

# **A new approach to Ice hockey skills development in an SHL Club**

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<p>The main objective of this report is to demonstrate the practical use of a constraints led approach in an ice hockey skills development setting. The thesis is structured as a learning diary where the author recorded the implementation of theory in a practical working environment, as an ice hockey skills coach in an SHL club, and analyzed the results. The time period consists of 1 introductory week, 8 reporting weeks, and 1 revision week.</p> <p>The report is divided into 4 parts. The first section gives an introduction to the professional literature, organization, working environment and key professional concepts. It also clarifies the type of constraints, including task, environment, and individual, which will be manipulated during the process.</p> <p>In the second section the framework is described. The framework is an analysis of the current work and the skills that are needed during tasks. Additionally in this framework the influence of interest groups are detailed, along with the exact interaction skills that are required.</p> <p>Section three gives a wider description of the daily objectives and tasks. Each week is followed by weekly analyses that reflect on work, old and new methods, players' feedback and the future implementation of new ideas, skills and strategies. This section will look into ice hockey skills development by manipulating various constraints. It shows the most central observations and how certain skills have changed. This is the most useful part for coaches where theoretical ideas are implemented into practical methods.</p> <p>Finally the conclusion summarizes and analyses the development aspects. It discusses how sessions changed from mono-stable to multi-stable when specific constraints are manipulated. It also points out how important it is to have an optimal balance regarding feedback. The importance of decreasing time and space is explained; this is a method that forces players to think and act faster. The author's personal development also identifies how he learned to set the bar for optimal load of challenge. He was able to make steps forward in setting the intention of sessions. It is pointed out how learning environment affects athlete's development and motivation. The author also concludes that it is in an important tool to have a wide variety of possible solutions, in order to maximize player's concentration and creativity. It allows individuals to discover different solutions on their own and puts emphasis on the role of individual differences. It is essential to realize that individual needs can differ. Game sense is a complex skill that needs to be developed constantly. For future development the author sets an objective to focus on methods where skills can interact and improve in conjunction with each other.</p>	
<b>Keywords</b> Skills development, self reflection, ice hockey, constraints-led approach, nonlinear pedagogy	

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# 1 Introduction

My name is Balázs Bartalis and I have been working as a hockey coach in Sweden for 3 years. The organization I am working for is called Växjö Lakers and in this season I am responsible for skills development in the men's, U20 and U18 teams. Twice a week, I also help out the youth academy players with group or individual skills sessions.

## *Observation period*

The observation period for this thesis starts on the 20<sup>th</sup> January 2020 and finishes on the 13<sup>th</sup> March 2020.

## *Professional literature*

When it comes to academic framework I have chosen two references as sources. Both books provide a framework to explain how nonlinear pedagogy can be used to enhance movement coordination and decision making skills. This framework is based on three constraints: performer, task, and environment. According to these books the functional coordination patterns can be altered for performers by adapting those constraints mentioned above.

The first source is *The Constraints Led Approach: Principles for Sports Coaching and Practice Design* by Ian Renshaw, Keith Davids, Daniel Newcombe, Will Roberts (2019). "Seeking to bridge the divide between theory and practice, the book sets out an 'environment design framework', including practical tools and guidance for the application of the framework in skills acquisition settings"(Renshaw & al. 2019,1). The reason why I chose this is that the central content of this book is to provide a theoretical knowledge about constraints-led approaches during practice, and it also includes a lot of practical solutions. "An additional goal is to support the development of nonlinear pedagogy through the provision of practical examples that will enable readers to understand how the key principles of ecological dynamics underpin current practice in a variety of sports"(Renshaw & al. 2019, 17).

The second source is called *Nonlinear Pedagogy in Skill Acquisition: An Introduction*, by Jia Yi Chow, Keith Davids, Chris Button, Ian Renshaw (2015). "It offers a thorough and critical appraisal of the optimal use of instructional constraints and practice design and discusses methods for creating challenging and supportive individualised learning environments at developmental, sub-elite and elite levels of performance"(Chow & al. 2015,

1). This book provides a wide understanding of nonlinear pedagogy. It gave me instructions on how to find an optimal path for certain constraints manipulation. It put a lot of emphasis on individual learning environment that is a crucial factor for skill development in any type of sport. This book also contains many practical ideas that gave me thoughts and helped me understand the theory behind nonlinear pedagogy. It also offered me different methods how to build an active practice environment and provided techniques to design effective practices.

### *Organization and working environment*

Växjö Lakers Hockey Club is one of the youngest clubs in the Swedish Hockey League (SHL). The club was founded in 1997 and started four divisions below the SHL. In 2011, after only 14 years they made it all the way up to the highest league. After being promoted, it only took 4 years to sit on the throne of the Swedish hockey by winning the club's first national championship in 2015. It was no coincidence they happened to win again in 2018, and almost took the club's first Champions Hockey League trophy only to lose in the final. Right under the pro team, the Växjö Lakers U20 and U18 teams are also playing in the highest divisions, providing motivation for the 500 kids who are currently playing in the club. The working environment, I would say, is the dream of any ice hockey coach. We have 3 full sized rinks, including the Vida Arena with a capacity of 6000, Växjö Ishall with a capacity of 4000, and a practice rink all under the same roof. We also have access to 3 fully equipped gyms, a track and field stadium, an indoor football field with running track and shooting room. There are almost 100 full time workers in this huge facility, including chefs and waitresses in the club's own restaurant, to meet the needs of all the hockey players and coaches.

## 2 Framework

### 2.1 Analysis of your current work

If I could simplify my work tasks I would say my job is to make hockey players better, as a skills coach for the men's U20 team, U18 team and the youth academy. Basically, I am responsible for individual ice hockey skills development, for the whole club. More specifically, the skills I am responsible for developing are skating, shooting, stickhandling, passing and other skills that are needed for ice hockey. Concretely, I spend my time on ice with them showing/practicing the correct techniques of those above-mentioned skills. With the older players I watch their shifts from previous games and analyse specific movements. Twice a week I take the U20 junior team to the gym where I plan and lead their workout.

Skills that are needed in my tasks:

According to the European Sport Coaching Framework these six primary functions are defining the daily work of the coach.

1. Set the Vision and Strategy. The coach creates a vision and a strategy based on the needs and stage of development of the athletes and the organizational and social context of the programme. The coach develops a specific plan outlining the steps required to bring the strategy to life and realize the vision.
2. Shape the Environment. The coach work with a group of athletes and takes responsibility for the common and individual objectives and the institution's. In order to do so, the coach seeks to optimize the environment in which the programme occurs through the procurement and maximization of personnel, facilities, resources, working practices and the management of other coaches and support personnel.
3. Build Relationships. The coach builds positive and effective relationships with athletes and others associated with the programme. This includes personnel at the club, school, federation and other levels. The coach is responsible for engaging in, contributing to and influencing the organizational context through the creation of respectful and effective working relationships with those he is accountable to.
4. Conduct Practices and Prepare and Manage Competitions. The coach organizes suitable and challenging practices using effective pedagogy and methodology to promote learning and improvement. The coach prepares for targeted and appropriate competitions and also oversees and manages the athletes in these competitions. The coach creates additional and relevant internal and external competitive opportunities where appropriate to promote individual and team development.
5. Read and React to the Field. The coach observes and responds to events appropriately, including all on- and off-field matters. Effective decision making is essential to fulfil this function and is a cross cutting capability that should be developed in all coaches at each stage of their development.
6. Reflect and Learn. The coach evaluates the programme as a whole as well as each practice and competition seeking improvements. In addition, personal evaluation and reflection underpin a process of ongoing learning and professional development. An important element of this process is the coach's efforts to support the education and development of other coaches. (European Sport Coaching Framework v1.1 2017, 23.)

The information I need to understand in order to excel, as a trainer, is that of the athlete and his stage of performance (I only train male players so I will use the male pronoun throughout the thesis). I need to know his strengths, weaknesses and history. It is essential to have a clear picture of the individual's background, to understand the context of his current skills. I also need to know where he wants to go in terms of performance.

Practical skills I need to succeed in my tasks:

- Skating
- Shooting
- Passing
- Stick handling

### *Evaluation*

I would say I am somewhere between the skilful performer and experienced specialist. This means I have a thorough understanding of the work tasks and I perform systematically at the level required for the tasks. I am also capable of instructing others to perform the tasks. I would say the only step that I am missing right now to reach the highest level is the ability to develop the procedures required by the tasks. Every skills coach on this level needs to have a full understanding of hockey skills development and its methods. In my opinion, and also from the feedback of experts and other coaches, I have this knowledge but with a mindset of "there is always a lot to learn". Obviously, staying humble and eager to learn is necessary to keep developing. I can perform systematically at the level required by the task; however it was not always like that. This was my third season in this role and I can tell that it took me three years to reach this level. What raised me to this level is my passion towards ice hockey. In order to make the last steps, I need to be able to develop the models and methods I use. I believe the biggest challenge will not be to find the models because I always read and learn about new methods and models, but rather the hardest part will be to modify or customize these methods in order to be useful to my players and this organization.

When it comes to my professional development, I have definitely made huge steps forward in the last three years. I am fully aware that not a lot of coaches at my age have the privilege and opportunity to work in this position. My job requires a lot of field experience, which I have much of, since I have been doing this for years. Although, this is my first season with the men's team, which needs a different approach in regard to working with them. It is important to mention that when we are talking about my stage of professional development it can be divided into two different parts. The first one would be the theoretic-

cal part where I believe that my professional stage of theoretical knowledge is lower than my real practical knowledge. The second part is practical in which I have developed a lot over the years because I have been coaching. Thus, I can say that I have gained a lot of practical field experience without knowing the concept and philosophy behind those drills.

As I mentioned previously this is my first year where I am responsible for the whole club's skills development. I have been given a lot of freedom from my bosses. I get to decide everything, including where and when the practices will take place, how long it will take, how many players I want to participate and what are the topics I want to work on. The freedom in this case taught me how to manage my time, how to be independent and how to recognize someone's developmental needs all alone. The biggest challenge for me in this season was to work with a young age group that I have never worked with before. They are 10-11 years old and the hardest part for me was to gain their trust. They are a totally new generation and in my opinion it is harder to build a bridge with them by only talking. You need to demonstrate your knowledge and prove everything to them more than you do with older players. Building a bridge with younger players is definitely something I need to focus on in the future. This ability will help me to bring out their best performance and motivate them in hard times.

In addition, I need to improve my theoretical knowledge behind the movements and skills in order to get a clearer picture. This know-how skill will hopefully take me to the next level as soon as possible. The methods I have been reading about in the above-mentioned books in the introduction will definitely help me achieve my goals, as I will be able to better understand the motivation and reasoning behind the practical side of coaching.

## **2.2 Interest groups at work**

When it comes to interest groups at my work, I can say that I am in a really lucky position regarding how many groups/people I need to work with/for. I would like to note that I am not connected with anyone outside of the hockey section of the organization, so I have no real contact with marketing, economics, sponsors or board members. The highest position I am accountable to is the General Manager. He is the one I negotiate my contract with, and clarify my roles and tasks. Under the General Manager there are two managers responsible for the junior organization and youth organization. The daily practices and goals are discussed with them, except the men's team sessions. When it comes to professional players I communicate with the men's team coaching staff, which includes 4 individuals.

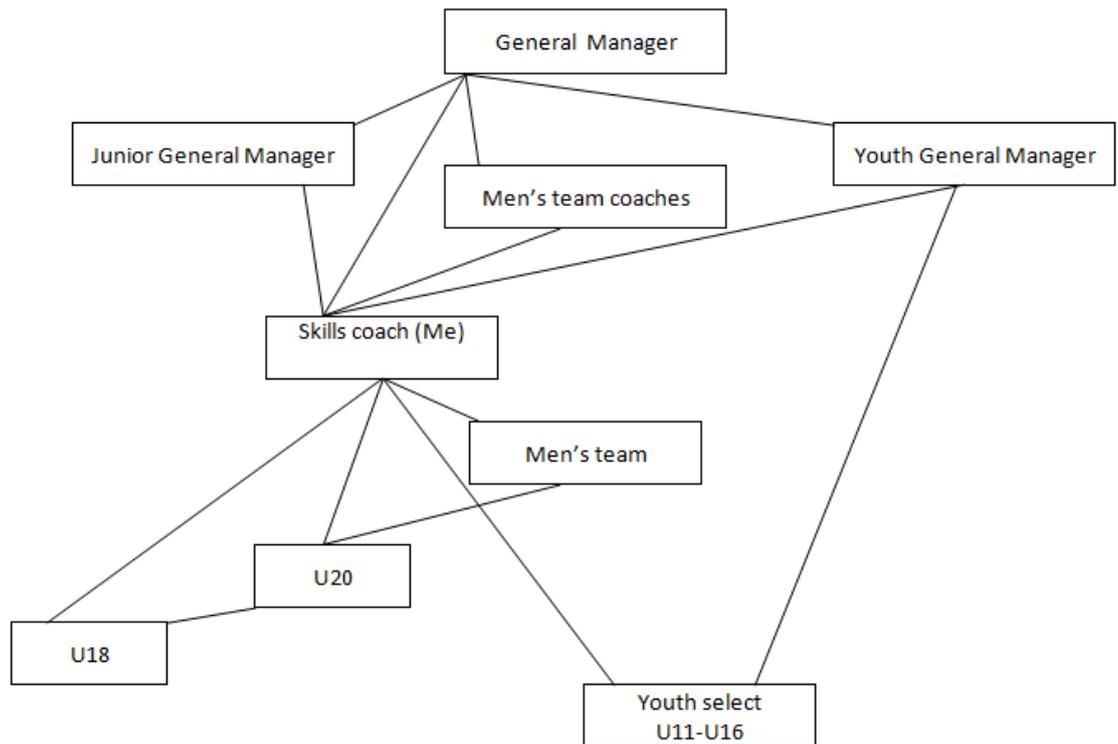


Figure 1. Interest groups at work

Overall there are eight coaches I work with and discuss daily topics, drills and schedules. Obviously these eight people's opinions and interests are central to my work. Another important part is the players group, which covers 4 different teams: youth select, U18, U20 and men's team. Their feedback is as important as that of other coaches, keeping in mind that they are the ones we want to help and improve.

### 2.3 Interaction skills at work

When it comes to communication at my workplace the biggest emphasis is on one-on-one discussions. Most of the time, I have these discussions with head coaches where we go through their schedules of practices and games each week. According to these schedules we plan together the optimal times for skills sessions and gym workouts. At some point in these meeting we go through the previous weeks, make conclusions and discuss the possibilities of how we can improve each player. We discuss if any of the players need individual sessions or if they had an injury and need some extra ice time.

There are also one-on-one discussions with the players every day but these have a different structure. These interactions involve much more of a question and feedback format.

The other type of interaction I have is when I present my plan at the beginning of the season in front of a group of coaches. We also gather couple times a year to discuss and monitor each other's work and the things that need to be changed. That type of interaction involves longer monologues, professional presentation and the ability to speak in front of a larger group.

The challenge I need to face every day is to draw a line with some players. In my first years as a coach, I had some difficulties due to my young age in that I let them get too close and they didn't respect me as a coach. It is important to recognize those players who are willing to challenge you and your authority. I am the one who had to learn how to deal with it and understand that they are just young teenagers pushing boundaries.

In order to interact with these groups I need to rely on my building relationship skills. I have to know how to reach out to these guys and feel who respects me. Each age group requires a different approach and moral/mental communication. I also have to know how to build a bridge and respect. Especially with those players whose respect I have not earned yet.

### **3 Diary entries**

#### **3.1 Observation week 1**

*Monday, 20 January 2020*

This week will be about manipulating mostly task constraints. Today's objectives are working on body weight-transfer, body posture, balance and combined motor skills.

Today I will have 4 different ice-sessions, including three smaller groups and one individual skills session. At the first one at 8:15 I will be working with 5 junior players who have this practice as part of their school schedule three times a week. These guys are playing in the highest U20 league in Sweden. Today I will put the focus on body weight-transfer while keeping forward strides in order to maintain speed.

At 10 o'clock, on my second session I will have a group of two players. With these two players we will also put the emphasis on weight transfer, but this time in a more advanced way. They are 20 years old and also playing in the highest level in Sweden. In their case these drills will be more complex and challenging compared to the first session.

Around 11 a.m. there will be one private session with a 30 year-old amateur, who wants to be a better skater. With him we will go back to basics and concentrate on the right body posture and balance.

After lunch, at my last session I will spend one hour with two young forwards from the pro team. This will be the most challenging and fun practice of the day. I will focus on putting drills together where they have to use their combined motor skills during high-speed game situations. These drills will include skating and puck handling at the same time. To make it more game-like we will create game situations where certain skills need to be used, followed by a shot or pass. With this kind of set-up we will be able to cover many different topics.

For the day I would say we have reached our objectives, especially with the last group of the day. They are very humble and hungry to become better every day; I love to work with them. One of the challenges I faced today and this is typical with younger players is the lack of motivation. The first session in the morning with the school kids there was an individual or two who were not fully committed (this occurs quite often). In regard to changing task constraints we used heavier pucks for passing and shooting.

*Tuesday, 21 January 2020*

Today's objectives are to improve edge work, forwards strides, agility and crossovers.

Like every Tuesday, today I will have an early start. My first ice practice will be at 6:30 a.m. with the youth-select team of the academy. This skill practice provides an opportunity for those kids between U10 and U16, who want to develop their individual skills. Today we will be working on edge-work and puck protection.

At 9 o'clock there will be two 18-year-old twin brothers who are having some developmental needs with skating. Two times a week we are working on their forward stride movements and agility, so as always we will be doing the same today.

At 10 o'clock, I will have a skills session with Markus. He is my "special project" nowadays and plays in our pro team, in the highest league in Sweden (SHL). Today we will put our main focus on crossovers and picking up speed after tight turns.

In the afternoon, I am going to have a circle type gym session with the U20 team. On today's workout there will be 10 different stations and each station will have two players at one time. We are going to kick off with a 15 minutes long dynamic warm up, which is followed by some sprints on the agility ladders. The intervals will be 30 seconds on, 30 seconds off, i.e., they will work for 30 seconds and then rest for 30 seconds. At each station we will repeat the exercises twice. As a finisher, we will challenge the core with some plank variations.

At the end of the day, I am going to run a gym session for the U18 team. They will have a game on Saturday, so today is the day to work on maximal strength. A 20 minute long dynamic warm up is followed by 3 stations with 7 players on each. Every station focuses on lower-body and core exercises.

For the day we have reached our goals by practicing edge work and forward strides. I had to be creative today in order to manipulate task constraints. Since the main focus was on skating today, I had to come up with the idea of adding rules while allowing them the freedom to work out their own process.

*Wednesday, 22 January 2020*

Today's objectives are to become better in shooting, shut downs and outside edge work.

On my first ice session today I am going to have the 2003 born skaters at 8:45. The focus today will be on quick release shooting technique. In order to make progress today I will build up the practice step by step. We will start with simple wrist-shots to get a good feeling and warm-up. Taking away the amount of time they will have will force the players to automatically have a quicker release. It is very important that as a coach I am trying to slowly make progress in these drills. Players can develop a bad technique and lose interest if I am not aware of the correct strategy.

The every-day routine with my pro player will start at 10 o'clock as always, and the emphasis will be on quick shut downs, followed by quick shot. I will force him into situations where his only good decision is a shut-down. It will be his call to decide which way to go, the ultimate goal is to escape from tight situations and by that create time and space for himself and his teammates. At the end the session we will have some outside-inside edge work. This is something new that I have realized in that these finisher edgework drills are great confidence booster before games or team practices.

For the day I would say we had a rough start because we used heavier pucks for shooting. It took time for them to adjust. In addition it also took time for them to trust me and be open to new methods. The beginning was harder than I thought it would be. They needed more repetitions to adjust, but after that we were able to take away time and space. In the final steps of today's sessions we used normal pucks again and it was a significant positive change in the quickness of shots.

*Thursday, 23 January 2020*

Today's objectives are working on skating, stick handling and sprints.

I am going to start my day with the pro team and work on the inside-outside edges today. Those drills will challenge and teach them where to put their body weight in tight turns, whether it is on the inside or outside edge.

At 11 o'clock, the oldest U20 players and myself will have a 45 minute long skills session where the focus will be on high speed stick handling. The point of this is on not losing control of the puck while moving forward and maintaining speed as much as possible.

In the last of my sessions today, we are going to have off-ice speed training with the U20 team. After a warm-up, we will have some sprint variations, followed by sprints with rubber bands and competitions.

For the day I kept using heavier pucks for stick handling and shooting. Just like yesterday, we were able to show progression with normal pucks at the end of the practice.

*Friday, 24 January 2020*

Today's objectives are working on combined motor skills, shooting and body posture.

Today there will be a session called hockey-school at 8:15 a.m. with the 2001 born players. My drills will be focused on high-speed puck movement while maintaining forward speed. In this diary I will call these types of drills 'combined motor skills'.

At 10 o'clock there will be the regular pro-team skills session. It is going to be a pre-game skate so we will take it a bit easier today, just having some edge-work and quick release shooting drills. I am going to make them feel comfortable with both inside and outside edges while paying attention to staying low and keeping their heads up. Although we are talking about professional players, it is always good to practice the basics because it gives them a lot of confidence and makes them trust my methods.

At the youth skills session in the afternoon we are expecting over thirty kids, so it will be a challenge to make individual skills session with that amount of players. I am going to split them into groups of ten according to their skill level, focusing on staying low in the skating position. Obviously, the older groups will have the puck involved.

For the day we have partly reached our objectives. Working on combined motor skills always gives a lot of freedom to players and coaches to create new methods and drills. Today I have learned that feedback is a dangerous weapon that you have to learn how to use. Too much can cause destruction, and too little can also have a negative impact.

*Weekly observation*

Before we jump into the first observation, it is important to understand what the theory is behind constraints-led-approach.

Gibson points out that “the CLA (figure 2.) is an approach to teaching and coaching based on the fundamental concept of the mutuality of the performer and environment”(Chow & al. 2015, 19).

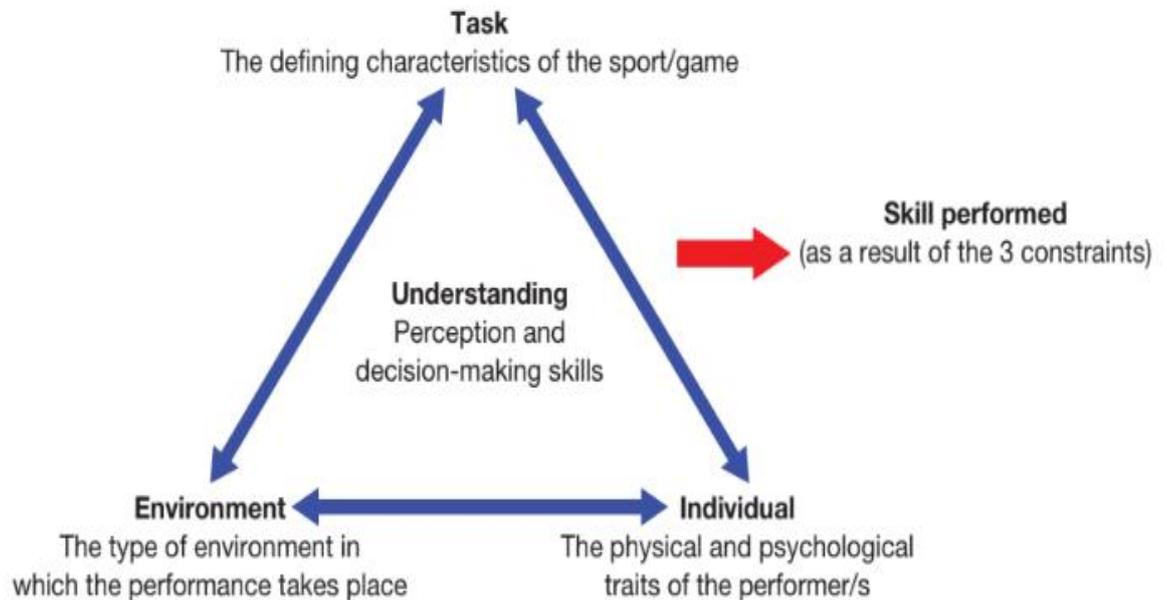


Figure 2. Constraints-led approach: skill as a product of three constraints: task, individual and environment

Through the interaction of the three core categories of constraints – task, environment and individual – a learner will self-organize in attempt to generate effective movement solutions. (Renshaw & al. 2019, 19.)

Learners need to be provided with practice task constraints that allow them to explore dexterity in their interactions with the performer’s environment. (Renshaw & al. 2019, 47.)

According to the literature, with the interaction of those three constraints, skills can be learned and developed in a new method of teaching.

The first week I have started by focusing on manipulating task constraints, more specifically equipment constraints. Most importantly, this is a method that I have been using for a while on my skills sessions without actually focusing on it. I always believed this is a key feature of successful skills development. Typical examples of this are: changing the width and length of the playing zone, changing a piece of the equipment, or adding specific rules or solutions.

During the first week by focusing on changing task constraints, I had to be more creative and prepare more detailed practices. I had to clarify why these methods would help my player's development.

Different individuals have their own constraints, which are relatively unique. In this sense, modifying the same constraints will have different impacts on different individual learners... A coordination pattern observed in one individual may not necessarily work for another individual since the manner in which the performer, task and environmental constraints interact may or may not vary greatly between individuals. (Chow & al. 2015, 30.)

To sum it up, every individual needs a customized method in order to develop.

This week has been about mostly manipulating equipment. The most successful solution ended up being to use heavier pucks. It was visible progress after changing back to basic pucks. Using different weights of pucks allowed individuals to explore and develop their own individual techniques.

The problem I have had during the week was that I gave too much feedback. Regarding the new methods, I was focusing on the amount of information and not the quality of it; "providing learners with both detailed pre-task instructions and concurrent movement-related feedback can often prove to be too much, particularly in complex tasks where spatio-temporal demands are high"(Chow 2015, 187).

I believe my skills have developed the most during this week in this particular area.

The provision of augmented information (typically known as feedback) is thought to be generally beneficial for learning, but this may not be the case. Instead, a better focus for practitioners should be on the quality of information available in learning how to support learners to find the information that best supports their actions. (Chow & al. 2015, 186.)

In the future I will concentrate on finding an optimal balance regarding giving feedback and avoid causing a form of 'paralysis by analysis', which is the state of over-thinking and over-analyzing.

Overall, the players had positive messages and feedback regarding manipulating task constraints. They were able to adapt and showed new skills, especially in their shooting technique.

### **3.2 Observation week 2**

*Monday, 27 January 2020*

This week will be about manipulating mostly task constraints. Today's objectives are to improve passing, decision-making and shooting.

The only skills session today will be with the pro team where we will be focusing on zone entries. This topic covers receiving passes, skating and edgework, quick decision making, passing and shooting. We will kick-off with simple solutions by skating full speed forward, receiving the pass on the offensive blue line, after entering the zone, while having their head up, they are forced to make a decision according to the defender's position. If the defender is cutting off the way along the boards, the forward needs to cut into the middle. If the defender is protecting the middle, the forward needs to shut down and find the passing lane. In terms of progress, I will provide many other opportunities along the way. They will have to switch sides on each drill so it will prepare them for all kinds of game situations.

For the day we have reached a lot of goals by changing rules. It was impressive to see how players adjusted to the new rules and discovered new solutions by simply giving them more freedom but still focusing on and achieving the goals set out.

*Tuesday, 28 January 2020*

Today's objectives are working on passing, crossovers, and spin-o-rama variations.

Today I will start pretty early as on a typical Tuesday. The first session will be with the youngest guys where we will do target passing. The drills I will show have a systematic progress line which builds up the technique of passing from the basics. A very essential and important step before we start passing is the ability of receiving the pass both forehand and backhand. This will be our first drill before we would move onto giving passes.

On my second ice session with the pro team's player Markus, we will keep working on his skating as we did last week. I will keep it simple today by focusing on the length of his stride and putting more pressure on the outside edge. This second theme will require drills where crossovers will have a crucial role. The point will be to skate as fast as possible with the least amount of strides by pushing with outside edge.

At 11 o'clock I will practice with the forwards from the U20 junior team. As a new challenge we will try variations of the so-called spin-o-rama move. This is a move of spinning a full turn while skating with the puck, in order to protect it from opponents. This move will require the players' full attention on skating and puck handling together. In order to get comfortable with it, we will perform it both ways, backhand and forehand.

In the afternoon I will have my last session with a gym workout with the U20 team. They will have game tomorrow, so today they will do their regular pregame workout.

For the day I had some difficulties in setting the optimal level for the youngest skaters. In the morning it seemed that the drills were too challenging, which eventually made some players feel uncomfortable and unmotivated. The rest of the day went pretty well regarding reaching our task goals.

*Wednesday, 29 January 2020*

Today's objectives are to work on body fake moves, edge-work, and combined motor skills.

This morning I will start with the high-school players on the ice. The main focus will be on body-fake moves where the forwards and the defenseman will work separately. The forwards will work on offensive moves, such as dropping the shoulder and doing one-leg turns in order to create those body-fake moves. Defenders will work on their moves by picking up the puck in the defensive zone and shaking off their fore-checker. I will ask them to have their heads up and in order to decide which way the forward is coming from. The hardest task here will be to pick up the puck while having their attention on the player behind him. A very essential move here will be the fake move that will come right before the exact turn. The perfect way to execute this move will require quick feet and the ability to make a fast decision.

At 10 o'clock I will skate with Markus Sylvegard alone from the men's team. One of his biggest weakness is that he never learned how to use and push with his outside edges.

We will target that today by only allowing him to use his outside edges. In the first half of the practice we will not use any pucks, focusing only on the correct technique of skating.

After lunch, at 3 o'clock I will skate with the youth group of the academy. Today I will put the emphasis on combined motor skills. In my opinion, the earlier you start working on this with young players, the more complex skill set they will have by the time they become professionals. On this session skating and puck movement at the same time will be the objective.

For the day I have set the bar based on yesterday's conclusion. The goal today was to start every practice with a little bit easier drills than usual. I made small rule changes where the focus was still on reaching the task goal but giving them more freedom on how to get there. I still had some issues with the youngest group but we have definitely made some small progress compared to yesterday.

*Thursday, 30 January 2020*

Today's objectives are to work on skating turns and increase confidence.

The day's first practice will be at 10 o'clock with 3 defensemen from the U20 team. The emphasis will be on transition from backward skating to forward. In order to perform these movements correctly and effectively, we will need to start slow with hip-opener drills. This means every time we turn we will use only one leg by opening the hips and changing the leg and direction together. After I have corrected the small mistakes and they have a good understanding of the details, we will increase the speed and create a game situation where they will be forced to change directions several times.

Right after that, I will run over to the main rink and have my regular skills session with Markus from the pro team. There will be a game tonight so today's plan will be to go over everything we have done this week. No new drills will be shown to him, so hopefully today will be a great confidence boost for his skating and a good preparation for the game.

In the afternoon, my last skills session will take place in the gym. For the U20 junior players I will create drills where we can simulate single leg skating pushes. It will include a lot of single leg jumps and slides focusing on the skating position the whole time.

For the day I had more time to implement some advanced rule changes. On the first and second session the ultimate goal was to make every drill game-like as much as possible. In my opinion we have reached that goal. A great example was adding forwards to fore-check defenders before they needed to pick up the puck and turn. With Markus I acted as a defender in every drill so he got a good feeling and confidence by simulating game situations.

*Friday, 31 January 2020*

Today's objectives are to develop passes, shots and balance.

The first session today will be with the high-school forwards and we will practice backhand passes and shots. This is the area where most of the players and coaches do not put enough emphasis. Having the ability of using your backhand as skilfully as your forehand is one of the biggest advantages that a professional player can have. They will work in groups of four at four different stations. On the first station the four players will stand in a square, one puck will be passed around and they will only receive and pass using backhand. On the second station, the same set up will be used but the pass needs to be high. The third station will start with receiving the pass forehand, changing to backhand and finishing with a backhand shot. On the fourth station they will skate towards the goal, receive a pass on backhand and shoot with backhand as quickly as possible.

At 10 o'clock I will skate with Markus again. They had game last night so first of all we will go through his shifts and analyse his skating. We will discuss both good and bad things while keeping in mind it has only been 2 weeks since we started to work together separately from the team. Depending on the things that we highlight in the video, we will focus on the developmental needs. I was watching the game last night so I already know we are going to focus on holding balance in tight turns. I want him also to watch his shifts and see his mistakes without me telling anything. Hopefully he will see them immediately so he will be more open to correcting them afterwards.

At 3 o'clock I will have my last ice session for today. I am expecting over 30 kids on the youth skills practice where I will begin with skating followed by stick handling and shooting. According to their skill level we will split them up into three groups so we can give more individual attention and feedback. The drills will progress by taking away time and space.

For the day I have achieved most of the objectives set out. On the first session I tried a new method: instead of telling the players to start right away with two-touch passing (stop the puck then pass), the goal was to make the pass, they were allowed to make as many touches as they wanted, but had to make the correct passes. Slowly they started to use less touches and finally achieved the maximum of two touches.

*Saturday, 1 February 2020*

Today's objectives are working on shut downs and cutbacks.

The only ice session today will be at 10 o'clock with a 20 year old forward who plays on the pro team. We are going to work on one of his biggest strengths, shut-downs and cutbacks. In order to make it game like, I will use two defensemen from the U20 team. They will chase him and try to keep him to the outside, close to the boards. Taking away time and space will play a big role today.

For the day we have achieved what we wanted by decreasing time and space while performing the same skills. My skills have developed also by figuring out how create small area game situations where time and space factors are crucial.

*Weekly observation*

On the second week the focus was on manipulating task constraints by changing the rules of each of the drills or games.

This week I was able to develop my skills by implementing new ideas from the book. Rule changes are limitless and simply require the practitioner to use his knowledge and creativity to shape the way the game is played. (Chow & al. 2015, 254.)

I had to take step back and observe the purpose of the practices from a different angle. I also needed to put into consideration that I work with a wide range of age-groups and it requires different task goals and approaches.

For early learners, the task goal may be as simple as achieving a desired outcome safely... For advanced learners, task goals are likely to be more sophisticated, numerous and challenging... Primary task goals can be directed towards accomplishment or outcomes, in which case they may be relatively stable, but secondary task goals may also emerge and change throughout an activity. (Chow & al. 2015, 117.)

The situation is that I have to deal with younger and older, and skilled and less skilled players, which presented me with a problem that I have been thinking about for a while. However it wasn't until I read the books that I was able to clarify the situation. The problem was to find an optimal load that challenges the players, but not too hard so they do not lose interest.

Depending upon the learner's skill level, there seems to exist an optimal 'zone' where the challenge of the task is ideal to promote learning and performance development. If too much or too little augmented information is provided by the practitioner, or if the task is too easy or too hard, then the challenge point is not set appropriately for the learner which may delay the overall progression. (Chow & al. 2015, 118.)

This week by changing rules of drills, finding the zone mentioned above was the hardest and most challenging task. With younger groups I felt like I set the goals too high, so they had a lot of failure and lost interest. This is the reason why they also lost motivation and were not open to new methods. If they cannot experience fun during practice, they will eventually lose the hunger for improvement. My skill on this topic has definitely improved during this week by paying more attention to what the players say and how they react.

One of the main aspects during the second part of the week was to find the most beneficial rules in order to make all the drills game-like.

Practice environments can be usefully designed for simulating (key aspects of) competitive performance environments. If learning is characterized as the development of effective perception-action couplings, the aim of our practice environments should be to help athletes build these synergies. (Renshaw 2019, 33.)

During the session I have used other players to make it more game like. This is definitely a tool that I will use on skills sessions in the future. First of all it, it is more fun for the players; second, by simulating a performance environment this will help players prepare better.

Examples of interacting constraints on the emergent behaviours in sport		
PERFORMER	TASK	ENVIRONMENT
Cognitive skills, emotional capacities, mental attributes, goals, motivations, intentions	Specific rules, markings, boundaries, surfaces	Family support and networks
Physical constraints including strength, speed, flexibility, height weight, and acoustic and visual system function	Instructional constraints including coaching methods, types of feedback provided, exposure to discovery learning etc.	Cultural expectations and attitudes. Social construction of age, gender, race etc.
Genes	Use of video, images, stimulations and models for practice	Peer group pressure, media images, commercialisation of sport and physical activity
Specific activities undertaken during practice time	Design and scaling of practice equipment	Access to high quality facilities for training
Amount of learning and previous experience	Design of practice tasks: Task simplification vs Task decomposition	Access to high quality learning opportunities and teaching
Develop status of various subsystems including those for locomotion, postural control, reaching and grasping etc.	Artificial aids and devices	Physical constraints such as gravity, altitude, ambient lighting and temperature.

Figure 3. Examples of interacting constraints (Renshaw & al. 2019, 56.)

There are many classes of constraints that can shape the behaviours of a complex dynamical system and it has been well documented that Newell (1986) considered individual (termed 'organismic'), task and environmental constraints to be the most influential. (Renshaw & al. 2019, 55.)

There is another method that ended up being really effective and that method was decreasing time and space. This method forces the players to think and act faster and faster.

When a talented young games player moves up to the next performance level, in team games for example, the time and space available to perform skills is generally decreased and the young learner must adapt his or her actions to successfully survive and then thrive in this new performance niche. (Renshaw & al. 2019, 56.)

By adding this method to my practices, I have realized that it is enough to create simple drills, and by decreasing time and space even the simplest drill can be challenging and beneficial for kids or professional athletes.

When the individual playing area is reduced, density is increased and vice versa. Results demonstrated an increase in unsuccessful dribbles when density was scaled. (International Journal of Sports Science and Coaching 2017, 6.)

In the future I will concentrate more on finding the optimal load for each individual by simply asking him or her before they lose their motivation. Using other players to help simulating competition conditions is an effective way to make drills more game-like. Furthermore, and most importantly, taking away time and space is one of the key features of effective practices. This tool is easily applicable to everyone by simply using creativity to shape the rules.

### **3.3 Observation week 3**

*Monday, 3 February 2020*

This week will be about manipulating mostly environmental constraints. Today's objectives are to improve skating, passing and shooting at the same time.

This week will be special due to national team break. There will be a lot of individual sessions including the men's team players. This morning I am going to have a group of 6 forwards from the men's team. We are going to focus mainly on combined motor skills and shooting.

For the day I have reached my objectives. I tried a new method that involved the players skating on used, snowy ice. Skating-wise it was not a big difference but stick-handling and shooting was way more challenging. We had good practice with an increased focus.

*Tuesday, 4 February 2020*

Today's objectives are working on crossovers and hockey-turns.

I am going to have a long day today with 4 different groups, including the men's team, U20 and U18 team. On the first session at 10 o'clock we will be focusing on crossovers with 3 forwards from the men's team.

At 11 o'clock with 3 other forwards and 1 defenseman from the U20 team I am going to work on hockey-turns with and without the puck. They will need to put pressure on the inside leg while keeping the load on as long as possible. At the same time the outside leg needs to be straight and pushed to the side.

In the afternoon I am going to have a gym session with the U18 team where we will be doing interval training. Right after that, there is going to be a team ice-practice with the U18 group.

Since skating was in the focus today, it was hard to get any feedback because there was not a big difference between skating on used or fresh ice. The key element that defines this adjustment is when there is more when stick-handling and shooting.

*Wednesday, 5 February 2020*

Today's objectives are to work on the edges, combined motor skills and box out drills.

Today the first ice session will be held at 8:15 with the high-school juniors. We are going to focus mainly on edge-work.

Right after that, I will have a skills practice with Brendan Shinnimin and Marcus Sylvegard from the men's team. The emphasis of this session will be on box-out and how to use it effectively. I will come up with some new methods to do this.

At 3 o'clock the regular youth skill practice will be held with skaters aged 11 to 16. With them, we are going to do some puck-movement drills while trying to maximize our speed. This practice will also include some combined motor-skill drills where we will focus on pushing on the outside-edge and finishing with backhand shots.

For the day I have reached some of the objectives and used my creativity to create a new practice environment. I had to think of what could be the important factors when it comes to box-out during games. I took some video-clips from the previous games and realized that communication between individuals has the biggest role. Basically they had to sort out who picks up which player. However the problem lies in determining what could interrupt communication. I came up with the idea that loud sounds can interfere with communication between the players when trying to determine the right guy to pick up. Just like on a crowded game, I played the sounds of loud, screaming fans on the arena's loudspeakers and I have to say most of the time it was confusing for the defenders to follow fast-moving situations and be able to communicate. It definitely made communication harder and they had to have a plan of how to solve different situations.

*Thursday, 5 February 2020*

Today's objectives are working on changing the rhythm, maximizing speed and improving skating technique.

The day will start early at 6:30 with the U14 forwards, where we are going to work on changing the rhythm of skating and the advantages of this ability.

On the second ice session I will be practicing with Eric Josefsson and Daniel Rahimi from the pro team at 10 o'clock. It will be challenging to put some useful drills together since we are talking about a forward and a defenseman with totally different developmental needs. The focus will be on maximizing speed while carrying the puck. We will go on the ice after the pro team's on-ice training so the surface will not be fresh.

The regular "twin-practice" will be at 11 o'clock with the brothers from U20. Their biggest weakness is skating so as always we are going to do edgework today.

The afternoon session will be in the gym with the whole U20 team, where will have a core workout and finish up with stretching.

For the day I had a great session with two pro team players. We tried to maximize their speed while carrying the puck. It was shocking to see how much trouble some snow can even bring into a pro player's life. I have realized that the faster they skate on used ice, the harder it is to keep pucks controlled.

*Friday, 7 February 2020*

Today's objectives are working on one-leg turns, good-habit-drills and combined motor skills.

The last workday of this week will start at 8:15 with a skills session where I will focus on one-leg turns and backward crossovers with the high school players.

Martin Lundberg and Eric Josefsson from the men's team are going to have a private session with me at 10 o'clock. During the session, while practicing of course, we will make a video of some habit-creating drills for the youth coaches that can be used in their educational program for youth teams.

At 15:00 the youth skills session will be held for players under 14 years old. We are expecting a lot of kids, so according to our plan we are going to play different games. Each game will have certain rules where they will have to focus on skating, passing or shooting.

For the day we could not really achieve our goals with the first and second groups since manipulating environmental constraints was not relevant for today's sessions. The intention of the sessions and my plan for the day was not in harmony. This is definitely something I need to pay attention to and improve on in the future.

### *Weekly analysis*

On the third week the main focus was on manipulating environmental constraints. This task ended up being more challenging than I thought. First of all, I had to use my creativity and imagination in order to plan practices on this topic. "Manipulating physical constraints can be more challenging, but coaches often use their creativity to create environmental variability"(Chow & al. 2015, 255). After this week I have to say that manipulating physical constraint has limited variability in ice hockey.

Taking my skill development into consideration this week, I have developed the most by simply taking the easiest and most important physical constraint to manipulate, ice surface. During the first part of the week I asked my players if we could practice on ice after other teams have used it. Obviously we had a little disagreement over this topic because every player wants to practice on a perfect ice surface. It was not easy to convince them and I believe they did not have any positive expectations towards improvement on snowy ice. Before I could even tell them what to focus and concentrate on, I had to try myself and figure out the benefits of it. On the first day I started to realize that developing skating will not have a significantly large influence on it. Although, for stick-handling and shooting it can be extremely helpful. In order to have full control of the puck, concentration levels needs to be higher than usual. Controlling the puck requires more power from the hands, which will eventually lead to 'easier' hands on a good ice surface. Hand-eye coordination can also be improved because of the bouncy surface. I got the idea from Araújo's research who suggests that Brazilian footballers have a connection between their innovative style and poor quality of irregular surface.

Climate variations across the world also give rise to different practice environments. Araújo et al. (2010) suggest that dry and bumpy, irregular surfaces typical of Brazil's shanty towns (favelas) may at least partly contribute to the flamboyant and innovative style of playing that is often associated with famous Brazilian footballers. (Chow & al. 2015, 123.)

During this week I started to realize that I do not need to show and tell every little detail to players. Instead I focus on the big ultimate goal and let them discover it in their own way. "In nonlinear pedagogy, the goal of providing instructions and feedback is to provide key information that facilitates the search for task relevant coordination and control solutions during learning"(Chow & al. 2015, 196). "When less prescriptive instructions are provided, attention is focused on the movement effect, which encourages players to explore the requisite relations between the limb segments involved in the basic movement pattern"(Chow & al. 2015, 206). It is really hard not to give instructions, especially when you know how it should be done perfectly and you see a mistake. Sometimes it is better to let individuals find their own way.

Another area where my skills have developed this week was to manipulate culture constraints and create environment competition. A great example of this was to add loud, interrupting sounds during box-out practise. "In order to ensure a close simulation of competition conditions, the interaction of categories of constraint during practice should be continuously framed by cognitions and intentionally of athletes"(Renshaw & al. 2019, 57). Our goal was to simulate competition environment, which I believe was successful enough to improve a very important game situation.

One of the aspects or skills I have to improve on in the future is the intention of the session. I could have done a better job regarding this topic during the week.

... as a coach engages in the environment design process, it is critical that they establish the primary goal(s) (intentions) of the practice session as a first step. In practice, a coach has the opportunity to shape emergent behaviour through the application of a CLA. As previously indicated, the various constraints can be added, removed, adjusted or repositioned within the practice environment. This manipulation process is both complex and nuanced, requiring careful consideration, consideration that is governed by the session intention. (Renshaw & al. 2019, 85.)

The key here was consideration. I have to consider what is the overall goal of the session and how can it be achieved. Obviously, there is a need to be in alignment between the intentions of the coach and the intentions of the players. If they are not, then it can lead to frustration or negative consequences like lower confidence and reduced interest. Eventually it will lead to losing motivation so coaches have to be really aware of setting the right goal for each session and sticking to the plan.

I have to say that the overall feedback from the players was still rather positive than negative. My practices have changed a lot compared to what they are used to, so this is new for them and for me as well. Some of the new methods have had more while some have had less success. In my opinion most of the new ideas can be used in the future but players also need to be open to improvement and new methods. Each individual is different and requires a different approach when something new is being implemented.

### **3.4 Observation week 4**

*Monday, 10 February 2020*

This week will be about manipulating mostly environmental constraints. Today's objectives are to improve deflections, edge work, toe-drags and one-timers.

Mondays are usually shorter schedule-wise than other weekdays, so today I am only going to have two ice practices.

At 8:15 with the U20 hockey-school players we are going to do some hand-eye coordination drills followed by edgework skating. We will kick off with a drill by standing at the goal and trying to deflect shots from the blue line. It will be followed by certain edge work drills where turning on one leg will be targeted.

At 10 o'clock two forwards from the pro team will join me and we will focus on toe-drags and rotational movements followed by one-timer wrist shots. We will start with slow movements to maximise the length of toe-drags.

For the day I have reached some of the objectives. I have tried something totally new that I have never seen before. When we did deflections I turned off half of the lights in the arena. I know the lights are bright on the games most of the time, but as I realized, it requires way more focus and better reaction time if you want to deflect the puck in darker conditions. We have definitely developed this during the day.

*Tuesday, 11 February 2020*

Today's objectives are to increase the length of skating strides and stick handling.

We will start the day pretty early at 6:30 a.m. with the youth skills session. Players are between 11 and 15 years old and will focus on long stride and puck movement. In order to be effective in this session we need to start by splitting up the groups and drills. Starting with the length of strides by putting a puck under each blade and getting to feel the longest stride possible while holding onto the boards for balance. It will be followed by puck movements side to side.

On the next session at 10 o'clock I will be with the U20 team where the main focus will be on stickhandling for the forwards and passing for the defensemen. We will start in a stationary position to maximize focus and speed of hands. This ice session will be followed by a gym session where we will be doing intervals.

For the day I have tried another new method, which I have seen before but did not really use. By putting a puck under each skate blade of the players you can really simulate the skating movement. Although, the pushing stride is a little bit easier, the recovery pull is much harder. It requires knowing your body and feeling the posture of it. This technique is not just for improving skating strides but it also builds muscle-mind connection with those slow recovery movements.

*Wednesday, 12 February 2020*

Today's objectives are working on the basics: opening hips, one-timers and give-and-go drills.

Today's first session will be at 10 o'clock with a defenseman from the men's team. He has been injured for some months and today we will work on the basics to get his skating back to where it was. The main focus will be on opening hips while turning since he had injured his hip-flexor. I am a little bit worried since he hasn't been on ice for 4 months. Hopefully he will respond well and will be able to do everything I have planned for today.

In the afternoon, I will have a skating session with some youth players. The focus will be on give-and-go drills and finishing with one-timer shots. It will be important to keep moving the whole time and be ready to receive or give a pass. These drills will be great to improve their game reading ability and positioning. In order to implement constraints, I will be the one distracting them by slashing their sticks and putting pressure on them just like in a real game.

For the day I have developed some pretty good and new methods that I haven't thought to use before. When it came to environmental constraints I only thought about manipulating light or surface. However slashing sticks could also be a distraction and manipulation. It is not just about being under pressure. It forces the players to pass faster and be stronger on the puck.

*Thursday, 13 February 2020*

Today's objectives are to improve body posture and hip stiffness.

The same session as yesterday will be held at 10 o'clock. We will be working on improving form after a long injury and getting back the feeling of skating. We will start with edge-work and a deep skating position followed by hip-opening drills. We need to work on using the hips and be brave enough to stretch the borders. The biggest challenge will be to overcome his mindset and stay patient. I will try the 'puck under edges' drill with him also.

At 15:30 p.m. I will have a gym session with the U20 team where we will be doing the pre-game exercises. Focus will be on explosive drills and some rotational movements.

Today was a challenging day since I tried a new drill with a player who came back from a long-term injury. The problem I had to face is that he is still scared to have his left leg fully extended while pushing forward. Starting with slow, stationary pushes with the puck under the edge of his skate was great way to build confidence and become braver in regard to using his hips. One of the topics I became more confident in is that not always the best looking drills that are the most beneficial for building trust.

*Friday, 14 February 2020*

Today's objectives are to work on combined motor skills, edge work and stick handling.

Today I will have two ice sessions, one with the high school players from the U20 team, and one with some skaters between the ages of 10 and 15.

In the morning at 8 o'clock we will be focusing on combined motor-skills. The biggest challenge with this group has been skating and shooting at the same time, so I will create drills where they will be forced to do both of those. It is hard to create game-like situations, but taking away time and space will increase the difficulty in performing these drills.

In the afternoon with the second group we will be doing edgework and stick handling. The hard part with these players is the age difference, as it is always a challenge to create the same demanding drill for the youngest and the oldest skaters.

For the day I wanted to think how cultural constraints could be manipulated. In order to come up with the answer, I had to think about the strongest factor in Sweden's hockey culture and that is competition. So how to create an even more competitive environment than usually. My idea was to find their biggest motivation and figure out how it could be linked to environmental factors. Finding the motivation was easy. Every player in this organization is working towards one goal, to get signed by the men's team. In order to bring out that extra motivation I asked the pro team's head-coach to join me with the U20 guys without telling them. It was a win-win situation because he had a chance to look over the best junior players, and they were extremely motivated to show up. This is definitely a method I will use in the future if I get the chance.

### *Weekly analysis*

The fourth week had been even more challenging than previous weeks regarding manipulating environmental constraints and being creative. The idea behind this week's methods was to try something new that can challenge the players from a new angle.

The first idea was to manipulate vision by decreasing lights in the arena. This method sounded a little bit childish for me at first. Honestly I did not expect that much from the use of this exact technique. After trying it I can tell that it really challenges your vision and time of reaction.

... physical environmental constraints may relate to ambient light, humidity, altitude or ambient temperature, all of which can affect human movement functioning at various levels. (Chow & al. 2015, 87.)

By changing ambient light I discovered how much sharper you need to be and your concentration level needs to be constantly increased. It takes some time for your eyes to adapt but turning the lights fully on made the players feel more confident and safe.

There is another method I tried during the week with younger players and a player who returned from a long-term injury. It was the method that simulates skating stride while remaining stationary at the boards. In my opinion if you want to teach the perfect technique

of skating strides, this is one of the best tools you can use. I found it extremely helpful with younger kids to develop correct movements. It provides a close simulation of the push-pull movement, and it also improves balance and body posture at the same time.



Figure 4. Correct posture of skating position and pucks under blades implementation (own source)

To understand this drill, visualize a player holding onto the boards while standing on two pucks in a skating position. The player simply pushes out to the side fully extending the leg, while the other leg that remains in the middle is still bent and facing forward. After fully extending the leg, it is brought back and recovered to the middle. This is then repeated with the other leg. I realized that there is a slight difference between the efforts of real skating push and pull, and this type of push and pull. Pushing is easier because the puck on the ice glides easier in all directions compared to a blade. The recovery is a bit harder since this drill is stationary and you do not have the speed. This tool has helped me and definitely helped my sessions achieve the goals I have set.

Learning environments affect the motivation of developing athletes (Keegan et al., 2009) and it is therefore incumbent on coaches to understand how they can influence motivation orientations and design effective sessions and programmes. (Chow & al. 2015, 318.)

When I started to think about cultural constraints I needed to think not just about the organization but Swedish hockey in general. To understand what motivates the players you have to know that hockey is the most popular sport in Sweden and has great history. A coach like me who did not grow up in Sweden has to recognize the differences and adjust accordingly. My idea of bringing the men's team head-coach ended up being super motivating and useful. "A key challenge for sport practitioners is to repeatedly provide performers with learning environment that result in sustainable motivation"(Chow & al. 2015, 316). Of course it is not possible to always have his presence on our practices, but bringing him in once a week could be an effective way to maximize junior players' motivation.

The other skill that I have developed during this week was the timing of sessions. Some of the players just came back from national teams, while others did not have games in last 10 days. This is probably not the best time to implement something new. My idea was to get their focus and attention back to where it was before the break. This is a subject where coaches need to be really careful. It can affect the player's performance on certain days and also in the long-term.

The intentions of a practice session will be influenced by the timing of session... it may not be advantageous to provide a session where learning is the primary objective the day before, or morning of, an important match or performance. The potential for an increased level of failure within these sessions (and associated performer frustration) could negatively impact on the competitive performance of the individual or team. (Renshaw & al. 2019, 86.)

This is definitely something I will consider in the future because timing has a really important role regarding performance.

The overall feedback from the players was still positive. They are humble, open minded, ready to try new methods and find new solutions. We had some success during the first part of the week. Even older players found simple changes fun and challenging. I believe the intention of practices and the way it went was harmonious. Something I surely have to consider in the future is timing of sessions.

### **3.5 Observation week 5**

*Monday, 17 February 2020*

This week will be about manipulating mostly individual constraints. Today's objective is to reach maximal speed with outside edge pushes.

Today there will be only one ice session for me with a forward from the men's team. During that skills session we will be focusing on crossovers and how to gain extra speed with outside-edge pushes. The point of those drills will be staying low as much as possible. If we can succeed with this, then the length of the outside-edge push will increase, so the speed will increase too.

For the day there was not much to do but I tried to implement a new method. The goal of the practice was clear and we made some progress. The way I tried to make him focus on long strides is that we chose a circle on the ice and I said a random number and that number was the maximum number of strides that he would use to skate a full round around that circle while trying to reach maximum speed. So every repetition had a different number and every time he started he had to pay full attention on his movements. Obviously I was decreasing the numbers so his strides had to become longer and longer every time. In the end we reached our objective.

*Tuesday, 18 February 2020*

Today's objectives are improving correct body posture and stick handling. After this there will be one more ice session followed by one gym session.

The regular Tuesday routine starts at 6:30 with the youngest skaters (ages 10-15). We will only have skating drills, focusing on the correct body posture and staying low. At the end of the practice we will have a coaches versus players scrimmage.

At 10:15 with last year's juniors we are going to do some stick handling with puck protection. The focus will be on quick hands while keeping the head up.

At 3 o'clock in the afternoon, I will take the U20 team to the gym where we will have a pre-game workout. It will be on explosive lower-body, upper-body and core exercises.

For the day I have tried another method that was mentioned in the book. Playing against older and better players provides an opportunity for young skaters to adapt to opponents. In my opinion it is always fun and stimulates younger players to become better.

*Wednesday, 19 February 2020*

Today's objectives are to get comfortable with the basics of skating.

Today a three-day-long training camp will begin with over 100 kids involved. Our club organizes this camp for players between the ages of 8 to 14. They are divided into 5 groups and will have 4 ice sessions per day, which are 45 minutes long each. I will be joining each group twice a day, except group 5 (the youngest group). This means I will have 8 ice sessions every day.

On the first day we will be focusing on the basics of skating, including correct posture, inside and outside-edges, and the correct technique of strides. Older groups will have a bit more challenging drills but the focus will remain the same during the whole day.

For the day I could not implement my practice due to the number of kids. I also had a discussion with the leader of the camp who was not open to trying new methods so we stuck to the old plan.

*Thursday, 20 February 2020*

Today's objectives are to put more emphasis on stick handling.

For day 2 of the camp, as I described yesterday, I will have 8 ice sessions with 4 different groups throughout the day. Today's main focus will change from skating to stick handling. These 3-day-long camps are not the most beneficial camps because all the leaders and parents are expecting to do all kinds of drills with different emphasis, but the reality is that 3 days are not enough to improve and master 3-4 different kinds of skills.

Today's stick handling drills will help the kids to be more confident using backhand and forehand moves. The older the groups will have more challenging drills with advanced stick-handling variations.

For the day just like yesterday no new methods were implemented.

*Friday, 21 February 2020*

Today's objectives are to focus on combined motor skills.

On the 3<sup>rd</sup> day of the camp my schedule will look the same as the previous two days. I will go on the ice with 4 groups, two times with each group. On those 8 practices, I am going to combine the skills we learned on the first and the second day. This means that we will be doing skating and stickhandling at the same time. This is the most crucial skill of a world-class player, and also the hardest to learn of all. Creating a habit by doing this is great benefit for young players, and at the same time it is the most challenging to teach. So today's emphasis will be on combined motor skills where the skaters have to pay attention to more than just one skill at one time.

For the day, as I mentioned above, my plans were overruled. The plan I had for this three-day-camp did not meet the camp leader's expectations.

### *Weekly analysis*

This week has been mostly about manipulating individual constraints. It was easy to understand what these constraints are but it was very challenging to understand how to manipulate them.

"Performer constraints are also known as individual or organismic constraints (see Newell, 1986) and can be defined as features or characteristics that relate to physical as well as functional aspects of the performer"(Chow & al. 2015, 86). This type of constraint is probably the most complex and complicated. When I was thinking how to manipulate individual constraints, I had to also think about mental manipulation, not just the environment and task.

The following picture (figure 5) describes the drill I tried on Monday. So the drill was to say a random number and that number is the maximum amount of crossover pushes the player can take to skate a full circle. At the beginning of the drill I was just throwing in numbers between 3 and 10 just to get the player's focus. After I felt that I got his full attention on the drill, I started with number 5, which is an average number to skate a full round, this was followed by four, as you can see this on the figure below. The left circle shows that he took four strides to complete a full round. On the right side you can see three pushes, this is the point where the individual really needs to use a fully extended stride in order to maximize his speed.

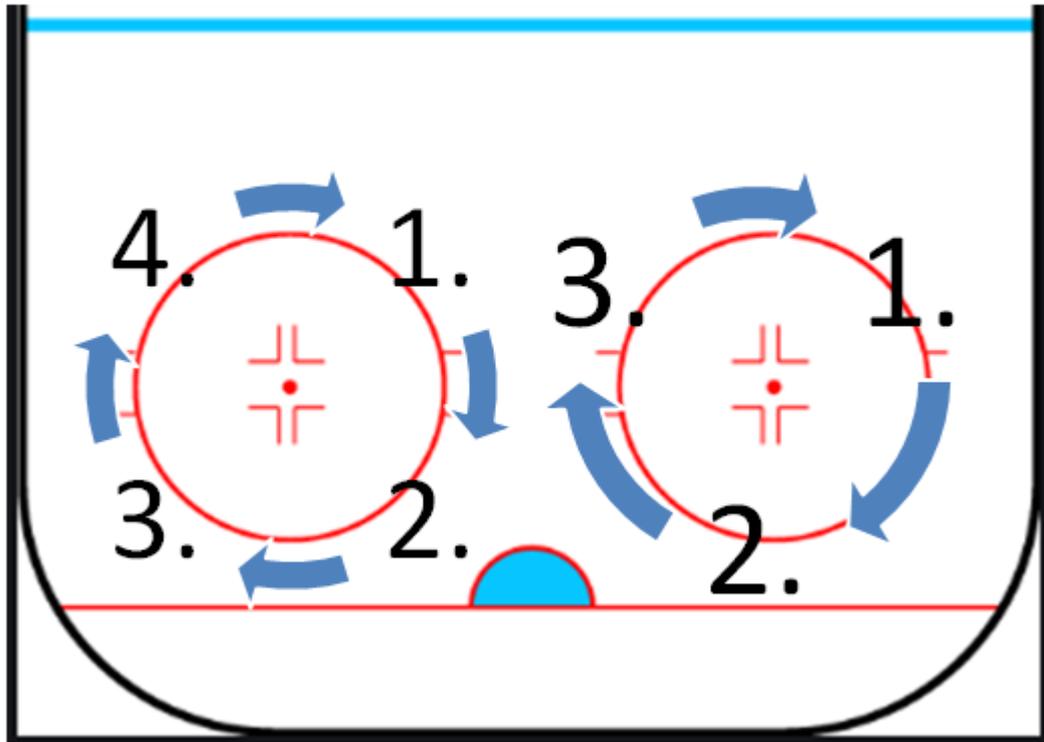


Figure 5. Increasing length of strides (own source)

Eventually this method led to longer crossovers so that his outside edge push increased in length.

Coaches can manipulate the emotions, cognitions and actions of individuals through manipulating environments and tasks and including instructional constraints. Additionally, coaches can manipulate action capabilities by the use of physical or mental tasks interspersed within play. (Chow & al. 2015, 246.)

Another skill that I have developed during this week was the variety in practices. Coaches often forget how important factor this factor is in a player's development. This is an aspect that can lead to boredom of practices and low concentration. One of my ideas was that the coaches play a scrimmage with the younger players as part of the practice. Most of these kids admire us and want to learn from us day-by-day. It was great to see how much attention we got during the game with the kids.

Opportunities to play against different types of opponents should be a key goal of practice and competition programmes. A lack of variety can limit attunement to the key affordances offered by the different individual constraints of opponents. With children's sport, this process could involve playing against older and bigger children (safely and appropriately)... (Chow & al. 2015, 247.)

It is always important to vary our practices. By doing this we can achieve better focus and motivation that obviously leads to better performance.

The overall feedback from the players I would say was very positive. This is as new for them as it is for me and most of these guys are progressive and ready to take the next step. My sessions have changed a lot but I believe we can see the progress and the way it works, so we must be on the correct path.

In the future I would definitely consider putting more emphasis on variability. This means that it is not just session variability but movement variability as well.

Movement variability during learning results from the learner searching, discovering and exploiting appropriate solution manifolds for different performance contexts. Influential constraints such as task goals, exploration, intrinsic dynamics and feedback stabilise certain areas of the landscape allowing the learner to experiment until a range of effective movement solutions are found. (Chow & al. 2015, 110.)

### **3.6 Observation week 6**

*Monday, 24 February 2020*

This week will be about manipulating mostly environmental constraints. Today's objectives are to improve hockey-turns and combined skills.

This week will start with the men's team having two skills sessions with me. The first ice practice will be with 3 defensemen and will focus on turns. This means that we will be turning from forward skating to backwards and from backwards to forward. This ability is a key element of a defender's skill-set. A defender is always facing the play regardless of changes in their position on the ice. Our goal today will be to have drills where they can practice the transition from forward skating to backwards and vice-versa.

On the second ice session with the forwards I will do combined drills. These types of drills will challenge even the top players, where they need to focus on stickhandling and skating at the same time. I will try to force them out of their comfort zones and still have fun while pushing their limits.

For the day I have mostly reached my objectives. For me it is always easier to work with professional players because their motivation and eagerness to become better is always at a high level. The challenge with these guys was not getting focused, but rather it was more how to distract them. I decided to try mental distraction today and I had a simple but fun idea. I talked to our media manager and asked him if they could choose funny or awkward pictures of certain players on our team. I played those pictures on the main screen in the arena during practices. The first 15-20 minutes were as I expected, laughing, poor focus and most of the guys were unable to execute the drills. After that with both groups I had a little conversation where I explained why I did that and what the purpose was. Following that they were able to step-up and they improved their performance.

*Tuesday, 25 February 2020*

Today's objectives are to work on the correct skating strides and outside edge pushes.

Today's skills sessions will start at 10 o'clock where I will skate with two defensemen from the U20 team. Their biggest developmental need is skating so I will plan a session where the main focus will be on tight turns and acceleration.

On the second ice session I will skate with the twin brothers from the U20 team. We are going to develop the length of their strides and how to use their outside edges to push forward. In these drills it is important they pay attention to little details and tricks; they can make a big difference.

In the afternoon I will take the U20 team to the gym. Today's workout will be maximal strength training, including 3 lower-body, 2 upper-body and 1 core exercise.

For the day I tried the same method with the U20 players that I tried with pro team players yesterday. The only significant difference between the two groups was that after the discussion I would say half of the U20 were not able to reset and get their focus back to a normal level. Slowly it affected the other guys as well and today's practices ended up being a joke. Inside I was pissed off but I knew the reason for this; I created it. One of the beneficial aspects of coaching alone, as I do most of the time, is that I can implement or try whatever I want to, even if it ends up a mess.

*Wednesday, 26 February 2020*

Today's objectives are to work on powerful strides, balance and acceleration.

This morning I am going to have my first ice session with the high school juniors. The main focus will be on edge-work, I am going to challenge them to push with their outside edges longer and more powerfully. These drills will require greater balance and more trust than the players are used to.

At 10 o'clock I will have my second ice session with the men's team where I will be skating with the 20-year old Marcus. They had a game last night so this session will be shorter, a maximum of 20 minutes. The purpose of this practice is to get some fresh blood into the legs by having some quick acceleration drills on the ice. We will be focusing on the different methods of quick starts and ability to reach his top speed in the fastest way possible.

In the afternoon I am going to have my last skills session with the youngest group. The best skaters of the organization will join me on ice between the ages of 11 and 15. This group will have approximately 20-25 kids so it will require a little bit more planning than the smaller groups before, especially as I am not sure of the exact number and age of the participants. The plan is to have full skills session, by practicing skating, passing and shooting.

For the day I had an idea that I saw in one of the books and wanted to try it out with Markus from the men's team since it requires a smaller group. The skill was quick acceleration and the activity involved a card game in order to maximize focus level. There was a set of playing cards and both of us turned over a top card. Whatever the number was on the card that was the number of extended skating pushes required to win the acceleration race. I have to say that it was probably the most fun drill I have tried so far during the weeks of this process. This is an activity that definitely can increase focus level and commitment for all levels of players.

*Thursday, 27 February 2020*

Today's objectives are improving shooting, sidesteps and quick feet.

As with all other Thursdays, today I will start at 10 o'clock with the oldest players from the U20 team. On this session I am going to split the group into two, forwards and defensemen. Forwards will focus on quick release shooting. The most common mistake that they have is when they are getting ready for the release they stop moving their feet. This means that they are not skating and they are losing speed, which provides an advantage for the opponents. Defensemen will practice quick feet sideways from a stationary posi-

tion. This skill is harder to improve on the ice than off-ice but it is extremely helpful to use after face-offs or starts and stops.

After lunch, we will we go the gym with the same U20 players to target those muscle groups that we used on ice before in order to develop. In the case of forwards, they will be focusing on rotation movements, which target mostly the core muscles. Defensemen will warm-up with the agility ladder where the biggest focus will be on side step variations. After that they are going to do some rubber band side pushing, which will mostly target the hips.

For the day I have tried to reach our objectives by giving freedom. Instead of telling them the exact movements and methods I let them discover and improve on their own. The only goal was to reach the objectives. These guys all have different skill levels, which is one of the most important constraints regarding individual performers.

*Friday, 28 February 2020*

Today's objectives are to work on passing and one leg turns.

My first ice practice will be at 8:15 with the high school juniors where we are going to focus on passing drills. Besides passing, the purpose of these drills will be to create the habit of constantly moving and finding a free spot after you have passed the puck.

After lunch I will be skating with the club's most skilled young players from ages 11 to 15. I am going to challenge them with some advanced edge-work drills where they will turn mostly on one leg. After they have reached a certain level they can add pucks to the drills, which will increase the difficulty. The focus will still be on skating but taking care of the puck at the same time will divide their attention, which is a great game-like simulation.

For the day I tried to teach passing with a new method that involves decision-making. With the first group I implemented a drill where they needed to make passes that hit different cones with numbers on them. We had 20 cones on the red line, each with a number on it between 1 and 20. Everyone on the U20 team has a jersey number between 50 and 75. The goal was to score your own jersey number by hitting the cones and adding the numbers together on them. The rules were simple rules: everyone starts at the hash marks, you are not allowed to hit the same cone twice, if you hit a cone you have to skate 2 meters forward and shoot from there, if you miss the pass you need skate backwards two

meters and pass from there. Guys took it really seriously and we were able to create a great competitive atmosphere with a decision-making drill.

On the second session I came up with another exciting idea. This is a modified treasure hunt game. We had a zone full of pucks and each puck had a number on it between 1 and 4 facing down. At the beginning of the session we did four different edge-work drills and each drill had a number (1,2,3,4). I made two teams and tried to split them up skill-wise evenly. On the red line each team had a 'house' where they had to return as many treasures (pucks) as they could. Each team had one skater at the time that could unlock the treasure by turning the puck up, completing the edge-work drill according to the number on the back of it. If they did not complete it correctly they needed to return to the house and next player could jump in. The goal was to collect as many treasures as possible. During this drill we used all the constraints we have mentioned so far.

### *Weekly analysis*

This week had been very enlightening for me by manipulating and implementing individual constraints. This is the point where I feel like that my personal development has improved the most.

Functional aspects of performer constraints include psychological characteristics such as cognitions, motivations and emotions. Collectively, both physical and functional aspects of performer constraints play a significant role in shaping output. (Chow & al. 2015, 86.)

I feel like I was able to take player's focus and attention to the next level. By distracting individual's emotions I have discover significant differences in performance and between players as well.

Pessoa & Adolphs point out that emotions influence perceptions, actions and intentions during decision-making, with the intensity of emotion generated reflecting the significance of stimuli to an individual, shaping the strength of the response on the visual cortex. (Chow & al. 2015, 116.)

During the session we got to a point where the distraction I made was not affecting the players so we could overcome and control emotions.

Probably the biggest surprise for me was the card game I had organized with Markus. I never thought these kinds of methods could maximize focus and be real fun during a seri-

ous practice session. I was obviously wrong. It was not just extremely fun but also motivating for him and myself as well. The idea was to tell him the intention of the practice and not specifically the way it will be carried out. By knowing the intention, I increased his focus successfully so adaptation was visible immediately. As I mentioned earlier, this week the intention was to improve acceleration and this little 'game' seemed to be the perfect solution to meet the developmental needs.

To maximize the impact of the session, performers may need to be primed in terms of framing the task in the context of the bigger picture. That is, by framing and setting intentions and clarify expectations. (Renshaw & al. 2019, 107.)

During the second part of the week I realized individual differences have a larger role in skills development than I thought before.

Unique characteristics can be viewed as resources that shape the way that performers solve particular task problems or limitations, and these can lead to individual-specific limitations. (Chow & al. 2015, 87.)

As coaches, we need to understand that not just individual skills can differ, but individual needs as well.

... an important challenge for sport practitioners is to understand how to design representative learning environments, by manipulating task constraints, that each learner needs at the moment in his/her development. (Renshaw & al. 2019, 168.)

There is no one good way to teach a skill for every individual. Some methods work for most of the players and some players need to find different solutions for the same goal.

...learning rates are different between individuals and that different functional coordination solutions can be explored to achieve the same task demands. (Chow & al. & al. 2019, 126.)

On the last day I tried to manipulate all the constraints at the same time and it ended up being pretty effective. The whole game design was a task constraint because they needed to perform different edge work drills. The environment was like they were on treasure hunt and the individual constraint was the motivating factor of collecting the most treasure.

The overall feedback from the players was divisive. I can understand that after trying a lot of new and different methods that it can be strange for some individuals. Another reason

in some cases could be lack of movement variability, which I know I have to pay more attention to. The plan is that individual differences and movement variability will have a greater focus in the following weeks. The last day was a great experience and we had a lot of fun together while keeping the ultimate goal in the focal point: to improve every day.

### **3.7 Observation week 7**

*Monday, 2 March 2020*

This week the emphasis will be on movement variability and its methods. Today's objectives are to work on shooting variations, skating strides and edge work.

This week will start with a skills session with the U20 team. I am going to split them up, one side for the forwards, the other side for the defensemen. The main focus of this practice will be shooting, to give a confidence boost for the players for the upcoming three games this week. These games will be the last three games before the playoffs start. We are going to try all kinds of shooting variations, including wrist-shots, slap shots, one-timers, and deflections. An additional task for the forwards will be screening the goalie, which means creating traffic in front of the net. The biggest emphasis for defensemen will be on one-time slap shots from the blue line where they need to be able to target one of the four corners of the goal.

Right after this session I will have an on-ice individual skill training with Marcus Sylvegard from the men's team. We have been working together for more than 2 months and the hard work seems to have paid off. In his last 3 games he scored 2 goals and had 1 assist. We are going to keep working on his stride and edges. The next step today is to improve his shut-downs with the puck, while trying not to lose his balance at all. These individual sessions are much easier and beneficial for both of us because we have the full attention of each other during the whole practice.

As I mentioned at the end of the last week more focus was paid to variability. The objective was shooting on the first practice and the ultimate goal was to score of course. I provided the opportunity and they had to execute it the best way possible in their own way.

With Markus I tried a 'role' game where I acted as a defender and he had to focus on shaking me off with his shut downs. The only difference compared to our regular sessions was that I constantly changed my speed and rhythm so he had to adapt to my movements in order to beat me.

*Tuesday, 3 March 2020*

Today's objectives are to develop deke moves, skating turns, edge warm-up and quick feet while providing variability.

On Tuesdays I usually start earlier than on the other days. My first practice will be 6:30 a.m. with the best players from the youth academy. They are between 11 and 15 years old and the majority of them are forwards. On these early mornings we usually have around 13-15 kids on the ice. In this case I will make two groups, working on the same skills at the two ends of the rink. The focus today will be on body-positioning while deking. Learning how to use your body instead of your stick is the newest trend to teach players nowadays on how to deke. Those who ever watched the NHL rookie of the year, our former player, Elias Pettersson, they know what it means to master these moves.

On my second practice today at 9 o'clock I will skate with two 19-years-old defensemen. Their biggest developmental needs are skating and turning. Today's drills will provide a wide range of different methods of transitioning from forward skating to backwards and backwards to forward.

At 10 o'clock I will have a pre-game skate with Marcus from the pro-team. Due to their game tonight, we will only be doing edge-warm-up where I will make him do one-leg drills on both the inside and outside edge. The purpose of this session will be to increase his confidence and trust for tonight's game.

At 11 o'clock the twins from the U20 team will join me and we will be working on their skating. Their biggest issue is the length of their stride, so this time I am going to force them to have slow and long strides while in possession of the puck. I want to make them understand that quick and short strides are not always as effective as slow and long ones. In order to be faster with longer pushes, they need to use the whole length of their blades while pushing.

In the afternoon I will have a pre-game gym session with the U20 team where explosive drills will be highlighted. We are simply going through the whole body with explosive drills. There will be 5 different drills of 3 sets and 5 reps on each.

For the day I tried some different methods. The youth session are always more challenging because of the increased number of players. In order to provide variability every time

they entered the offensive zone, I pressured them as a defender but always from a different angle so they had to do body fake moves from different angles.

On the second session we tried many different methods but the most useful ended up being the simplest one. The challenging part is not the transition itself, but rather the ability of not losing any speed while performing the transition.

With Markus we had about 20 different edge work drills but all of them had been implemented on previous sessions. The objective of this session was to have a good warm up before the game and we reached this goal.

With the twins we have made baby steps in progression by using my method that I explained in figure 5 on week five. This time the only difference was to control a puck while performing this drill.

*Wednesday, 4 March 2020*

Today's objectives are to practice offensive zone set-ups, combined motor skills and balance.

This morning I will start with the younger high-school defensemen at 8:15 a.m. On this session I will only have specific drills for offensive zone set-ups. We will start with face-offs that are won by our team and the puck is played back to the defender. I will give them three different chances: first, they can shoot it right away but it has to be a one-timer shot. Second, they can receive the puck on the forehand but in this case they need to skate as fast as they can backwards with crossovers on the blue line, at least 3-4 meters before they are allowed to shoot. Third, they can receive the puck on the backhand, and in this case they need to skate forward as fast as they can on the blue line, shake the forechecker forward off, and shoot. In this situation it is important to have full control of the puck and be able to protect it with the body until release.

At 10:30 some players from the pro-team will have a skills session with me. We will be doing combined motor skills, which are mostly based on a combination of skating, stick handling and shooting at the same time. There are 3 players expected to participate, so that will be perfect for individual feedback and analysing their moves.

After lunch at 3 o'clock, my last ice session will take place with the youngest group of the day. These players are between 11 and 15 years old and most of them are the best skat-

ers of the academy. My drills for today will focus on keeping balance as low as possible. This will help them be stronger on the puck, stronger in physical contact, and more balanced in tight turns. I also want to challenge them by making them try something new and different. In the end some of these new methods could be more effective for certain individuals.

For the day I believed I reached most of the objectives. On the first session I provided three different opportunities (variability), which seems to be not so much but on a game usually those three situations are the possible outcomes and a great defender can identify which one would be the most beneficial in a certain situation. With the pro team players I made the practice really advanced by creating a lot of drills to push their limits and not letting them think too much between the different tasks so that it challenged their minds as well. It ended up being a little bit stressful but it was part of the plan since competition could sometimes be the same. With the youngest group in the afternoon we had many different drills but with the same goal. I showed some variations on how stay as low as possible. At the end I tried a game called 'wolf' where all three constraints were manipulated.

*Thursday, 5 March 2020*

Today's objectives are to work on shut-downs, crossovers and reading the game.

Today will be a shorter day compared to the other days this week. There will be only 2 sessions with the U20 team, one on ice session and one gym session in the afternoon. Since the U20 team had a game yesterday evening, there are only 4 forwards expected on today's skills session. I am going to focus on shut-downs from crossovers with the puck. In order to implement these drills correctly, they need to have a good rhythm and the ability to read their opponents moves. This is why we are going to work in pairs today and on each drill they will be competing against each other.

In the afternoon I will take the whole U20 team to the gym. I want to help with the recovery after yesterday's game so it will be a light-weight-workout with more reps in order to increase the heart rate and blood flow. The players will be working in 3 groups on 3 stations. Each station will target a specific muscle groups and every group will have to do 2 sets at every station.

For the day the objectives were mostly reached. This was the first day since I started to write the diary that game reading ability played a big role in my sessions. Game sense is

one of the most important mental skills you can have. Today we tried to improve the ability of reading other's movements and how to recognize or fend off certain dekes.

*Friday, 6 March 2020*

Today's objectives are to improve the variety of shooting, body position and balance.

This morning will start with the same group as on Wednesday, but this time I will focus on the forwards. These guys mostly play on the U18 team and their biggest weakness at the moment is shooting. My job today is to create a session where they are able to become better in shooting. We will kick off with wrist shots, where I will give them all the time and space needed in order to correct the technical mistakes before we make it a game like situation, and take away some time and space. After I have corrected each player, we will move onto one-timers where they are not allowed to receive and handle the puck. In this case I want them to have as quick of release as possible, regardless if they get a good pass or not. As the most advanced and last drill of the practice will be a full speed shooting drill. The skaters will be forced to enter the offensive zone with full speed where they will have limited space and time to receive the puck and shoot it in the net, while all the time having their legs moving full speed forward.

As usual, my last session of the week will be with the youngest group. Today I am expecting a larger group of the players between the ages 11 to 15. We are going to split them into two groups according to their skill level. With the less skilled group I will be working on the basics, like body position and balance. In the second half of the practice I will be with the more skilled group where the emphasis will be on having the puck. We are going to do stick handling drills combined with skating of course. They will need to be able to use their sticks better and hopefully be more confident after this session.

For the day I have reached the objectives regarding variability of shooting possibilities. On the first session I provided many different methods of shooting so the players were focused and were concentrating the whole time. On the second session I was also paying attention to providing more methods than usual. In my opinion the implementation met the requirements and we had a successful practice.

*Weekly analysis*

During this week my emphasis was on movement variability and its methods. The biggest challenge came with larger quantity of drills with the same goals. It is obviously an important tool that can help a player to develop certain skills.

...the importance of variability in practice to allow learners to search, explore and exploit information in the environment in order to develop functional solutions that match performance scenarios. (Chow & al. 2019, 240.)

As I mentioned above it was not easy to decide how many drills I should attach to a certain skill and how it will affect the individual's behaviour.

A key question for practitioners, then, is what they should vary and how much variability is enough. Essentially, coaches have a responsibility to ensure that their performers are prepared anything that the environment or the task can throw at them. (Chow & al. 2019, 240.)

What I have realized during this week's process is that the creativity and motivation has needs to be highlighted. Players have less time to think so they should rather act and try again and again. If I provide the opportunity for them to perform all the time and manipulate constraints, they will adapt easier to changes.

Coaches should therefore ensure that they identify all the variables they can and then choose to deliberately manipulate during practice session to enable learners to attune to performance settings. (Chow & al. 2019, 240.)

In my opinion, due to the number of variability activities, players will adapt better and quicker. If they can maintain their focus and be creative we can implement more successful sessions together in the future.

My practices have changed a lot during this week. Before this, I could say I focused less on variability and more repetition. I can say that this method definitely has beneficial aspects, such as increased motivation and a higher level of concentration. With these qualities involved, sessions can be implemented in a more effective way.

The overall feedback from players was satisfying. They felt that practices and drills had a better flow and it seemed like I was more prepared with the practice plan. The truth is that I always try to prepare in advance but when you have plenty drills on the paper it gives a more professional comprehension and it sets the tone of the session right away.

In the future I would consider using this method more and implement it at least once a week. Hopefully the impression will be the same and we can achieve the same quality as those sessions.

Teaching game sense and decision-making was another topic we touched on during the second part of the week.

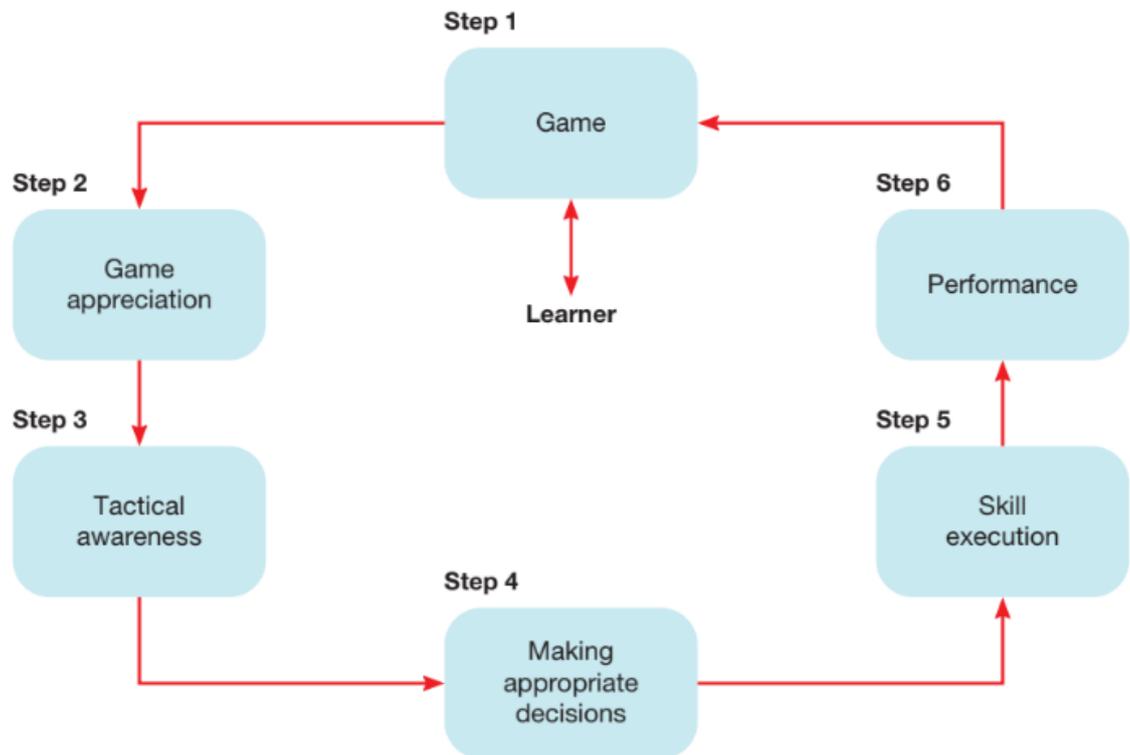


Figure 6. Steps of teaching game sense  
(Adapted from Werner, P, Thorpe,R & Bunker, D 1996,Teaching games for understand-  
ing: evolution of a model', The Bulletin of Physical Education, Recreation and Dance, vol  
67, no. 1, p. 29.)

Teaching game sense is a long and challenging journey. It will be introduced deeper on the following week.

### 3.8 Observation week 8

*Monday, 9 March 2020*

This week the main focus will be on how to develop decision-making, game sense and certain individual skills hand-in-hand. Today's objectives are to work on crossovers and how to gain speed with this.

Today will be a fun day, which means I only have a skills session with the pro team. I am going to work with Marcus Sylvegard on his skating. The main focus will be on long cross-overs and gaining speed while changing direction. We will kick off with the basics, paying attention only on skating and the correct technique of crossovers. These guys know it by heart but it is always good to have a quick reminder and I feel like it makes them more confident in every aspect of skating. After we go through the basics, we are going to progress by increasing the speed in order to make it more like a game situation. For the final step I am going to challenge him by having always keep his head up, looking at me, and make him skate with the puck without losing eye contact. This type of progression makes it fun and challenging throughout the whole practice.

For the day we have reached our objectives by having competitive games. Every game had a skill-goal and the main focus was to reach it. We had a fun competitive session together. I like to see my players satisfied with the work they have done.

*Tuesday, 10 March 2020*

Today's objectives are to practice edge work, puck control and stick skills.

This morning will start early for me, at 6:30 I will be skating with three 2011 born players. The spotlight of today's skill clinic will be edgework, which will be followed by puck-movement drills. My aim is to challenge them in a way that they have not been before. This means that not only I will give them the necessary tips and information in order to perform specific drills, but I will also provide them the time and freedom to figure out the way in which they are going to get from point A to B.

At 9:45 I will have a private session with an amateur player where the attention will be on the very basics. He is a fairly good skater but has problems with stick handling and puck control, including shots. We will make a fresh start by discussing and implementing the correct grip of the stick, among other things, like which hand is responsible for what function. After that I will set up a course with all kinds of different puck handling drills, which will be a good test to see if he is on the right track of development.

At 10.45 our regular Tuesday skills ice practice with the U20 will take place on the practice rink. I am expecting 8 forwards, who will be working as one group this time. Today we will change my regular session theme and target stick skills mostly. In my opinion it is good to bring something totally new to the practice, it shakes up the players and you can hold their attention better.

At 15:30 the whole U20 team will have a gym session with me. The focus will be on maximal strength where they will have one upper-body, one lower-body and one core station, followed by an explosive drill on the same muscle groups. They will perform 3 sets at each station with a resting time of 3 minutes between each set. At the end of the session we will finish up with a plank challenge, which is called “bring sally up”.

For the day I had many different groups with different developmental needs. On the first session in the morning I provided a lot of freedom. It was an early morning practice but they had to be sharp in order to complete the drills I planned. I set up a course where certain skills needed to be implemented at certain cones. The challenging part was that players needed to get from one side of the rink to the other by stopping at certain cones and completing a drill that the cone’s colour denotes. Each player had the freedom to decide which three cones he wanted to choose, but all the cones needed to be a different colour. The goal was to get to the other side first. During this session all three constraints were manipulated, which ended up being fairly profitable. With the U20 forwards I tried a new method. I wanted to highlight stick skills today and I planned a session where we played small area games. The unusual part of these drills was in the way we played. They were not allowed to skate, only glide so the focus was pretty much on stick handling and passing, which they needed to perform constantly. It ended up being very entertaining and players were pumped up to play in the practice.

*Wednesday, 11 March 2020*

Today’s objectives are to improve inside edge pushes, puck movement and shooting.

Today’s opening session at 8:15 will be with the first-year U20 skaters. The purpose this time is going to be on the technique of how to gain speed with inside edge pushes while moving the puck away from the body. This drill will require an overall understanding of and the ability to implement combined motor-skills. Play-offs are about to start in one week, so every drill that we are going to do is in a game like situation. In these drills decision-making is a key factor and it forces the players to think before they act.

In the afternoon at 3 o’clock my second practice will take place with the youth academy. I am expecting about 20 players between the ages of 11 and 15, so I will definitely split them into two groups according to their skill level. With the rookie group we will focus on skating and the correct body posture. We will try to correct all the mistakes as they are young, so the corrected adaptations will become habits. We hear it many times that good

habits build good players. The advanced group will do stick handling and shooting. The focus will be on the position and function of the lower hand on the stick. The lower hand determines a lot of things, including the quickness of the shot release and the range of puck movement. I will create a drill today where they have to find the optimal position and grip by themselves in order to be more effective in the above-mentioned points.

For the day it was easy to meet the objectives since the first practice included drills that I have tried in the past. In order to meet combined motor skills with the emphasis on inside edge pushes we needed to play small area games where two teams were competing against each other. It was a regular 3 versus 3 but the way they were allowed to gain speed or change direction was with only using inside edge pushes. This is an extremely complex and challenging drill where concentration and focus need to be at 100 percent in order to constantly perform.

On the second session with the advanced group we practiced stick handling and shooting in different game situations. We were lucky to have an extra coach with us so I could talk to players one by one after every repetition. I asked each of them what they should have done differently and how they could have been more effective. These questions encouraged the players to think for themselves.

*Thursday, 12 March 2020*

Today's objectives are to work on shooting variations, shut-downs and crossovers.

My first session today will be with two 20 years old defensemen. The main focus will be on shooting variations from the blue line. The variations of these drills will include one-timers, wrist shots, slap shots and other types of puck movement setups in the offensive zone. We will start with a simple drill by simulating a face-off won by our own center man. The point here would be to shoot the puck as quick as possible by taking away time from the other team's forwards to close the gap. To make it harder, I am going to provide them less and less time and space to be able to shoot. In the next step, the defenseman who received the puck after the face-off is won will pass it for a one-timer slap shot to his defensive pair, instead of shooting right away. The final and most advanced step will be the ability of reading the game and making the right decision of the above-mentioned two options. Everything will depend on the position and skating direction of the opponent's forward. It is up to the defenseman to decide whether he has enough time and space to shoot, or pass and provide a shooting opportunity.

On my second session I will be skating with the twins, as I do every Thursday. We will target shut-downs from crossovers today. In order to perform this move, you need to be able to slide over smoothly from the outside-edge to inside-edge with both legs, but only one at a time. The biggest challenge today will be to find the right rhythm and decide when to attack with the inside edge in order to be able to shut-down. If you learn to perform this correctly then this skill will be a powerful weapon against anybody. This move is really hard to read, so if opposing players are not familiar with it, it can also provide extra time and space for the attackers; this is a crucial factor to being successful in hockey. We will start practicing without a puck so all the emphasis will be on skating. Afterwards when the skating part seems perfect, we will add the puck to accomplish the final step.

For the day we had a lot of repetitions from the first session. We have reached our goal regarding improving decision-making skills. It was not the smoothest practice of the week, since the guys were a bit frustrated after unsuccessfully performing some of the drills.

This was the first time that I saw big differences between the twins. Martin, the older one had more difficulty with the skating part than his brother. Even with twins there are individual differences.

*Friday, 13 March 2020*

Today's objectives are to improve stickhandling and combined motor skills.

This morning will start at 8:15 on the ice with the high-school players. The main focus will be on stickhandling. We will start with mostly stationary drills where the point is to get a feeling of the comfortable grip and go through the functions of both the lower and upper hand. This is a great warm-up drill and also gives some confidence to the players to try new things before we move on to active moving drills. During the second part of the session we will practice the same movements but this time it will not be stationary. By adding skating and speed it will increase the difficulty to perform these drills. The whole point of today's session is to develop combined motor-skills while focusing their attention on stickhandling.

In the afternoon we are going to have our last skills session of this season at the academy. Due to this, I am only going to play different small area games with them. In the second part of the practice we will finish with a scrimmage.

For the day it was hard to meet the objectives and improve decision-making with the first group. After the warm-up and stick handling drills I was not satisfied with the structure of the session so I decided to change the last drill and try to implement stick handling alongside decision-making. We played a small area game where they were only allowed to shoot if they had made at least 3 passes and deked one player. An additional rule was that the team's players who were defending had to hold their sticks with the blade in their palms. This method increased the amount of situations and plays where stick skills had a more crucial role in the decision-making.

### *Weekly analysis*

During this week the main focus was on how to develop decision-making, game sense and certain individual skills hand-in-hand. I have to say that it was challenging and exciting at the same time. My skills have definitely improved regarding this topic in the past days.

The literature has helped me a lot to understand what are the key aspects that I should focus on. Game sense approach to coaching consists of 5 core elements that coaches should always consider.

The first one is game, which means coaches need to design modified games where players can improve tactical awareness and relevant skills.

Game sense is a means of coaching or teaching that uses small-sided modified games to develop tactical and strategic thinking, as well as movement skill performance. (VCE series 2017, 82.)

The second one is that coaches should use open-ended questions to guide the learning process.

Questions should cover four fundamental concepts:

1. TIME – when should you.....?
2. SPACE – where should you.....?
3. RISK – which option.....?
4. EXECUTION – how should you.....? (VCE series 2017, 83.)

The third one is building an environment where learners can be motivated and take ownership of the learning process.

The fourth one is manipulating constraints.

The emergence of behaviours under manipulated constraints is a key idea that needs to underpin the design of practice tasks that require athletes to solve performance problems with their actions. In adapting to changing interactions of constraints, athletes can learn to exploit adaptive variability to maintain the functionality of their performance behaviours. (Renshaw & al. 2019, 52.)

And the fifth element is the categories of games.

...the tactical knowledge and decision-making skills you develop in one sport are can be easily transferred and applied to other sports within the same category.

Invasion games (for example, soccer and netball)

Striking field games (for example, cricket and basketball)

Net/court games (for example, tennis and badminton)

Target games (for example, archery and shooting). (VCE series 2017, 83.)

Thanks to these ideas and key aspects it was way easier to achieve daily and overall objectives during the week. Keeping in mind that every individual is different, so it requires a different approach and developmental plan. To understand the differences you need to know your athletes and their individualised learning preferences. Even twins can have individual differences where genetics could influence their learning process.

The overall feedback from players was that this week had the best performance-like setup because I tried to develop decision-making through game-like situations. I believe that this method has a great future in our profession.

In the future I need to be aware of this technique's possible outcomes and try not to control every movement during the development process. Every individual needs a different amount of time, space and environment to adapt. I need to learn how to control players' emotions better (e.g., frustration) and turn them into motivation.

Due to the unfortunate circumstances of the coronavirus pandemic, the Swedish Ice Hockey Association has made a decision to end the season in the whole of Sweden for all age groups. This means that all ice rinks will shut down and our work for the season will cease, just as it is in all other countries.



## 4 Discussion and conclusions

I have to start by saying that my sessions have changed significantly compared to my previous ones. The new methods and techniques have changed not just the structure of my practices but the overall approach as well.

...nonlinear systems are multi-stable while linear systems are always mono-stable. In simple terms, these ideas mean that when specific constraints are manipulated, a system (e.g. learner) can potentially be challenged towards multiple different patterns of behaviour and not just guided to one outcome. (Chow & al. 2015, 79.)

My old sessions concentrated on only one exact skill or move. The new ones are ready to challenge my players in a different ways and provide them with more outcomes.

On the first and second weeks I was manipulating task constraints in which varying rules ended up being the most effective. An interesting note is that creating performance-like sessions was of the methods that followed my work throughout the diary. I made some changes to equipment as well, when we used heavier pucks. "The use of modified equipment is another aspect of task manipulation that can have an important influence on the emergence of goal-directed behaviours"(Chow & al. 2015, 89).

I had to realize that creativity has to have bigger role while creating drills. Your imagination can create many methods and variations that are almost limitless. "Creativity in manipulating task constraints is needed in pedagogical practice to facilitate continuous adaptations of learners to changes in an affordance landscape"(Davids, Shuttleworth, Araújo, & Gullich 2017, 120).

I have also learned how important it is to have an optimal balance regarding feedback and I will avoid over-analyzing in the future.

Another effective method that I utilized was decreasing time and space in order to force players to think and act faster.

An interesting issue was to find an optimal load to challenge players. Most of the time it was too high of a bar so they eventually lost interest in improving. This is another aspect where I was able to make steps forward.

In the third and fourth week environmental constraints was the focal point. During this week the new method I tried was manipulating the ice surface. This approach has high-

lighted an essential aspect in that cultural norms have a great influence on skill development (figure 7).

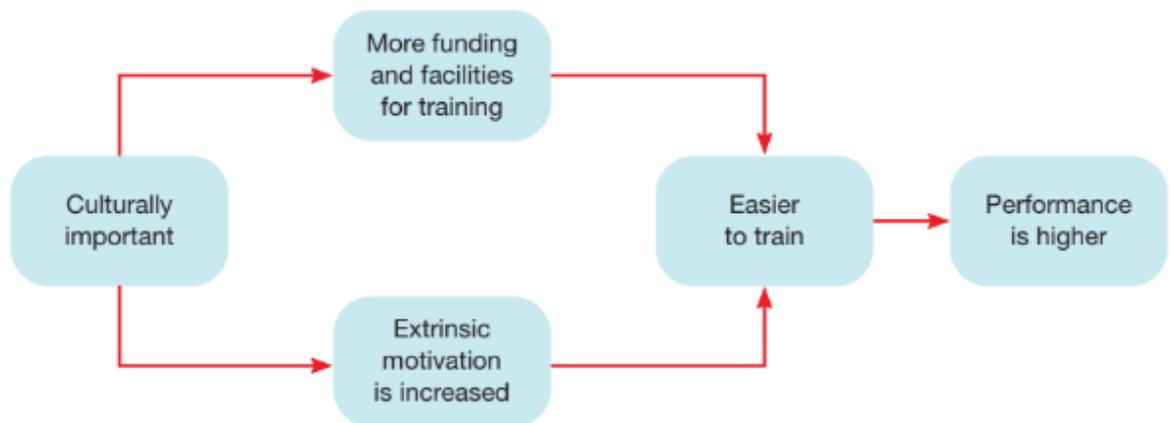


Figure 7. The greater the influence of culture on a particular sport leads to an increase in the standard of performance in that sport. (<https://www.jacaranda.com.au/wp-content/uploads/2017/04/C03-Coaching-And-Instruction.pdf> )

Hockey players in Sweden are idols to children and this leads to greater participation, which obviously results in higher performance.

Another aspect that I have developed is the intention of the sessions. In the future I plan to always set primary goals for the practices.

Moreover, new methods were also implemented by manipulating vision and other environmental constraints. It is obvious that the learning environment affects athlete's development and motivation.

I have learned that the timing of the session can have an influence not just in the short-term but also in the long-term.

On the fifth and sixth week I mostly manipulated individual constraints. The take home messages from those weeks were the variety of practice, movement and individuals. Variety is a great tool to maximize player's concentration and motivation.

The new methods during these weeks affected player's emotions and motivation. In particular, the card game had a significant influence on motivation in a positive way. I have realized that stating the intention of the practice beforehand can also increase focus. Putting more emphasis on individual differences can also play a larger role. It is essential to realize that not only individual skills but individual needs can differ. "It is one thing to know

why individual differences exist but it may require a radical shift in pedagogical philosophy to best cater for them in practice”(Chow & al. 2015, 129).

I had to accept the fact that some techniques could work for most individuals but others needed different approaches or methods.

Brisson & Alain point out that practice needs to help athletes develop individualized and contextually functional motor solutions, rather than to rehearse and reproduce a collective ‘default technique’ or optimal movement ‘template’, towards which all athletes should aspire. (Renshaw & al. 2019, 65.)

During week seven and eight the main focus was on how to increase motivation, teaching game sense and motivation. Movement variability is a great tool to increase focus with creativity and it allows individuals to discover different solutions on their own. Game sense is a complex skill that needs to be developed constantly, while keeping in mind that individual differences also exist.

The history of the individual shapes what emerges in learning: know the athlete’s history so that practice tasks can build on what is already known and complement the athlete’s current capacities. (Renshaw & al. 2019, 82.)

Creating performance environment is one of the most important aspects of successful skills development.

Representative learning design in practice is predicted on the key principle that movements typically need to be coupled to specifying perceptual variables in practice tasks which simulate competitive performance environments. (Chow & al. 2015, 150.)

A very helpful tool that I have used during my thesis process is the GROW model for constraints-led session planning (figure 8). It has four essential steps with questions that can help coaches plan a perfect session. Using those questions will prepare every aspect of a successful practice step-by-step. In the future I will definitely use it and implement it into other aspects of ice hockey tactical session planning.

## CONSTRAINT-LED SESSION PLANNING

<b>G GOAL</b>	<b>R REALITY</b>	<b>O OPTIONS</b>	<b>W WAY FORWARD</b>
<ul style="list-style-type: none"> <li>• What's the goal or intention for this session?</li> <li>• How does this link to the overall goal?</li> <li>• The focus for learning is ...?</li> </ul>	<ul style="list-style-type: none"> <li>• What's the current skill level?                             <ul style="list-style-type: none"> <li>○ Co-ordination?</li> <li>○ Adaptability?</li> </ul> </li> <li>• What affordances of the performance environment do you want to design-in to practice?                             <ul style="list-style-type: none"> <li>○ Which?</li> <li>○ Why?</li> <li>○ When?</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• What practice activities will bridge the gap?</li> <li>• Which practice environment will you use?</li> <li>• What constraints will you use and how will you manipulate them?</li> <li>• How will you measure performance?</li> <li>• We will know we have been successful if:                             <ul style="list-style-type: none"> <li>○ We can see ...</li> <li>○ The data shows ...</li> <li>○ The coach says ...</li> <li>○ The performer feels ...</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• How will you prepare the practice environment?</li> <li>• How will you prepare the performers for the session?</li> <li>• Is there anything else you need to do to be ready?</li> </ul>

Figure 8. Adapted GROW model for constraints-led session planning. (Renshaw & al. 2019, 98.)

One of the challenges during the whole process was how to create a learner-centered approach.

A learner-centered approach requires the practitioner to consider how to place each learner at the center of the practice environment. Of course this might be extremely challenging when working with large group... (Chow & al. 2019, 130.)

For future development I want to create drills like I had on the last week. That means I want to focus on methods where skills can interact and improve with each other. It is interesting to see that more than one skill can be developed hand-in-hand at the same time with another skill.

...when a new skill is acquired, it may also have an impact of some other related existing skill that the individual may possess. So acquiring a new skill is not just about

attaining the new movement pattern. Rather, as a new movement is acquired in a particular learning environment and under specific task constraints... (Chow & al. 2015, 75.)

By analyzing my own work I was able to better prepare for my sessions and provide a more professional opportunity for my players. Thanks to this we were able to adapt faster and have better performance. During the process I have discovered and tried many new methods that will follow me in my career. Keeping in mind that my job is to educate young athletes on their journey, it has been a fun and educative learning process for me.

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