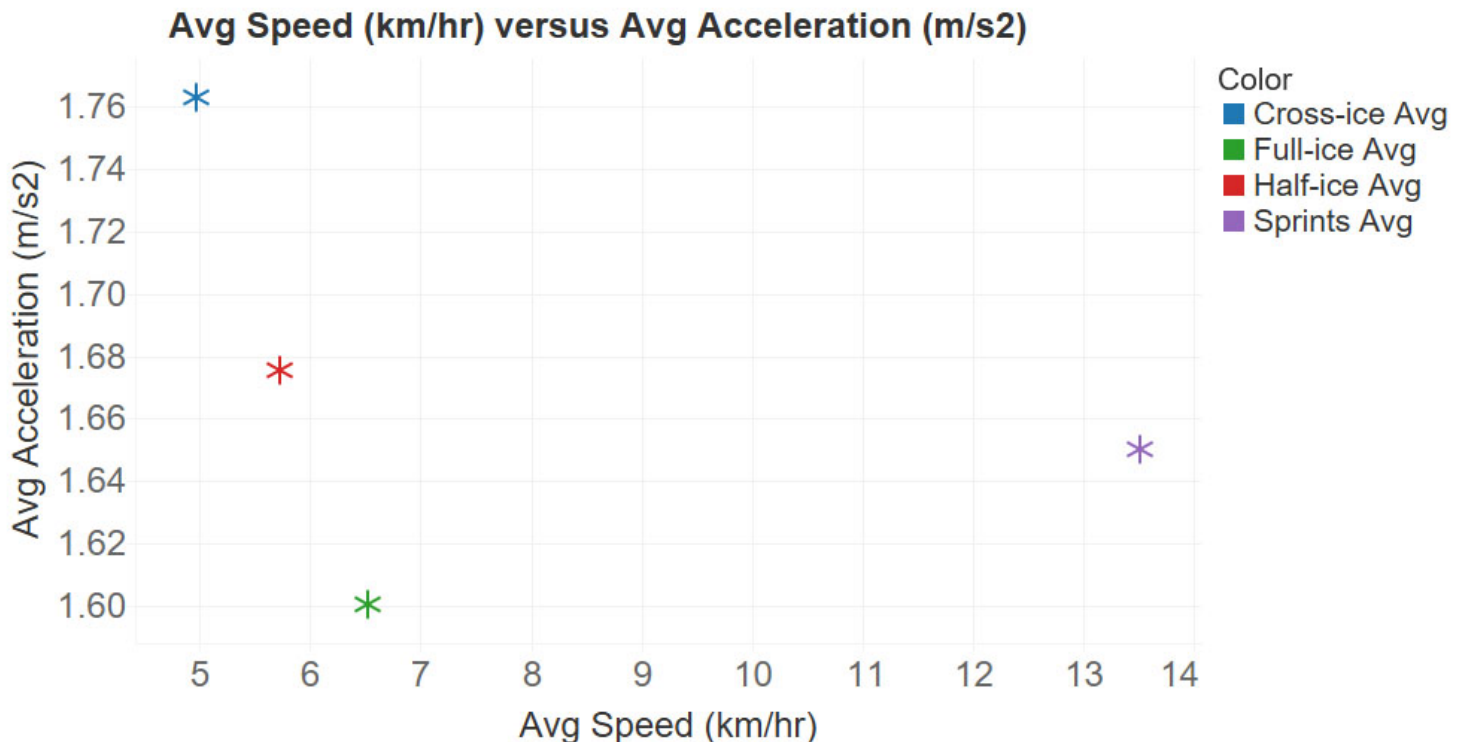
2. Player acceleration speeds ( $m/s^2$ ) increased as the ice surface size was reduced.

### Why is this significant?

Acceleration in the 200-foot (full-ice) sprints and the full-ice games was lower than in cross-ice and half-ice games. Puck movement and availability drives the speed of play, and young players want to “get the puck”. Observation showed that the players believed they had a better opportunity to get the puck when playing on half-ice or cross-ice, which resulted in increased acceleration in pursuing the puck.

SPECIAL NOTE: When looking at overall speed of the games, full-ice games had a higher average km/h rating — 0.8 km/h higher than half-ice, and 1.5 km/h higher than cross-ice games. However, observation noted a different kind of skating taking place in the full ice game — nine players chasing the puck carrier with fewer puck touches and fewer plays being made. These observations are in keeping with findings in similar studies done by USA Hockey.

[https://www.youtube.com/watch?v=CB\\_Ygapyl7c](https://www.youtube.com/watch?v=CB_Ygapyl7c)





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### WHAT WE LEARNED

3. The average sprint speed achieved in practice is double that of the average game speed.

#### Why is this significant?

To help develop a player's skating skills and to become a faster skater, the practice environment is generally more conducive than games. There is a greater opportunity to skate faster for extended periods of time in practice than in a game.

SPECIAL NOTE: This data confirms the importance of practices, and practice to game ratios. The practice environment has a significant positive impact on skill development opportunities. A 3:1 practice to game ratio is recommended by Hockey Canada.

Sequence	Average Speed (km/h)	Average Acceleration (m/s <sup>2</sup> )
Cross-Ice	5.0	1.76
Half-Ice	5.7	1.68
Full-Ice	6.5	1.60
Sprints	13.5	1.65
Average	7.7	1.67



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## WHAT WE LEARNED

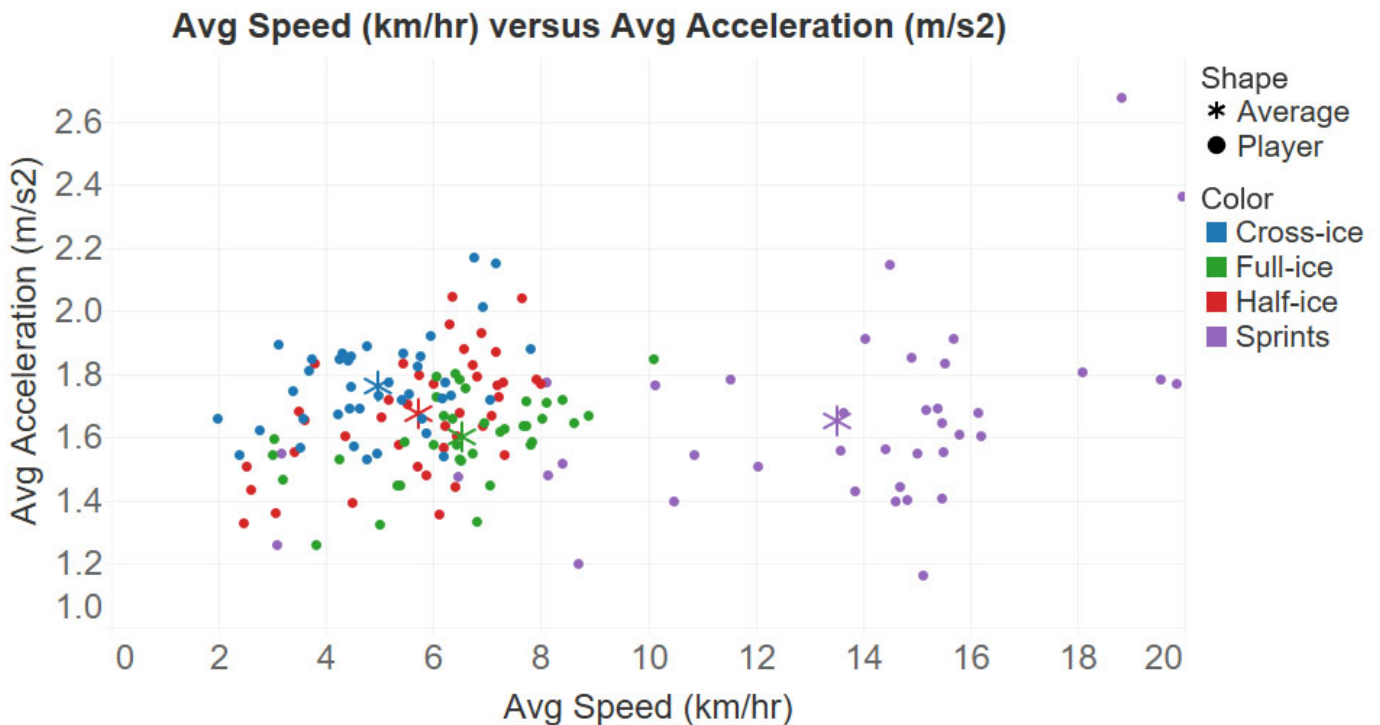
- When the ice surface size decreases, acceleration rates increase and the top speed comes down.

### Why is this significant?

The relationship between acceleration and top speed is crucial to understand. A combination of turns, pivots, transitions, stops, starts, change of pace and acceleration is needed to “skate the game”, rather than simply having great top speed. According to Powerscout Hockey data, an NHL player has a top speed of approximately 40 km/h, but they only spend 20 per cent of each game skating above 20 km/h.

**SPECIAL NOTE:** Half-ice hockey was found to provide an equal balance of speed and acceleration when comparing the three game scenarios.

- The average speed when combining all three game scenarios was 5.7 km/h (equal to the average speed of the half-ice game)
- The average acceleration when combining all three game scenarios was 1.68 m/s<sup>2</sup> (equal to the average acceleration of the half-ice game)





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## CONCLUSION

The ability to skate fast is an important part of hockey - but it is not the only part.

The data compiled by Powerscout Hockey reinforces the key tenets of the Initiation Program guidelines that reducing the size of the ice surface is important for our youngest players to have the best opportunity to develop the key skills associated with skating development over the long term.

Being able to detach from the short-term results and focus on the long-term process – which is what is recommended by Hockey Alberta and Hockey Canada through the Initiation Program guidelines and general principles of Long Term Player Development – is the key to helping our players improve, and keeping our province and country competitive in an ever-changing hockey landscape.

The data and the conclusions are supported by some of hockey's top coaches and skill development professionals.

In an Edmonton Journal article in 2013 (see full article in Appendix A), Dr. George Kingston stated:

*"When you do skate competitions you are **really most interested in acceleration and agility skating**. The flat-out use of maximum skating in the game of hockey, it simply doesn't happen very often."*

And, in an article published in 2015 by Scott Wheeler ([www.pensionplanpuppets.com](http://www.pensionplanpuppets.com)), Darryl Belfry, the skills development coach for the Toronto Maple Leafs, talked about the most successful professional players, and how the NHL's number one skill is not max speed, but the ability to alter speed:

*"Offense is about dictating, it's not about being in reaction," Belfry said, adding that one area where all players can be trained to improve is in changing speeds.*

*Belfry argues the NHL's number one skill is not max speed, but the ability to alter yours. By working on a player's skating patterning, any player can quickly learn.*

*"They already have very high skating skill sets but oftentimes their patterning doesn't lend itself well to change speed that's going to be necessary in the NHL," he said.*

### For more information:

**Mike McGinnis, Hockey Alberta Regional Development Consultant**

Email: [mmcginnis@hockeyalberta.ca](mailto:mmcginnis@hockeyalberta.ca)

Website: [www.hockeyalberta.ca/players/initiation-program/](http://www.hockeyalberta.ca/players/initiation-program/)



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### Appendix A – Dr. George Kingston

#### Think Small for Big Gains in Learning Hockey

By Jason Gregor, Edmonton Journal, 10/02/13

#### USING HALF-ICE, FEWER GAMES AND MORE PRACTISE TIME A PLUS FOR KIDS, SAYS DEVELOPMENTAL GURU GEORGE KINGSTON

George Kingston started his coaching career going on 50 years ago — in 1968 at the University of Calgary — but the man considered one of Canada’s best developmental coaches still keeps giving back to hockey at age 74.

One thing the hockey man with the long resume and career is is a proponent of on the ice is keeping things short — particularly with developing and coaching young hockey players.

“When I went over to Europe to study the game, I noticed right away that the Europeans were developing much more skill into their players simply because they practice more,” said Kingston, who was part of Hockey Canada for more than a decade and had different roles with the 1980, 1984, 1988 and 1994 Olympic teams.

“But their practices were more like small period games, and mini games and mini challenges, competitions to get faster, to be better with the puck, to be able to shoot faster, to be more accurate, all of those things were done in practice. They spent no time on systems.

“Their practice ratio for kids was up to five practices with no games, and maybe an occasional game. They didn’t really need games because what they did in practice emulated a game, in fact it was much better because the kids touched the puck more often.”

Hockey Edmonton announced early this year that the majority of pre-novice and novice practices will be on half ice. Atom teams will have eleven practices on half-ice while peewee teams will have seven. I was amazed at how many parents felt this would hamper their child’s development.

Why should kids between the ages of 5-10 be playing and practicing on the same sized ice surface as pro hockey players? It makes little sense to me. If we want our kids to improve their skills they need to practice more often. According to Kingston, Canada is starting to realize this.

“In 1971, Canada’s model was basically that there would be three games for every practice,” said Kingston, the San Jose Sharks’ first head coach and a former assistant coach with the Minnesota North Stars and the Calgary Flames. “Hockey Canada now recommends, thankfully, through the long term development plan, basically one game to every one practice.

“We’re still behind the Europeans in the sense that they do a lot of shrinking the game, changing the game to a lot of small area games to help kids develop their skills quicker. We have to meet kids on their terms and their development level much more readily than we have in the past.”

One of the biggest complaints I’ve heard about half-ice practices is that they will hamper a young player’s skating abilities. Once again, Kingston was quick to shoot down that theory.

“When you do skate competitions you are **really most interested in acceleration and agility skating,**” he said. “The flat-out use of maximum skating in the game of hockey, it simply doesn’t happen very





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often. What does happen is that you have to be adjusting, changing, going forward, backward, lateral, always turning and moving toward the puck; that's agility skating ... Practices in smaller areas generate more stops, starts, turns and, most importantly, more puck touches."

The most important aspects of hockey are skating and puck control. Kingston outlined how practicing and playing games on a smaller surface will improve young player's skating, but also their puck-handling skills.

It is crazy how infrequently kids actually touch the puck in a game, Kingston informed me.

"In the late 1970s, while at the U of C, we did a study on entry-level players all the way up to the Calgary Cowboys (the former WHA team)," Kingston said. "The average time that a Cowboys player had possession of the puck to stick handle, to pass, to shoot, or even touching the puck when they were trying to get possession was only 47 seconds a game.

"For kids eight years of age and younger, who played on the full-sized rink, they had between 15.3 to 20.7 seconds of actual contact with the puck or puck possessions."

That means the average player would need to play 60 games just to handle the puck for twenty minutes.

Hockey Edmonton made a great decision implementing half-ice practices. Kids will touch the puck more often, and their skating; stops, starts and turns should improve, if coaches implement proper drills.

According to Kingston, the best drill coaches can use is a simple one: keep-away.

"Play keep-away for 20-30 seconds," he said. "Blow the whistle and let the other player start with the puck. It is the basics of hockey. You have the puck, or I have the puck."